

# A Cross-Sectional Study to See the Incidence of Needle Prick Injury amongst Health Care Workers in a Tertiary Care Hospital

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**Abstract-** Needle prick injury poses a significant healthcare hazard amongst the health care workers. There is an increased risk of occupational transmission of blood borne pathogens subsequent to accidental needle prick injuries. Various studies indicate that the incidence of needle prick injury is on rise in the community of healthcare providers. The study was conducted for 120 hours in the department of anaesthesia, general surgery, gynaecology, orthopaedics and trauma centre of a tertiary care hospital to determine the incidence of needle prick injury, awareness amongst various health care workers about transmission of hepatitis B & HIV the two most dreaded diseases subsequent to needle prick injuries and awareness for post exposure prophylaxis and availing the same. Incidence of needle prick injury, awareness of complication and post exposure prophylaxis if taken were recorded on a semi-structured proforma. Awareness level is high in all the four groups, maximum in junior residents (100%) while minimum in ward boys (73.33%). Immunization status is least in ward boys (36.67%) with only 13.33% complete immunization. Level of Hepatitis and HIV status evaluation is low in all the four groups, but least in ward boys (6.67%).

**Index Terms** - Biomedical Waste Management, Hepatitis B, Immunisation, Needle Prick Injury, Post-Exposure Prophylaxis

## I. INTRODUCTION

**B**iochemical waste also known as infectious waste or medical waste, is defined as any waste which is generated during the diagnosis, treatment or immunization of human beings or animals in research activities pertaining there to or in the production or testing of biological and including categories mentioned in schedule I.

The large volumes of health care waste if not managed properly can lead to a global hazard. This could not only lead to the spread of highly contagious diseases but the hazardous chemical waste produced by the use of items can cause considerable damage to the ecosystem and the environment. Thus health care waste, if not managed properly will be a cause in ushering of "disasters in making" by causing air, water, soil

pollutions and helping in emergence of antibiotic resistant strains of microbial ingress of pollutants in the food chain and thus becoming a part of human consumption.

India already has biomedical waste management regulations (biomedical waste Management and Handling rules, 1998) but their implementation and enforcement throughout the country has been inconsistent. Best segregation practices and techniques for health care waste management are not yet fully operational in most of the hospitals and other health care institutions. The lack of segregation at the site of origin has been observed which causes mixing of infectious and non-infectious waste. Further improper disposal and management of sharps can result in inadvertent needle stick injury as well as spread of HIV, Hepatitis and other infectious disease.

A *needle-stick injury* is a percutaneous piercing wound typically set by a needle point, but possibly also by other sharp instruments or objects also. Commonly encountered by people handling needles in the medical setting, such injuries are an occupational hazard in the medical community. Despite their seriousness as a medical event, needle-stick injuries have been neglected: most go unreported as injured healthcare workers(HCW) may not take the time to report, down play the risk or fear stigmatization and professional consequences.

A needle stick injury is the most important risk factor for transmission blood-borne diseases such as Hepatitis B, Hepatitis C and the Human Immunodeficiency Virus (HIV). Needle-stick injuries are a common event in the healthcare environment. When drawing blood, administering an intramuscular or intravenous drug, performing procedures involving sharps, the needle can slip and injure the healthcare worker. Needle recapping and failure to place used needles in approved sharps containers is also a very common event. Generally needle-stick injuries cause only minor bleeding or visible trauma, even in the absence of bleeding the risk of viral infection remains. Needle-stick injuries may occur not only with freshly contaminated sharps, but also, after some time, with needles that carry dry blood. While the infectiousness of HIV and HCV decrease within a couple of hours, HBV remains stable during desiccation and infectious for more than a week.

**Global Incidence:** Over 3.5 million individuals have sustained needle prick injury. It is estimated that annually as a consequence there are 66,000 infections with HBV, 16,000 with HCV, and

1,000 with HIV worldwide. Among healthcare workers most susceptible are physicians/surgeons, nurses, technicians, ward boys and sweepers. Non-existent waste management system in most of the healthcare facility, non-existent steam lined post-exposure prophylaxis system, lack of awareness of consequences and reporting of needle prick injury being not mandatory are related with high incidence.

The present study was carried out to record the incidence of needle prick injuries amongst the health care workers, their immunization status ; awareness of needle-prick injury hazards/ preventive measures, post exposure prophylaxis taken or not.

## II. METHODOLOGY

The study was conducted in the Department of anesthesia, orthopedics & general surgery of King George’s Medical University, Lucknow. This cross-sectional study was carried out in the month of October 2013

The study was conducted in 120 hours. 30 resident doctors, 30 nurses, 30 ward boys and 30 OT technicians from department of anesthesia, orthopedics & general surgery were included in the study.

Four groups were made:

**Group A:** Doctors (30 junior residents, 15 from anesthesia and 15 from orthopedics)

**Group B:** Nursing Staff (30 nurses, all females)

**Group C:** Ward boys (30 from orthopedics and general surgery)

**Group D:** OT technician (30 from orthopedics and surgery OT)

Incidence of needle prick injury, immunization for hepatitis-B vaccination and awareness for possible complications and preventive measures amongst HCW were recorded on Semi structured pro forma and analyzed.

Percentage of HCW sustaining needle prick injury; % HCW immunized/non immunized; percentage HCW aware of complication and preventive measures were recorded and analyzed.

## III. RESULTS

Needle prick injury was sustained by 60% of nurses (fig.1) followed by resident doctors (50%) and ward boys (50%). Lowest incidence was observed among OT technicians (30%). Incidence was highest amongst the nurses.

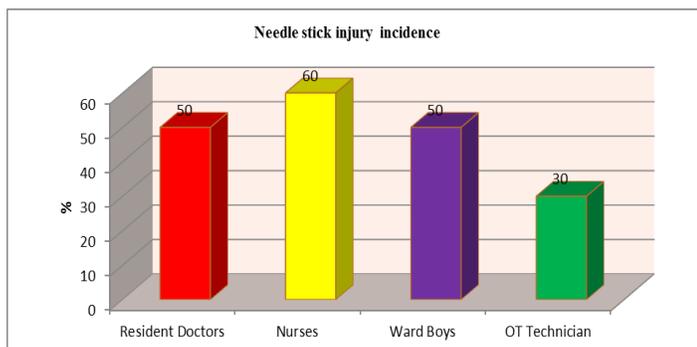


Figure 1: Percentage of health care workers with needle prick injury

All the four groups were inquired about the about hepatitis B vaccination status and data revealed that highest numbers of hepatitis B non-immunized health care workers were ward boys (63.33%) followed by nurses (43.33%). Fairly large % of resident doctors (73.34%), and OT technician(73.34%) were immunized with Hepatitis B vaccine. (fig.2)

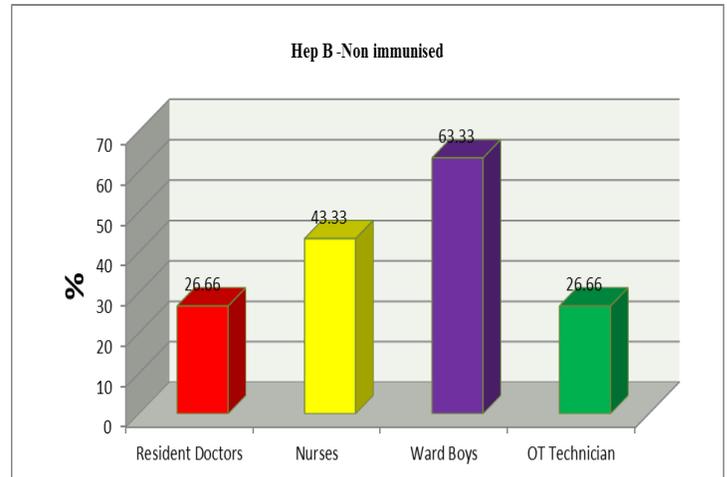


Figure 2: Percentage of Hepatitis B non-immunization in all the four groups of health care workers.

(23.33%) of ward boys, (20%) OT technicians and (13.33%) nurses were partially immunized. Least number of incomplete immunization was observed in resident doctors (3%). (fig.3)

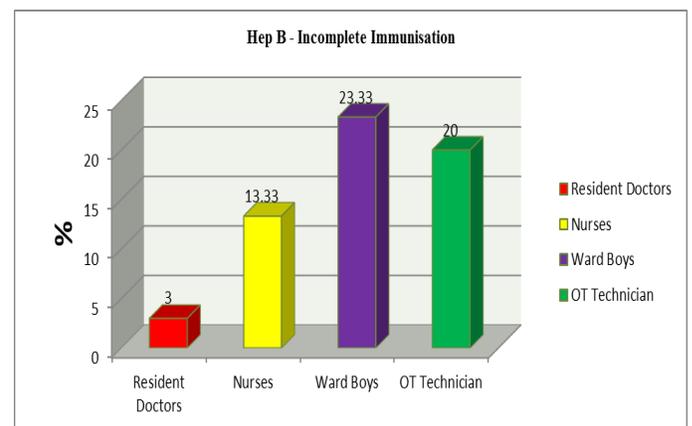


Figure 3: Percentage of incomplete immunization of Hepatitis B in all the four groups

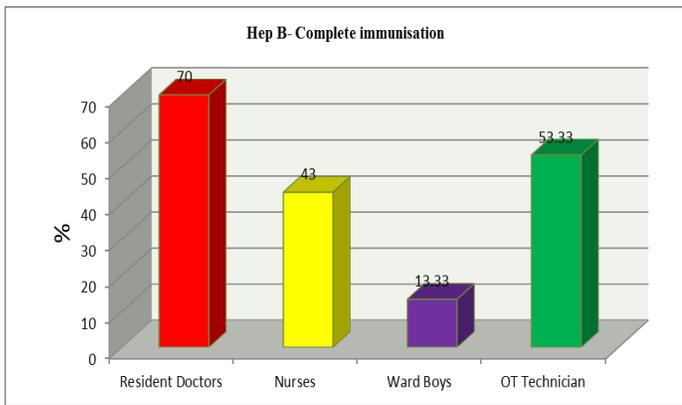


Figure 4: Percentage of complete hepatitis B immunization in all the four groups

As shown in figure highest number of complete immunization status was seen in resident doctors (70%) followed by OT technicians (53.33%) and nurses (43%) and ward boys (13.33%).

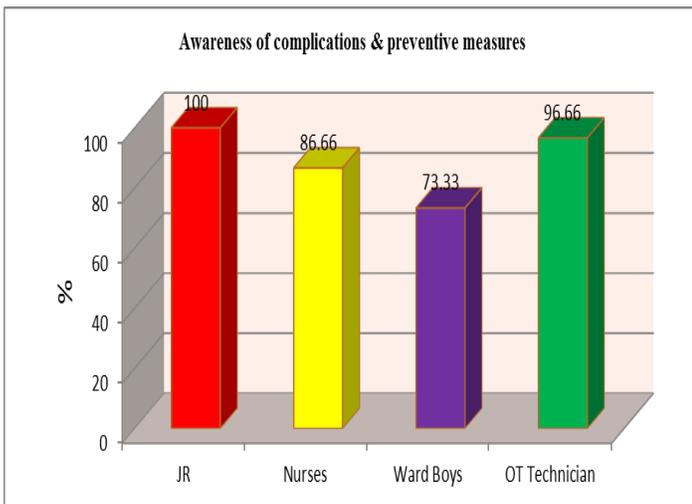


Figure 5: Awareness of complications and preventive measures in all the four groups

As shown in figure 100% resident doctors were aware of complications and preventive measures of needle prick injuries followed by OT technician (96.66%), nurses (86.66%) and ward boys (73.88%).

#### IV. CONCLUSION

Waste management system should be implemented stringently in all healthcare facilities. There should be institutional ongoing training programs for awareness/sensitization about hazards and post-exposure prophylaxis subsequent to needle prick injury especially in healthcare workers working in accident prone areas. Reporting of needle prick injury should be mandatory. Post exposure prophylaxis system should be streamlined. Baseline

immunization of one and all involved in providing healthcare should be mandatory. A wise strategy could be to immunize one and all at the entry point to the institution.

#### ACKNOWLEDGMENT

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