Knowledge, Attitude and Practices about Needle Stick Injuries in Healthcare Workers

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Abstract

Objectives: To assess knowledge, attitude and practices about needle stick injuries in health care workers.
Study type, settings and duration: Hospital based study carried out at Pakistan Institute of Medical Sciences, Islamabad, from August 2010 to November 2010.
Subjects and Methods: A self administered 19 items questionnaire was prepared which contained information about needle stick injuries, its awareness, frequency of injury and the protocols that were followed after an injury had occurred. These questionnaires were given to 500 health care workers working in different wards and theaters of the hospital after obtaining their informed written consent. The health care workers included doctors, nurses and paramedical staff of Pakistan Institute of Medical Sciences, Islamabad. The data was entered and analyzed using SPSS version 15.
Results: A total of 500 health care workers filled the questionnaire and returned it. Out of these 416(83.2%) reported ever experiencing needle stick injuries in their professional life. Health care workers working in Emergency department were most frequently affected (65%) followed by those working in different wards (27%) and operation theatre (8%). Most (93.6%) workers had knowledge about needle stick injuries and only 6.4% were not aware of it. Needle stick injury occurred from a brand new (unused) syringe in 51.2% cases, while in 32.8% cases, the needle caused an injury after it had been used for an injection. In 5% cases, injury occurred with blood stained needles. The commonest reasons for needle injury in stick injuries were heavy work load (36.8%) followed by hasty work (33.6%) and needle recapping (18.6%). About 66% health care workers were already vaccinated against hepatitis B. Only 13% workers followed universal precaution guidelines of needle stick injuries and no case was reported to hospital authorities.
Conclusions: Health care workers had inadequate knowledge about the risk associated with needle stick injuries and do not follow standard preventive measures.
Policy message: A standard protocol regarding the training and compliance to follow preventive measures should be followed in all health care institutions.

Key words: Needle stick injuries, hepatitis B, hepatitis C, universal precaution guidelines.

Introduction

Needle stick injuries mean introduction into the body of health care providers during the routine performance of their duties, of blood or other potentially hazardous material by a hollow bore needle or sharp instruments e.g. needles, lancets and contaminated broken glass. More than thirty different micro organisms have caused documented occupational infections following exposure to blood or body fluids, in health care workers or hospital laboratory personnel. Many other pathogens have been transmitted via needle stick injuries in clinical practice and research laboratories, the most important of these are Hepatitis B virus (HBV), Hepatitis C virus (HCV) and Human Immunodeficiency Virus (HIV). In 1990s, between 600,000 and 800,000 needle stick injuries were believed to occur annually with almost 2000 per day, thus resulting in more than 1000 health care workers contracting serious blood-borne diseases, such as HCV or HIV.

Unreported, unnoticed exposure can also occur because of manifestations of other sharp instruments or exposure of mucous membrane to infected bodily fluids and can result in transmission of infectious diseases. To exact quantify the risk of disease transmission following mucocutaneous membrane is difficult because many go un-reported as 60-95 % of incidence among hospital staff fails to be reported. Even though the risk of injury per use is low, so many needles are used in hospital settings that even a very low injury rate translates into an imposing number of injuries.

The World Health Organization (WHO) defines ‘a safe injection’ as one that does not harm the recipient,
does not expose the provider to any avoidable risk, and does not result in any waste that is dangerous to the community. Irrational and unsafe injection practices are rife in developing countries like Pakistan. More than 80% of the needle stick injuries can be prevented through the use of safety devices and effective safety programmes. Many international studies advocate the use of applying “Universal precautions” as a safety measure.

In Pakistan a study done in 300 health care workers at Holy Family Hospital Rawalpindi, revealed their inadequate knowledge about the risks associated with needle stick injuries. While another study from Rawalpindi Medical College concluded that needle stick injuries due to syringe recapping and surgical stitch needle were the frequent causes of injury in doctors working in tertiary care hospitals of Rawalpindi who work under stressful and overworked circumstances.

The present study was done to find out the knowledge, attitude and practices of needle stick injuries amongst health care workers in our set up.

Subjects and Methods

Five hundred health care workers participated in the survey after taking informed consent. Approval for the study was taken from Hospital Ethical Committee. Health care workers included doctors, nurses, paramedical staff, laboratory workers and operation theatre technicians working in various departments of Pakistan Institute of Medical Sciences, Islamabad from August 2010 to November 2010.

A 19 item questionnaire based on universal precaution guidelines was given to the health care workers. The questionnaire was not gender or age specific. The language of questionnaire was English, however help was provided where needed. Health care workers were selected on the basis of their availability and almost all disciplines of the hospital were covered for collection of data. Two senior postgraduate residents of general surgery specialty were deputed to give the questionnaire to the health care workers and collect it once completed. They visited all the wards of the hospital and provided the questionnaire to each health care worker who was willing and available at that time. Health care workers were given two days to complete the questionnaire. The study objectives and other details were explained to them at the time of distribution of the questionnaire.

The questionnaire gathered information about the frequency of needle stick injuries, its causes, the commonest workplace, responses after injury, prevention practices, vaccination status and awareness about universal precaution guidelines.

The filled questionnaire was edited and entered in SPSS Version 15. The data was analyzed in the same software for frequency and percentages.

Results

Out of 500 Health care workers 256(51.2%) were doctors, 144(28.8%) were nurses, 56(11.2%) were operation theater technicians and dressers and 44(8.8%) were laboratory workers. Needle stick injuries were reported by 83.2% health care workers which included 90.7% doctors, 93% nurses, 54% laboratory technicians and 89% operation theater technicians.

Majority of the workers i.e. 468(93.6%) were aware of the definition of needle stick injuries and the diseases caused by them as 385(77%) knew about mode of spread of hepatitis B and C, 145(29%) knew about post exposure prophylaxis and 65(13%) were aware of the universal precaution measures.

Four hundred and sixteen (83.2%) subjects had history of needle stick injuries and most of them belonged to surgical departments i.e. 280(56%) followed by those belonging to medical departments. Common workplaces of needle stick injuries were Emergency department in 325(65%) instances, operation theatre in 40(8%) and wards in 135(27%) cases.

Two hundred and fifty six (51.2%) health care workers got injury with a sterilized/unused needle, while in 164(32.8%) cases, the needle had been used before they got injury. In 28(5%) cases the needle was clearly blood stained.

The heavy work load was the leading reason of needle stick injuries in 184(36.8%) cases, followed by hasty work in 168(33.6%), needle recapping in 93(18.6%) and while disposing sharps in 55(11%) cases.

Following needle stick injury, 460(92%) cases immediately squeezed out blood from the prick site and the same number washed the site while 40(8%) neither washed the area nor pressed/squeezed blood from the site of injury. One hundred and sixteen (23%) workers washed the site of needle stick injuries with antiseptic solution and 384(77%) did not do so.

Only 204(40.8%) health care workers were able to trace the serology of the patient from whom they got the needle stick injury while 296(59.2%) workers did not know the HBV or HCV status of the patient. Immune status of the patient was checked in 212(71.6%) cases after injury. About 66% health care workers were vaccinated against Hepatitis B and only 08(1.6%) had their antibody titres checked.

Mode of spread of HBV and HCV was known in 384(77%) workers while 116(23%) did not know it. Only 144(29%) health care workers knew about post exposure prophylaxis while 356(71%) did not know what prophylaxis were to be taken following an accidental needle stick injury. None of the cases of needle stick injuries were reported to hospital authorities.

Only 64(13%) workers knew about universal guidelines regarding precautions about needle stick injuries. Though 444(89%) health care workers said that
they always used disposable sharps but only 20(4%) workers always used gloves while putting Intravenous (IV) lines always and 30(6%) used gloves often but not always.

Discussion

In this study 83% health care workers experienced needle stick injuries in their professional life. Emergency department workers were most frequently affected followed by those working in different wards and operation theatre. Though 93% knew about the risk associated with needle stick injuries yet they injured themselves due to either heavy work load or hasty work and needle recapping. Only 66% health care workers had been vaccinated against hepatitis B in the past and only 13% followed universal guidelines.

All individuals who have occupational exposure to blood are at increased risk for acquiring blood-borne infections. The level of risk depends on the number of patients with that infection in the health care facility and the precautions that the health care workers observe while dealing with these patients. Occupational health and safety is an issue in developing countries including Pakistan. Needle stick injury is one such issue that should be addressed to prevent blood borne diseases in health care workers in Pakistan.

The needle stick injury occurred in 83.2% cases in the present study and these figures are very high as compared to reports from Khatmandu and Japan. In the present study no incidence was reported to the hospital authority while in USA, about half of all injuries are never reported to the employee health service, although residents reported 84% injuries that were associated with high risk patients. Time constraints was listed as the major reason for failing to report the injury. In this study 66% health care workers were vaccinated against HBV and these figures are higher than 41% reported from Dublin.

Health care workers working in surgical department were most commonly affected by needle stick injuries due to their increased exposure to sharps while, operating or working in emergency room or out patient’s department where, there is a huge rush of patients. Nurses were most commonly injured in an Italian study while wards were reported to be the most common place for needle stick injury in Scotland. In the present study heavy work load and hasty work were the two major causes of injury. According to the Centre of Disease Control, needle manipulation (26%) and injury sustained during sharp disposal (13%) were major causes while, recapping needle accounted for only 6% of such injuries. Regarding post exposure actions, 92% health care workers washed the wound with running water and drew blood from the pricked site, 23% also applied antiseptic solution. Almost similar response was observed in the University of Toronto where 87% medical students washed wound with water and antiseptic solution.

The immune status of the patient was known in 41% health care workers as compared to 23% in Dublin. Out of 83% health care workers who were exposed to needle stick injuries, only 16.6% were aware about their hepatitis B immune status after sustaining needle stick injury. This figure is lower then 23% serology testing following exposure in Kathmandu.

The risk of transmission after exposure to HIV-infected blood in a study was 0.3%, and was 100 times greater for HBV (30%) and could be as high as 10% for HCV. In the year 2000, contaminated injections caused an estimated 21 million HBV infections, two million HCV infections and 260,000 HIV infections, accounting for 32%, 40% and 5% of new infections respectively.

Post Exposure Prophylaxis (PEP) was observed in only 29% cases. Further work need to be done regarding PEP to enhance awareness in health care workers who also deal with the sharps. Lack of awareness on PEP was reported in 93% health care workers. Hepatitis B immunization and post exposure management are integral components of a complete program to prevent infections following blood borne pathogen exposure and are important elements of workplace safety. In 1994, the Advisory Committee on Immunization Practice reviewed available data regarding the prevention of HCV infection with immunoglobulin (Ig) and concluded that using Ig as PEP for Hepatitis C does not show good results, more work is still being done on the use of Ig.

The US Public Health Service published guidelines for the management of HIV exposures that included considerations for post exposure prophylaxis PEP. In this study only 13% workers were aware about safe medical practices regarding needle stick injuries i.e. Universal precaution guidelines. Other studies have shown higher level of awareness (61%) in the Centers for Disease Control and the Occupational Safety and Health Administration, introduced Universal Precaution Guidelines in 1985 to increase awareness amongst health care workers about dangers of sharp injuries and others types of diseases transmission. These guidelines have become worldwide standard in both hospital and community care settings and have been shown to be very effective.

When asked about safe work practices, only 4% health care workers used gloves for phlebotomy procedures, while a study from Rawalpindi reported 49% people who used gloves for phlebotomy procedures. In Kathmandu, 23% health care workers used gloves for phlebotomy procedures all the time.
References


