

# Job Stress and Work Ability Among Emergency Nurses in Isfahan, Iran

Mohammad Nasr-Esfahani,<sup>1</sup> Babak Masoumi,<sup>1</sup> Soheila Mohamadirizi,<sup>2</sup> and Shahla Mohamadirizi<sup>3,\*</sup>

<sup>1</sup>Department of Emergency Medicine, Isfahan University of Medical Sciences, Isfahan, IR Iran

<sup>2</sup>Department of Midwifery, School of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, IR Iran

<sup>3</sup>Department of Nursing, School of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, IR Iran

\*Corresponding author: Shahla Mohamadirizi, Department of Nursing, School of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, IR Iran. Tel: +98-9103142630, Fax: +98-3137922937, E-mail: mohamadirizi@nm.mui.ac.ir

Received 2015 May 24; Revised 2016 July 14; Accepted 2016 July 19.

## Abstract

**Background:** Job stress is one of the most common health problems with clinical and psychological consequences, which can affect work ability among emergency nurses. Nevertheless, more studies are needed to shed light on the status of this disorder and its relevance to work ability in nurses in the emergency departments (EDs).

**Objectives:** The current study aimed to determine job stress among emergency nurses and its association with work ability.

**Methods:** This cross-sectional study was conducted in 2013 in hospitals affiliated to Isfahan University of Medical Sciences, Isfahan, Iran. Two hundred nurses who worked in the EDs were asked to complete a demographic questionnaire and special scales to assess their job stress and work ability. T-tests, analysis of variance, Pearson correlation coefficient and linear regression were used to analyze the data.

**Results:** The mean job stress and work ability scores were  $151.09 \pm 0.01$  and  $26.9 \pm 8.2$ , respectively. Fifty-five percent of the subjects had high job stress and fifty-seven percent showed low work ability. A significant indirect correlation was found between job stress and work ability scores in the subjects ( $P = 0.015$ ).

**Conclusions:** Nurses working in the EDs experience a high level of job stress and low work ability. This may decrease the quality of care and patients' safety. Fulfilling the staff shortage in ED and improving management behaviors are important in this regard.

**Keywords:** Work, Aptitude, Occupation, Strains, Emergency Department, Nurses, Iran

## 1. Background

Occupational stress is a common and costly problem in most workplaces. It is difficult to find someone who has not experienced this type of stress (1). Huge amounts of money are lost as a result of a variety of factors, such as lack of physical and mental health among the staff, efficiency deduction, job quitting and job changing, that mainly happen because of job-related stress (2, 3). It is believed that every year, stress and stress-related problems waste hundreds of working days, and in average, everyday one person avoids going to work because of stress disorders and diseases (4). The demand-control-support model indicates that job stress occurs when the amount of mental demands is high and the amount of control over the job is low (5).

Causes of job stress are divided into two main categories: common strain and specific strain. The former includes job shift, weak organizational structure, high responsibility, insufficient number of staff and disagreement or argument in the workplace and can be usually found in almost all careers; however, the latter varies depending on careers (6, 7).

Recently, there is a growing interest in the psychosocial work environment of healthcare workers since they

are exposed to high levels of stress. For example, Park et al. (8) showed that occupational stress is prevalent among nurses. Similarly, another study reported that 27% of nurses experience psycho-physiological stresses. Higher levels of psychiatric symptoms are also reported among emergency department (ED) nurses compared with nurses in other departments. In fact, the ED is the frontline of the healthcare system with a high range of trauma, damage and agitation. Therefore, ED nurses are especially vulnerable to job stress (9). These nurses are specially predisposed to stress and tension due to frequent exposure to death, trauma, violence and overcrowding. Such a stressful environment can predispose healthcare workers to increased risk of injury, heart diseases and psychological disorders, and also would negatively affect the quality of their services and work ability (10). A previous study also found a diverse significant correlation between work ability and occupational stress among nurses, and military and civil workers (11). However, in a recent study on hospital nurses in Brazil no significant association was found between nurses' work ability and occupational stress (12). Considering the contradictory results in this field and also due to the fact that no study was available about the work ability and occupational stress among Iranian ED nurses,

it is still a question whether a relationship exists between work ability and job stress among Iranian ED nurses.

## 2. Objectives

The current study aimed to determine job stress among nurses in the EDs and the way it is associated with their work ability.

## 3. Methods

A cross-sectional study was performed on ED nurses working in hospitals affiliated to Isfahan University of Medical Sciences (IUMS), Isfahan, Iran. The study was conducted from June to August 2013. Sample size was calculated based on a previous study in which work-related stress and work ability was investigated and a correlation of 0.2 was reported between these two variables (10). Then, considering  $Z = 1.96$ ,  $\beta = 0.84$ , and  $r = 0.2$ , it was estimated that a total of 200 subjects were needed. After calculating the sample size, a list of nine hospitals affiliated to IUMS was prepared and using a table of random numbers, four hospitals were selected. Then using a convenience sampling method, the expected number of subjects was selected among the ED nurses who met the eligibility criteria.

The inclusion criteria were: a minimum of one year job experience, native Isfahani subjects, and no experience of horrible incident in the last six months. Incomplete answering to the study instrument was the exclusion criterion.

### 3.1. Instrument

The instrument used in the study consisted of three parts. The first part included eight questions on demographic data including the subjects' age, gender, marital status, educational level, job experience, income status and weekly working hours. The second and the third part of the instrument included the occupational stress assessment questionnaire (OSAQ) and a work ability index questionnaire (WAIQ).

The OSAQ consists of 37 items all responded on a five-point Likert scale with responses ranging from 1 (no stress) to 5 (high stress). The questionnaire has six dimensions including work-related financial issues, public criticism, workplace hazards, workplace interpersonal conflicts, work shift and professional and intellectual demands. The total score is from 37 to 187 with a higher score indicating a higher level of occupational stress. A score from 37 to 74 is considered as experiencing no stress; while scores 75 - 111, 112 - 148 and 149 - 185 are considered as low,

moderate and high stress, respectively (13). To achieve the most common cause of job stress, of the 37 items, the factors with the greatest mean scores were identified. The WAIQ is a standardized instrument and was developed in the Finnish institute for occupational health. This questionnaire consists of seven dimensions including: recent work ability in comparison with the best life period, work ability in relation to job-related mental and physical needs, the number of current diagnosed diseases, rate of sickness in the last 12 months, personal prediction regarding his/her work ability in the next two years, mental resources and work drawback estimation as a result of illnesses. Each answer is allocated a score from 1 to 7 and the overall score is from 7 to 49. Scores 7 - 27, 28-36, 37 - 43 and 44 - 49 are regarded as weak, normal, good and excellent work ability, respectively (14).

The content validity and reliability of the OSAQ was previously assessed by Kordi et al. (10), and the Cronbach's alpha coefficient was 0.94 (15). Moreover, the content validity and the reliability of the WAIQ was assessed by Habibi et al. and Mohamadirizi et al. (4, 15); Cronbach alpha was 0.82.

In different working shifts, the first author explained the study purposes to the subjects and invited them to participate in the study. The subjects were asked to complete the questionnaires during their break time and the completed questionnaires were gathered at the end of their break.

### 3.2. Ethical Considerations

The study protocol and its ethical considerations were approved by the applied research council and ethics committee of Isfahan University of Medical Sciences (grant no. 191125; ethical approval was issued on November 23, 2014). Permission was obtained from the hospital authorities and the purpose of the study was explained to all participants and they all signed the written informed consents before participation. They were also assured of the data confidentiality and all the questionnaires were kept anonymous.

### 3.3. Data Analysis

Data were analyzed using SPSS ver. 11.5 (SPSS Inc., Chicago, IL, USA). Descriptive statistics (frequencies, percentages, mean and standard deviation) were calculated. Independent samples T-test and analysis of variance were used to compare the mean job stress and work ability scores in subgroups of the participants (i.e., age, gender, marital status, level of education, job experience, income status and weekly working hours). Pearson correlation coefficient was used to examine the correlation between job stress and work ability scores. Linear regression was also performed to control confounding factors. The level of statistical significance was  $P \leq 0.05$ .

#### 4. Results

Of the 200 nurses who participated in the study, 65% were female, 51% were single, 73% had a bachelor degree in nursing and 55% had insufficient income (Table 1). The means of age, working experience and weekly working hours of the nurses were  $35.2 \pm 13.20$  years,  $6.01 \pm 1.02$  year and  $48.1 \pm 0.03$  hour/week, respectively.

**Table 1.** The Demographic Characteristics of the Study Subject

Variables	No. (%)
<b>Gender</b>	
Male	70 (35)
Female	130 (65)
<b>Marital status</b>	
Single	102 (52)
Married	98 (48)
<b>Income status</b>	
Low	110 (55)
Moderate	54 (27)
High	36 (18)
<b>Educational level</b>	
Bachelor of nursing	176 (73)
Master of nursing and higher	24 (7)

The mean of job stress was  $151.09 \pm 0.01$ ; 23% of the nurses had no job stress, while 13%, 9% and 55% were at low, moderate and high levels of job stress, respectively. The most common causes of job stress were job change, staff shortage, insufficient time to visit patients and fear of being injured by sharp instruments (Table 2). Also the greatest job stress was related to the workplace difficult dimension and the minimum mean score was related to the public criticism dimension,  $22.00 \pm 3.10$  and  $10.00 \pm 1.20$  respectively.

**Table 2.** Frequency of Four Most Common Causes of Job Stress Among Study Subjects

Cause of Stress	No. (%)
Job change	126 (61)
Staff shortage	107 (51)
Insufficient time to visit the patient	90 (43)
Fear of being injured by sharp instruments	84 (40)

The mean of work ability score was  $26.91 \pm 8.23$ ; 57% of the nurses had weak work ability, while 28% and 15% were at moderate and good levels of work ability, respectively.

A significant indirect correlation was observed between job stress and work ability scores ( $r = -0.28$ ,  $P = 0.015$ ). The relationship between demographic variables and the means of job stress and work ability scores are reported in Pearson correlation coefficient showed that only work experience had a significant relationship with work ability ( $P = 0.032$ ).

In the regression analysis, age, gender, and marital status, educational level, job experience, income status and weekly working hours were included as independent variables; job stress and work ability were separately considered as dependent variables in several steps. In the first stage, both work ability and job stress were significantly associated with other variables ( $P < 0.5$ ). Then, work ability was added to the independent variables and job stress was kept as the only dependent variable. Under such conditions, only work ability ( $P = 0.002$ ,  $B = 0.81$ ) could significantly predict the job stress (Table 4).

#### 5. Discussion

The present study showed that approximately half of the emergency department (ED) nurses had job-related stress symptoms. Factors such as fear of being injured by sharp instruments, insufficient time to visit patients and staff shortage were the most common causes of job stress among nurses in the EDs. The obtained results were in line with the results of Rahmani et al. who studied Iranian nurses and reported that a significant number of nurses in the emergency units and the ones working in the intensive care units (ICUs) had moderate to high levels of job stress (16).

The current study showed that more than a half of the ED nurses had low work ability. Habibi et al. (17) also studied nurses in Alzahra hospital in Isfahan and reported that 27.6% of them had low work ability. The rate of low work ability in the present study was much higher than that of Habibi et al.; this might be attributed to the types of nurses investigated. Habibi et al. (17) studied a combination of nurses working in different settings; however, the current study examined the nurses working in EDs and resulted that such departments are usually more stressful and unpredictable than general wards. Clients of the EDs are usually traumatized either physically or psychologically, are more anxious and many of them have life threatening and unpredictable conditions. These patients are usually accompanied by their family members and the relatives themselves are anxious. This condition increases the tension and job pressure in ED nurses (18).

The current study showed a significant inverse correlation between job stress and work ability among nurses. Therefore, work ability increased by decreasing job stress.

**Table 3.** The Relationship Between Job Stress and Work Ability, and Demographic Data and Work Related Variables in the Study Subjects

Variables	Job Stress		Work Ability	
	Statistical Indicator	P Value	Statistical Indicator	P Value
Age <sup>a</sup>	r = 0.1	0.5	r = 0.05	0.4
Gender <sup>b</sup>	t = 4.3	0.5	t = 2.2	0.2
Marital status <sup>b</sup>	t = 3.3	0.1	t = 6.5	0.6
Income level <sup>c</sup>	f = 6	0.1	f = 8	0.2
Educational level <sup>b</sup>	t = 8.3	0.4	t = 2.3	0.1
Work experience <sup>a</sup>	r = 0.01	0.1	r = 0.2	0.03
Weekly working hours <sup>a</sup>	r = 0.05	0.2	r = 0.02	0.4
Contractual employment <sup>c</sup>	f = 2	0.1	f = 4	0.5
Work shift <sup>c</sup>	f = 3	0.3	f = 3	0.7

<sup>a</sup>Pearson correlation.<sup>b</sup>T-test.<sup>c</sup>ANOVA.**Table 4.** Result of the Linear Regression to Determine the Predictors for Job Stress<sup>a</sup>

Predicting Variables	Coefficients <sup>b</sup>					R <sup>2</sup>
	Unstandardized Coefficient		Standardized Coefficient	T	P Value	
	B	Std. Error	Beta			
Total work ability score	0.081	0.021	0.145	2.602	0.002	0.13

<sup>a</sup>Independent variables: work ability score, age, gender, marital status, educational level, job experience, income status and weekly working hours.<sup>b</sup>Coefficientsa, dependent variable as total job stress score.

This finding was consistent with a previous report by Kordi et al. which showed a negative correlation between job stress and work ability among midwives (10).

The inverse correlation between job stress and nurses' work ability signifies the importance of managerial efforts to decrease nurses' job stress. Lack of sufficient staff and lack of time were prevalent in the current study, which can increase the nurses' job strain. If workforce shortage decreases, then nurses have more time to provide qualified care to their patients in the EDs. Then their job stress diminishes and their work ability increases (10). Furthermore, a supporting managerial manner, establishment of some support systems, providing favorable and rewarding working conditions can significantly decrease the nurses' stress and also increase their work ability (6, 10).

The present study showed that work ability determined about 14% of the variance of job stress. This finding was consistent with the results of Kordi et al. who reported that age, gender, work environment, work shift, educational level, weekly working hours, work experience and work ability can predict the level of job stress (10).

The results of the study should be considered along

with its limitations. The study sample size was relatively small and only the nurses working in the state hospitals were studied. The study did not investigate the effects of colleagues' behaviors and administrators' management on nurses' job stress and work ability. Moreover, although some statistical analyses were performed to evaluate the factors affecting the nurses' job stress and work ability, the current cross-sectional study cannot accurately examine the causal relationships.

In conclusion, findings of the study showed that nurses working in EDs experience a high level of job stress and have low work ability. An inverse relationship was found between job stress and work ability. This may decrease the quality of care and patients' safety in EDs. ED is the frontline of the hospital and it is necessary to take steps to decrease the ED nurses' job stress and improve their work ability. Considering the staff shortage in EDs and improving management behaviors are also important in this regard. Moreover, a counseling system should be available to nurses to help them manage and decrease their stress level; then, their work ability and quality of services improve.

Considering the limitations of the present study, further researches with larger sample sizes, especially inclusion of nurses from the private sectors, are recommended. Moreover, studies with special consideration in colleagues' relationships and managerial behaviors are suggested. In addition, comparison of job stress and work ability in settings with sufficient and insufficient nursing workforce is suggested.

### Acknowledgments

This study was part of a research project approved in September 2014 (research no. 191125) in Isfahan University of Medical Sciences, Isfahan, Iran, and was financially sponsored by vice chancellery of research in the same university. Authors greatly appreciate the support and cooperation of the vice chancellor, as well as the emergency nurses.

### Footnotes

**Authors' Contribution:** Shahla Mohamadirizi and Mohammad Nasr-Esfahani: providing study concepts, design and supervision, data analysis and critical revisions on the first draft of the manuscript; Babak Masoumi: providing study concepts, design, data gathering and preparing the first draft of the manuscript.

**Financial Disclosure:** None declared.

**Funding/Support:** The current study was financially supported by Isfahan University of Medical Sciences, Isfahan, Iran.

### References

- Habibi E, Taheri MR, Hasanzadeh A. Relationship between mental workload and musculoskeletal disorders among Alzahra Hospital nurses. *Iran J Nurs Midwifery Res.* 2015;20(1):1-6. [PubMed: 25709683].
- Gunnarsdottir H, Bjereld Y, Hensing G, Petzold M, Povlsen L. Associations between parents' subjective time pressure and mental health problems among children in the Nordic countries: a population based study. *BMC Public Health.* 2015;15:353. doi: 10.1186/s12889-015-1634-4. [PubMed: 25884879].
- Adib-Hajbaghery M, Khamechian M, Alavi NM. Nurses' perception of occupational stress and its influencing factors: A qualitative study. *Iran J Nurs Midwifery Res.* 2012;17(5):352-9. [PubMed: 23853647].
- Habibi E, Poorabdian S, Shakerian M. Job strain (demands and control model) as a predictor of cardiovascular risk factors among petrochemical personnel. *J Educ Health Promot.* 2015;4:16. doi:10.4103/2277-9531.154034. [PubMed: 25861661].
- Donnelly T. Stress among nurses working in an acute hospital in Ireland. *Br J Nurs.* 2014;23(13):746-50. doi: 10.12968/bjon.2014.23.13.746. [PubMed: 25072339].
- Kaewboonchoo O, Yingyuad B, Rawiworrakul T, Jinayon A. Job stress and intent to stay at work among registered female nurses working in Thai hospitals. *J Occup Health.* 2014;56(2):93-9. [PubMed: 24430836].
- Pulkki-Raback L, Elovainio M, Virtanen M, Kivimaki M, Hintsanen M, Hintsala T, et al. Job Demands and Job Control as Predictors of Depressive Symptoms: Moderating Effects of Negative Childhood Socioemotional Experiences. *Stress Health.* 2016;32(4):383-394. doi: 10.1002/smi.2632. [PubMed: 25641815].
- Park YM, Kim SY. Impacts of Job Stress and Cognitive Failure on Patient Safety Incidents among Hospital Nurses. *Saf Health Work.* 2013;4(4):210-5. doi: 10.1016/j.shaw.2013.10.003. [PubMed: 24422177].
- Gholamzadeh S, Sharif F, Rad FD. Sources of occupational stress and coping strategies among nurses who work in Admission and Emergency Departments of Hospitals related to Shiraz University of Medical Sciences. *Iran J Nurs Midwifery Res.* 2011;16(1):41-6. [PubMed: 22039378].
- Kordi M, Mohamadirizi S, Shakeri MT, Modares Gharavi M, Salehi Fadardi J. The Relationship between Occupational Stress and Work Ability among Midwives in Mashhad, Iran. *JMRH.* 2014;2(3):188-94.
- Golubic R, Milosevic M, Knezevic B, Mustajbegovic J. Work-related stress, education and work ability among hospital nurses. *J Adv Nurs.* 2009;65(10):2056-66. doi: 10.1111/j.1365-2648.2009.05057.x. [PubMed: 19627386].
- Negeliskii C, Lautert L. Occupational stress and work capacity of nurses of a hospital group. *Rev Lat Am Enfermagem.* 2011;19(3):606-13.
- Goedhard WJ. [Sex, hormones and Alzheimer's disease]. *Tijdschr Gerontol Geriatr.* 2005;36(5):213-4. [PubMed: 16353342].
- Notenbomer A, Groothoff JW, van Rhenen W, Roelen CA. Associations of work ability with frequent and long-term sickness absence. *Occup Med (Lond).* 2015;65(5):373-9. doi: 10.1093/occmed/kqv052. [PubMed: 25964509].
- Mohamadi Rizi S, Kordi M, Shakeri MT, Salehi Fadardi J. A survey on midwives work ability at public hospitals and health-care centers in Mashhad in 2011. *Occup Med Quart J.* 2012;4(1):59-65.
- Rahmani F, Behshid M, Zamanzadeh V, Rahmani F. Relationship between general health, occupational stress and burnout in critical care nurses of Tabriz teaching hospitals [in Persian]. *Iran J Nurs.* 2010;23(66):54-63.
- Habibi E, Dehghan H, Zeinodini M, Yousefi H, Hasanzadeh A. A Study on Work Ability Index and Physical Work Capacity on the Base of Fax Equation VO(2) Max in Male Nursing Hospital Staff in Isfahan, Iran. *Int J Prev Med.* 2012;3(11):776-82. [PubMed: 23189229].
- Torshizi L, Ahmadi F. Job Stressors From Clinical Nurses' perspective [in Persian]. *Iran J Nurs.* 2011;24(70):49-60.