

The Relationship between Nurse's Job Stress and Patient Safety

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Abstract

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BACKGROUND: Patient safety is a key element of the quality of health services. Nurses are the largest group that care for patients, observing safe in nursing care would reduce injuries, disability, morbidity and mortality. However, high stress can lead to a decline in the quality of nursing care.

AIM: This study aimed to investigate the relationship between job stress of the nurses and patient safety in a teaching hospital of Hamadan in 2017.

MATERIAL AND METHODS: This is a cross-sectional study. The data was gathered by a questionnaire of Nurse's job stress prepared by the researcher that after confirming the validity and reliability was completed by 198 nurses of three teaching hospitals of Hamadan city that were selected by simple random sampling and the checklist of patient safety that was collected by the researcher. Data analysis was done in the two levels of descriptive and analysis statistics.

RESULTS: The results showed that the job stress of the nurses and patient safety (mean = 1.75 and SD = 0.114) have been at an average level. There was no statistically significant relationship between Nurse's job stress and patient safety because the Spearman correlation coefficient showed that $r = 0.007$ and $p = 0.919$. Among the demographic factors, there was only a significant relationship between marital status and Nurse's job stress ($p < 0.05$).

CONCLUSION: Because of nursing job stress is affected by different working conditions, further studies in the many hospitals are needed. Moderate levels of patient safety are not acceptable; Therefore, health's policymakers should focus on providing the safety of all patients at the optimal level, with more effort to reduce the stress of their nurses at the lowest level.

Introduction

Work-related stress exists among the public and in all occupation, but it is far more important in professions that deal with people's health. Job stress among health professionals and health care staff, especially nurses, is very prevalent [1], [2]. Due to the specific nature of the nursing profession, which requires high-skill, team working in stressful situations, providing 24-hour care and a great emotional burden, nurses are faced with a variety of stressors [3]. In addition to these cases, other factors such as communication with patients and their companions, communication with physicians and

other nurses, high workload, long working hours, dissatisfaction with wages and benefits, working on holidays also cause stress in nurses. Stress can lead to bad consequences, and if the intensity of the stressor exceeds thresholds of tolerance, it could lead to work-related events, including increased absenteeism and leave the job, decreased job satisfaction, reduced productivity and organisational commitment, reduced quality of patient care [4], [5]. If these stresses continue, they will lead to burnout, the worst consequence of which is the reducing of quality of care patients receive because the patient was deprived of adequate care and his human rights.

Sometimes this burnout can result in care

errors and thus negative impact on patients [6]. Rising health care costs, emotional exhaustion, depersonalization and reduced personal accomplishment are the other consequences of accumulated and unmanaged job stress [7]. Of course, providing high quality and safe services to patients can lead to reduced referrals and admissions rate, increased patient satisfaction, improved health status and productivity [7], [8]. Nurses have the most direct contact with patients and are considered as the main foundation of the continuous quality improvement process. Since safe procedures are the core of nursing care to maintain and improve patient safety and if unsafe procedures are done, has not only legal consequences but also irreparable harms are incurred to patients [9], [10], which can have dire consequences for the patients and their family, including long-term accommodation, patients suffering, additional costs, dissatisfaction with the hospitals, (and thus dissatisfaction with the whole health system) and sometimes even patients death [11], [12]. It can impose a huge economic burden on the healthcare system and society [13].

Thus, according to the above discussion, this study aimed to investigate the relationship between patient safety and occupational stress in nurses.

Materials and Methods

Two instruments were developed by researchers team and used to collect data, including a Nurse's Job Stress questionnaire and Patient safety checklist. That In most of the existing checklists that have been used to measure patient safety, all safety-related factors were not fully considered, so, using work experiences, professors' and experts' comments, the researchers decided to carefully include general aspects related to patient safety that are related to nursing procedures in the checklist. Finally, a checklist of 44 items and questionnaire with 46 items and 5 detentions were designed in the following stages.

Based on literature review, we extracted many dimensions of the patient safety and the factors of the nursing job stressor, and then we selected items by taking into consideration the strengths and based on the researcher's opinion.

Instruments design performed through determining validity and reliability. To determine the content validity, we used content validity ratio (CVR) and content validity index (CVI). In this way, the 15 experts are requested to specify whether an item is necessary or not (score each item from 1 to 3). The formula of $CVR = (N_e - N/2)/(N/2)$, in which the N_e is the number of experts indicating "essential" and N is the total number of experts. To obtain CVI, we computed the number of experts giving a rating 3 or 4

to the relevancy of each item, divided by the total number of experts. If the score was bigger than 0.49 the item in the instrument will be accepted, and if it is less than 0.49 it is eliminated, and between two ranges were need revision [1].

To determine the face validity, we gathered viewpoints of 10 experts of nursing that they were professionals and have research experience or work in the field about sufficient appearance of our checklist and questionnaire.

To determine the Reliability of the instrument, we used the test-retest method. Therefore, in the first step the questionnaires were distributed among 30 nurses, and 10 days later we did it again. For calculating Test-Retest Reliability Coefficients, the data were analysed using SPSS 16 software that we found 0.88.

A cross-sectional study has been done on three hospitals affiliated to Hamedan University of Medical Sciences in 2017. The study population included nurses and patients that admitted to these hospitals during the study.

According to the formula $(n = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2}{d^2} + 3)$ of the correlation coefficient of two variables and based on data from previous studies, $d = 0.2$, $Z = 1.96$, the sample size was calculated 194.

However, the final sample size was 200 people by taking into account the possible loss of samples, which were studied and divided proportionally to the number of nurses in three teaching hospitals. The questionnaires distributed among these nurses and at the same time, the patient safety checklist is completed by the researcher. SPSS.Ver.16 was used to analyse the data. Data analysis was performed using descriptive statistics (frequency and percentage, mean, standard deviation) and inferential (Kolmogorov-Smirnov test for determining the normal distribution of data, Mann-Whitney U and Spearman test).

Results

Male and single participants accounted for 31.8% ($n = 63$) and 40.4% ($n = 80$) of the subjects. According to the study population, participants were divided into three age groups of 22-25, 26-34 and 35-53 years, which respectively accounted for 21.7%, 53% and 25.3% of the participants. Regarding work experience, nurses with 1-5, 5-10 and above 10 years of work experience, respectively accounted for 52%, 25.8% and 22.2% of the total samples. A total of 88.4% of the study subjects had degrees above diploma (Table 1).

Table 1: Demographic characteristics of the nurses

Educational level	Sex	Male		Female		Age groups	22-25		26-34		35-53		Total			
		N	P	N	P		N	P	N	P	N	P	N	P		
		Diploma		63	31.8		135	68.2	43	21.7	105	53	50	25.3	198	100
		Above diploma		N	P		N	P	1-5		5-10		>10		Total	
		23	11.6	175	88.4	103	52	51	25.8	44	22.2	198	100			

About the occupational stress related to job characteristics; the factors that had the greatest stress-related impact on nurses respectively included long working hours and working on holidays, high workload, lack of career advancement, the unknown importance of nursing career for others and lack of proper mindset towards nursing jobs at the society level. By the scope of nurses' job stress, their job stress is explained in the following five dimensions (Table 2).

Table 2: The status of the five dimensions of the nurses' job stress

Nurses' job stress aspect	Mean	Standard deviation	Status
Job stress related to job specifications	0.33	1.68	Average
Job stress related to management-organisational factors	0.37	1.76	Average
Job stress related to personal communication factors	0.51	2.32	Average
Job stress related to issues related to the physical environment in which a job is performed	0.46	1.85	Average
Job stress related to patient care factors	0.39	1.69	Average
Total	0.30	1.86	Average

The feeling of inadequacy for the nursing job was the least effective factor in the nurses' stress so that only 14.1% of nurses had a feeling of inadequacy towards themselves. In the study of management-organisational factors affecting job stress, the most effective factors, respectively included "lack of sufficient personnel, lack of adequate salary, lack of understanding of the needs of nurses by managers and lack of support by superiors".

Among these studied factors, "lack of coordination between different hospital units" was considered as the lowest effective factor on job stress. About the area of personal relationships affecting job stress, it was found that these factors have little effect on job stress among nurses. Among individual factors, unresolved conflicts with staffs in other units and problems with patients were the least effective factors in this regard.

Also, among physical environment factors creating stress in the workplace, lack of proper conditions such as proper ventilation, noise control, resting place, etc. was the most effective factor in the majority of nurses (52%). However, a small number of nurses (12.1%) believed that unfamiliarity with the existing equipment in the workplace was an important factor affecting stress. Below, patient-care-related factors creating stress in nurses are listed: Dealing with patients in the final moments of life and death (56.1%), non-professional expectations of patients and their relatives (53.5%), the presence of visitors in non-regulated working hours (53%). Among patient care factors, a feeling of discomfort during performing

care procedures was identified as a factor in creating job stress only by 18.7% of nurses; this was the least important factor in causing stress.

Investigating patient safety status in the studied hospitals, it was found that the following factors played the most significant role in patient safety from the viewpoint of nurses (the percentage of nurses who stated that the relevant factor plays a significant role in patient safety are shown in parentheses): Preparing care equipment prior to performing procedures (62.1%), separation of infectious and non-infectious wastes (58.6%), personnel's familiarity with all five principles of drugs use (57.1%), putting the patient in a comfortable position to carry out care measures (57.1%), writing the name and surname of the patient and the related physician in boards above patients' beds (52%), rising protective railings beside the bed in case of need (51%), dealing politely and cheerfully with patients (50.5%). The overall condition of the patient safety was evaluated average with an average of 1.75% and a standard deviation of 0.114.

In general, using the Kolmogorov - Smirnov test, job stress (N = 198, Z = 0.558, P = 0.879) has normal distribution and patient safety (N = 198, Z = 1.651, P = 0.009) lacks the normal distribution. A t-test indicated that job stress score in single (P = 0.979) and married male and female groups (P = 0.001) and diploma and higher diploma (P = 0.405) had no statistically significant difference. ANOVA test indicated that job stress score was not significantly different among the three age groups and in three groups with varied work experiences with a p-value of 0.405 and 0.444, respectively.

To investigate the relationship between job stress and the patient safety that Spearman's rank correlation coefficient was used (r = 0.007 and P = 0.919). The coefficient indicates that this relationship is not significant statistically. There was also no significant relationship regarding the presence or absence of a significant relationship between job stress dimensions and patient safety (Table 3).

Table 3: Correlation between aspects of Nurses' job stress and patient safety

Nurses' job stress	Patient safety	
	R	P-value
Job stress related to job specifications	-0.05	0.486
Job stress related to management-organizational factors	0.002	0.983
Job stress related to personal communication factors	0.039	0.586
Job stress related to issues related to the physical environment in which a job is performed	0.006	0.931
Job stress related to patient care factors	-0.008	0.915

Discussion

The results of this study showed that there is no relation between demographic characteristics of

nurses and job stress. This result is consistent with the results of the study by Gandy [15]. Halvah also stated in his study that, among demographic characteristics, there is only a significant correlation between gender and job stress no significant relationship was observed in other cases [11]. In a study that was conducted by Ghasemi Mortaqi. The findings imply that among demographic variables, there was only a significant relationship between the level of education and work-related stress [12]. However, Faraji found a significant relationship between job stress and the demographic variables [13]. This difference in results may be due to differences in the working conditions of nurses, including the type of hospitals, the number of personnel providing service, number of patients etc.

In the present study, it was found that there is no significant relationship between job stress and type of employment, work experience, and work shifts. Hashemi et al. also found similar results in their study [16]. While other studies have reported different results, for example, Letvak and Buck reported that there is a negative correlation between experience and job stress [17]. Hazvehi and Zeighami relationship reported that there is a significant relationship between the number of night shifts and job stress [18].

A study by Shahraki et al. demonstrated significant differences in mean job stress for nurses regarding the type of employment [19]. Bahrami also found that there was a significant relationship between job stress and type of employment and work experience [20]. There is no compelling reason for the observed differences regarding the type of employment (permanent, temporary, contractual, project employment, etc.), but it can be expected that the higher stress level is seen in the night shift due to a more inconvenient time than other shifts(although there was no relationship in the present study).

The results of the present study indicated the average overall level of job stress among nurses. The results of the study conducted by Zeighami also suggest that 86.7 % of nurses have experienced moderate job stress [21]. The results of the study conducted by Faraji also showed that more than 70% of nurses experience medium and high job stress [22]. There was a relatively high consistency between the present study and other studies regarding the results on the most important factors creating job stress in various fields. In a study on nurses, Rahmani referred top high job stress due to a heavy workload and responsibility as well as high stress caused by the physical environment [23].

In a study, Ghasemi et al., listed the most important stressors as follows: patient's death, heavy workload, uncertainty about treatment, conflicts with colleagues, lack of personal adequacy and lack of support [12]. In a study, Hashemi also considered the followings as the most significant stressors: job nature, relationships with co-workers, management

factors, workload and authority limit [16]. In a study on nurses, Flanagan also has emphasised the impact of two factors of workload and organisational support on job stress [24]. Considering that factors such as high workload, physical environmental factors, patient's death, lack of adequate salary are among the most important causes of stress in the present study, we can realise the consistency between the current study and the above studies.

In his findings, Torshizi has referred to the highest mean score of job stress factors in different areas as follows respectively: The highest score in the area of working conditions, management factors, interpersonal relations and patient's care was obtained inward congestion, insufficient salaries and benefits, lack of support from superiors and the presence of visitors during non-regulated working hours [25].

The factors mentioned above are consistent with the effective factors found in the present study. Regarding patient safety, the results of the current study show that patient safety is not affected by job stress. This result is inconsistent with results obtained by Berland. In his findings, he pointed out the impact of nurses'stress, caused by high working demands and low organisational and occupational support, on patient safety [26]. The difference between the findings of these two studies can be due to different definitions of safety in two studies or evaluation by different groups with different viewpoints towards patient safety. Thus, it can be noted that it is important for managers and health care organisations to control pressure and stress among nursing staffs.

In conclusion, the findings of our study showed that apart from individual areas, areas such as patient care, management, physical environment and working conditions are considered a source of stress for nurses. Because of nursing job stress is affected by different working conditions, further studies in the many hospitals are needed. Moderate levels of patient safety are not acceptable; therefore, health's policymakers should focus on providing the safety of all patients at the optimal level, with more effort to reduce the stress of their nurses At the lowest level. Programs can be designed to reduce or control job stress by looking specifically at effective factors in these areas. A major step forward can be taken in promoting this valuable culture by holding workshops and training courses for health personnel to familiarise them with the culture of patient safety. And since the results of this study, which are derived from their nurses' opinions, showed that the stress in the patient's care has been overwhelming; The need to adopt measures in the process of serving patients and their relatives, as well as to control visiting hours so that stress and psychological problems of personnel are reduced as much as possible becomes clear more than ever.

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