



ORIGINAL RESEARCH PAPER

Management

A Knowledge and Awareness study on preventing occurrence of Needle Stick Injuries among Nursing personnel in O.T at a Tertiary Care Health Centre, Mysuru

KEY WORDS: Needle Stick Injury, Knowledge, Awareness, Prevention.

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ABSTRACT

Introduction: Hepatitis C (HCV) and HIV, the virus that causes AIDS, are two of the most serious of the 20 blood-borne pathogens that healthcare workers are exposed to in their daily work caring for world's health. Hepatitis B virus (HBV) is the most common blood borne infection and the only one of the three serious viral infections for which an immunization exists and healthcare workers incur approximately 2 million needle stick injuries (NSIs) per year.

Aim and Objective: The purpose of this study is to explore the prevalence and cause of Needle Stick Injury and to strengthen the knowledge, awareness and prevention among nursing staff in OT.

Material and Methods: A cross sectional study was carried out among Nursing staff of O.T of a tertiary care teaching hospital during September to October 2016. A pre-structured & self-administered questionnaire was used to collect data regarding Knowledge and Awareness on needle stick injury among nursing staff in O.T. Data was analysed using Microsoft Excel statistical software.

Results & Conclusion: Majority of nurses had good knowledge about occurrence of needle stick injuries along with the risks associated (95.54%). Around 86.36% were aware of Post Exposure Prophylaxis along with the adequate reporting and record keeping of incidents and almost 91.8% knew the preventive measures and were duly following the Universal Precautions for adequate disposal.

Introduction:

Needle stick injuries are one of those hidden problems, like "latex allergy". It happens, but mostly we forget it and get on with our daily lives. Evidence states we shouldn't do that as there is a risk of transfer of blood borne pathogens, and, in some cases, we should take antiviral prophylaxis. At the very least there may be protection for the individual under employment legislation.

An evidence based article defines Needle Stick Injury as:

The parenteral introduction into the body of a health care worker, during the performance of his or her duties, of blood or other potentially infectious material by a hollow-bore needle or sharp instrument, but not limited to, needles, lancets, scalpels, and contaminated broken glass.

Needle stick injuries constitute a major hazard for the transmission of viral diseases such as Hepatitis B, Hepatitis C, and Human Immunodeficiency Virus (HIV). The risk of transmission of from patient to the healthcare worker is as follows:

Hepatitis C (3%), Hepatitis B (30%), and HIV (0.3%), which depends on the viral load of the patient.¹ The World Health Organization estimates the global burden of disease from occupational exposure to be 40% of the hepatitis B and C infections and 2.5% of the HIV infections among HCWs as attributable to exposures at work.²

At least **20 different pathogens** are known to have been transmitted by needle stick injuries.³

Needle stick injury is a significant problem in general practice and exposes general practitioners and practice nurses to a serious risk of infection from blood-borne transmissible agents. All patients should be considered to pose a potentially high risk of infection; also, recommended precautionary measures should be followed at all times.⁴ Housekeeping and laboratory personnel experienced the highest incidence of needle stick injuries, but 60% of all injuries occurred in nursing personnel. Most injuries occurred during disposal of used needles (23.7%), during administration of parental injections or infusion therapy (21.2%), drawing blood

(16.5%), recapping needles after use (12%), or handling linens or trash containing uncapped needles (16.1%).⁵

Determinants of NSIs^{6,7} include:

- Overuse of injections and unnecessary sharps
- Lack of supplies: disposable syringes, safer needle devices, and sharps-disposal containers
- Lack of access to and failure to use sharps containers immediately after injection
- Inadequate or short staffing
- Recapping of needles after use
- Lack of engineering controls such as safer needle devices
- Passing instruments from hand to hand in the operating suite
- Lack of awareness of hazard and lack of training

Objective:

Nursing staff in the O.T is at highest risk of needle stick injury. The purpose of this study is to explore the prevalence and cause of Needle Stick Injury and to strengthen the knowledge, awareness and prevention among nursing staff in OT.

Methodology:

Study setting:

This cross sectional study was conducted at a tertiary care teaching hospital.

The study was carried out among **Nursing staff of O.T** of a tertiary care teaching hospital during September to October 2016. All the nursing staff voluntarily participated in the study and were fully informed about the design and purpose of the study.

A pre-structured & self-administered questionnaire containing 20 questions was used to collect data to assess the **Knowledge and Awareness** on needle stick injury among nursing staff in O.T. It also included a brief introduction covering the potential risk of needle stick injuries (questionnaire enclosed). The purpose of the study was explained to all the participants and Verbal informed consent was taken. Data was analysed using Microsoft Excel statistical software.

Results:

Out of 60 Nursing personnel working in the O.T at all hours (including night duty staff), **55** members responded. Majority of the nurses were Females (**91%**) (**Table no.1, Figure no. 1**) and belonged to the age group 20-30 years (**50%**) (**Table no. 2, Figure no. 2**).

Most of the nurses were working in the institution for 10-20 years (**45%**) (**Table no. 3, Figure no. 3**).

The department chosen for study was Operation Theatre as it is one of the highest reported areas for cases of Needle Stick Injury and all the nurses were GNM qualified (**Table No. 4, Figure no. 4**). Majority of nurses had good **knowledge about occurrence of needle stick injuries** along with the risks associated (**95.32%**) (**Table No. 5, Figure No. 5**).

94.5% nursing staff agreed on Needle Stick Injuries being a common event in the O.T. 100% of the staff knew about the associated risk of transmission of Hep B, Hep C and HIV from NSI's. 81.8% knew that immediately post injury the wound/cut needs to be washed with soap and water.94.5% knew that the risk of transmission of HIV is at least 0.3% and 100% knew that there is no vaccination available to prevent Hepatitis C infection.

Around **81.80%** were **Aware of Post Exposure Prophylaxis** (**Table No. 6, Figure No. 6**). Only 12.7% staff in the Operation Theatre had sustained a needle stick injury in the past 12 months, this data was verified with the Hospital Infection Control committee in the Hospital. With a very less number of nursing personnel sustaining Needle stick Injury showed a high level of awareness among the staff. In a study conducted by Mittal Garima et al showed that about 57% of HCWs had at least one episode of NSI in the preceding 1 year.

There was a discrepancy with the use of needle cutters as a very less percentage of staff (45.5%) was not using needle cutters before discarding the needle.74.5% of the staff agreed that the reporting of needle stick Injury was being done adequately, a lot of NSI's. This study showed that 63.6% of the nursing staff reported the incident while 36.4% did not. A study in a university of Iran reported that 82% of the students did not report needle stick injuries with the most common reason that there is lack of knowledge that all the injuries are to be reported.

A famous case of Karen Daley, a registered nurse with 23 years of experience, had just completed accessing the vein of a patient in the emergency room of a large teaching hospital and was placing the used intravenous catheter into the sharps container according to protocol when she felt a prick in her finger from a needle extruding from the sharps container that had been caught in its drop-down lid. Nine months later, she learned that she had been infected not only with the human immunodeficiency virus (HIV) but also with hepatitis C.⁸

92.7% of the staff knew that Post-exposure Prophylaxis (PEP) should be initiated within one hour of the injury. Post-exposure prophylactic medication has been demonstrated to reduce the risk of transmission of HIV following NSI by 80%.⁹

However, there is only 4% of the needle stick injuries reported to get the post exposure treatment in a hospital in Sharourah (Alam, 2002).

100% of the staff knew that HIV testing to monitor for a possible seroconversion should be done at least 6 months after exposure and similarly were aware of the **Universal Precautions** to be followed in the Hospital in case of infected cases as per guidelines.

Almost **91.80%** knew the **Preventive measures** required for prevention of Needle Stick Injury (**Table No. 7, Figure No. 7**).

There was a widely prevalent wrong practice of recapping the needle as 90.9% staff was practicing the same. A **CAPA analysis**

followed and the nurses were addressed with the help of Hospital Infection Control Nurses in the hospital to stop practising recapping as it increases the risk of Needle Stick Injuries. In a study done by Rahul Sharma et al¹⁰. 34% Injuries occurred during recapping.

98.2% of the O.T staff nurses had received Hepatitis B vaccination. In a study conducted by Rakesh Shah et al stated that 67% HCWs had received Hepatitis B vaccination.100% of the nursing staff admitted to Safe Injection practices being followed at their Hospital and that there were sufficient quantities of sharps boxes to dispose of sharps safely.

The most effective means of preventing the on transmission of blood-borne pathogens is to prevent exposure to NSIs. Primary prevention of NSIs is achieved through the elimination of unnecessary injections and elimination of unnecessary needles.

The implementation of education, Universal Precautions, elimination of needle recapping, and use of sharps containers for safe disposal have reduced NSIs by 80%, with additional reductions possible through the use of safer needle devices.^{11,12}

The Centres for Disease Control (CDC) and the Occupational Safety and Health Administration (OSHA) in the United States introduced the "Universal Precaution Guidelines," which have become the worldwide standard in both hospital and community care settings.

TABLE NO. 1- Sex Distribution

MALE	FEMALE
5	50

FIGURE NO. 1- Sex Distribution

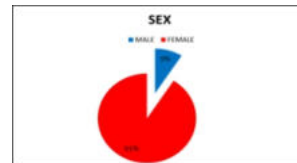


TABLE NO. 2-

20-30 YR	30-40 YR	ABOVE 40 YR
18	16	2

FIGURE NO. 2

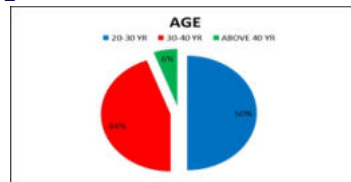


TABLE NO. 3

0-10 YR	10-20 YR	> 20 YR
29	25	1

FIGURE NO. 3

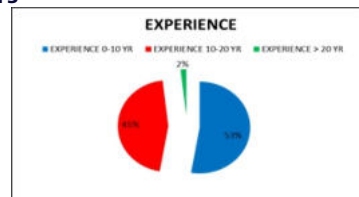


TABLE NO. 4

MAJOR OT	STAFF NURSE	GNM
55	55	55

FIGURE NO. 4



TABLE NO. 5- Knowledge

s.no	QUESTION	CORRECT		WRONG	
		NO.	%	NO.	%
1	Needle stick injuries are a common event in O.T	52	94.5	3	5.5
2	Needle stick injuries result in transmission of hepatitis B, hepatitis C and hiv	55	100	0	0
3	After a needle stick injury affected area should be washed with soap and water.	45	81.8	10	18.2
4	The greatest risk is of transmission of hep b virus	55	100	0	0
5	There is no vaccine to prevent hep c infection.	55	100	0	0
6	Risk of transmission of HIV from needle stick is least 0.3%	52	94.5	3	5.5
7	Blue bag is used for disposal of sharps	53	96.4	2	3.6

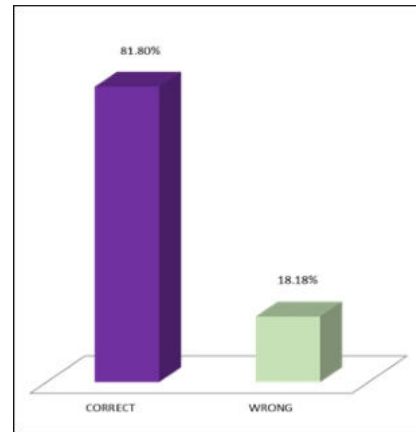


FIGURE NO. 5-Knowledge

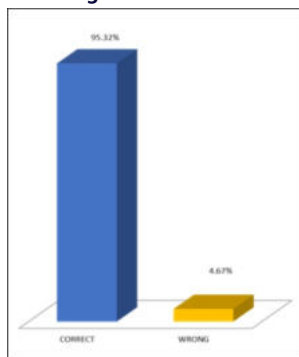


TABLE NO. 6- Awareness

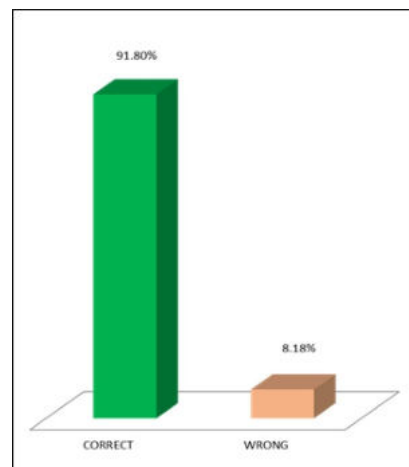
s.no	QUESTION	CORRECT		WRONG	
		NO.	%	NO.	%
1	Have you sustained a needle-stick injury during the last 12 months?	7	12.7	48	87.3
2	Did you fill in an incident report after sustaining a needle stick injury?	35	63.6	20	36.4
3	Is the reporting of needle stick injury done adequately?	41	74.5	14	25.5
4	Prophylaxis (PEP) should be initiated within one hour of the injury	51	92.7	4	7.3
5	Do you use needle removers or needle cutters before disposing of injection equipment	25	45.5	30	54.5
6	HIV testing to monitor for a possible seroconversion should be done at least 6 months after exposure	55	100	0	0
7	Are you aware of the Universal or standard precautions	55	100	0	0

FIGURE NO. 6- Awareness

TABLE NO. 7- Prevention

s.no	QUESTION	CORRECT		WRONG	
		NO.	%	NO.	%
1	Do you re-cap the used needle?	5	9.1	50	90.9
2	Do you discard the used needle immediately?	48	87.3	7	12.7
3	Have you been vaccinated for Hepatitis B?	54	98.2	1	1.8
4	Safe Injection practices are being followed at your Hospital.	55	100	0	0
5	Most needle stick Injuries occur during disposal of syringes.	41	74.5	14	25.5
6	Do you have sufficient quantities of sharps boxes to dispose of sharps safely?	55	100	0	0

FIGURE NO. 7- Prevention



Conclusion:

The morbidity and mortality of HCWs related to occupational exposures has an impact on the workforce, and as a result on access to good health care.

The staff in Operation Theatre is at highest risk of needle stick injuries and needs the highest level of knowledge, awareness and prevention. Sound knowledge, appropriate attitude and right practice toward prevention and post exposure action of NSI are

important to minimize the risk of getting infections. The study concluded that though majority of the staff had adequate knowledge about Needle Stick Injury and was practicing the Universal Precautions Guidelines. The need for strengthening skills, developing newer competencies and broadening our knowledge in occupational health and safety and disaster management remains.

To conclude, the results of this study confirm the importance of updating the knowledge of NSI and its management and the need for an increased awareness of the risk of needle stick injury and imparting education to improve outcomes.

Recommendations:

- Proper training of workers
- Periodic training of old and new employees.
- Provision of Personal Protective Equipment (PPE).
- An effective occupational health program that includes immunization, PEP, and medical surveillance.
- Encouraging Health Care Worker's especially regarding reporting of Needle Stick Injury and filling an incident report at all times.
- Adequate documentation by Hospital Infection Control team in reported and near miss cases.

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Conflict of interest:- None declared

Ethical approval:- The study was approved by the Institutional Ethical Committee.

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