Original Article

Nurses' Knowledge Levels and Perceptions Regarding Occupational Risks and Hazards

Gul Yesilgul, MSc, RN
Nurse, Nicosia Hospital, Cyprus

Hatice Sutcu Cicek, PhD, RN
Professor, Girne American University, School of Nursing, Kyrenia, Cyprus

Mehmet Zeki Avci, MD
Associate Professor, Girne American University, School of Nursing, Kyrenia, Cyprus

Buket Huseyniklioglu, PhD, RN
Girne American University, Faculty of Health Sciences, Health Care Management Department, Kyrenia, Cyprus

Corespondence: Hatice Sutcu Cicek, Prof. Girne American University, School of Nursing, Kyrenia, Cyprus
E-mail: haticecicek@gau.edu.tr, haticecicekk@gmail.com

Abstract

This study was conducted to determine hospital nurses' knowledge levels and perceptions regarding occupational risks. It was carried out in a large state Hospital situated in Nicosia Cyprus, and its sample was 246 nurses who agreed to participate. Developed by researchers sociodemographic, occupational health and the hospital environment in the form with information risk as the danger of detection and the nurses that affect them 33 questions shows the status of the form with the collected data, which are presented as numbers, percentages and frequency distributions. The majority of the nurses (81.7%) had received training about occupational risks, and 91.5% stated that they took protective measures against risks. The first three of the nurses who participated in the study perceived most risky of danger, respectively; blood, blood products and body fluids, transmission of with transmitted diseases (75.2%), the development of circulatory disorders related to prolonged standing (74%) and long, intense work hours and fatigue-related in the form of Sift (71.5%) it was determined that were. Nurses, a maximum of 22% of lumbar problems, 16.4% in arrival and 11.6% with cutter-they experienced a penetrating injury determined. As a result of this thesis study, it was determined that the nurses still had preventable health problems despite knowing the risky situations. Institutional and individual precautions should be taken and training should be organized to protect the health of nurses.

Keywords: nurses, hospitals, occupational risk, knowledge levels

Introduction

Nurses and other health care staff face many occupational dangers and risks (Kokturk et al., 2003). Although health care personnel perform their duties in difficult circumstances, they are considered as people who should sacrifice themselves due to traditional values, and their health problems are neglected (IAEA, 2010). However, the quality of the health care provided to society is related to health professionals' lives and their living conditions. It is necessary to take precautions in health care sector just as it is in other sectors. This subject not only concerns health care personnel, but their patients, too (Kokturk et al., 2003).

Health is defined as "a state of complete physical, mental and social well-being" by the World Health Organization (IAEA, 2010). It is necessary to analyze deviations that occurred/can be occurred in health of health care professionals to ensure their mental, physical and social well-being (Ikademi, 2011). Many negative circumstances, risks and dangers in work environments cannot be prevented. Therefore, nurses and other health care professionals can be

exposed to diseases, work accidents and injuries arising from these dangers (OSHA, 2008).

The occupational factors that jeopardize health professionals' health are described identically in many publications (Kıran, 2003). Dangers due to the work environment directly and indirectly affect health care professionals' health. The National Institute for Occupational Safety and Health (NIOSH) recommends that risks and dangers in hospitals be categorized as physical, biological, chemical, ergonomic and psychosocial without mentioning specific occupations, and reports that of them, 29 are psychical, 24 are biological, 25 are chemical, 4 are ergonomic, and 10 are psychosocial (Ozkan, 2005).

The health sector ranks first in terms of the risks it entails for employees (Erdem et al., 2005). Determining risk perceptions in the work environment is considered the basic tool for changing attitudes and behaviors and establishing a safe and healthy workplace (OSHA, 2008). Despite this, there are not enough studies about how nurses and health care professionals perceive and describe occupational risks and hazards. A study by Walters and Haines (1988) found that 86% of health care professionals perceive the dangers in work environment accurately (OSHA, 2008). This study aims to contribute literature by examining of hospital nurses' knowledge levels and perceptions regarding the risks in hospital environment currently.

Method

The descriptive research model was used in this study. The Introductory Knowledge Form and "Perception of Hospital Risks Form Occurring in Hospital Environment", including a total of 33 questions and data collection forms consisting a question about the accidents and diseases they experienced in hospital, were used to collect data. These forms were designed to be filled out in 10 to 15 minutes. This research was conducted in a large state hospital situated in Nicosia between March 1 and April 30, 2017 in Nicosia, Cyprus.

Ethical Considerations

Ethics committee approval was obtained before conducting research (GAU, No: 5.1/17, date: January 27, 2017). The nurses were informed about the research. Then, a written participant information and consent form and oral consent was obtained from the participants.

Sample

A large state hospital of Nicosia was chosen and the 303 nurses working at this hospital were planned to be included in the study, but the questionnaire was completed by 246 of them.

Results

Of the nurses, 39.8%, 24.0%, 28.5% and 7.7% were in the 31-40, 20-30, 41-50 and over 51 age groups, respectively. Of them, 65.0%, 23.2%, and 11.8% were single, married, or widowed or divorced, respectively.

Almost half of the participants (51.2%), 15.4%, 17.5% and 15.9% completed an undergraduate program, high school, earned an associate's degree or had postgraduate education, respectively. Of the participants, 11.0%, 22.4%, 25.2% and 41.4% had 1-5, 6-10, 11-15, or 16 years or more years of work, respectively. Of the participants, 48.0%, 15.8% and 36.2% worked 160-180, 181-200, or 201 hours or more per month, respectively. Of the participants, 69.5% worked in night shifts: 1-5, 6-10, or 11 or more per month for 29.7%, 67.4% and 2.9% of the participants, respectively.

Of the nurses, 81.7% had received training about occupational risks, and 91.5% took protective measures against them. There were 233 nurses who were vaccinated. Of the nurses, 50.2%, 11.2%, 91.0% and 3.9% were vaccinated for tetanus, influenza-a, hepatitis B, pneumococcus, respectively. Of the nurses, 74.8% had checked themselves for hepatitis B titration.

Of the participants, 122 were working in the internal diseases clinic, and 121 were working in the surgical clinic. The departments with the most participants were: 12.3% outpatient clinic services, 10.7% oncology services and 9.8% coronary intensive care. The surgical clinics with the most participants were: 25.9% operating room, 14.9% general surgery and 10.7% urology.

When the nurses' risk perceptions were analyzed in dangerous situations, it was found that the first three dangers were ranked as blood, blood products and diseases contaminated with body fluids (HIV, hepatitis B and C), circulatory abnormalities due to standing for long periods of time (varicosis, edema) and tiredness due to long and intensive work hours in shifts, respectively.

The dangers that internal disease clinic nurses perceived most were blood, blood products and diseases contaminated with body fluids (HIV, hepatitis B and C), spinal cord injuries while giving care to patients (back and neck pain and hernias) and Tiredness due to long and intensive work hours in shifts, respectively.

The dangers that surgical clinic nurses perceived most were circulatory abnormalities due to standing for long periods of time (varicosis, edema), blood, blood products and diseases contaminated with body fluids (HIV, hepatitis B and C) and injury from sharp objects such as needles respectively.

Of the nurses, 22%, 16.4% and 11.6% had back problems, varicosis and sharp object injuries, respectively.

Discussion

This study was conducted to determine hospital nurses' knowledge levels and perceptions regarding risks arising from hospital environment, it was found that most of the nurses had received training about risks threatening their health and perceived the risks in the environment in line with the literature. Their hepatitis B vaccination rate was (91.2%); however, not all the nurses were vaccinated, and they experienced preventable occupational diseases and injuries.

Most of the nurses (84.1%) were women, and 39.8% were in the 31-40 age range. Of them, 65.0% and 11.8% were single, or widow or divorced. Therefore, they lacked social support from their spouses. A study by Saricam (2012) found that married nurses experience back, neck and viral infection problems more than other nurses and have fewer sleeping problems ($p<0.05$). This can be interpreted to mean that if married nurses are exposed to psychical difficulties outside the workplace, it can increase their complaints.

Table 1. Nurses' Perception of Occupational Risks in Hospital (N=246)

Dangers	No Risk		Minor Risk		Moderate Risk		High Risk	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
1. Slipping and falling on slippery floors	1	0.4	39	15.9	109	44.3	97	39.4
2. Injury from sharp objects such as needles	0	0.0	21	8.5	52	21.1	173	70.3
3. Injury from sharp objects such as scalpels	2	0.8	39	15.9	54	22.0	151	61.4
4. Injury by an ampoule	6	2.4	62	25.2	87	35.4	91	37.0
5. Injury due to fall of medical equipment on legs or feet	7	2.8	76	30.9	104	42.3	59	24.0
6. Exposure to radiation due to radioisotopes and x-rays	12	4.9	30	12.2	62	25.2	142	57.7
7. Spinal cord injuries while giving care to patients (back and neck pain and hernias)	4	1.6	14	5.7	63	25.6	165	67.1
8. Circulatory abnormalities due to standing for long periods of time (varicosis, edema)	1	0.4	6	2.4	57	23.2	182	**74.0**
9. Insufficient light, heat and air conditioning	4	1.6	30	12.2	91	37.0	121	49.2
10. Excessive noise	7	2.8	47	19.1	104	42.3	88	35.8
11. Burns due to sterilizers, hot water and hot steam	32	13.0	74	30.1	92	37.4	48	19.5

12. Injuries due to disrepair of the electrical system	27	11.0	76	30.9	63	25.6	80	32.5
13. Dermatitis due to disinfectants, soaps, detergents, etc.	5	2.0	25	10.2	88	35.8	128	52.0
14. Irritation of eyes, nose and throat due to disinfectants and antiseptics	4	1.6	40	16.3	84	34.1	118	48.0
15. Chronic poisoning due to exposure to medications, sterilization fluids and anesthetic gases, etc. for long periods of time	19	7.7	47	19.1	63	25.6	117	47.6
16. Latex allergy	14	5.7	72	29.3	78	31.7	82	33.3
17. Carcinogenic, mutagenic and teratogenetic effects of antineoplastic medications	25	10.2	32	13.0	59	24.0	130	52.8
18. Pneumonophthisis contamination	9	3.7	34	13.8	83	33.7	120	48.8
19. Blood, blood products and diseases contaminated with body fluids (HIV, hepatitis B and C)	2	0.8	13	5.3	46	18.7	185	**75.2**
20. Infection with global mortal viruses (EBOLA, MERS, etc.)	9	3.7	42	17.1	53	21.5	142	57.7
21. Catching childhood contagious diseases (polio, chicken pox, etc.)	24	9.8	82	33.3	83	33.7	57	23.2
22. Infected with hospital infection agents (MRSA, etc.)	4	1.6	19	7.7	65	26.4	158	64.2
23. Infected with herpes simplex, varicella zoster viruses	14	5.7	58	23.6	97	39.4	77	31.3
24. Infected with influenza (A) flu	4	1.6	27	11.0	92	37.4	123	50.0
25. Inadequate and unbalanced diet	7	2.8	21	8.5	71	28.9	147	59.8
26. Post-traumatic stress disorders due to patient groups	5	2.0	28	11.4	90	36.6	123	50.0
27. Tiredness due to long and intensive work hours in shifts	2	0.8	7	2.8	61	24.8	176	**71.5**
28. Sleeping disorders due to work conditions	4	1.6	24	9.8	49	19.9	169	68.7
29. Exhaustion due to work conditions	4	1.6	21	8.5	58	23.6	163	66.3
30. Exposure to physical and verbal violence from patients and patient relatives	2	0.8	28	11.4	71	28.9	145	58.9
31. Addiction risk due to heavy work conditions (alcohol, smoking, drugs)	25	10.2	48	19.5	70	28.5	103	41.9
32. Communication problems with heath care personnel	16	6.5	68	27.6	95	38.6	67	27.2
33. Limited social life	8	3.3	30	12.2	86	35.0	122	49.6

Table 2. Nurses' Injury and Disease Risk due to Working in Hospital Environment (N=119)

Problems	N*	%
Back problems	55	22.0
Varicosis (lower extremity)	41	16.4
Sharp object injuries	29	11.6
Orthopedic problems	23	9.2
Neck pain	20	8.0
Psychological problems	18	7.2
Scalpel injuries	9	3.6
Chronic throat infection	7	2.8
Skin problems	6	2.4
Tendinitis (wrist)	4	1.6
Hearing problems	3	1.2
Other (allergic asthma, endocrine problems, heart spasms, trigger finger, gastritis, communication problems)	35	14.0
Total	250	

*N increased because nurses gave more than one answer.

The monthly work hours of almost half of the nurses (48%) were 160-180 hours. Although it hardly seems fair, 36.2% and 15.8% work for 201 hours or more and 181-200 hours. Of them, 69.5% worked night shifts. Long work hours can cause stress and tiredness along with many other health problems and risky behaviors (Tascioglu, 2007; Caliskan and Akdur, 2001; Mohammed, 2013).

Of the nurses, 91.5% stated that they take preventive measures against risks. A study by Caliskan and Akdur found this rate to be 82.2%. In our study 50.2%, 11.2%, 91.0% and 3.9% of 233 nurses were vaccinated for tetanus, influenza-a, hepatitis B and pneumococcus, respectively. However, 13.1% were not vaccinated. That difference may have occurred due to time difference between the studies and vaccination of health care personnel along with the general population increased.

When the nurses' risk perceptions were analyzed, it was found that the first three dangers were ranked as blood, blood products and diseases contaminated with body fluids (HIV, hepatitis B and C), circulatory abnormalities due to standing for long periods of time (varicosis, edema) and tiredness due to long and intensive work hours in shifts, respectively. A similar study by Caliskan and Akdur found that 70% of the nurses had psychosocial problems such as tiredness, communication problems and post-traumatic stress disorder, although stress was not examined directly in our study.

The dangers that internal disease clinic nurses perceived most were blood, blood products and diseases contaminated with body fluids (HIV, hepatitis B and C), spinal cord injuries while giving care to patients (back and neck pain and hernias) and tiredness due to long and intensive work hours in shifts, respectively. The dangers that surgical clinic nurses perceived were circulatory abnormalities due to standing for long periods of time (varicosis, edema), blood, blood products and diseases contaminated with body fluids (HIV, hepatitis B and C) and injury from sharp objects such as needles, respectively. A similar study found that infections and contagious diseases

are perceived as the greatest risks (Caliskan and Akdur, 2001). This study results are consistent with our study results. A study that focused on the occupational risks of nurses in Florida found that injuries to the skeletal muscle system was the problem that nurses complained the most while the most remarkable subject was pinpricks by needles. This study also found that back aches are encountered the most (Mohammed, 2013). Another study conducted in Spain reported 407 occupational accidents regarding blood and blood products. Nurses experienced 61.6% of these accidents, and 84.5% occurred due to pinpricks, while 15.2% were due to accidental splashing and mucosal exposure (Blazquez et al., 2001). A study performed at Dubrava State University for 10 years (from 2002 to 2011) found that there were 451 blood and blood product exposure cases. Nurses and medical technicians experienced 55.4% of these cases, of which 27.9% and 23.5% happened while taking blood or during surgeries. Serological tests found that 1.6% and 2.2% of these cases HBV and HCV were positive. No professional infection cases were recorded (Serdar et al., 2013).

Spinal cord injuries due to standing for long periods of time (varicosis, edema), tiredness due to long and intensive work hours in shifts and sleeping disorders due to work conditions were found to be risk factors for perception and complaint levels in a study by Erdem et al. conducted with 219 health care personnel.

Some risk perception scores changed the two departments because the procedures used in internal disease and surgical clinics partially differ. For example, the risk of spinal cord injuries while giving care to patients (back and neck pain and hernias) was 92% in internal disease clinics, while this rate was 73% in surgical clinics.

The problems that the participating nurses experienced in hospitals were 22% back problems, 16.4% varicosis and 11.6% sharp object injuries (Table 2). In general, risky situations perceived by the nurses were infection risk and then spinal cord and circulatory problems due to standing for long periods of time. Another comprehensive study conducted with 1,719 nurses found that nurses complained about musculoskeletal system problems most, although needle injuries were also mentioned (Mohammed, 2013). Similarly, a study performed in a Kuwaiti hospital found that the prevalence of lifelong back problems for health care personnel is 70.9%, and the 24-hour point prevalence was 21.5% (Landry, Raman and Sulway, 2008). Another study of 928 nurses in Australia, New Zealand and the United Kingdom who had not experienced back problems before found that 34.4% of the nurses (319) experienced back problems and back problem risks, and for overweight nurses, these problems were found to be 1.15 times more frequent (2012). Of the nurses in another study, 62.9% had at least one venous stasis, and 54.4% had chronic venous stasis according to clinical, anatomical, etiological and physiopathological criteria. A significant relationship was found between the mean length of time spent at the hospital each day and ankle sizes (Diken, Yalcinkaya and Aksoy, 2016).

Of the nurses, 81.7% had received training about occupational risks. Although 91.5% took measures against occupational risks, they did not meet the requirements for effective vaccinations because they did not have hepatitis B vaccinations (almost 10%) or check antibody titration (25.2%). At the same time, most of them had experienced some of 250 preventable health problems.

Conclusion

This study was conducted to determine hospital nurses' knowledge levels and perceptions regarding occupational risks arising from hospital environment. It was found that most of the participants had received training for occupational risks and preventive measures against risks. The three main risks that nurses perceived were blood, blood products and diseases contaminated with body fluids, circulatory disorders due to standing for long periods of time and tiredness. Despite varying ranks, the nurses experienced back problems, varicosis and sharp object injuries. Most of the nurses only had hepatitis B vaccinations and rate of having other vaccinations remained low. Although nurses knew the risks, they did not take measures to prevent health problems and they experienced them. Legal regulations that inspect training, health care personnel units and institutional measures in terms of occupational risks and hazards.

Acknowledgement: Thanks for nurses who participate in our study.

References

Blazquez R.M., Moreno S., Menasalvas A., Guerrero C., Novoa A., Segovia M.(2001) "Occupational exposures to blood-borne pathogens in health care workers", Enferm Infecc Microbiol Clin. Apr;19(4):156-60.

Caliskan D., & Akdur R. (2001). Occupational Risks of Nurses Working at Ankara University Faculty of Medicine in Comparison with Their Notifications. Ankara University Medical Faculty Magazine, 54(2): 135–42. (in Turkish)

Diken A.I., Yalcinkaya A. & Aksoy E. (2016),"Prevalence, presentation and occupational risk factors of chronic venous disease in nurses" Phlebology, Vol 31, Issue 2.

Erdem O., Turhan F., Bakar C. & Akgun H.S. (2005). Evaluation of Occupational Risk Factors and Behaviors of Başkent University Employees. XI. National Public Health Days: September 28, 2005, October 01; Kizilcahamam. Turkey. Ankara, Zes Presentation & Organization; 418. (in Turkish)

IAEA. (2010). Safety Culture, International safety Advisory Group. Safety Series 75-INSAG-(Vienna: IAEA).

Ikademi Web Sitesi. (2011). http://www.ikademi.com/guvenligi-isci-sagligi/280-isci-sagligi-ve-guvenliginde-egitimin-onemi.html, Date of access: 22.05.2017.

Kiran S. (2003). Levels of Encountering Occupational Factors and Assessment of Disease-Complaint Relation in Health Care Workers (Unpublished Doctoral Thesis). Izmir: 9 Eylul University Health Sciences Institute. (in Turkish)

Kokturk M., Kursun S., Yavuz M. & Dramali A. (2003). Investigation of Cutting Drill Tool Injuries in Hospital Health Care Personnel, pp: 305-316, 4th National Congress of Surgery and Operating Room Nursing, 22-26 October, Izmir. (in Turkish)

Landry M.D., Raman S.R., Sulway C., Golightly Y.M. & Hamdan, E. (2008), " Prevalence and Risk Factors Associated With Low Back Pain Among Health Care Providers in a Kuwait Hospital", SPINE, Volume 33, Number 5, pp 539–545.

Mohammed S. (2013). Evaluation of Occupational Risk Factors for Nurses and CNAs: Analysis of Florida Workers ' Compensation Claims Database. University Of South Florida.

NIOSH. (2014). Guidelines for Protecting the Safety and Health of Health Care Workers Revision, www.cdc.gov.niosh/hcwold0.html. Date of access: 18.04.2017

OSHA. (2008). Hospital Investigations: Health Hazards. OSHA Technical Manual – Section VI: Chapter 1. www.osha.gov/dts/osta/otm/otm_vi/otm_vi_1.html . Date of access: 11.04.2017.

Ozkan O. (2005). Identification of Dangers and Risks and Risk Perceptions of Work and Working Environment of Nurses Working at the Hospital (Unpublished Doctoral Thesis). Ankara: Hacettepe University Health Sciences Institute. (in Turkish)

Serdar T., Derek L., Unic A., Marijancevic D., Markovic D., Primorac A. & Petrovecki M.(2013), "Occupational Exposures in Healthcare Workers in University Hospital Dubrava-10 year follow-up study", Cent Eur J Public Health, Sep;21(3):150-4.

Tascioglu I. (2007). Luleburgaz State Hospital and Luleburgaz 82nd Year State Hospitals Risk and Emergency due to Work and Working Environment and Detection of Perceived Levels of Nurses at These Risks. T.C. Trakya University Health Sciences Institute, (Unpublished Master Thesis) (in Turkish).

Zhao I., Bogossian F. & Turner C. (2012), "The Effects of Shift Work and Interaction Between Shift Work and Overweight/Obesity on Low Back Pain in Nurses Results From a Longitudinal Study", Journal of Occupational and Environmental Medicine, Volume 54, Number 7, July: 820-825.