Pharmacophore

ISSN-2229-5402

Journal home page: http://www.pharmacophorejournal.com

Pharmacophore
an International Journal
ISSN 2229-5402

RELATIONSHIP BETWEEN OCCUPATIONAL STRESS AND PATIENT SAFETY PERFORMANCE OF OPERATING ROOM TECHNOLOGISTS IN MEDICAL - EDUCATIONAL HOSPITALS OF IRAN UNIVERSITY OF MEDICAL SCIENCES IN 2016-2017

Fariba Nasiri Ziba[1], Maryam Donyayi[2*], Sedighe Hannani[3]

1. *Department of medical surgical Nursing,Faculty Member of Nursing and Midwifery School,Iran University of Medical Sciences,Tehran, Iran*
2. *Ms student of Operating Room,Department Of Operating room ,Faculty of Paramedical Sciences,Iran University of Medical Sciences,Tehran, Iran*
3. *MSc of Nursing,Department of Operating room,Faculty of Paramedical Sciences,Iran University of Medical Sciences,Tehran, Iran*

ARTICLE INFO

Received:
03th Jun 2017
Accepted:
29th Nov 2017
Available online:
14th Dec 2017

Keywords: *Occupational Stress, Patient Safety, Operating Room Technologist*

ABSTRACT

Introduction: One of the important issues in health sector is the quality of care provided to patients. The quality of care involves a number of elements, and patient safety is one of its most important components. The goal of this study was to determine the relationship between the occupational stresses of operating room technologists with their patient safety performances in Medical - Educational hospitals affiliated to Iran University of Medical Sciences in 2016-17.
Materials and Methods: This is a descriptive cross-sectional study conducted on 128 operating room technologists selected by census methodology from teaching hospitals affiliated with Iran University of Medical Sciences. The data were collected using three questionnaires of demographic information, safe surgery, and Expanded Nursing Stress Scale (ENSS). Data analysis was done using independent t-test, ANOVA, and Pearson's correlation coefficient by SPSS software.
Results: Mean score of occupational stress among operating room technologists under study was 119.11 with a standard deviation of 40.57, which indicated an occupational stress level higher than the median score of the tool, which was equal to 114. The results showed that mental and physical factors as well as the social work environment were among stressors with a mean of 2.15±0.75, 2.09± 0.75, and 2.08±0.87, respectively. Also, Pearson correlation test showed that occupational stress had a significant inverse correlation with the performance of operating room technologists in terms of patient safety (p=0.05, r= -0.174).
Conclusion: The results showed that occupational stress had a significant inverse correlation with performance in terms of patient safety.

To Cite This Article: Fariba Nasiri Ziba,Maryam Donyayi,Sedighe Hannani, (2017), "Relationship between Occupational Stress and Patient Safety Performance of Operating Room Technologists in Medical - Educational Hospitals of Iran University of Medical Sciences in 2016-2017", ***Pharmacophore, 8(6S),*** *e-1173804.*

Introduction

The health sector is one of the most important areas for the development of sustainable health in human societies, which is directly related to human health and is responsible for the serious task of maintaining and restoring health to the human community [1]. One of the important issues in health sector is the quality of care provided to patients that is composed of a number of elements, from which patient safety is among the most important components [2]. As one of the main components of quality of health services, patient safety means avoiding any injury and damage to the patient while providing health care

Corresponding Author: Maryam Donyayi, Ms student of Operating Room,Department Of Operating room ,Faculty of Paramedical Sciences,Iran University of Medical Sciences,Tehran,Iran. E-mail: m.donyayi@yahoo.com

to them. National Patient Safety Foundation (NPSF) in 2010 has defined patient safety as the avoidance, prevention, and improvement of side effects or harm caused by health care processes [3]. Surgical safety is also an important component of patient safety. In 2008, the World Health Organization evaluated the safety of hospital surgery by presenting a checklist. A number of studies have been conducted to determine the impact of this checklist, the results of which indicate the effect of the checklist on the rate of surgical complications, patient mortality, etc. [4]. Van Klei et al. examined 25513 cases and found that the patient mortality rate fell from 3.13% to 2.85% after the checklist was implemented [5]. On the other hand, occupational stress is also among the most important issues associated with human behavior, which has transpired in workforce performance for many reasons. Stress is seen at a widespread and complex level in all human activities. It is a problem that in its severe form can lead to mental deterioration and the emergence of psychological-behavioral disorders in the community [6]. Nurses are constantly exposed to stress due to the critical nature of their occupation, so that stress has become a well-known component of modern nursing and a challenge to the nursing profession [7]. The operating room is a tense and stressful place in a hospital, and surgical technologists work in one of the most challenging and nerve-racking areas of a hospital due to the complexity and expertise required for patient care [8, 9]. According to the reports of Association of PeriOperative Registered Nurses (AORN) in 2009 and Centers for Disease Control and Prevention in 2013, operating room nurses are at a high risk because of long working hours, unexpected work conditions, and exposure to stressful factors [10].

Materials and Methods

The population of this descriptive-cross sectional study consisted of 128 operating room technologists in teaching hospitals of Iran University of Medical Sciences who were selected by census methodology. Data collection tool includes three parts.

The first part was the questionnaire of demographic data such as age, sex, marital status, education level, type of employment, overtime hours, working shift, and work experience. The second part was Expanded Nursing Stress Scale (ENSS) questionnaire to measure occupational stress. ENSS is a revised version of Nursing Stress Scale (NSS), which was developed by Gary Taft and Anderson (1981). The 57 items of the questionnaires are arranged in a five-point Likert scale, and the subject should choose one of the options based on the frequency of the considered experience as follows: 1) I'm not at all stressed, 2) I'm sometimes stressed, 3)I'm often stressed, 4) I'm extremely stressful, and 0) This situation does not concern my tasks. This questionnaire evaluates occupational stress in three dimensions of mental, physical, and social work environment as well as nine sub-scales including Death and Dying, conflict with physicians, Inadequate preparation, problems with supervisors, problems with peers, workload, Uncertainty concerning treatment, patients and their families, and discrimination in the workplace. The occupational stress score is obtained by summing up the questions, which ranges 0-228, with higher scores indicating a higher level of occupational stress in the operating room technologists. In the study of Farhadi et al., the content validity method was used to determine the validity of the tool. To determine the reliability of the questionnaire, the test re-test method was used. The total correlation coefficient of the tool in this study was 0.99. Also, the Cronbach's alpha coefficient was used to assess the internal consistency of the questionnaire, which was equal to 0.96 for the whole questionnaire [11]. Moreover, the reliability of the questionnaire was approximately 0.96 in the study of Milutinovich, and the reliability of the subscales of the questionnaire was 0.65-0.88 [12].

In the third part, the safe surgery questionnaire of Mousavi (2013) was used to assess the performance of operating room technologists. This questionnaire, which was designed according to the World Health Organization's Safe Surgical Checklist, was completed by the researcher for the staff filling the occupational stress questionnaire. Sponsored by the Global Alliance for Patient Safety affiliated to World Health Organization, Safe Surgery Checklist was developed in 2008 with the participation of surgeons, anesthesiologists, nurses, and patients from all over the world in order to reduce unwanted incidents, disabilities, and mortality due to surgical procedures on patients undergoing surgery. This questionnaire contains 40 three-option questions (yes, no, not applicable) and has three parts. The first part involves questions related to patient safety prior to anesthesia (sign in) and has 19 questions. The second part is related to patient safety during surgery (time out) and includes 13 questions. The third part relates to patient safety before leaving the operating room (sign out) and includes 8 questions. The score range was 0-40, with a higher score indicating a better performance. In Mousavi's study, face and content validity was used to evaluate the validity of the checklist, being assessed and approved by ten nursing faculty members of Tabriz University of Medical Sciences. To calculate the reliability of the checklist, the test retest method was conducted on 20 operating room nurses and 20 patients, and r was calculated as equal to 0.81. Moreover, to determine the internal consistency, Cronbach's alpha with a value of α=0.71 was used [13].

Descriptive statistics (mean and standard deviation), Pearson's correlation test, as well as independent t-test, ANOVA, and Kruskal-Wallis tests were used to describe the research units, to determine the relationship between occupational stress and patient safety performance, and to specify the relationship between occupational stress and patient safety performance with demographic data, respectively. The data were analyzed using SPSS 21 software.

Results

The statistical results showed that a majority of research units (75.2%) was female and 24.8% of them were male. The mean age of research units was 30.88 years with a standard deviation of 5.76. Most of the studied research units (77.2%) held a

BSc degree in operating room technology and 22.8% of them had an associate diploma degree. 52.3% of research units were married and 47.7% were single. Regarding the job status, the official recruitment (34.6%) was the most frequent type of employment among the studied units, 7.1% had work contracts, 29.9% had a specific work share, and 28.3% of the research units were completing their obligatory commitments to ministry of health. More than half of the units under study (53.8%) had 40-70 hours of overtime, 26.9% worked less than 40 hours overtime and 19.3% had over 70 hours. 59.1% of the operating room technologists had mixed shifts, 2.4% had only morning shifts, 37.8% had both morning and evening shifts, and 0.7% had only the night shift. 48.4% of research units had a work experience of less than 5 years, 23.4% a work experience of 5-9 years, and 28.2% an experience of 10 years or more.

The results of statistical tests showed that the mean score of occupational stress among operating room technologists under study was 119.11 with a standard deviation of 40.57, which indicated that occupational stress among operating room technologists was higher than the median score of the tool. The results also showed that the mental and physical factors as well as social work environment were among the stressors for operating room technologists with a mean of 2.15±0.75, 2.9±0.75, and 2.08±0.87, respectively. Out of these factors, the following had the highest impact on the incidence of stress: problems with supervisors (2.36±0.91%), Uncertainty concerning treatment (2.34±0.77%),Death and Dying (2.19 ± 0.81%), conflict with physicians (2.12±0.92%), workload (2.09± 0.75%), Inadequate preparation (1.92±0.93%), patients and their families (1.81±0.85%), discrimination (1.69±1.02%), and problems with peers (1.68±0.77) (Table 1). Moreover, the results showed that from among the demographic characteristics (age, sex, marital status, education level, type of employment, overtime hours, working shift, and work experience), occupational stress had a significant correlation only with work experience (p=0.445). The stress among operating room technologists with a work experience of less than 5 years (126.34±38.87%) was significantly higher than that among the operating room technologists having a work experience of 5-9 years (120.8±44.35%) as well as those with a work experience of 10 years (105.27±38.36).

Considering the performances of operating room technologists, their mean scores at all three steps of patient's admission in the operating room, before the anesthetization (sign in), after anesthesia and before incision of the skin (time out), and before the closure of the site of surgery (sign out) was 32.87±3 in this study, indicating that the performance was higher than the median of the tool score of 20. With respect to the performances of operating room technologists upon patient's admission in the operating room and before anesthetization (sign in), the most frequent negative answer was to the following question: "Has the site of surgery been marked on the patient"? This means that only in 21.1% of the cases were the surgery sites marked, and in more than half of the units studied (66.4%), there was no mark of the surgery site. According to the results of Pearson's correlation test shown in the Table, a significant inverse correlation was observed between occupational stress and performance (p=0.05, r =-0.174), which indicated that 0.03 of the changes in performance were affected by occupational stress. The results also showed that among the demographic characteristics, only the work experience (p=0.030) had a significant correlation with the performance. The performance of the operating room technologists with a work experience of over 10 years (mean of 33.63±2.22) was higher than that of the operation room technologists with a work experience of 5-9 years (mean of 33.44±2.54) as well as those with a work experience of less than 5 years (mean of 32.16±3.44).

Table 1. Occupational stress subscales in research units

Factors	Subscale (criterion)	Minimum	Maximum	Mean	Standard deviation
Social work environment	**Problems with supervisors**	0	4	2.36	0.91
	Problems with peers	0.17	3.33	1.68	0.77
	Conflict with physicians	0	3.8	2.12	0.92
	Discrimination	0	4	1.69	1.02
	Patients and their families	0.11	3.33	1.81	0.85
Mental	Death and Dying	0.17	3.67	2.19	0.81
	Inadequate preparation	0.33	3.67	1.92	0.93
	Uncertainty concerning treatment	0	3.78	2.34	0.77
Physical	**Workload**	0.44	3.78	2.09	0.75
	Occupational stress	28.5	192.38	119.11	40.57

Discussion

Turning to the results of this study, the mean scores of occupational stresses among operating room technologists under study were 119.11±40.57, which indicates a higher level of occupational stress from the median tool score (114) among the operating room technologists. The results of this study showed that mental and physical factors along with social work environment are among the stressors of operating room technologists, respectively. Out of these factors, problems with head nurses, uncertainty about treatments, and patient mortality had the highest impact but problems with colleagues had the least effect on stress.

In a study by Ghiasi et al. in a military hospital in Iran, mental and physical factors together with social work environments were among stressors for nurses, respectively [14]. Out of these factors, patient's death and suffering, problems with head nurses, and patients and their families had the greatest effects on stress.

Findings of Milutinović et al. study on ICU nurses in health centers of Serbia [12] showed that physical and mental factors as well as social work environment were among stressors for nurses, respectively. Furthermore, based on the results of this study, from among the demographic characteristics (age, sex, marital status, education level, type of employment, overtime hours, working shift, and work experience), occupational stress had a significant correlation only with work experience, and the stress level among operating room technologists with a work experience of than 5 years was significantly higher. There was no significant relationship between work experience and occupational stress in Decarla Angela study in Virginia [15]. However, the results of Farhadi et al. study on intensive care nurses [11] and Nasiri Zarrin Ghabaee et al. study on nurses working in hospitals of Sari [16] showed that there was a significant relationship between stress and work experience and that the occupational stress was reduced with increasing work experience. With increasing work experience, many occupational stresses are resolved due to improved work skills and increased control over the environment and working conditions. Increasing work experience also enables the technologist to deal with stressful situations [11, 17]. Based on the results of this study, the mean performance score of operating room technologists was higher than the median tool score of 20, which indicates a relatively favorable performance in terms of patient safety. The results of Mousavi's study in educational hospitals of Tabriz University of Medical Sciences showed that in all three parts of the safe surgery questionnaire, safety items were observed by the operating room personnel; therefore, the performance of the operating room personnel in relation to observing patient safety related points was acceptable. In this study, the mean scores were high in the majority of cases regarding measures taken prior to anesthesia (sign in); however, in more than half of the cases, the surgery site was not marked on the patient. In the study of Mousavi [13] the results in relation to measures taken before anesthesia (sign in) showed that the surgery site had not been marked in less than half of the cases. Moreover, according to the results, occupational stress among operating room technologists had a significant inverse relationship with their performance in terms of patient safety. The results of Park & Kim study in South Korea showed that occupational and safety-related incidents of patients were affected by occupational stress, so that chronic stress caused damage to the brain structure, leading to the impairment of cognitive functions and thereby increasing the error rate in doing tasks [18]. In the study of Elfering et al. on 19 hospitals in Switzerland, the similarity of safety-related incidents and the probability of relapse were significantly associated with chronic occupational stressors and poor occupational control, and occupational stressors as well as low occupational control were shown as risk factors for patient safety[19]. Furthermore, the results of the present study showed that amongst the demographic characteristics, there was a statistically significant relationship only between work experience and performance in terms of patient safety, and the performance of operating room technologists with a work experience over 10 years was in a higher level. In the study of Jafarjalal et al. the results showed a significant relationship between the work experience of nurses and their safe performance towards patients, so that the mean safe performance was significantly lower in nurses with a work experience of less than 5 years than those with 5-10 years of work experience, which points to the important role of experience in providing safe care. In fact, experienced staffs have had a better opportunity to experience and learn from ensuing mistakes and dangers. In other words, with increasing work experience, the level of control of individuals on their environment and working conditions increases due to increased work skills [20].

References

1. Komeili-Sani M, Etemadi A, Boustani H, Bahreini M HA. The relationship between nurses' clinical competency and job stress in Ahvaz university hospital, 2013. J Clin Nurs Midwifery [Internet]. 2015 Apr 15 [cited 2016 Oct 7];4(1):39–49.(Persian)
2. Smits M, Christiaans-Dingelhoff I, Wagner C, van der Wal G, Groenewegen PP. The psychometric properties of the "Hospital Survey on Patient Safety Culture" in Dutch hospitals. BMC Health Serv Res [Internet]. 2008 Dec 7 [cited 2018 Jan 16];8(1):230.
3. DeBourgh GA, Prion SK. Patient Safety Manifesto: A Professional Imperative for Prelicensure Nursing Education. J Prof Nurs [Internet]. 2012 Mar [cited 2017 Aug 28];28(2):110–8.
4. Mohebbi far R, Pour rostami K, Mahdavi A, Hasan pour A, Sokhanvar M, Nazari M, et al. Effect of Surgical Safety Checklist on the Rate of Mortality of Surgical Patients in Medical Centers of the University of Medical Sciences α. Alborz Univ Med J [Internet]. 2013 Jan 1 [cited 2017 Sep 2];3(1):33–9.(Persian)
5. van Klei WA, Hoff RG, van Aarnhem EEHL, Simmermacher RKJ, Regli LPE, Kappen TH, et al. Effects of the

Introduction of the WHO “Surgical Safety Checklist” on In-Hospital Mortality. Ann Surg [Internet]. 2012;255(1):44–9.

6. Jafari A, Amiri Majd M, Esfandiary Z. Relationship between personality characteristics and coping strategies with job stress in nurses. Nurs Manage. 2013;1(4):36–44. (Persian)
7. Ghanei Gheshlagh R, Valiei S, Rezaei M RK. The relationship between personality characteristics and Nursing occupational stress. IJPN. 2013;1(3):27–34.(Persian)
8. Chen C-K, Lin C, Wang S-H, Hou T-H. A study of job stress, stress coping strategies, and job satisfaction for nurses working in middle-level hospital operating rooms. J Nurs Res [Internet]. 2009 Sep [cited 2017 Sep 12];17(3):199–211.
9. Lee H, Kim M-S, Yoon J-A. Role of internal marketing, organizational commitment, and job stress in discerning the turnover intention of Korean nurses. Japan J Nurs Sci [Internet]. 2011 Jun 1 [cited 2017 Sep 12];8(1):87–94.
10. Vowels A, Topp R, Berger J. Understanding stress in the operating room: a step toward improving the work environment. Ky Nurse [Internet]. 2012 [cited 2017 Sep 6];60(2):5–7.
11. Farhadi M, Hemmati Maslakpak M KhH. Job stressors in critical care nurses. J Urmia Nurs Midwifery Fac. 2014;11(11):875–83.(Persian)
12. Milutinović D, Golubović B, Brkić N, Prokeš B. Professional stress and health among critical care nurses in Serbia. Arh Hig Rada Toksikol [Internet]. 2012 Jun 1 [cited 2016 Oct 7];63(2):171–80.
13. Mousavi SF. The Study of Operating rooms Personnel’s Viewpoint and Performance About Patient Safety In Teaching Hospitals Affiliated to Tabriz University of Medical Sciences, 2013. 2015. (Persian)
14. Ghiasi A, Ghaffari M, Shahabi nejad M, Soltani Poorsheikh S, Barkhordar A, Davari M. A study of occupational stressors among the nurses in a military hospital. EBNESINA- J Med. 2017;19(1):4–11.(Persian)
15. Jackson AD. A Survey of the Occupational Stress, Psychological Strain, and Coping Resources of Licensed Professional Counselors in Virginia: A Replication Study. 2004 Dec 21 [cited 2018 Jan 28];
16. Nasiry Zarrin Ghabaee N, Talebpour Amir F, Hosseini Velshkolaei M RR. Quality of Life and its Relationship with Job Stress among Nursing Staff in Hospitals of Sari. Jouranal Nurs Educ. 2016;5(2):40–8.(Persian)
17. Bahrami A, Akbari H, Mousavi G, Hannani M, Ramezani Y. Job stress among the nursing staff of Kashan hospitals. Feyz. 2011;15(4):366–73.(Persian)
18. Park Y-M, Kim SY. Impacts of Job Stress and Cognitive Failure on Patient Safety Incidents among Hospital Nurses. Saf Health Work [Internet]. 2013 Dec [cited 2017 Sep 5];4(4):210–5.
19. Elfering A, Semmer NK, Grebner S. Work stress and patient safety: Observer-rated work stressors as predictors of characteristics of safety-related events reported by young nurses. Ergonomics [Internet]. 2006;49(5–6):457–69.
20. Jafarjalal E, Jafarpour H, Dehghan Nayeri N HH. Relationship between Perceptions of Organizational Culture with Patients’ Safety Behavior among Nurses in Babol. Hayat. 2013;19(3):5–16.(Persian)