

A STUDY ON KNOWLEDGE AND PRACTICES RELATED TO PREVENTION OF NEEDLE STICK INJURIES AMONG NURSES IN INTENSIVE CARE UNITS OF KANDY TEACHING HOSPITAL

EWAIM Siriwardana¹, WNS Herath², YMWDK Yapa³ and K G P K Munidasa⁴

¹Registered Nurse, Kandy, Sri Lanka

^{2,3}Registered Nurse, Teaching Hospital, Kandy, Sri Lanka

⁴Department of Nursing, Faculty of Health Sciences, Open University of Sri Lanka

Corresponding author; <priyangamunidasa@gmail.com>

Abstract

Needle stick injuries (NSIs) in healthcare settings are a global issue. Risk of transmitting variety of blood borne pathogens to a health care worker is greatly increased with the exposure to NSIs. Incidence is high among nurses as they represents the majority of health care team of any country. This incidence is considerable high in a country like Sri Lanka which health care delivery is mainly take part by state in funded hospitals. Therefore, the evaluation of knowledge and practices regarding NSIs of nurses is important for planning to maintain their occupational health. The aim of this study was to assess knowledge and practices related to prevention of needle stick injuries among intensive care nurses. A quantitative descriptive study was designed and 136 randomly selected nurses were recruited into the study. A self-administered questionnaire was used as the tool for collecting data. Data was analysed using Microsoft Excel spread sheet. A total of 45% of study participants had sustained at least one (Needle Stick Injury) during previous year. Mean scores for knowledge and practices regarding prevention of NSIs were 63.5 % and 72.4 % respectively. At the knowledge assessment phase, 83 % nurses reported NSIs to infection control unit of the hospital. 62 % of nurses follow post exposure guidelines after NSIs. Practice assessment phase revealed that 64 % nurses are not recapping the needles after using. The questions for assessment of usage of gloves for venepuncture revealed 57 % of nurses using gloves every time of venepuncture while 28% using occasionally and 15 % not at all. Findings of this study shows high incidence of NSIs among ICU nurses of Kandy Teaching Hospital. Knowledge and Practices related to prevention of NSIs were inadequate compared to universal standards. Level of knowledge and practices should reach 100 % to achieve zero risk.

Key words: Needle Stick Injuries (NSIs), Intensive Care Nurses, Occupational Health

I. INTRODUCTION

Needle stick injuries (NSIs) in healthcare settings are global issue. A Needle Stick Injury can be defined as a penetrating stab wound from a needle (or other sharp object) that may result in exposure to blood or other body

fluids. The main concern is exposure to the blood or other body fluids of another person who may be carrying infectious disease. When a Health care provider is exposed to a (needle stick injury) the risk of transmitting various types of blood borne pathogens such as Human Immunodeficiency Virus (HIV), Hepatitis B (HVB) and Hepatitis C (HVC) from an infected patient to that person is greatly increased (American Nurses Association, 2008). These injuries occur during variety of diagnostic and therapeutic procedures such as surgical procedures, blood drawing and intravenous line administration, suturing of wounds and checking capillary blood sugar. Thus nurses who assist and engaged in such procedures are most vulnerable to NSIs compared to other categories in health care system. (Needle Stick Injuries) can be prevented by applying Universal Precautions as a safety measure (Deisenhammer, 2006). Therefore, it is an urgent matter to improve nurses' knowledge and practice on universal precautions throughout their career. The literature review revealed that there are fewer studies regarding knowledge and practices among nurses on prevention of NSIs in Sri Lankan context. Therefore, a study on Sri-Lankan nurses' knowledge and practices regarding prevention of NSIs is a necessity. The findings of this study may help to understand the level of current knowledge and practices regarding prevention of NSIs of ICU nurses in Kandy Teaching hospital. Also it may help the authorities to take remedial actions if necessary to combat this problem. Thus, the main purpose of this study is to assess the ICU nurses' knowledge and practices regarding prevention of NSIs in Kandy Teaching Hospital.

II. Methodology

Quantitative descriptive design was used for this study. Following an ethical approval from the Ethical Review Board of the Teaching Hospital Kandy, study was conducted in Teaching Hospital, Kandy during the month of March 2016. Simple random sampling technique was used for selecting study participants while data collection was done with the aid of a self-administered questionnaire. The questionnaire was prepared considering published literature and expert opinions. It was piloted among 10 nurses at a surgical ward in Teaching Hospital, Kandy. The sample size was decided by using the table developed by a sample of 136 nurses was

selected randomly from nurses working in all ICUs in TH, and they were requested to fill pretested questionnaire. The data analysis was done using Microsoft Excel Spread Sheet. Mean scores for level of knowledge and practices were calculated. Also, Percentages were calculated and interpreted for each area of knowledge and practices.

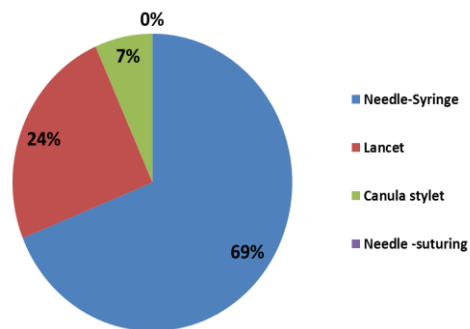
III Results

Table 1: Demographic Characteristic of Nurses

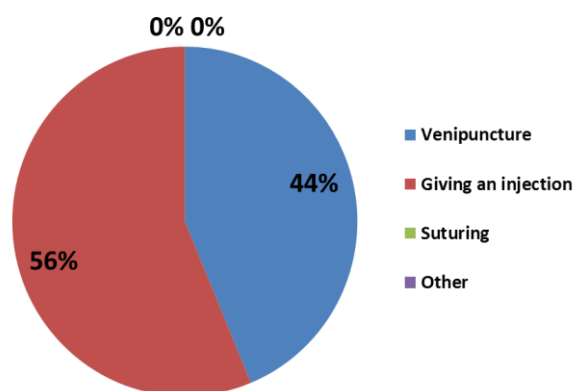
Demographic characteristic	Number (%)
Sex	
Male	27 (21)
Female	103 (79)
Age(Y)	
20-30	12(9)
30-40	79(61)
40-50	36(28)
>50	3(2)
Experience as a registered nurse	
<1years	3(2)
1-5 years	23 (18)
5-10 years	47(36)
10 years	57(44)
Experience in a Intensive Care Unit	
1< years	20 (15)
1-3 years	33 (25)
3-5 years	29 (22)
5 years	48 (38)
Highest professional qualifications	
Diploma in nursing	117(90)
Degree	13 (10)
Post graduate degree	0

Table 1 shows some demographic characteristics of nurses. We have selected one hundred (136) participants for the study and 130 of them participated and filled up the questionnaires. Of the 130 nurses, 79(61 %) were aged between 31 to 40 years, 103(79 %) were females and 27(21 %) were males. 57 (44 %) of the subjects had been working as a registered nurse for more than 10 years. Also, 48(38 %) subjects had been experience in a ICU for more than five years. 117(90 %) were diploma holders and (13)10 % were BSc degree holders.

Nurses’ Incidence and characteristic of NSIs of previous year



Material for NSIs



Type of procedure for NSIs

A total of 58 (45 %) nurses had sustained NSIs during the previous year. 39 (31 %) and 14 (11 %) experienced NSIs from needle-syringes and lancets respectively. 37 (29 %) of NSIs occurred during Injection procedures while 21 (16 %) of them sustained them during venepuncture.

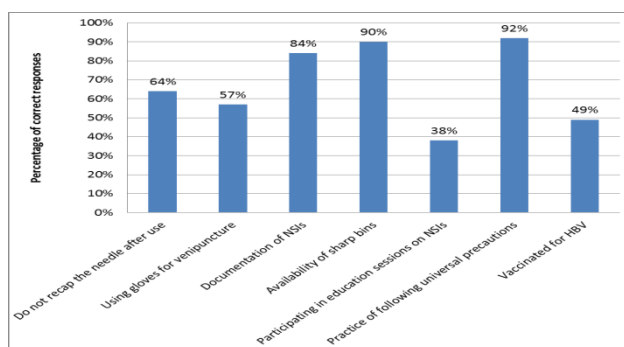


Figure 1 Knowledge of preventive measures regarding needle stick injuries

48% nurses knew all the time diseases are transmitted by NSI. 56% nurses reported mostly disease are transmitted by NSIs. 75% subjects rated the NSI as high risk, 8(6%) nurses perceived as low risk. 84% nurses mentioned there is more possibility of HBV transmission by NSI. 83% nurses reported the incidence to Infection Control Unit while 22(17%) respondents viewed reporting place as sexually transmitted diseases clinic. Most commonly after NSI 80 (62%) nurses followed each step of post exposure guideline of NSI and 17 (13%) nurses mentioned they ignore and continue work. 44 (34%) nurses knew percentage of transmission of HIV and HBV owing to Needle Stick Injury and majority did not know. Mean scores of knowledge level regarding prevention of NSIs is 63.5.

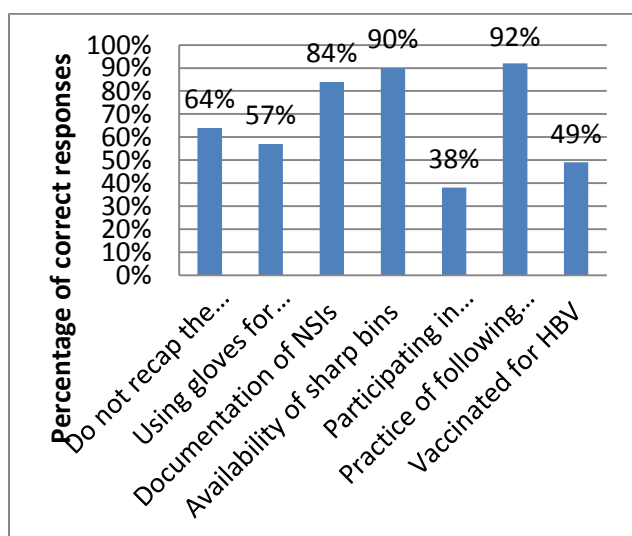


Figure 2 Nurses 'practices of preventive measures regarding needle stick Injuries

Table 2 shows practices of nurses' preventive measures regarding needle stick Injuries 82 (63%) nurses do not recapped needles after used. 108 (83%) nurses were of the impression that needle should not be recapped after use. 74 subjects (57%) were using gloves for venepuncture procedures all the time while 36 (28%) were occasionally and 20(15%) not used at all. 84% nurses have documentary system and 90% have sharp bins at their units. 92% followed universal precautions. Also, 64 (49%) subjects had been vaccinated against hepatitis B, while majority 66 (51%) were not vaccinated against hepatitis B. Majority of nurses 81 (62%) had not attend any education session on prevention of NSIs after the basic training. 125 (96%) subjects wanted more education sessions regarding prevention of NSIs. Mean scores of practice regarding prevention of NSIs is 72.4.

IV. Discussion

The discussion mainly focuses on the nurses' knowledge, practices and incidences on NSIs. To understand the results of this study, major findings will be discussed in

relation to meet the objectives such as nurses' knowledge towards NSIs, nurses' current practices related to NSIs and incidences of NSIs among nurses.

A. Incidences of NSIs among nurses

A total of 58 (45%) of the study population had sustained at least one Needle Stick injury throughout previous year. This prevalence can be compared with other studies in Sri-Lanka and other developing countries which show the same trend with different causes according to their local practices. Smith et al (2006) also found that 46 % nurses had NSIs among health care workers, Ehsani et al. (2003) have reported, 45.12 % nurses experienced NSIs in Iranian Teaching Hospital and above incidence rates are approximately similar to present study. In this study 58 (45 %) was considerably higher than study which was done in Srilanka sample including (205) nurses, 14% nurses experienced NSI (Karawita, 2012),. Ebrahimi, 2008, the incidence of 63.3% NSIs among a sample including 180 nursing workers in a university hospital in Shahroud, Iran .It is similar to study done Injection procedure is the most common procedure that NSIs are occurred. Our study syringe needle is the major cause of needle stick injuries in nurses (72%).Smith et al. (2006) also stated a syringe needle as major cause of NSI.

B. Nurses knowledge towards prevention of NSIs

The participants of the present study were well educated, with three years nursing diploma.

Most of them had more than one year Intensive Care Unit (ICU) experience. A few participants were having degree qualifications. However some specific areas of nurses' knowledge regarding prevention of NSIs are low.

In this study, 37 % of nurses were aware of the fact that all the time diseases can be transmitted by (needle-stick injury), but about 20 % were believed diseases sometimes transmitted and 43 % believed mostly diseases transmitted by NSIs. 75 % nurses perceived NSIs as high risk, but 6% perceived it as low risk. It is a knowledge gap related to NSIs. Almost 90 % of all the needle stick injuries occurred in nurses of third world countries, where there is lack of knowledge, resources and training.(Zafar et al.,2008) However, the vast majority of nurses had better knowledge about the possibility of transmission of HBV than HIV through NSIs. Majority (83 %) mentioned incidences are reported to Infection control unit, and 17% to the sexual transmitted clinic. It is similar to Sri Lankan study in which 83.3 % reported to Infection control unit. (Karawita et.,al). 62 %nurses believed that they should seek Post Exposure Prophylaxis (PEP) when they get needle stick, but 13 % of the participants reported that they ignore and continue of work. Similar findings of Karawita (2010) showed, 90 % of nurses seek PEP after NSIs and others neglect it. The result of this study also noticed that nurses had better knowledge about some facts and less knowledge about some. Findings show knowledge regarding prevention of NSIs among nurses have different thoughts. The result of this study shows

that ICU nurses had average knowledge related to prevention of NSIs. As NSIs can cause serious chronic diseases like Hepatitis B and HIV/AIDS, it is expected that knowledge among nurses on NSIs should be reached 100%. The possible reasons for this might be that the nurses have not updated their knowledge after their basic nursing education and non-availability of NSIs related in-service educational programs for nurses in hospitals.

C. Nurses' practices towards NSIs

This study identified majority of nurses do not recapped and 83% of subjects viewed recapping as malpractice. When asked about safe work practices, only 57% people used gloves all the time, for venepuncture procedures. While a study conducted by Gurubachariya in Kathmandu 23% Health Care Workers were in the habit of using gloves for venepuncture procedures all the time (2003). Irrational and unsafe injection practices are rife in developing countries (Rajasekaran et al., 2003) 16% nurses had not documentation system and 10% participants hadn't sharp bins for the units. It is the responsibility of the hospital authorities to provide such basic requirements which are essential to protect healthcare workers at the work place. While the majority of the participants (92%) followed Post Exposure Prophylaxis, but more than half (51%) of the nurses were not immunized against Hepatitis B. This information highlights the failure of infection control program. 62% never received training for needle stick injuries and 96% felt the need for further education. Results of the study identified safe practices and some malpractices in reported practices and priority need of education sessions. Although nurses are expected to follow 100% of standard precautions, this study reveals that it is at average level with regard to NSIs in high risk health care settings like ICUs.

V. Conclusion

This study showed a considerably high rate of needle stick injuries among ICU nurses in TH Kandy. The results of this study show an average level of knowledge and practices related to NSIs among ICU nurses. It is not adequate to achieve the zero risk from NSIs, because reaching 100% is the internationally accredited standard. It is recommended that there should be regular in-service training programmes for ICU nurses to improve their knowledge and practices related to prevention of NSIs.

ACKNOWLEDGMENT

I would like to thank; the subjects involved in this study for their co-operation, Mrs. KWPK Munidasa for her supervision throughout the study and all the staff members of the department of nursing at OUSL for their valuable contributions and support.

References

- American Nurses Association (2008). Workplace safety and needle stick injuries are top concerns for nurses. Retrieved from <http://www.nursingworld.org>
- Das, L., D., K. (2008). *Designs of Social Research*, New Delhi, Rawat publication.
- Deisenhammer, S., Radon, K., Nowak, D., Reichert, J. (2006) Needle stick injuries during medical training. *Journal of Hospital Infection* ;63:263–267.
- Ebrahimi H. Khosravi A (2007). Needle stick Injuries among Nurses. *J Res Health Science*;7(2):56–62.
- Ehsani, S., R., Mohammadnejad, E., Hadizadeh, M., R., Mozaffari, J., Ranjbaran, S., Deljo, R., Deljo, S. (2013) Epidemiology of Needle Sticks and Sharp Injuries Among Nurses in an Iranian Teaching Hospital *Arch Clin Infect Dis.* 8(1): 27-30.
- Gurubacharya DL, Mathura KC, Karki DB. Knowledge, attitude and practices among health care workers in needle stick injuries. *Kathmandu Univ Med J* 2003;1(2):91–4.
- Karawita D., A., I., Gunathilake M., P., W., Hettiarachchi, I., Ariyaratne K., A., M., Ariyaratne L., Abeywardena M., L., D., S., S. (2012). The knowledge, practices and the extent of occupational exposures to blood among healthcare workers in Colombo; A cross sectional study: *The Sri Lanka Journal of Venereology* 3(1) 23-28.
- Rajasekaran, M., Savignanam, G., Hirumalaikolundusubramanian, P. (2003). Injection practices in Southern part of India. *Public Health* ; 117: 208-213.
- Smith, D., R., Leggat, P., A. (2005). Needlestick and sharps injuries among nursing students. *J Adv Nurs.*; 51(5):449-55.
- Zafar, A., Aslam, N., Nasir, N., Meraj, R., Mehraj, V. (2008). Knowledge, attitudes and practices of health care workers regarding needlestick injuries at a tertiary care hospital in Pakistan. *J Pak Med Assoc* ;58(2):57–60.