Preventive Care in Nursing and Midwifery Journal
2019; 9(2): 42-47

Occupational Stress in Intensive Care Units Nurses: A Cross-sectional Study

Torkaman M[1], Heydari N[1], Kamali M[2], Fadaei MH[3,4*]

[1]Student Research Committee, Department of Nursing, School of Nursing and Midwifery, Shiraz University of Medical Sciences, Shiraz, Iran
[2]Clinical Education Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
[3]Student Research Committee, School of Nursing and Midwifery, Kerman University of Medical Sciences, Kerman, Iran
[4]Nursing Research Center, Kerman University of Medical Sciences, Kerman, Iran

Corresponding Author: Kerman University of Medical sciences, Haft-Bagh Highway, Kerman, Iran

***Tel*:** 0098- 9130705578

Email: mh.fadaei72@gmail.com

Received: 2 May 2020 **Accepted:** 16 June 2020

Abstract

Background: Occupational stress can have seriously negative effects on the physical, psychological, and economic dimensions of nurses working in the intensive care units (ICUs).
Objectives: Thus, this study was conducted to determine occupational stress in nurses who work in ICUs.
Methods: This cross-sectional study was carried out on 120 nurses in three hospitals in Kerman, southeastern Iran. Data were gathered by Socio-Demographic Information and Osipow Occupational Stress questionnaires.
Results: The mean of occupational stress and all its constructs were at the moderate-high level. The highest mean score was related to role overload (37.11±3.63) while the lowest mean score belonged to role boundary (30.32±3.66). No statistically significant differences were found between the mean of occupational stress and participants' characteristics.
Conclusion: Considering the moderate-high level of occupational stress in ICU nurses, we recommend hospital authorities to take appropriate measures to prevent and manage stressors in ICU nurses to improve the quality of care and patients' satisfaction.

Keywords: occupational stress, intensive care unit, nurse

Introduction

Stress and anxiety are among the most common disorders in the present century, which have not been controlled by technological advances [1]. Stress is a psychological process with negative impacts on people's physical and psychological well-being. In addition, stress occurs in interaction with the environment when a mismatch outbreaks between situational pressures and resources available to the individual [2]. Some stressors are necessary for growth, but severe, persistent, and recurrent stress changes into a negative phenomenon when the individuals do not have access to the required resources to support them [3]. Stress has numerous sources, and occupation is considered as one of the most important sources of stress in a human's life [4]. Occupational stress occurs when expectations are higher than an employee's authority and abilities [5]. Other causes of occupational stress include poor working conditions, work organization, and work environment [6].

In Nigeria, Faremi et al. showed that occupational stress in nurses was associated with several factors such as lacking manpower, having high workload, performing painful procedures for patients, lacking medications and equipment for nursing care, seeing patients' death in addition to dealing with unpredictable staffing and scheduling. Furthermore, other factors included feeling inability about end-stage patients, seeing a patient's suffering, hearing or talking to patients about their developing death, having conflicts with physicians, fearing of making a mistake in

treating a patient, and feeling inadequately prepared to help with the emotional needs of a patient [7]. Based on the findings of studies conducted in multicultural countries such as Vietnam [6], Iran [8], India [5], and French [9], occupational stress, an inseparable component of the nursing profession, leads to dissatisfaction, illness, burnout, job abandonment, reduced productivity, and decreased quality of patient care in the long run [10].

Among various nursing groups, nurses working in the intensive care units (ICUs) are faced with a high risk of stress, fatigue, and illness due to the high-quality care, long hours of stays in the hospital, lack of protection facilities, noise pollutions caused by device alarms, end-stage patients' care, and participation in the patients' grief [11].

Nurses in Iran are encountered with many challenges including forced rotating shifts and overtime as well as lack of social support, facilities, funding, and protective facilities due to severe sanctions [12]. Although many stressors are uncontrollable in the nursing profession, especially in ICU, prevention of physical, psychological, and social complications, improvement of the working conditions, and education of stress management skills are very important. Considering the above-mentioned explanations, the present study investigated occupational stress among nurses in order to draw the attention of nursing administrators to this issue and provide them with effective solutions to deal with this issue. Therefore, this study was conducted to evaluate occupational stress in nurses working in ICUs.

Methods

This cross-sectional study was conducted in a hospital in Kerman, southeastern Iran from February to March 2019. Three hospitals are affiliated with Kerman University of Medical Sciences and each hospital has five ICUs with a total number of 192 staff. Cochran's sample size formula was applied and the sample size was calculated as 128 individuals [8]. The participants were selected using the stratified random sampling method. In each stratum, a simple randomized sampling method was performed by a random table of numbers.

The inclusion criteria were working as a nurse in the ICU and having at least one year of clinical working experience. The exclusion criteria included submitting incomplete questionnaires and having psychological problems (reported by nurses or medical records). Finally, 120 nurses completed the study with a response rate of 93.75%.

To collect the study data, two questionnaires were administered as follows.

A: The demographic questionnaire included information about, age, work experience, gender, marital status, educational level, and employment status.

B: The Osipow Occupational Stress questionnaire, designed by Osipow et al. (1987), encompasses 60 questions that are required to be answered on a 5-point Likert-type scale (1 = Never, 2 = Occasionally, 3 = Sometimes, 4 = Usually, and 5 = Most of the time). This questionnaire investigates occupational stress in six aspects of role overload (there is too much work to do regarding the resources or time allotted), role insufficiency (the job is not challenging and the career future is discouraging), role ambiguity (the criteria for the successful performance of a task are not clear), role boundary (the individual has to negotiate different values and objectives to interact with close coworkers), responsibility (one is responsible for others' job and well-being, or one's job requires a sheer volume of interpersonal interactions), and physical environment (the unsuitable environments one is exposed to). Each aspect of the questionnaire consists of 10 items and higher scores represents a greater level of the role stressor. In other words, scores within the ranges of 10-19, 20-29, 30-39, and 40-50 indicate low, low-moderate, moderate-high, and high levels of occupational stress, respectively. According to [8], the total score of the occupational stress questionnaire is also divided into four levels of low (60-119), low-moderate (120-179), moderate-high (180-239), and high (240-300). The validity of this questionnaire was confirmed by Sharifian et al. and its reliability was determined as satisfactory using the test-retest. Furthermore, its Cronbach's alpha coefficient was reported as 0.83 [13].

Descriptive (i.e, percentage, mean, and standard deviation) and analytical (Mann-Whitney and Kruskal-Wallis tests) statistics were used to analyze the data. According to the Kolmogorov-Smirnov test, data did not follow a normal distribution (Table1). The level of significance was set at 5% and SPSS 20 (Statistical Package for the Social Sciences, version 20; IBM, Armonk, NY, USA) was run for data analysis.

Table 1: One-sample Kolmogorov-Smirnov Test

N		Total
		120
Normal parameters a,b	**Mean±SD**	194.53±11.94
Most extreme differences	**Absolute**	0.088
	Positive	0.051
	Negative	-0.088
Test statistic		0.088
Asymptotic Significance (2-tailed)		0.023c

***Note*. SD:** Standard deviation

Results

Demographic information

A total of 120 nurses completed the study. The participants' socio-demographic characteristics are presented in Table 2. Most nurses were women (68.3%), married (77.5%), and within the age range of 31-40 years (60%). In addition, the majority of participants had a bachelor's degree (65.8%), 6-10 years of work experience (34.2%), and temporary-to-permanent employment (32.5%).

Occupational stress was at the moderate-high level in most nurses. Among the constructs of the occupational stress, the highest and lowest mean scores were related to role overload and role boundary, respectively (Table 3).

The mean score of occupational stress was higher in female and married nurses although this difference was not statistically significant. Nurses in the age group of 31-40 years had a higher mean of occupational stress compared to the other age groups. Furthermore, nurses with an M.Sc. degree had a higher mean of occupational stress compared to other nurses although this difference was not statistically significant (Table 2).

The mean score of occupational stress was higher in nurses with a work experience of 1-5 years compared to other nurses as well as those with contractual employment compared to nurses with the other types of employment, although these differences were not statistically significant (Table 2).

Table 2: Sociodemographic features of the nurses

Variables		n (%)	Total Occupational Stress	
			Mean±SD	Statistic & P-value
Gender	**Female**	82(68.3)	192.92±12.39	Z=-1.4
	Male	38(31.7)	192.02±11.74	P=0.16
Marital status	**Married**	93(77.5)	195.16±12.26	Z=-1.7
	Unmarried	27(22.5)	191.59±10.50	P=0.073
Age	**20-30**	35(29.2)	194.14±12.53	df=2
	31-40	72(60)	195.19±11.53	0.51
	>41	13(10.2)	190.30±12.61	χ^2=1.32
Educational Level	**Associated diploma**	5(4.2)	189±12.96	df=2
	Bachelor	79(65.8)	194.58±10.54	0.59
	MSs	36(30)	194.61±14.60	χ^2=1.04
Work experience (years)	**1-5**	24(20)	196.62±10.99	df=3
	6-10	41(34.2)	194.34±11.30	0.74
	11-15	38(31.7)	194.02±13.31	χ^2=1.22
	>16	17(14.2)	192±11.57	
Employment status	**Conscription**	15(12.5)	192.93±9.35	df=3
	Contractual	29(24.2)	195.84±13.41	0.39
	Temporary-to- Permanent	39(32.5)	192.55±9.61	χ^2=2.95
	Permanent	37(30.8)	194.78± 13.01	

Table 3: Frequency and Mean of Occupational Stress and its Constructs Among Nurses

	Role Overload	Role Insufficiency	Role Ambiguity	Role Boundary	Responsibility	Physical Environment	Total Occupational Stress Score
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Low	-	-	2(1.7)	2(1.7)	-	-	-
Low-moderate	4(3.3)	28(23.3)	44(36.7)	39(32.5)	25(20.8)	23(19.2)	18(15)
Moderate-high	86(71.7)	90(75)	74(61.7)	79(65.8)	92(76.2)	96(80)	102(85)
High	30(25)	2(1.7)	-	-	3(2.5)	1(0.8)	-
Mean±SD	37.11±3.63	31.39±3.21	31.07±4.75	30.32±3.66	31.78±3.37	32.66±3.69	194.35±11.94

Discussion

The present study aimed to determine occupational stress among nurses working in intensive care units (ICUs). According to the findings, most nurses were at the moderate-high levels of occupational stress. Some studies reported that occupational stress was moderately high in ICU nurses [9,11,14], which is in line with the findings of the present study. A mixed-method study in America indicated that occupational stress was prevalent in nurses and its long-term sustainability could have a negative impact on nurses' health [1]. Moderate-high occupational stress among ICU nurses can be justified by their critical working conditions.

Nurses require constant vigilance as well as prompt responses to immediate situations since they have heavy responsibility regarding the patients' unstable conditions [11]. Other reasons for the high levels of occupational stress include lack of nursing staff, low salaries and benefits, night shifts, limited and closed space of the ICU, alarm sound of devices, as well as lack of the required medicine and equipment [7].

Among occupational stress components, the highest mean score was related to role overload, which corroborates with the findings of another study in Iran [8]. This result can be justified by the fact that nurses working in ICUs have to deal with critically ill patients requiring mechanical ventilation, instability of the patients' consciousness, injection of sensitive drugs such as dopamine, constant checking of vital signs, and prevention of bed sores. Therefore, they experience higher levels of stress compared to the nurses of the public sector [11]. Reducing workload and improving nurses' role boundary can play a significant role in reducing their job stress.

The lowest mean score was attributed to the role boundary among occupational stress components. Iranian nurses are faced with many challenges such as role conflicts, patients' negligence in the health care system, poor initial and in-service trainings, the gap between theory and practice in the nursing profession, which can affect the role boundary [12]. The lower score of the role boundary can also be related to nurses' marital status. More precisely, married people may pay less attention to their job requirements since they are already occupied with their responsibilities in the family. Furthermore, these people work intensively in various medical centers due to economic problems in Iranian society.

The findings showed that occupational stress was higher in women than men, but this difference was not statistically significant, which conforms with the findings of two other studies [8, 15].

In this regard, one can maintain that Iranian women have to play multiple roles, which doubles their responsibilities. To meet this problem, nursing managers are required to provide training courses such as stress management, time management, and problem-solving for nurses, especially women. Accordingly, nurses can render high-quality and holistic services by controlling factors affecting the nursing profession.

Nurses in the age range of 31-40 years had higher occupational stress, but this difference was not significant. Previous evidence showed that occupational stress was higher in middle-aged nurses [15-17]. This is because nurses with high work experiences expect the system to improve their occupational, economic, and social status. The failure of the system to meet these expectations can lead to feelings of despair and hopelessness in nurses and increase their stress and anxiety [5].

In the age range of 31-40 years, most people are married and need to spend more time with their families while nurses in Iran are forced to spend most of their time in medical centers due to economic problems and lack of nurses can increase their stress and anxiety levels [12].

We found that nurses with master's degrees had higher occupational stress, but this difference was not statistically significant, which is in conformity with the findings of studies by Sabzi et al. [16] in Iran and Yim et al. [15] in Korea. Nurses with master's and higher degrees are more active in educational and research settings in Iran, but less active at patients' bedsides. In other words, visiting and taking care of ICU patients with unstable conditions may cause high occupational stress in these nurses [12]. Moreover, nurses with higher educational degrees are expected to have better performance. They also expect a better performance from themselves compared to nurses with lower levels of education. In other words, others' expectations from nurses and nurses' expectations from themselves may affect the creation and development of job stress in nurses [8].

The findings revealed that nurses with 1-5 years of work experience experienced higher occupational stress, but this difference was not significant. Sarafis et al. [18] supported these findings, but Godwin et al. [19] found a significant association between occupational stress and work experience. One of the important effective factors in reducing the occupational stress in nurses is to improve their levels of knowledge, attitude, and practice with regard to the principles of clinical care, which is called 'professionalism' in the nursing profession [1]. Considering the findings of this study, it seems that the participants were not professional in their nursing occupation and still had stress like novice nurses.

Based on the findings, nurses with contractual employment had higher levels of occupational stress. This is due to the lack of job security in this type of employment so that contractual nurses' position is not well-defined in nursing systems. Nurses with contractual employment cannot usually have organizational positions such as a head nurse, supervisor, and metron in Iran.

In addition, the negative impact of occupational stress on nurses' physical and mental health can reduce their energy and the quality of patient care. Therefore, stressors should be determined, and efficient planning should be considered for addressing them. Considering professional experiences of the present study researchers in clinical settings, conducting educational courses on professional qualifications, stress control, and time management for ICU nurses is regarded as one of the effective strategies in reducing occupational stress. Accordingly, future researchers are recommended to carry out interventional studies with a 3-6 months follow-up in order to assess occupational stress in ICU nurses.

The present study had two limitations. The administration of self-report questionnaires could have caused bias in the findings. Moreover, examination of the cause-effect relationship and its effective factors was impossible in this cross-sectional descriptive study

Conclusions

In general, the ICU nurses are at a moderate-high level of stress. Thus, more organizational and social support is needed to reduce occupational stress in nurses. In this regard, specific preventive measures can be taken to manage stress, including organizational management and staff training. Management-level interventions can include providing nurses with more rest, reduced workload, and promoted rewards. To train the staff, short-term educational courses over stress management and nursing qualifications can be effective in supporting ICU nurses against occupational stress.

Ethical considerations

This research was approved by the Ethics Committee of Shiraz University of Medical Sciences (IR.SUMS.REC.1398.753). All participants signed written informed consent forms. In addition, they were explained about study goals and procedures and ensured of data confidentiality and anonymity along with voluntary participation in the study. Finally, this research was carried out in accordance with the Code of Ethics of the World Medical Association (the Declaration of Helsinki).

Acknowledgements

We would like to appreciate the nurses who devoted a part of their time so graciously to participate in this study.

Conflict of interest

The authors declare that theyhave no conflict of interest.

Funding

This research was funded by the Vice-chancellor of Shiraz University of Medical Sciences, Iran (97-01-89-18617).

References

1. Singh C, Cross W, Munro I, Jackson D. Occupational stress facing Nurse Academics-A mixed-methods systematic review. J Clin Nurs. 2020; 29(5-6): 720-35.

2. Taiye BH, Kehinde BH, Abdul M, Mustapha HB. Occupational Stress and Job Satisfaction among Nurse Educators in Ahmadu Bello University, Zaria. J Educ Soc Behav Sci. 2019; 29(4): 1-9.

3. Holberg C. Burnout-Its Relationship to Stress and Individual Susceptibilities.[Thesis in Clinical Psychology]. NTNU: Norwegian University of Science and Technology. 2019.

4. Cooper CL, Marshall J. Occupational sources of stress: A review of the literature relating to coronary heart disease and mental ill health. J Occup Psychol. 1976; 49(1): 11-28.

5. Mathew A, Thomas S. Occupational stress among nurses: Government versus private sector. Int J Nurs Care. 2019; 7(1): 1-5.

6. Nguyen Ngoc A, Le Thi Thanh X, Le Thi H, Vu Tuan A, Nguyen Van T. Occupational Stress Among Health Worker in a National Dermatology Hospital in Vietnam, 2018. Front psychiatry. 2019; 10:950.

7. Faremi FA, Olatubi MI, Adeniyi KG, Salau OR. Assessment of occupational related stress among nurses in two selected hospitals in a city southwestern Nigeria. Int J Africa Nurs Sci. 2019; 10: 68-73.

8. Faraji A, Karimi M, Azizi SM, Janatolmakan M, Khatony A. Occupational stress and its related demographic factors among Iranian CCU Nurses: a cross-sectional study. BMC Res Notes. 2019; 12(1): 634.

9. Jones G, Hocine M, Salomon J, Dab W, Temime L. Demographic and occupational predictors of stress and fatigue in French intensive-care registered nurses and nurses' aides: A cross-sectional study. Int J Nurs Stud. 2015; 52(1): 250-59.

10. Dagget T, Molla A, Belachew T. Job related stress among nurses working in Jimma Zone public hospitals, South West Ethiopia: a cross sectional study. BMC Nurs. 2016; 15(1): 39.

11. Kwiatosz-Muc M, Fijałkowska-Nestorowicz A, Fijałkowska M, Aftyka A, Kowalczyk M. Stress prevalence and stressors among anaesthesiology and intensive care unit workers: A multicentre survey study. Aus Crit Care. 2018; 31(6): 391-95.

12. Farsi Z, Dehghan-Nayeri N, Negarandeh R, Broomand S. Nursing profession in Iran: an overview of opportunities and challenges. Japan J Nurs Sci. 2010; 7(1): 9-18.

13. Sharifian SA, Aminian O, Kiyani M, Barouni SH, Amiri F. The evaluation of the degree of occupational stress and factors influencing it in forensic physicians working in legal medicine organization in Tehran-autumn of 2005. Iran J Forensic Med. 2006; 12(3): 144-50. [In Persian]

14. Tajvar A, Saraji GN, Ghanbarnejad A, Omidi L, Hosseini SSS, Abadi ASS. Occupational stress and mental health among nurses in a medical intensive care unit of a general hospital in Bandar Abbas in 2013. Electron physician. 2015; 7(3): 1108-13.

15. Yim HY, Seo HJ, Cho Y, Kim JH. Mediating role of psychological capital in relationship between occupational stress and turnover intention among nurses at veterans administration hospitals in Korea. Asian Nurs Res. 2017; 11(1): 6-12.

16 sabzi z, royani z, mancheri h, et al: The relationship between occupational stress and coping strategies in critical care nurses. Iran Occupational Health 2017, 14(5):45-52.

17. Chatzigianni D, Tsounis A, Markopoulos N, Sarafis P. Occupational Stress Experienced by Nurses Working in a Greek Regional Hospital: A Cross-sectional Study. Iran J Nurs Midwifery Res. 2018, 23(6): 450-57.

18. Sarafis P, Rousaki E, Tsounis A, et al. The impact of occupational stress on nurses' caring behaviors and their health related quality of life. BMC Nursing. 2016; 15(1): 56.

19. Godwin A, Suuk La, Selorm Fh. Occupational Stress And Its Management among nurses at St. Dominic Hospital, Akwatia, Ghana. Health Sci J. 2016; 10(6): 1-7.