

Live experience of nurses about occupational exposures in emergency wards

Esmail Mohammadnejad (1)

Nahid Dehghan Nayeri (2)

Ayshe Hajiesmaeilpoor (3)

(1) Assistant Professor, School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran

(2) Professor, Nursing and Midwifery Care Research Center, School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran

(3) Department of Nursing, School of Nursing and Midwifery, Sanandaj branch, Islamic Azad University, Sanandaj, Iran

Corresponding Author:

Ayshe Hajiesmaeilpoor

Department of Nursing, School of Nursing and Midwifery, Sanandaj branch, Islamic Azad University, Sanandaj, Iran

Email: esmaeilpoor86@gmail.com

Abstract

Background and Objective: Health Care Workers (HCW) are exposed to viral infections such as hepatitis B, hepatitis C and HIV. Major occupational hazards of infection transmission in health centers are injuries from sharps and exposure to pathogens and infectious can be transmitted through blood. The purpose of the study was to “explore live experience of nurses about occupational exposures in emergency wards”.

Materials and Methods: A qualitative approach using content analysis was adopted. In-depth and semi-structured interviews were conducted with 14 nurses in the emergency ward. Content analysis was performed to analyze the data.

Results: Five major categories emerged from the data analysis, including improvidence, fear, stigma, lack of support, follow-up.

Conclusion: The results of this study show that there is complex process for follow-up and lack of support after occupational exposures. Since the emergency ward is a heart hospital, there is a need for taking standard precautions, and post occupational exposure design and operational processes.

Key words: nurse, occupational exposures, emergency ward

Please cite this article as: Esmail Mohammadnejad, Nahid Dehghan Nayeri, Ayshe Hajiesmaeilpoor. Live experience of nurses about occupational exposures in emergency wards. *World Family Medicine*. 2017; (10):170-175. DOI: 10.5742/MEWFM.2017.93156

Introduction

Medical personnel are routinely exposed to viral infections, including hepatitis B, hepatitis C and HIV (1-2). Occupational exposures to the blood-borne pathogens occur in medical personnel percutaneously by needle stick and sharp and cutter tools, exposure to mucous membranes and unhealthy skin (3). Evaluating the status of needle stick injury in hospitals is important both in terms of medical personnel and hospital managers and in spite of the guidelines and training programs provided to the staff, the rate of needle stick injury is increasing. Needle stick injury is a major occupational hazard for health care workers (4). According to the World Health Organization, 16,000 cases of hepatitis C, 66,000 cases of hepatitis B and 1,000 cases of HIV have been reported annually following occupational exposure (5). In the United States, 600,000 to 1,000,000 occupational exposures through percutaneous exposure and 200,000 cases through exposure to mucous membranes with blood and other body fluids are reported annually (5). A study conducted in Iran showed that 65.62% of the healthcare workers had once been injured with sharp and cutter tools and 43.11% of them were nurses who were in contact with the sharp and cutter tools (6). According to the reports, a case of serious blood-borne infection could cost \$1 million to conduct laboratory tests, follow-ups, costs of disability, and loss of working time, while the cost of preventing a suspected infectious illness is estimated at \$ 3,000 (7). The economic cost of contact with sharp objects in the United States is estimated at \$51-3766, which includes about 14 to 839 people per 1,000 working in health care clinical settings, but in Iran, there are not enough precise statistics regarding the costs of needle stick injury. The lack of proper and timely reporting of occupational exposure is one of the most important problems in the management of infection control (8). The reasons for not reporting occupational exposure can be the lack of effect of the injury report on the process of the disease, lack of knowledge, examination of the patient and the conclusion that the patient is not infected with the disease, the history of uncomplicated injury, the safety against hepatitis B, high workload and lack of a systematic approach (especially the type of injury report) to report and follow-up injuries and to protect the injured person by the managers (9-10).

A study conducted in Tehran showed that 36.17% of the participants indicated that occupational exposure had a negative effect on their lives, 42.68% had follow-up after contact with the sharp and cutter tools and where immunoglobulin was injected, and performed the necessary laboratory tests, and 7.44% of them had to receive anti-HIV drugs (6, 11). The emergency department is considered as the busiest, most diverse and sensitive ward of the hospital. On average, this part occupies 50 percent of hospital beds. Emergency department employees are at higher risk of occupational injuries than other departments. Extreme work speed and pressure in the emergency department, fatigue and high tension of the staff, and dealing with blood and body secretions of emergency patients are among the reasons that increase the risk of exposure (12). Another issue is that, nurses in the emergency department are the largest medical treatment group (13). Considering the fact that so far no study has been done in Iran to explain the experiences of nurses regarding occupational exposure in emergency departments, this study was designed with the aim of "Nurses' experiences of occupational exposure in emergency departments of Tehran University of Medical Sciences in 2012".

Materials and Methods

This qualitative study was done by content analysis method. Considering the title and purpose of this research, and since the qualitative research is a suitable method for describing life experiences and meaning for them, and the application of this method can contribute to the development of nursing science (14), therefore the present study is qualitative. The research environment in this study was the emergency departments of teaching hospitals affiliated with Tehran University of Medical Sciences. Purposive sampling was used in this study, during which 14 nurses (8 women and 6 men) were interviewed to achieve saturation of information. The criterion for reaching data saturation was the lack of more emerging data and non-repetitive information in subsequent interviews. Participants' inclusion criteria were having at least three years of clinical experience and a willingness to express their experiences so that they can freely exchange their feelings regarding these experiences. All interviews were conducted by the first researcher. A semi-structured interview was used for data gathering, which is suitable for qualitative research due to its flexibility and depth. One of the main questions of the interview was: What experience do you have as a nurse in terms of occupational exposure in the healthcare ward? The duration of the interviews lasted between 20 to 65 minutes with an average of 40 minutes, and they were individually conducted. The process of determining the validity and reliability of qualitative research differs from quantitative research. The rigor in this study was ensured by using the proposed criteria by Guba and Lincoln (15). In this research, four criteria for trustworthiness of qualitative research were used, i.e., credibility, transferability, dependability and confirmability. Credibility by time sampling and members and peer checking, transferability by dense description and comparison of participants to demographic data, dependability by dense description of research methods and code-recode procedure, and confirmability by avoiding any bias or prejudice during the interview, was assured.

The conventional content analysis method was used to analyze the data. Interviews were digitally recorded, word-by-word transcribed and typed, reviewed, coded and immediately analyzed. In fact, data gathering and analyzing was done continuously and concurrently. For primary coding, the words of participants or in vivo coding and indicative coding (the researcher's perceptions of the statements) were used and followed by subsequent interviews. The units of meaning from the participants' statements were extracted from the interviews in the form of primary or open codes; the codes were reviewed several times and were classified in a category based on the similarity and proportionality of the subject. Data categorization was done by assigning separate codes, repeated review, and merging similar codes and then the second level (axial) encoding or data classification was formed. In the next stage, the categories were also compared and each that were similar in characteristics were integrated and formed a broader category to emerge from the themes. During the research process from data

gathering to analysis, to ensure the research ethics, informed consent form was taken from all participants. In this form, permission to record interviews and use the information anonymously was acquired from the participants. At the end of each interview, the use of interviews by maintaining the confidentiality of the participants' names was emphasized, and all participants agreed to their comments being used

anonymously in this study and any information that indicated the participant's name was deleted. Participants were assured that their information would be kept confidential and the recorded interviews would be cleared after the transcription. Participants were assured that they had the right to retire at each stage of the research.

Findings

Of the 14 nurses who participated in this study, eight were female and six were male. The age of participants was 27 - 45 years with a mean of 31.2 ± 1.4 years old and mean job experience of them was 9.2 years. The majority of participants were nurses (N= 8, 67%).

Table 1: Participants' Demographic Data: Number (Percent)

Variable	Number	Percent	
Age	Less than 35 years old	3	21.4
	36-45 years old	8	57.1
	More than 45 years	3	21.4
Sex	Male	6	42.8
	Female	8	67.1
Educational level	Less than a bachelor's degree	3	21.4
	Bachelor's degree	9	64.2
	Higher than bachelor's degree	2	14.2
Job experience	Less than 10 years	7	50
	11-20 years	5	35.7
	More than 20 years	2	14.2
Job position	Paramedic	1	7.1
	Nurse	8	67.1
	Head nurse	2	14.2
	Supervisor	1	7.1

The findings of this study were merged into 186 codes, 18 sub-categories and five main categories, which are as follows:

Main categories	Sub-categories
Careless	Non-observance of standard precautions
	Lack of equipment
	Lack of ward safety
	Lack of thinking or concentration when performing care measures
Worry	Having stress
	Hide information from family
	Revealing information to the family
	Long-term trouble
	Misery in life
	Cancel the work
Stigma	False belief in society
	Inappropriate definitions in the way of transference
	Discrimination in the society
Lack of support	Lack of monthly payment per workload
	Failure to take responsibility for costs
	Lack of support from colleagues and family
Follow up	Multiple laboratory tests
	Multiple counseling

Careless

One of the main factors in contamination of nursing staff with the patients' blood is the lack of use of precautions and the carelessness of colleagues. Having multiple care requirements simultaneously, failing to observe standard precautions, overcrowding, high referrals of patients, and lack of cooperation from other colleagues while caring for patients is considered to be effective in their carelessness.

"...When there are a lot of patients in the ward, the noise causes me to be annoyed. I went to get the patients' blood sample, I realized that there were a lot of gloves in the ward, but the glasses were not in the ward for me to wear, so the patient's blood was poured on my face and head, I washed it with plenty of water, but I feel the blood is sticking to my face..." (Participant 2)

Worry

Worries after occupational exposure develop concerns and stress, which are one of the most important problems for nurses.

"...When I discovered that my patient is HIV positive, it seems as if I was at the end of my life. I did not know what to do, I did not know who to deal with my problems, I thought very much, I contacted the counseling center who talk to me very much to make some of my stress seem to be small, from the center of the counseling that I came out, I reappeared like before..." (Participant 2)

Stigma

Stigma is important because people in the community due to lack knowledge think that the disease has not been created through an occupational exposure so consider the illegitimate sexual relationships as the most important factor.

"...I had been talking to my family that I had needle stick injury during inserting IV access device for a patient with hepatitis, which means that the needle of the syringe has fallen into my hands, my family members told me that you should separate your dish and even the linen from our appliances, when my nephew wanted to come to me, his mother nodded and said, do not, he may be ill..." (Participant 1)

Lack of support

The lack of support from hospital managers and family members has been another unpleasant experience for the nurses working in the emergency department.

"...When the blood sample poured into my head and face, I took the primary infection control steps and informed the supervisor who introduced me to the lab; the lab said that the infectious disease control supervisor should be approved to make the costs free; otherwise you should pay the price. The shift was overnight, and finally, with the help of the night manager, the lab accepted my blood sample. 48 hours later, when I came to get my lab test answer, the supervisor of the nursing office said: "What is going to happen so the needle is constantly falling into your hands? Are you thinking to get sick leave?..." (Participant 11)

Follow up

One of the necessary measures after occupational exposure is long-term follow-up, which is one of the experiences of the emergency nursing staff.

"...I should continue to conduct lab tests for two weeks, after I came back to my hospital counseling center, they told me to come to an infectious disease control specialist tomorrow, when see the lab test answer, told me that you should do the HIV exam four weeks after the date of the needle stick, according to my concern, I introduced a psychiatric specialist ..."

Discussion

One of the findings of this study was staff carelessness. Studies have shown that with observance of standard precautions by healthcare workers, the prevalence of contact with patients' blood and discharges decreases and observing these precautions is the best way to protect employees against occupational diseases (16-17). The Center for Disease Control (CDC) has identified standard precautions as an appropriate strategy for controlling blood-borne diseases (18). In 1994, the US Centers for Disease Control and Prevention have developed a comprehensive precaution to minimize the risk of contamination of health care workers with blood-borne pathogens.

The study of Mirzaee et al. (2013) showed that the participants did not accept compliance with the standard precautions and considered it not only to be not useful, but also to be considered as harmful (19). In the study of Artimani et al. (2012), the rate of observing standard precautions was 5% (20). Jalalinia and colleagues (2006) showed that only half of the nurses implement safe injection methods. The overall observance of precaution measures in male and female employees of Mazandaran University of Medical Sciences was 1.4% and 6.5%, respectively (22).

One of the findings of this study was worry. The study of Raghavendran et al showed that the damage caused by sharp and cutter objects causes worry and a particular concern, both in the patient and their family (10). The results of one study showed that more than half of those who were exposed to sharp injuries, suffered from psychosocial symptoms after the incident, including stress, anxiety, depression, and about 15% of them required counseling and psychological follow-up (23).

Stigma has been the main element of nurses' experience. Stigma or social stigma is a complex and multi-dimensional phenomenon. Stigma in health care centers is a major barrier to providing health services for patients and personnel with occupational exposure and prevents efforts in diagnosis, treatment and follow up. In a study in Kenya, there was a fear of infection among health care providers as a result of social stigma and discrimination (24). The results of the studies show that fear and stigma among the health care workers due to the scandal caused by exposure to occupational infections can affect providing care for patients (25). By encouraging empathy with staff that have had an occupational exposure and providing an

environment where standard precautions are observed, a positive viewpoint can be made between nurses regarding nursing care (26). The social concepts of stigma lead to hopelessness, suicide, loneliness, and death expectancy. Fear of social stigma, disturbance, frustration and anxiety are among the negative psychological effects of occupational exposures that can affect the medical staff in the future (27).

The lack of support from hospital managers and families has been another virulent experience of health care workers in the emergency department. A study in Iran showed that senior hospital managers, due to executive responsibility and distancing themselves from the clinical care environment, had no experience of injuries caused by sharp and blood-bearing equipment, therefore, the worries and tensions of staff suffering from injuries due to such equipment were not well understood by them (28).

One of the main themes in this research was follow-up after occupational exposure. In a study in India, 66% of occupational injuries were reported during the first hour after the exposure for required follow-up. In several studies, the most important reasons for follow-up reporting has been indicated in some cases, including: dissatisfaction with the follow-up process, unfamiliarity with the reporting and follow-up process, high engagement, lack of risk perception, individual prediction of a low risk infection in the source of injury and complicated bureaucratic process (29). In a study in Iran, it has been shown that after post occupational exposure follow-ups, 15.6% and 12.5% of the cases were prescribed anti-hepatitis vaccine and immunoglobulin and anti-HIV drugs, respectively (6). The results of a study showed that 67% of staff with occupational exposure did not take any medical and therapeutic measures as follow up, and 3% of those who had the result of negative infectious tests were contacted by patients with positive infectious test results, and received both immunoglobulin and vaccine (2). The results of this study showed that the most important cause of contamination of health care workers with blood and infectious discharge of the patient was their carelessness and the nurses initially blamed themselves. However, lack of thinking and concentration during care, lack of safety equipment, and unsafe measures in the clinical ward are mentioned as other causes of occupational exposure.

Conclusion

To comply with standard precautions and to implement infection control standards, emphasis on training staff and providing instructions is not enough, but in addition to providing the necessary equipment, there is need to strengthen the staff's belief in the necessity of observing this precaution. To achieve this goal, it is suggested that measures be taken to enhance the adaptation of staff to personal protection issues, cognitive approaches, behavioral modification strategies, and the combination of theoretical foundations and educational experiences to enhance the staff's skills. It is necessary that health care professionals, in order to provide better health care

services post occupational exposures, while supporting the managers through follow-up measures, should also distinguish the attitudes of judgment and emotions caused by the stigma from their professional behaviors.

Acknowledgments

This study is a part of the research project at Nursing and Midwifery Care Research Center, Tehran University of Medical Sciences, Tehran, Iran.(ID: 92-01-99-20942). The authors thank all the nurses of the emergency departments of hospitals affiliated to Tehran University of Medical Sciences who participated in this research.

References

1. Amira CO, Awobusuyi JO. Needle-stick injury among health care workers in hemodialysis units in Nigeria: a multi-center study. *Int J Occup Environ Med*. 2014 Jan;5(1):1-8.
2. Atensteadt RL, Payne S, Roberts RJ, Russell IT, Russell D, Edwards RT. Needle-Stick injuries in primary care in Wales. *Journal of Public Health* 2007; 29(4):440-434.
3. Zhang M, Wang H, Miao J, Du X, Li T, Wu Z. Occupational exposure to blood and body fluids among health care workers in a general hospital, China. *American Journal of Industrial Medicine* 2009; 52: 89-98.
4. Rezaei SH, Rabirad N, Tamizi Z, Fallahi Khoshknab M, Mohammad Nejad E, Mahmoodi M. Needle sticks injuries among health care workers in emergency medical centers in Tehran University of Medical Sciences Hospitals (2007-2010). *Journal of Health Promotion Management* 2012. 1 (3) :46-54.
5. Ehsani SR, Mohammadnejad E, Hadizadeh MR, Mozaffari J, Ranjbaran S, Roghyeh Deljo R, et al. Epidemiology of Needle Sticks and Sharp Injuries Among Nurses in an Iranian Teaching Hospital. *Arch Clin Infect Dis*. 2013 January; 8(1): 27-30.
6. Mohammadnejad S, Esfandbod M. Needlestick Injuries Reporting among Nurses. *Irn J Infet Dis Tropical* 2010; 48(15): 49-53.
7. Dement JM, Epling C, Ostbey T, Pompeii LA, Hunt DL. Blood and body fluid exposure risk among health care workers. *Am Ind Med* 2004, 46(6):637-48.
8. Smith D R , Wei N, Zhang YJ , Wang RS. Needle stick and sharps injuries among a cross-sectional of physicians in Mainland China. *American Journal of Industrial Medicine* 2006 ; 49:169-174
9. Khorsandy M. The study of needlestick injuries and preventive strategies among health care workers in educational hospital in Arak city *Arak J Nurs* 2003; 14:8-13.
10. Raghavendran S, Bagry HS, Leith S, Budd JM. Needle stick injuries: a comparison of practice and attitudes in two UK district general hospital. *Anaesthesia* 2006;61: 867-872.
11. Haj Baghri A, Sorur P, Salsali M, Qualitative Research, Tehran: Boshra; 2007.
12. Maguire BJ. Hunting KL.Guidotti TL. Smith GS. Occupational injuries among emergency medical services personnel. *Pre hospital Emergency care* 2005; 9 (4) 405-411.

13. Ehsani SR, Cheraghi MA, Nejati A, Salari A, Esmailpoor AH, Nejad EM. Medication errors of nurses in the emergency department . *J Med Ethics Hist Med*. 2013; 24; 6:11.
14. Abbaszadeh A, Ehsani SR, Begjani J, Kaji MA, Dopiani FN, Nejati A, et al. Nurses' perspectives on breaking bad news to patients and their families: a qualitative content analysis. *J Med Ethics Hist Med*, 2014, 7:18
15. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today* 2004. 24(2): 105-11.
16. Nichol K, Bigelow P, Pallas LB. The individual, environmental, and organizational factors that influence nurses' use of facial protection to prevent occupational transmission of communicable respiratory illness in acute care hospitals. *AJIC* 2008;36(7):481-7.
17. Lewis DK, Callaghan M. Prevalence and indicators of HIV and AIDS among adults admitted to medical and surgical wards in Blantyre, Malawi. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 2003; 97(1): 91-6.
18. Kalantarzadeh M, Mohammadnejad E, Ehsani SR, Begjani J. Knowledge and Practice of nurses about Prevention and Control of Nosocomial Infection in emergency departments in 2012-13 *Arch Clin Infect Dis*. 2014; 9(4): In Press.
19. Mirzaei T, Ravari A, Mirzaei S, Loripoor M. Standard Precautions: Compliance to Precautions or Precautions as a Barrier: A Qualitative Study. *Journal of qualitative Research in Health Sciences* 2014; 3 (3) :230-238.
20. Artimani T, Khodaveisi M, Soltani F. Compliance with standard precautions for Blood borne diseases in Hamadan's Maternity Hospitals 2013; 21 (3) :31-39
21. Jalaliniya F, Zakeri Moghadam M, Kazemnezhad A. Evaluation of applying safe injection method by Nurses in Emergency Department. *Hayat* 2006;12(1):71-77.
22. Parsaee M, Jamshidi M, Moosazadeh M, Amiresmaili M, Nezammahalleh A. The Survey of Observing Universal Precaution and Factors Affecting it in Emergency Clinics at Selected Hospitals of Mazandaran University of Medical Science 2013; 12 (1) :107-118.
23. Ko NY, Yeh SH, Tsay SL, Pan Sh M, Feng MCh, Chiang MCh et al. Adherence to management after occupational exposure to bloodborne pathogen among health care workers in Taiwan , *Am J Infect Control* 2009;37:609-11.
24. Turan JM, Bukusi EA, Cohen CR, Sande J, Miller S. Effects of HIV/AIDS on maternity care providers in Kenya. *J Obstet Gynecol Neonatal Nurs* 2008; 37(5): 588-95.
25. Dickson D, Stevens M. Needle stick injuries in an era of HIV: technical and personal aspects , *Afri- can J of AIDS Research* 2007 ; 6(1): 41-48.
26. Rahmati F, Niknami S, Amin F, Ravari A. HIV/AIDS Patients' Experiences about Stigma: a Qualitative Study. *Journal of qualitative Research in Health Sciences* 2012; 1 (2) :71-80
27. Kabbash IA, El-Gueneidy M, Sharaf AY, Hassan NM, Al-Nawawy N. Needs assessment and coping strategies of persons infected with HIV in Egypt. *East Mediterr Health J* 2008; 14(6): 1308-20.
28. Madadi Neshat M, Pashaei F. The experience of health care workers after contact with sharp instruments contaminated with patients'blood: A phenomenological -qualitative study. *J North Khorasan Uni Med Sci* 2011; 3(3); 81-8.
29. Jayanth ST, Kirupakarn, Brahmadhanthan KN, Gnanarg L, Kang G. Needlestick injuries in a tertiary care hospital. *Indian J Med Microbial* 2009;27(1): 44-7.