Needle-Stick and Medication Errors in Emergency Nurses are Due to their Job Stresses? A Descriptive Study in Kermanshah Hospitals, Iran

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ABSTRACT
Prevention of medication errors could reduce healthcare costs, and protect health and well-being of patients. On the other hand, job stress was determined to be underlining for several health problems. The aim of 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. Data collected based on interview and analyzed by SPSS version 20 using multiple logistic regression tests at 95% significant level. Our findings showed that 41.4% and 22.4% of the participants had history of needle-sticking and medical errors at least once, respectively. 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, request and demand stronger than their abilities and sources that endangers person’s comfort and welfare; there are different types of stress which affect people differently (1). Stress presses employees’ lives differently; among different occupations, medical related ones are more affected by stress as such jobs create 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 people mental health; direct caring of patients, organizational atmosphere, challenges and conflicts with other medical care staff, specially conflicts between nurses and doctors, are some factors which increase stress among nurses (4). Stress can have much damaging effect on people; studies on the field showed that stress and mental problems could affect physical sicknesses such as malignant tumors and cardiovascular problems. Studies, also, reported that 5 out of 10 major reasons of mortality around the world relate to mental disorders (5). Several studies on stress to etiology of a group of physical sicknesses suggested newer evidence every day; it was seen that stress was more effective on cardiovascular, diabetes, skin diseases and some malignant cases (5). Research, on one hand, has shown that 70 to 80% of health matters appeared or were aggregated due to stress; on the other hand, stress was considered as an important factor in detection and continuity of mental disorders and...
the correlation was proven between stress and mental disorders (5). As was mentioned, occupation satisfies major economic needs of people and creates social identity and feeling usefulness, and many people spend long hours of their day in their work places (6). Studies, also, showed that high stress of work could result in being absent at work, incuriosity at work and lower work motivation (2). Fatigue and inefficiency, lower participation and difficulty in decision making and making mistake were introduced as undesirable effects of stress on nurses (7). Nowadays, manpower is considered as the most valuable capital of organizations and organizational progress is hinged to staff effort and job satisfaction. In this regard health and treatment organizations found their precious in society due to their responsibility to prevention, caring and curing (8). Among the major occupation risks of health-therapeutic staff were 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 scalpel, scalpel, 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 major concern of health-therapeutic services (11). Doping is of important common responsibility of nurses which seems to be the most hazardous one, too (12). Wide and various responsibilities of nurses are increasing every day as they play leading role in offering personal and social health (13). Errors of offering health services surely are damaging and irrecoverable in some cases (14). Among 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, few numbers of nurses according to high number of patients, lack of acceptable team work and low training of experts. Inappropriate physical settings may also increase the proportion of making mistakes, especially medication error. Reducing stress and anxiety of nurse through reforming physical setting may be efficient to staff health and productivity (13). Considering the importance of the issue, present study aims to investigate the relationship among occupation 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 responsible and chairman of training hospitals in Kermanshah, samples were selected through simple random sampling and were asked to complete designed questionnaires; data was gathered accordingly. All samples were justified on goals and information security of study. They all participated in investigation based on their tendency. Removing incomplete questionnaires, 58 questionnaires were analyzed (answering rate was reported to be 82 percent).

2.1. Measure

Measurement included three parts and information gathered as self-reports by participants. Part one- demographic questioner; it included for questions and investigated age (year), gender (male, female), marital status (single, married) and job experience (year). Part two- items of occupation stress; a standard questionnaire including 36 questions used for this purpose. Minimum and maximum gained score by each person could be 0 and 144, respectively. The higher the score, the more the stress was among participants. Part three- items of needle sticking and medication error; there were 5 questions to study the experience of being needle-stick (yes, no), number of times being needle-stick, medication error (yes, no), number of times making mistake in feeding medication and type of the medication (edible, injection). Data analyzed by SPSS version 20 using multiple logistic regression tests, at 95% significant 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 participant was women and 53.4% of them was men, also 5.2 % was not response 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 at last one, respectively. 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 show the results of correlation between field variables, occupation stress and needle-stick, and medication error, respectively. Our findings showed that sex (OR=2.872, P=0.046) and job stress (OR=1.503, P=0.009) were predictors of nurses being needle-stick. In addition, sex (OR=1.471, P=0.035) and job history (OR=1.695, P=0.084) were predictors of medication error.

<table>
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<th>S.E.</th>
<th>Odds</th>
<th>P value</th>
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<td>Job stress</td>
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Table 1. Multiple Logistic Regression Analysis for Background Variables and Job Stress Related to Needle-Stick

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The main objective of this study was determined relationship between job stress, needle-stick and medication error. Our results indicated 41.4% prevalence of being needle-stick among nurses. In this regard, several studies reported 18 to 80% prevalence of needle-stick and injuries with sharp head and cutting tools among health care staff. For example, Ziraba reported the injury to be 67.8% in Uganda, Al Awaidy reported 17.9% in Oman, Muralidhar reported 80.1% in India, and Smith reported 46 percent in Japan (16-19). Several studies in Iran also, reported high rate of needle-stick among health care staff (20, 21). For example, Shamohammadi et al., also, presented it to be 32% among nurses and practice nurses working in medical training hospitals in Hamadan (20); furthermore, Askarian et al. reported 49.6% of needle-stick among nurses attending hospitals in Fars province (21). Results suggested high prevalence of needle-stick among health care staff, which represented the necessity to pay more attention to the problem due to its consequences and wide damage created. CDC, therefore, has suggested much advice to use vasofoxi safety, which caps the needle automatically after injection, and needles, which are detached immediately after injection and prevent injuries. Another suggestion from CDC was to design training programs to prevent and reduce needle sticking among health-therapeutic personnel (20). Therefore, it is important to recognize effective behavioral factors on getting needle-stick to design and develop preventive training programs. Regression analyses showed that gender (OR=2.872) and job stress (OR=1.503) were predictors of nurses being needle-stick, where it was higher among males and the higher the stress, the more the possibility to get needle-stick. Studies on stress suggested that it could be considered as a reason to be absent at work (22). As the result, more attention would be necessary to maintain mental health among 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, especially among male nurses, and using safer tools or designing them. Results from present study showed 22.4% medication error among nurses; in this regard, Chilton reported 28 percent of medication error 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; also, some studies showed weaknesses of nursing cadre 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 re-training courses and, also, recognize other personal or environmental factors, met or not, to suggest working solutions in this regard.

4. CONCLUSION

As results of present study showed occupation stress affected needle sticking, however it showed no meaningful relation to medication errors. Stress roots from various internal, external and environmental factors; in the case of getting needle stick other factors than stress like job experience were considered to be effective. Considering high prevalence of needle sticking and medication error, it sounds important to recognize factors producing stress resulting in needle sticking, and other factors affecting medication errors, to design intervention decreasing 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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