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Haris Habib, Ejaz Ahmed Khan, Anwar Aziz

International Journal of Collaborative Research on Internal Medicine & Public Health
Vol. 3 No. 2 (February 2011)

Featured Article from IOMC 2011 Conference


Article URL: http://iomcworld.com/ijcrimph/ijcrimph-v03-n02-01.htm

Correspondence concerning this article should be addressed to Dr. Haris Habib; Health Services Academy, Islamabad, Pakistan; E-mail: drharishabib@yahoo.com

Paper publication: 06 April 2011
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Haris Habib (1) *, Ejaz Ahmed Khan (1), Anwar Aziz (2)
(1) Health Services Academy, Islamabad, Pakistan
(2) Principal State School of Nursing, Mirpur, AJK, Pakistan

* Corresponding author; Email: drharishabib@yahoo.com

ABSTRACT

Background: Needle stick injuries remain the main cause of Hep B, Hep C and HIV which lead to mortality and morbidity in health care providers especially in nurses all over the world. Although needle stick injuries have been well studied in developed countries, data from developing countries is limited.

Aim & Objectives: To estimate the prevalence of needle stick injuries among nurses and its associated factors in public sector tertiary care hospitals of Pakistan.

Methods: This cross sectional survey was conducted in 3 major tertiary care hospitals of Rawalpindi, Pakistan. Study duration was from March 2010 to May 2010 (3 months). Two Hundred and Sixteen (216) nurses were selected by simple random sampling with proportionate sampling. All those registered nurses who were working in allied hospitals of Rawalpindi and involved in clinical work were included, while all those who were on administrative positions, students, retired or on maternity leave were excluded from the study. Pre structured questionnaire was used and data was collected by questionnaire having optional choices and few open ended questions. The questionnaire was piloted among thirty nurses in a tertiary care hospital and their comments were incorporated accordingly to redesign the final questionnaire. The data was analysed using SPSS 16.

Results: Sixty Seven (67%) of nurses got needle stick injury during job. Almost all (99%) nurses said that they didn’t report their injury because of no reporting system in their hospital (p value < 0.05). Injection and needles (72%) are the most injury causing instrument and needle stick injuries mostly occurred (81%) at bedside and ward (p value < 0.05)). Sixty six percent (66%) of nurses said that they didn’t attended any educational session, seminar or workshop related to needle stick injuries during their job.

Conclusion: The frequency of needle stick injuries among nurses is quite high in public sector hospitals of Rawalpindi Pakistan. Non-reporting and less health education are the main factors leading to needle stick injuries.

Keywords: Prevalence, Needle stick injuries, Public sector hospitals, Registered nurses, Pakistan
Introduction

Accidental exposure to blood borne diseases through needle stick injuries (NSI) is very common among health care workers. They are more prone to hospital acquired transmission of blood pathogens via contaminated needles. Almost 90% of all the needle stick injuries occurred in nurses of third world countries where there is lack of knowledge, resources and training. 2 millions Needle stick injuries are reported in health care providers every year. But these are only the reported cases and about 40-70% cases of needle stick injuries are unreported in developing countries. A European survey of Needle stick injury found that nurses (91%) are the main group among health care providers who are more exposed to needle stick injuries as compared to doctors and phlebotomist. Needle stick injuries may increase hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV) transmission risk in the healthcare workers and the most vulnerable group is nurses. According to the World Health Organization, 16000 Hepatitis C (HCV), 66000 Hepatitis B (HBV) and 1000 cases of HIV may have occurred worldwide in the year 2000 among health care worker especially nurses through their exposure to needle stick injuries. According to World Health Organisation (WHO) regional classification, Pakistan comes in Eastern Mediterranean Region D (EMR D). Unfortunately this region has the highest rate of needle stick injuries as compared to the entire world. An Indian study also showed that most of the needle stick injuries occurred in nurses (45%) among health care worker. This study further reveals that among nurses who got NSI Twenty three (23) were positive for Hepatitis B surface antigen, 15 were positive for HIV and 12 were positive for HCV. The under-reporting of NSI events appears to be common within hospital environments; with surveys suggesting that ≤ 80% of nurses do not officially report their NSI incidents.

Method

This cross sectional survey was done in three Public Sector tertiary care hospitals with total bed strength of seventeen hundred and seventy five (1775) from April 2010 to May 2010. Study approval was taken from Institutional Review Board committee of Health Services Academy Islamabad. An informed verbal consent was taken from participants prior to administration of the questionnaire. All those registered nurses who were working in allied hospitals of Rawalpindi during study period involved in clinical work were included in the study. Those nurses who were students, retired, on sick or maternity leave or on administrative position were excluded from the study. A total of two hundred and fifteen (215) nurses participated in the study. A pre structured questionnaire was used as an instrument and some of its parts were modified from international studies on NSI. The questionnaire was piloted among 30 nurses in one of the tertiary care hospitals of Rawalpindi and their comments and suggestions were adjusted accordingly to redesign the final version of the questionnaire. The questionnaire consisted of a simple tick box format with few open ended questions and with sections for demographic items, type of device that caused the injury, number of needle stick injuries, causes, training, reporting of injuries, personal protective equipment, working conditions and duty shifts. The data was analysed using SPSS version 16. Frequencies were calculated for all variables which gave the numbers and percentages of responses of all variables. The data was then analysed by using cross tabulation and chi square was applied to find
out the association. The significance level was taken as 0.05.

**Results**

We have selected two hundred and sixteen (216) participants for the study and all of them participated and filled up the questionnaire. The mean ages of the nurses were 30 ±5 years (see Table 1). Majority of nurses (39%) sustained needle stick injuries more than once, while only twenty five (11%) nurses sustained NSI once in their life (p value< 0.05). Two third (81%) of nurses experienced NSI in ward or bedside whereas only few got NSI in Emergency Room (9%) and Operation Theatre (6%). Needle is the most injury causing instrument (48%) followed by ampoule (18%) and blade (1%).

One third (33%) of nurses experienced NSI in morning shift where as other sustained NSI in evening (15%) and night (6%). Almost all the nurses (99.3%) didn’t report their injury to hospital administration and 99% of those nurses who didn’t report their injury consider absence of reporting system in the hospitals as main cause of non reporting the NSI incidents (p value < 0.05). More than half of nurses (55%) were attending 11-30 patients per day whereas one fifth (20%) of the nurses were attending more than 50 patients.

**Discussion**

This study is the first to estimate the prevalence of NSI in public sector tertiary care hospitals of Pakistan. Needle stick injuries are a serious problem among health care workers in many countries. All health care providers are at risk of needle stick injuries at their work environment but nurses are at high risk because of their job nature. Many studies have been conducted on nurses, physicians and other technical and sanitary staff regarding needle stick injuries but nurses have highest rates of NSI among them. This is because of having direct contact of nurses with patient and low nurse to patient ratio.

In this study a high rate of needle stick injuries among the nursing staff working at a Tertiary Care Hospitals Rawalpindi Pakistan was observed. A total of 67% of the study population had sustained at least one needle stick injury throughout their life. This high prevalence can be compared with other studies in developing countries which show the same trend with different causes according to their local practices. But still in Pakistan the rate of NSI is comparatively higher and it might be higher due to the reason that we don’t have proper reporting system to have proper surveillance and management strategy. Many published studies reveal that 40-80% of NSI are underreported.

In our study syringe needle is the major cause of needle stick injuries in nurses (72%). Other studies also stated about needle as major cause of NSI. This fact is because of high injection practices by physicians in health setup. Another study demonstrates that about 26% of nurses using recapping method which might be one of a cause for NSI. Likewise Iranian and Saudi Arabian studies also show high incidence of NSI due to recapping. Majority of nurses sustained needle stick injuries 2-5 times where as only 17% have sustained one injury. An African study revealed 57% sustained NSI more than once. Ward or bedside is another significant predictor towards needle stick injuries in our study. Most of the injuries happened during medication by nurses on bedside or in ward. Smith and Leggat also predicted in their study that ward and bedside is the most common location for needle stick injury to occur. In Pakistan’s health setup only emergency services are provided after day time in health care facilities which causes high influx of patients in day time for outdoor treatment and
this indirectly causes high incidence of needle stick injuries due to heavy workload on nurses. In comparison, developed countries like Japan have the same system and that’s why they have the same trend of more needle stick injuries in day time. Due to absence of occupational health departments in public sector tertiary care hospitals, it is very difficult to report the injury to any concerned authority for immediate action and recording keeping. Our study reveals that 99% of nurses didn’t report their injury to any concerned authority and they considered non availability of effective reporting system as main cause for that. It is a dilemma that developing country like Pakistan who has very high prevalence of needle stick injuries has no reporting departments in their tertiary care hospitals. If the injury would not be reported than it’s very difficult to make any strategy for a problem without knowing its severity and consequences. There is a desperate need for having effective occupational health departments in all health care facilities that will monitor and record such kind of events.

Conclusion

The study demonstrates a high rate of needle stick injuries among nurses in Pakistan. The strongest risk factor is absence of reporting system in hospitals that’s why majority of nurses couldn’t report their injury. This study suggested that needle stick injury can be considerably reduced in developing country environment by maintaining a proper occupational health department in hospitals which can report injuries, make recommendations and create awareness regarding any disease or disability due to needle stick injury. Further studies are needed to investigate that how occupational department can work effectively and according to the need of nurses so that they report the injuries conveniently without any hesitation.

Acknowledgment

We are thankful to all nurses of allied hospitals of Rawalpindi, Pakistan who participated in our study. We are also grateful to the medical and nursing superintendent of allied hospitals, who facilitate us in data collection.

References


Table 1: Demographic Characteristics of the Participants (N=216)

<table>
<thead>
<tr>
<th>Description</th>
<th>N</th>
<th>Number</th>
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<tr>
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<td>31-40 years</td>
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Procedure causing needle stick injuries among nurses

Figure 1: Pie Chart showing the most common procedure causing Needle Stick Injuries among nurses
Figure 2: Bar graph showing factors associated with Needle stick Injuries among nurses.