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Needle - Stick and Medication Errors due to their Job Stress Emergency by Nurses- a Descriptive Study in Kermanshah Hospitals, Iran

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ABSTRACT

Prevention of medication errors could reduce health care costs, and protect health and well-being of patients. On the other hand, job stress was determined to be underlining for several health complications. The aim of the present study was to determine the relationship between job stress, needle sticking and medication error among nurses attending emergency centers of medical training hospitals in Kermanshah, Iran. This cross-sectional study conducted among 70 nurses working in medical training hospitals. The data collected based on interviews and analyzed by the SPSS version 20 using multiple logistic regression tests at the 95% significant level. Our findings showed that 41.4% and 22.4 % of the participants had history of needle-sticking and medical errors, respectively at least once. Logistic regression showed that sex (OR = 2.872), and job stress (OR = 1.503) could predict needle sticking. In addition, sex (OR = 1.471), and job history (OR = 1.695) could predict medication errors among participants. Our findings showed high levels of needle sticking and medication error. Thus, it seemed important to design and implement interventions for needle sticking and medication error prevention among nursing.

Key words: Needle-Stick, Medication Error, Nurse

1. INTRODUCTION

Stress is a special relation between person and environment, which person evaluates it as threat. It requested and demand stronger than their abilities and sources that endangers the person's comfort and welfare. There are different types of stress which affect people differently (1). Stress presses employees' lives in a different way. Among different occupations, medical and health related occupation is more affected by stress. As these jobs demand responsibility of supplying comfort, welfare and treatment of patients. There is much stress perceived in hospital settings that results in anxiety among medical care staff, mainly nurses (2). In this regard, studies showed that third of nurses suffer from low mental health (3). Much work and time limitations are some physical tensing factors which directly affect person's mental health. Direct care of patients, organizational atmosphere, challenges and conflicts with other medical care staff, especially conflicts between nurses and doctors, are some factors which increase stress among nurses (4). Stress can have a large amount of damage on people. Studies on the field showed that stress and mental problems could affect physical sicknesses such as malignant tumors and cardiovascular problems. Studies, reported that 5 out of the 10 major reasons of mortality around the world relate to mental disorders (5). Several studies on stress to the etiology of a group of physical sicknesses suggest newer evidence every day. It was observed that stress influences cardiovascular, diabetes, skin diseases and some malignant cases (5). Research has shown that 70 to 80% of health matters appeared or aggregated due to stress. On the

contrary, stress was considered as an important factor in the detection and continuity of mental disorders and the correlation was proven between stress and mental disorders (5). As mentioned, occupation satisfies major economic needs and creates social identity and self- worth, as majority of people spend long hours in their work places (6). Studies, showed that high work stress could result in being non-attendant, distracted and demotivated at work (2). Fatigue and inefficiency, lower participation, difficulty in decision making and inaccuracy were detrimental effects of stress on nurses (7). Nowadays, work force is considered as the most valuable assets of organizations. Moreover, organizational progress is hinged to staff effort and job satisfaction. In this regard health and treatment organizations found their worthiness in society due to their responsibility for preventing, caring and curing (8). Among the major occupational risks of health-therapeutic staff was recognized as injury with needle stick, sharp tools and touches of discharge (9). Needle stick injury is defined as penetration of a sharp head tool (a needle or a sharp tool such as double-edge scalpels, broken manometer, etc.) into body while being in touch with blood or other body liquid, which is a common difficulty among medical staff (10). On the other hand, patients' immunity is considered as a major concern of health-therapeutic services (11). Doping is another important yet common responsibility of nurses which seems to be the most hazardous of all (12). Broad and the diverse responsibilities of nurses are increasing every day as they play a leading role in offering personal and social health (13). Errors of offering health services surely are damaging and irrecoverable in some cases (14). Among the errors by nurses, medication errors reported to be the most common and created 19 percent of undesirable problems among patients, which mostly happens during feeding medication (15). The reason could be high working pressure and stress among nurses, ratio of patient higher compared to nurses, lack of unity in teamwork and less training by experts. Inappropriate physical settings may also increase the proportion of making mistakes, especially medication errors. Reducing stress and anxiety of nurse through reforming physical setting may be resourceful to staff health and productivity (13). Considering the importance of the issue, the present study aims to investigate the relationship among occupational stress, needle-stick and medication error among nurses attending emergency centers of medical training hospitals in Kermanshah, Iran.

2. MATERIALS AND METHODS

It is a cross sectional study, which studied 70 nurses working in medical training hospitals in Kermanshah, Iran in fall 2013. Coordinating medical science university responsibilities and chairperson of training hospitals in Kermanshah, samples were selected through simple random sampling. They were asked to complete designed questionnaires and data was gathered accordingly. All samples were justified on goals and information security of study. They all participated in investigation based on their propensity. After removing incomplete questionnaires, 58 questionnaires were analyzed (answering rate was reported to be 82 percent).

2.1. Measure

Measurement includes three parts and information gathered as self-reports by participants. Part one- demographic questionnaire, it investigated age (year), gender (male, female), marital status (single, married) and job experience (year). Part two- items of occupational stress, a standard questionnaire consist of 36 questions used for this purpose. Minimum and maximum gained score by each person could be 0 to 144, respectively. The higher the score, the more the stress was among the participants. Part three- items of needles sticking and medication error, there were five questions to observe the experience of being needle-stick (yes, no), number of times being needle-stick, medication error (yes, no), number of times making mistakes in feeding medication and type of the medication (edible, injection). Data analyzed by SPSS version 20 using multiple logistic regression tests, at 95% significance level.

3. RESULTS AND DISCUSSION

The mean age of respondents was 29.70 years [SD: 6.61], ranged from 22 to 49 years. Almost, 41.4 % of participants were women and 53.4% men. Moreover, 5.2 % did not respond to this item. 41.4 % (24/58) participants were married and 58.6 % (34/58) were single. Furthermore, the mean of job history among respondents was 6.98 years [SD: 6.40], ranged from 1 to 26 years. In addition, 41.4% and 22.4 % of the participants had history of needle-stick and medical errors, respectively at least once. Result showed, the mean job stress of respondents was 62.81 years [95% CI: 58.44, 67.17], ranged from 17 to 97. Table 1 and Table 2 , shows the results of correlation between field variables and occupational stress with needle-stick and medication errors. Our findings showed that sex (OR=2.872, P=0.046) and job stress (OR=1.503, P=0.009) were predictor variables of needle-stick injury by nurses. In addition, sex (OR=1.471, P=0.035) and job history (OR=1.695, P=0.084) were predictor variables of medication error.

Table 1. Multiple Logistic Regression Analysis for Background Variables and Job Stress Related to Needle-Stick

Variables	B	S.E.	Odds Ratio	P value
Sex	1.055	0.614	2.872	0.046
Job stress	0.052	0.020	1. 503	0.009
Final model:				
step 4				

Table 2. Multiple Logistic Regression Analysis for Background Variables and Job Stress Related to Medication Errors

Variables	B	S.E.	Odds Ratio	P value
Sex	2.349	1.113	1.471	0.035
Job history	0.528	0.306	1.695	0.084
Final model: step 4				

The main objective of this study was to determine the relationship between job stress, needle-stick and medication error. Our results indicate 41.4% prevalence of needle-stick injury caused by nurses. In this regard, several studies reported 18% to 80% prevalence of injuries with needle-stick, sharp head and cutting tools among healthcare staff. For example, Ziraba, Al Awaidy, Muralidhar and Smith reported the injury to be 67.8 % in Uganda, 17.9 % in Oman, 80.1 % in India, and 46 percent in Japan, respectively (16-19). Several studies in Iran, reported high rate of needle-stick injury caused by health care staff (20,21). For example, Shamohammadi et al., presented it to be 32% of nurses and practice nurses working in medical training hospitals in Hamadan (20). Furthermore, Askarian et al. reported that in distant provinces 49.6% of needle-stick injury are by nurses attending hospitals (21). Results suggest high prevalence of needle-stick injury by health care staff, which illustrates the necessity to pay more attention to the problem due to its consequences of extensive damage. Therefore, the CDC has suggested using vasofix safety, which caps the needle automatically after injection, and needles are detached immediately after injection, which prevent injuries. Another suggestion from the CDC was to design training programs to prevent and reduce needle sticking injury by a health-therapeutic personnel (20). Therefore, it is important to recognize effective behavioral factors in getting needle-stick injury to design and develop prevention-training programs. Regression analyses showed that gender (OR=2.872) and job stress (OR=1.503) were predictor variables of needle-stick injury by nurses, where it was higher among males and the higher the stress, the more the possibility to cause needle-stick injury. Studies on stress suggested that it could be considered as a reason to be non attendant at work (22). As a result, more attention is required to maintain the mental health of nurses, eliminate their stress and improve their health. In addition, it would be essential to design in service education on methods preventing getting needle stick injury, especially among male nurses, and using safer tools or designing them. Results from the present study showed 22.4 % medication error among nurses. In this regard, Chilton reported 28% of medication errors are common among nurses (23). In addition, our findings showed, sex (OR=1.471) and job history (OR=1.695) were two major factors to predict medication error among nurses, where higher medication errors corresponded with more job experience, mainly among male nurses. It seems that female nurses were more accurate in their job in comparison with male peers. Note that medication quality was affected directly by continuity of training programs (24) and several studies reported the efficiency of training on enhancement of knowledge and skill. Furthermore, some studies showed weaknesses of nursing care in different fields of pharmacology (11,25-28). Therefore, considering that increasing job experience there were higher rates of medication errors, it could be helpful to design and present retraining courses. In addition, recognizing other personal or environmental factors, met or not, to suggest working solutions in this regard.

4. CONCLUSION

The results of the present study showed stress in occupation influenced needle sticking injury. However, it showed no meaningful relation to medication errors. Stress roots from various internal, external and environmental factors. In the case of causing needle stick injury in stress, job experience considered effective. Considering high prevalence of needle sticking and medication error, it is important to recognize factors producing stress resulting in needle sticking injury. Furthermore, factors affecting medication errors, to design interventions to diminish such cases.

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AUTHORS CONTRIBUTION

This work was carried out in collaboration between all authors.

CONFLICT OF INTEREST

The authors declared no potential conflicts of interests with respect to the authorship and/or publication of this article.

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