



## The effect of job-stress on patient-safety in hospitals affiliated to Alborz University of Medical Sciences, Iran

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### Original Article

#### Abstract

**BACKGROUND:** Patient-safety is one of the main pillars of healthcare. Given that nurses are the largest group associated with patients, so with safety harms, job-stress among them can reduce patient-safety in hospitals. The aim of this article was to investigate the effects of job-stress on patient-safety in hospitals affiliated to Alborz University of Medical Sciences, Karaj, Iran.

**METHODS:** In this cross-sectional study, data gathering tools consisted of a reliable researcher-made job-stress questionnaire, and a patient-safety checklist. 320 nurses in hospitals affiliated to Alborz University of Medical Sciences, who were selected using simple randomized sampling method, completed the questionnaire, and the checklist was filled by the researcher. Data were analyzed at two levels of inferential and descriptive statistics.

**RESULTS:** Job-stress and also patient-safety were at average levels in studied hospitals. Among the demographic factors, only the relationship between job-stress and marital status was statistically significant ( $P < 0.050$ ). There were no significant relationships between different aspects of job-stress among nurses and patient-safety.

**CONCLUSION:** According to average level of job-stress among studied nurses, the quality of offered services would decrease and patient-safety would become undermined, if no action take place to reduce the job-stress among them. Therefore, it is necessary to increase nurses' physical, psychological, and social health to increase patient-safety.

**KEYWORDS:** Job-Stress, Patient-Safety, Hospitals

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### Introduction

Being secure from any hazards and injuries during receiving health-care services is one of human rights, while medical errors is one of the major health-system challenges threatening

patients all over the world.<sup>1</sup>

Patient-safety means no room for any medical errors and harms while providing health services and also not to getting any more damages during health-care is one of main components of the health-care itself.<sup>2,3</sup>

Medical errors, such as wrong type and wrong dosage of prescribed medications, or surgery at body part or using wrong

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mechanics for surgery, postoperative complications and misdiagnosis or delayed diagnosis and failure to diagnose and misdiagnosis, medical equipment and machinery failures that leads to misdiagnosis, and other factors such as hospital infections or accidently patient falls, bed sores, unsafe services that leads to unpleasant consequences for patients and their families and also causing psychological pressure for them and staff, eventually impose huge economic burden on health-care system and all community.

Patient-safety knowledge and patient-safety culture in health centers play an important and key role. Patient-safety culture can be define as accepting patient-safety as first priority and common value within organization, and also can define integrated pattern by individual and organizational behavior based on common values and beliefs continuously looking to minimize damages caused by providing patient-care process.<sup>4,5</sup>

Over past two decades, the idea that health-care system is not secure enough, and needs to be improved, had promoted globally as far as patient-safety be top priority for health systems and patients; moreover, worldwide efforts have become focus point -with World Health Organization (WHO) special emphasis- in order to reduce errors and mistakes, root and fix errors, and prevent it from happening again.<sup>6</sup>

Nurses are the largest group of human factors working in hospitals, directly associated and involved with patients, and as core elements of health-care have essential role in providing health-care progress, and since they are the direct way to deliver most of the services to patients, their act has important role to reach health-care purposes.<sup>7-10</sup> According to researchers, 90 percent of staff believes that nurses' first responsibility is patient's health.<sup>10</sup>

Although the hospitals, as competitive organizations, are putting the employees and specially nurses mental health as their

priority to improve their effectiveness, but there are more psychological stress than expected for nurses and employees, and most of studies have suggested that nursing is stressful job.<sup>11-13</sup>

Nursing medical staff problems such as management pressures, lack of support and facilities, interpersonal conflicts, patient's death, high demands, and working extra shifts or secondary job. These difficulties may cause physical and psychological fatigue so exhausting, and stress will lead to low patient care performance.<sup>14</sup>

According to the importance of nurses at present health systems, this article discuss the importance of occupational stress on patient safety in order to examine the issues to improve patient safety in health care centers, as well as patient satisfaction.

## Materials and Methods

In this cross-sectional study, the effect of job-stress on patient-safety in hospitals affiliated to Alborz University of Medical Sciences, Iran, containing three Rajaii, Bahounar, and Madani hospital was assessed.

Nursing staff in inpatient and other sectors of the hospital with least one year of work experience in that hospital who were interested in participating in the study were enrolled this research.

Cochran sampling technique was used to have a bulk of sample by using the formula,  $n = (Z_{\alpha/2} + Z_{\beta})^2 \sigma^2 / d^2$ . Considering  $\alpha = 0.05$  (confidence of 95%),  $\beta = 0.2$  (test power of 80%),  $\sigma = 30$ , and  $\delta = 4$  (relative error of 2.5%), the bulk of sample was calculated as 430 people, of which, 320 participants should complete the questionnaires. These participants were selected using simple randomized sampling method.

The data gathering tools consisted of a researcher-made job-stress questionnaire, and a patient-safety checklist.

**Table 1. Describing the situation and dimension of job-stress among the studied nurses**

Dimension	Mean	Standard division	Condition
Job-stress related to job-specification	1.55	0.30	Moderate
Job-stress related to management-organization factors	1.65	0.35	Moderate
Job-stress related to interpersonal communications	2.44	0.61	Moderate
Job-stress related to environment issues	1.75	0.46	Moderate
Job-stress related to patient-care factors	1.49	0.37	Moderate
Total	1.86	0.30	Moderate

The questionnaire consisted of simple questions such as age, sex, marital status, education, work experience, and employment status, as well as specific questions including the questions that legated to our research. The checklist also consisted of 44 items of all aspects of patient-safety. Content validity of the questionnaire and check list was assessed by professors and experts in medical and nursing schools of Alborz University of Medical Sciences, and the reliability was tested using Cronbach's Alpha coefficient test that was obtained as 0.98.

Participants completed the questionnaire, and the checklist was filled by the researcher. Distributing the questionnaires and collecting them was done by one the researchers, as well as completing the checklist; in items of checklist that needed some information from the patients, the data were gathered via asking them verbally.

After collecting and scoring the data, statistical analysis was done using descriptive statistics as well as t, ANOVA, and Spearman correlation coefficient tests via SPSS software (version 20, IBM Corporation, Armonk, NY, USA).

## Results

In this study, 320 nurses in three hospitals were enrolled that 210 of them were women

(65.6%) and 110 were men (34.4%). Most of the participates were at the age group of 26-34 years (53%), and least of them were at the age group of 22-25 years (21%). Moreover, most of the nurses had a work experience of 1-5 years (52%), whereas the least of them had more than 10 years of work experience (18%).

According to the findings of this study, job-stress was at moderate level among the studied nurses (Table 1).

Moreover, the patient-safety was in an average near to moderate status in all three studied hospitals (Table 2).

**Table 2. The overall patient-safety situation in studied hospitals**

Hospital	Mean	Standard division	Condition
1	1.45	0.10	Moderate
2	1.63	0.11	Moderate
3	1.75	0.12	Moderate
Total	1.75	0.11	Moderate

Spearman correlation coefficient test was used to investigate the relationship between job-stress among the nurses and patient-safety, and the relationship was not statistically significant ( $r = 0.007$ ,  $P = 928$ ).

In addition, the relationships between the different dimensions of job-stress among nurses and patient-safety were not statistically significant, too (Table 3).

**Table 3. The correlation between the dimension of job-stress among nurses and patient-safety**

Variable	r-value	P
Job-stress related to job-specification	-0.040	0.456
Job-stress related to management-organization factors	0.003	0.953
Job-stress related to interpersonal communications	0.049	0.686
Job-stress related to environment issues	0.006	0.831
Job-stress related to patient-care factors	-0.008	0.915

The amounts are the results of Spearman correlation coefficient test.

## Discussion

Various studies that have been conducted in relation to patient-safety showed different aspects such as drug error, misdiagnosis, and failure of devices and equipment, that could lead to a mistake. In addition, there are cases of hospital infections, fall in the patient, bed sores, and wrong treatment, too.<sup>15</sup>

The results of this study showed that there was no relationship between the demographic specification of nurses and job-stress. This result is consistent with the results of Mahmoudi et al.<sup>16</sup> and Hazavehei et al.<sup>17</sup> studies; except that Mahmoudi et al. expressed a significant relationship between the gender and job-stress.<sup>16</sup> According to Mortaghi Ghasemi et al., there was only a significant relationship between the educational level and job-stress.<sup>12</sup>

We did not find any significant relationship between job-stress and work experience. Hashemi and Garshad found the same result in their research.<sup>18</sup> Cavalheiro et al. reported inverts relationship between work experience and job-stress.<sup>19</sup>

The results of this study indicated that the average level of job-stress among the studied nurses was moderate. The results of Faraji et al. study also indicated that most of the nurses (over 70%) experienced moderate and high job-stress.<sup>20</sup>

In this study, factors such as job-specification, management-organization factors, interpersonal communication, environment issues, and patient-care factors were the most prevalent causes of job-stress with a moderate situation. Rahmani et al. mentioned the heavy work load and responsibilities as well as physical environment as the causes of high level of stress.<sup>14</sup> Mortaghi Ghasemi et al. listed the most prevalent stressors as patient death, heavy work load, uncertainty about treatment, conflict with colleagues, lack of individual Insufficiency, and lack of support.<sup>12</sup>

Torshizi and Ahmadi in their study mentioned that the majority of nurses (65%) thought that the most effective factors on job-stress were physical environmental factors such as lack of suitable conditions like lack of air conditioning, noise control, and resting place.<sup>21</sup> They said that the most stressful factors were the low level of salaries and benefits, then the aspect of interpersonal communication, lack of adequate support from superiors, and the presence of visits in unforeseen hours.<sup>22</sup>

These finding could be used to promote the status of job-stress among the nurses in our country.

Our findings suggested that the patient-safety was in an average near to moderate status in all three studied hospitals, and job-stress among the nurses as well as different dimensions of it (job-specification, management-organization factors, interpersonal communication, environment issues, and patient-care factors) did not have any effect on patient-safety; while Colla et al. referred job-stress among the nurses as an effective factor on patient-safety.<sup>22</sup>

More studies should be done in Iran to clear the factors affecting patient-safety in our hospitals to promote them, and to reach a better condition of patient-safety. As the Deilkas and Hofoss study showed that serious interventions should be undertaken to promote the patient-safety culture. These interventions can be combined with scoring systems at different levels.<sup>23</sup>

## Conclusion

According to our findings, job-stress was at moderate level among the nurses working in hospitals affiliated to Alborz University of Medical Sciences. Moreover, the patient-safety status was in an average near to moderate level. Intervention should be planned to promote the status of job-stress among the nurses, as well as patient-safety in these hospitals.

## Conflict of Interests

Authors have no conflict of interests.

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