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Sources of Occupational Stress and their Relationship with Personal and Occupational Factors in Nurses of Rasht Teaching Hospitals in 2016

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ABSTRACT

Introduction: Nurses experience more stress than other health's staff. Job stress has significant effects on the performance of nurses and health care organizations; it also endangers the health care quality and patients' safety. The purpose of this study was to identify the sources of occupational stress and their relationship with personal and occupational factors among nurses.

Methods: This cross-sectional and analytical study was conducted among nurses in the teaching hospitals in Rasht City in 2016. The sample size was estimated based on the Cochran formula (n=250). The sample was selected via stratified randomly from the clinical wards in seven hospitals. Data were collected by demographic questionnaire and Toft - Anderson nurses' stress scale including 34 questions in seven domains of nurses' stressors. Data were analysed with independent t, One way ANOVA, Friedman and Pearson correlation coefficient tests using SPSS V21.0 software (Significance level <0.05).

Results*:* The mean score of job stress (72.46 ± 12.47) and 77.8% of the nurses reported that their stress was at the high level. The most frequently mentioned sources of stress were related to "uncertainty in treatment", "suffering and death of patients", and "high workload". However, the least source of stress was related to "lack of support resources". There are significant differences between scores of the seven domains of occupational stress (p = 0.001). In addition, the score of job stress had no significant relationship with gender, marital status, unit type, shift type, education level, and employment type (p> 0.05). Job stress had no significant correlation with personal and occupational characteristics (p> 0.05).

Conclusion: Given the high levels of nurses' job stress, continuous interventions are needed to decrease the nurses' stress at the individual and organizational levels, especially in the highest sources of stress including "uncertainty about treatment" and "workload". In this regard, we recommend the following interventions at primary (related to reducing stressors), secondary (aimed at reducing nurses' response to stressors), and tertiary (focusing on specific assistance to nurses with high levels of stress) levels.

Key Words: Occupational stress, Workplace, Nurses, Hospital

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Introduction

Nurses are the largest health care providers who play a basic role in the health care system (1.2). Due to the nature of nursing profession, nurses experience more stress in comparison with other health care providers (1-5). In this regard, the American National Association of Occupational Safety and Health has introduced nursing at the forefront of 40 high stress professions (6). Occupational stress (also called job stress or work-related stress) has a significant effect on the performance of nurses and health organizations (5.7).

Job stress is an emotional, perceptual, behavioural, and physiological response pattern that responds to undesirable aspects of occupational, organizational, and workplace environments (8). The major stressors of nursing profession include: complexity of care, heavy tasks, high workload, role ambiguity, conflict between work and family, nursing shortage, insufficient time in doing tasks, long working hours, irregular shift, conflict with colleagues and doctors, inadequate support from the managers, high job demands, facing critical situations, acute risk factors in the workplace, and the need to manage emergency situations (5, 8, 9). In fact, job stress occurs when the expectations and demands of a job are not proportionate to the employees' abilities (10).

Job stress causes nurses to suffer from more severe physical and psychological problems than other healthcare provides (3-5). High workload and nursing shortage were introduced as the first factors of nurses' job stress. It was also reported that the severity of job stress was related to the quality of nurses' performance in patient care (11).

Nurses' job stress reduces job satisfaction, organizational commitment, clinical competence, and job efficiency, but increases job burnout, absenteeism, turnover, job displacement, as well as mental and physical health problems (4, 5, 6, 14-12). Stress has a negative effect on personal and organizational performance by decreasing attention, decision making skills, and judgment of nurses. It also can increase the risk of adverse events and medical errors (10), which endangers the quality and safety of care as a result (7.10).

Remarkable national (2, 8-13, 15-17) and international (3-5, 7, 9, 14, 18) research were conducted in the field of nurses' job stress. Most of these studies showed that nurses' job stress was at a moderate to severe level (4, 10, 13, 14-22). In some studies, a significant relationship was also reported between job stress and some nurses' personal and occupational characteristics such as age, work experience, monthly working hours, ward type, and shift type (4, 7, 13). Other studies indicated that job stress had no relationship with individual and occupational characteristics (1, 6, 14, 23). For example Amin et al. (2018) showed that high stress was observed in more than half of the nurses and job stress was associated with a two-fold increase in the risk of musculoskeletal disorders in nurses (19). Alenezi (2018) mentioned that the highest and lowest stressors of nurses were related to high workload and inadequate preparation, respectively. Alenezi indicated that factors such as age, marriage, and job title were related to nurses' stress (7).

In spite of the studies conducted in this field, it is necessary to improve the awareness of managers about the effect of job stress on nurses' health and exhaustion, quality and safety of care, as well as organizational outcomes by new research (22). Given the numerous stressors in the nursing profession, the inevitability of some of these factors, and the need to prevent the psychological and physical effects of these stressors, measures should be taken to reduce stress. One of the first steps to reduce stress is to identify its sources and to determine the personal and occupational effective factors. Therefore, further information is required about the prevalence of nurses' job stress and its causes. The results of such studies can be used to protect and support human resources and improve the quality of nursing care. In this study, we applied different job stress tools to investigate some other sources of nurses' job stress, which has been less considered in the past studies. Therefore, the present study aimed to identify the sources of occupational stressors and their relationship with personal and occupational factors among nurses in teaching hospitals of Rasht City, Iran in 2016.

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Methods

This analytical cross-sectional study was carried out among nurses working in teaching hospitals of Rasht in 2016. A sample of 250 nurses (with adding 10% sample drop) was selected using Cochran formula (p = 0.5, q = 0.5, d = 0.06, N = 1700, z = 1.95). The sample was selected by stratified random sampling method. In this method, data was divided into various sub-groups (strata) sharing common characteristics like age, gender, race, income, education, ethnicity, and workplace. A random sample was selected from each stratum. Therefore, in the sampling procedure, the nurses were divided into various sub-groups (strata) sharing common workplace (hospital). Later, the samples were selected randomly from each hospital.

Criteria for entering the study included having a bachelor's degree or higher in nursing, willingness and informed consent to participate in the research, and at least one year of clinical experience. Exclusion criteria included having severe stress during the past six months due to critical conditions (such as death of loved ones, divorce, etc.) and using psychiatric drugs on the basis of self-declaration. Incomplete questionnaires were also excluded from the study. Finally, data were collected and analysed from 230 participants (return rate of 93%).

The data collection tool consisted of two parts. The first part was about the personal and occupational information including information such as age, gender, marital status, education, type of hospital unit (wards), type of shift work, overall work experience, work experience in the current ward, monthly working hours, in-service training hours, and number turnover within the hospital wards.

The second part was the Nurses Stress Scale (NSS), developed by Toft and Anderson (24). This tool measures the frequency and sources of stress experienced by nurses in different parts of the hospital. This scale has seven dimensions: "patient suffering and death" (7 items), "conflict with physicians" (5 items), "lack of preparation for satisfying the needs of the patient and family" (3 items), "lack of support from the managers" (3 items), "conflict with nurses and Supervisors" (5 items), "workload" (6 items), and "uncertainty of treatment" (5 items) (25).

This scale contains 34 items that should be responded on a four-point Likert scale (including never = 0, sometimes = 1, often = 2 and always = 3) according to the respondents' perceptions of workplace incidents. The questionnaire's total score is within the range of 0 - 102. Based on the scale scoring method, the stress level of nurses is divided into three levels: low: ≤39, moderate: 40-62, severe: 63≥ (24, 25). To confirm the validity of the scale, the original version was translated into Persian and its content validity was confirmed based on the views provided by 11 faculty members of nursing faculties in Shahid Beheshti and Tarbiat Modarres Medical Sciences Universities in Tehran, Iran (25). This tool was administered in various studies and its reliability was confirmed by α =0.74-0.96 (24-26). In the present study, the reliability of this tool as confirmed by Cronbach's alpha coefficient of 0.91.

The ethical considerations of this study included obtaining the approval of Ethics Committee in Gilan University of Medical Sciences (IR.GUMS.REC. 1394.240), obtaining informed consent forms from participants, observing confidentiality of information by explaining the participants that the questionnaires should be anonymous and they can leave the research on their willing.

The data were reported by mean, standard deviation, minimum, and maximum values. Data were analyzed by the Kolmogorov Smirnov statistical test (for data normalization), Friedman test (for comparing the mean ranks of the seven areas of nurses' stress). Furthermore, independent t, ANOVA, and Pearson correlation coefficient (for investigating the relationship between continuous variables and score of stress) were run using IBM SPSS Statistics V21.0 software. The significance level was considered at less than 0.05.

Results

According to the results, the nurses' mean age was 32.8 ± 7.0 years and majority of them were female (91.7%), had a bachelor's degree (95.2%),

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and were married status (66.1%). In addition, more than half of the participants had permanent employment (57.8%), worked in the general units (54.8%), and were mostly working in rotating shift (76.0%). The participants' mean of overall work experience was 9.16 ± 4.6 years and their mean monthly working hours was 170.6 ± 11.9. Moreover, the mean hours of in-service training was 80.9 ± 15.3 (Table 1).

The Kolmogorov-Smirnov test showed that the overall scores of job stress scale (in the range 0-102) had a normal distribution (p =0.375). In addition, age, overall work experience, work experience in the current ward, monthly working hours, in-service training hours, and number of turnover had normal distribution (p >0.05). Therefore, the parametric tests were used to examine the relationship between the total score of job stress and personal and occupational variables.

However, Friedman test was run to compare the mean ranks scores of the seven domains of job stress. The average score of job stress (72.46 ± 12.47) was evaluated at a severe level. Moreover, 77.8% of the nurses reported that their job stress was at the severe level, while 21.7% of them reported a moderate level of stress.

Table 1. Individual and occupational characteristics of the nurses in teaching hospitals

Variable	Category	N (%) 230(100%)	Mean±SD (min-max)
Gender	Male	211 (91.7)	
	Female	19 (8.3)	
Marriage	Married	152 (66.1)	
	Single	78 (33.9)	
Education	bachelor degree	219 (95.2)	
	Master degree	11 (4.8)	
Hospital unit type	General care units*	126 (54.8)	
	Intensive care units**	104 (45.2)	
Shift type	Rotating	177 (77.0)	
	Morning	53 (23.0)	
Employment	Permanent	133 (57.83)	
	Contract	45 (19.57)	
	Temporary	52 (22.60)	
Age (years)			32.8 ± 7.8 (24-53)
Overall work experience			9.1 ± 6.4 (1-28)
Work experience in ward			4.9 ± 9.4 (1-28)
Working hours per month			170.6 ± 11.9 (140-200)
Turnover			2.5±1.6 (0-7)
In-service training			80.9 ± 15.3 (30-100)
	total	230 (100%)	

* General care units: Internal, surgical, paediatric, orthopaedic, gynecologic, and neonatal
** Intensive care units: Hemodialysis, ICU, CCU, NICU

The domains of "uncertainty of treatment", "suffering and death of patients", and "workload" had the highest occupational stress. However, "the lack of preparedness" and "lack of support from the managers" received the least job stress (Table 2). Friedman test also showed a significant difference between scores of the seven domains of occupational stress (p = 0.001, df = 6, Chi-Square=187.145).

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Table 2. Mean and standard deviation of total scores and domains of job stress scale

Dimensions	Mean ± SD	Dimensions ranking
Uncertainty of treatment	2.36±0.47	1
Suffering and death of patients	2.24±0.48	2
Workload	2.21±0.52	3
Conflict with doctors	2.18±0.47	4
Conflict with colleagues & supervisors	2.06±0.62	5
Inadequate preparation for supply needs	1.80±0.70	6
Lack of supportive resources	1.71±0.78	7
Total Scores of the stress	2.13±0.37	-

In order to investigate the relationship of job stress with personal and occupational characteristics of nurses, T-test and one-way ANOVA were used. The results showed that job stress had no significant relationship with gender, marital status, unit type, shift type, education level, and employment type (Table 3). Pearson correlation coefficient showed that the overall scores of job stress had no significant relationship with age, overall work experience, work experience in the current ward, monthly working hours, number of nurses' turnover, and in-service training hours (Table 3).

Table 3. The relationship of job stress scores with personal and occupational characteristics of nurses in teaching hospitals

Variable	Sub category	Mean ± SD	Statistic	p-value
Sex	Male	71.37±10.96	t= -0.398	p= 0.691
	Female	72.56±12.61		
Marital status	Single	70.53±11.72	t= -1.694	p= 0.092
	Married	73.45±12.75		
Unit type	General ward	72.21±12.18	t= -0.275	P= 0.783
	Intensive ward	72.67±12.85		
Type of shift	Morning	71.19±14.69	t= -0.847	p= 0.398
	Rotating	72.48±11.73		
Education	Bachelor degree	72.42±12.50	t= -0.221	p= 0.825
	Master degree	73.27±12.32		
Employment type	Permanent	73.38±13.10	F=0.998	p= 0.370
	Contract	70.47±11.72		
	Temporary	71.85±11.36		
Age			r=0.033	0.620
Overall work experience			r=0.062	0.348
work experience in ward			r=0.014	0.837
Monthly working hours			r=-0.041	0.534
In-services training hours			r=-0.035	0.602
Turnover			r=-0.066	0.316

In addition, job stress domains had no significant correlation with individual and occupational characteristics of nurses (including age, work experience, and work experience in the ward, monthly working hours, and in-service training hours) (P>0.05).

Discussion

In the present study, the rate and sources of job stress and their relationship with some personal and occupational factors were investigated. The results showed that nurses' job stress was at a severe level and the domains of "uncertainty of

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treatment", "suffering and death of patients", and "workload" were the most frequent sources of job stress. However, the least stressful sources were related to domains of "lack of adequate preparedness" and "lack of supporting from organizational managers". In addition, the scores of stress scale and subscales had no significant relationship with personal and occupational characteristics of nurses.

Based on the results, nurses reported a severe level of occupational stress. In the field of nursing occupational stress, numerous national (2, 10-13, 15-17, 21) and international (3-5, 7, 9, 14, 18, 19) studies had been conducted. The majority of these studies indicated that the nurses' job stress was moderate or severe (4, 10, 13, 14, 19-22). For example, Jafari (2016) reported nurses' stress at a moderate level, while Farzi (2015) and Nasiri (2016) reported nurses' job stress at a severe level (10, 13, 20). In addition, Amin et al. (2018) and Admi et al. (2016) showed that more than half of the nurses had significant level of stress at work environment in Malaysia, America, and Thailand (19, 22). Moreover, Hylen et al. (2018) mentioned that one-third of the Swedish nurses had a significant level of stress in their workplace (23). In contrast, Hegney et al. (2014) and Tran et al. (2019) reported that only 11.4% of the Australian nurses and 18.9% of the Vietnamese nurses had high levels of stress in their work environments (5.18).

Differences in these findings may be due to the variety in the individual, organizational, and occupational environments or due to the differences in the study tools. These differences are justifiable since the environment, culture, and organizational structure are affected by stressful occupational factors. Health-care providers are always exposed to many diseases and threats that seriously endanger their health (27). Although nurses are faced with high levels of occupational stress, the stress-management behaviours of nurses were very low (28). Since nurses' job stress can have harmful effects on their quality of work life and patient care, regular evaluations of occupational stress is necessary in this group of hospital staff (29). Nurses' stress due to patient care is associated with reduction of job satisfaction and general health while increasing job burnout (3). In addition, occupational stress can have a negative effect on nurses' quality of life and the nursing care outcomes (30, 31). So, focusing on organizational policies may reduce job stress, burnout, and intention to turnover among nurses (32).

In order to reduce occupational stress, organizational and individual interventions are required. Individual interventions can help nurses to develop responses to stressors and coping strategies in the workplace (30).

The present study showed that the most nurses' stressors were related to the "uncertainty of treatment", "suffering and death of patients", and "workload" dimensions, respectively. In the past studies, the highest occupational stressors were related to the "suffering and death of patients" (4, 6, 8), "uncertainty of treatment" (1, 4), workload and job demands (4, 6, 13, 33, 34), inability to complete tasks (35), time pressure (34), and conflicts with doctors and supervisors (1, 8). For example, Shareinia et al. (2018) reported that the highest job stress was related to the domain of "uncertainty in treatment" among nurses working in the emergency department. The nurses working in other hospital wards reported that the highest stressors were related to "uncertainty in treatment" and "suffering and death of patients" (12). Nurses' job stress leads to depression and occupational burnout (36). Nursing is a multi-disciplinary profession that requires several interpersonal interactions due to the hard work conditions. Nurses experience high stress while providing care for sick patients, who are dealing with their pain and suffering. On the other hand, the present study showed that the nurses' average age and work experience were relatively low. This issue may justify their stress with regard to the "uncertainty of treatment" dimension due to low experience. In addition, the lack of timely access to doctors for treating ill patients and managing complicated situations is another factor that increases nurses' stress. With regard to the fact that the nurse-patient

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ratio in Iran's educational hospitals is much lower than the international standard, Iranian nurses face high workloads and multiple job demands. This problem causes nurses to face difficulties in performing their tasks timely and meeting the patient's care needs; so, they experience great stress in the workplace. In this regard, improving stress management techniques and coping strategies, developing professional competence, and employing enough nurses in hospital wards may reduce nurses' stress.

According to the findings, scores of the job stress scale and sub-scales had no significant relationship with nurses' individual and job characteristics. However, discrepancies exist with regard to this result in the literature. In some studies, nurses' job stress had no significant relationship with their age (1, 6, 14, 23), gender (6, 14, 23), marriage (1, 6, 14), overall work experience (6, 23), type of shift (6), and education (1, 14). In other studies, job stress had a negative correlation with age (7, 13, 18), work experience (13, 14, 18), and education (18). However, in other studies, occupational stress had a significant direct correlation with monthly working hours (13) and long hours of shift work (18). In addition, other studies showed that nurses' job stress had a significant relationship with ward type (1) and job title (14). To put it in a nutshell, controversial findings exist about the relationship of personal and occupational factors with nurses' job stress. Based on our findings, nurses are faced with severe stressful factors due to their specific occupational conditions, but individual and occupational factors had no significant effect on their stress. Although personal and occupational factors such as age, education, work experience, monthly hours, working shift length, type of job shift, and job rank should be considered in identifying and planning nursing stress control interventions, severe job stress is a comprehensive issue in nursing.

In addition, one of the new findings of this study was about "uncertainty about treatment" dimension, as one of the most stressful dimensions of nursing work, which has received less attention in previous studies. In this regard, on-call physicians are recommended to have a continuous presence in hospital wards so that nurses can have timely access to them in the case of emergency. It is also necessary to improve the clinical competency of nurses through in-service training. These measures make nurses less stressful when deciding on care and providing timely and proper nursing care.

This study has strengths and weaknesses. The large research community, stratified sampling method, and high response rate were the strengths of this study. In contrast, the type of study (descriptive and cross-sectional study) and data collection method using self-report questionnaires were among the limitations of our research. On the other hand, only some personal and occupational factors affecting occupational stress were investigated in this study and some of the other occupational factors, such as managerial style, were not examined.

Conclusion

Findings indicated a high level of occupational stress among nurses. The greatest stressors were caused by "uncertainty of treatment", "patient suffering and death," and "high workload". These findings can be used to plan appropriate interventions in order to reduce some of these stressors. In this regard, hospital managers are required to carry out planned interventions at individual and organizational levels. Measures should be taken by employing enough nursing staff in hospital wards for reducing the workload of nurses, improving professional competence, providing easy access to physicians, continuous monitoring of supervisors in order to ensure the provision of standard care, and holding stress management courses to improve coping skills in nurses. Due to the high stress levels of nurses in this study, individual and organizational interventions are recommended in primary (to reduce stressors), secondary (to reduce a nurse's response to stress), and tertiary (which focus on giving special assistance to nurses who have high levels of stress) levels.

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Conflict of interest

Authors declare no conflict of interests.

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