



Study To Assess Knowledge Of Needle Stick Injury Among Healthcare Workers

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ABSTRACT:

Laboratory technicians and other workers are at high risk of infection because of their daily exposure to micro-organisms. Needle stick injuries (NSIs) are a critical occupational hazard for healthcare workers, carrying the risk of transmitting blood borne pathogens such as HIV, hepatitis B, and hepatitis C. Despite established guidelines and preventive measures, the occurrence of NSIs remains a significant concern. This study seeks to evaluate the knowledge of healthcare workers regarding needle stick injuries, aiming to identify areas of strength and weakness in their understanding.

OBJECTIVES:

- Determine the baseline knowledge of healthcare workers about the risks and prevention of needle stick injuries.
- Assess the impact of current training programs on healthcare workers' knowledge and behaviour concerning needle stick injuries.
- Provide data-driven recommendations for enhancing educational initiatives and safety measures in healthcare setting

SIGNIFICANCE:

Understanding healthcare workers' knowledge of needle stick injuries is crucial for developing targeted interventions, improving training programs, and enhancing safety protocols to reduce injury incidence and improve occupational health.

METHODOLOGY:

The study will use a mixed-methods approach, combining surveys and interviews. A structured survey will gather data from diverse healthcare workers, and in-depth interviews with selected participants will provide deeper insights into their understanding and practices regarding needle stick injuries.

FINDINGS:

90% have knowledge regarding NSI and 10% don't have. 80% never stuck with NSI and 20% got injured. 66.66% did not report about incident of NSI and 33.33% reported to concerned departments. 73.33% are aware about post-exposure prophylaxis but 26.66% did not. 93.33% are well aware about universal precautions but 6.66% did not.

RECOMMENDATIONS:

A similar research project can be conducted by using other strategies by developing informative booklets.

INTRODUCTION

"You cannot change your future, but you can change your habits, and surely your habits will change your future."

– A.P.J. Abdul Kalam

Needle stick injuries (NSIs) are a big deal for healthcare workers all over the world. They happen when healthcare workers accidentally poke themselves with needles or sharp stuff that has blood or body fluids on them. This could expose them to diseases like HIV, hepatitis B, and hepatitis C. Even though there are lots of rules and stuff to stop this from happening, NSIs still happen a lot.

NSIs can cause serious problems, like hurting a lot, bleeding, damaging tissues, and even getting long-term illnesses from the blood borne diseases. It's not just physical either; healthcare workers who get NSIs can also feel really stressed out, anxious, and scared of getting sick. Plus, it costs a ton for healthcare places to deal with NSIs, like paying for medicine and tests, and they might even get into trouble with the law.

Knowing how often NSIs happen, what makes them more likely, and how to stop them is super important for keeping healthcare workers safe. People try to stop NSIs by using special safety tools, handling sharp things properly, following safety rules, and teaching workers how to stay safe. But even with all this, NSIs still happen, so it's important to keep checking how things are going and making safety better.

DEFINITION:

A sharps injury is a penetrating stab wound from a needle, scalpel, or other sharp object that may result in exposure to blood or other body fluids. Sharps injuries are typically the result of using sharp equipment in a fast-paced, stressful, and potentially understaffed environment.

-Acc. To CDC

A needle stick injury is the penetration of the skin by a hypodermic needle or other sharp object that has been in contact with blood, tissue or other body fluids before the exposure.

-Acc. To WIKIPEDIA

Various employees, including nurses, laboratory technicians, physicians, and cleaning staff, face the risk of needle stick injuries. Injuries can result from mishandling or improper exposure to needles or sharp objects. Risky behaviours contributing to needle stick injuries encompass:

1. Failure to utilize safety-engineered sharps or improper use of them.
2. Recapping needles.
3. Transferring bodily fluids between containers.
4. Inadequate disposal of used needles in puncture-resistant sharps containers.

NEED OF SAFETY MEASURES IN PREVENTING NEEDLE STICK INJURIES

“Life cannot be saved for tomorrow

It always happens in the present.”

-Rubem Alves

Needle stick injuries (NSIs) are a big risk for healthcare workers in hospitals. This happens when a needle or something sharp accidentally pokes someone, and it could expose them to serious diseases like HIV or hepatitis. So, it's super important for hospitals to have safety rules to stop NSIs and keep healthcare workers safe.

First off, hospitals need to teach healthcare workers how to stay safe. They should learn the right way to give shots, throw away needles safely, and use special tools that make NSIs less likely. Everyone who might touch something sharp at work, like nurses or lab techs, should get this training. If everyone knows how to be safe, there's less chance of someone getting hurt.

Hospitals should also use special tools that are made to be safer. These tools have features like

retractable needles or ones that don't need needles at all. If hospitals use these tools, it lowers the risk of NSIs and protects the staff from getting sick from blood borne diseases.

Getting rid of used needles the right way is super important too. Hospitals need clear rules for throwing away sharp stuff, like having special containers for used needles and having trained people collect them regularly. Plus, they should make sure everyone knows to throw away needles right after using them and not try to put the cap back on, which can cause accidents.

Lastly, hospitals should always be checking and updating their safety rules to make sure they're the best they can be. This might mean doing risk assessments regularly and asking staff for feedback to see if there are any new ways to stay safe. By keeping up with the latest safety tips, hospitals can make sure their workers are as safe as possible.

CLINICAL SIGNIFICANCE

Preventing needle stick injuries is really important because they can cause serious health problems for healthcare workers. These injuries can spread dangerous diseases like HIV, hepatitis B, and hepatitis C, which can lead to long-term illness or even death. They also create a lot of stress and anxiety for workers worried about getting sick. Additionally, these injuries are costly for the healthcare system due to the need for treatments and follow-up tests, and they can disrupt the workflow when workers need time off to recover. By preventing needle stick injuries, we protect healthcare workers' health and ensure they can continue to provide quality care without the fear of getting hurt on the job.

Problem Statement

A descriptive study to assess knowledge of needle stick injury among healthcare workers and its prevention in Maxfort Hospital, Sonipat (HR)

General Objective:

The general objective of this research is to assess the level of knowledge and awareness regarding needle stick injury prevention, risks, and management among healthcare workers, in order to identify gaps in understanding and to inform the development of targeted educational programs and safety protocols.

Specific Objectives:

- i. Determine the baseline knowledge of healthcare workers about the risks and prevention of needle stick injuries.
- ii. Assess the impact of current training programs on healthcare workers' knowledge and behaviour concerning needle stick injuries.
- iii. Provide data-driven recommendations for enhancing educational initiatives and safety

measures in healthcare settings.

METHODOLOGY:

The study will use a mixed-methods approach, combining surveys and interviews. A structured survey will gather data from diverse healthcare workers, and in-depth interviews with selected participants will provide deeper insights into their understanding and practices regarding needle stick injuries.

- By assessing about the risks and prevention of needle stick injuries in any areas of Hospital.
- By making awareness posters.
- By Health Education.

Operational Definition

Assess: - To find out the proper knowledge and prevention of needle stick injury.

Needle stick injury: Needle stick injury, which occurs when the skin is accidentally punctured by a used needle.

Prevention: The act of stopping something from happening or of stopping someone from doing something; crime prevention.

Healthcare-associated infections: HAIs are infections people get while they are receiving health care for.

Assumptions:-

Proposed study assumes that:

- Participants will respond honestly.
- Participants may possess some basic knowledge regarding needle stick injury and its prevention.
- Healthcare workers accurately recall and report past incidents of needle stick injuries and the circumstances surrounding them.
- All participants have received some form of training on needle stick injury prevention and management, though the quality and comprehensiveness of this training may vary.

CONCEPTUAL FRAMEWORK

Concept is defined as a complex mental formulation object, project or event that is derived from individual perceptions and experiences.

According to Miles and Huberman (1994), conceptual framework is a written or visual presentation that explains the main things to be studied in either graphically or narrative forms the key factors, concepts or variables and the presumed relationship among them.

This input when implement provides an output. This system is cyclical in nature, and continues to be so, as long as these parts keep interacting. If there are changes in any of these parts, there will changes in all the parts. In the present study these can be explained as follows:

Input: Any type of input in the form of information or even the manual effort, which are processed by the system to get the desired output.

In the present study, the input is participant's knowledge regarding needle stick injury and prevention.

Throughput: It refers to the actions needed to accomplish the desired task.

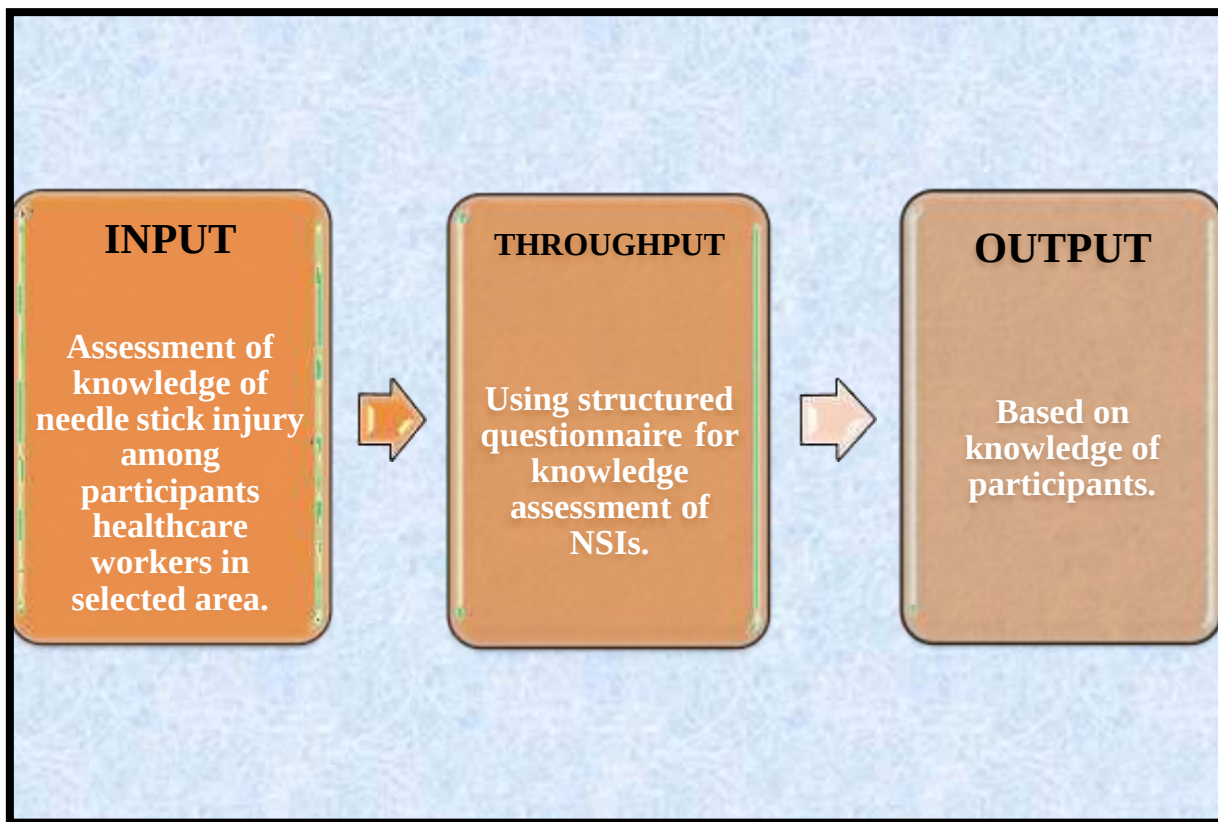
- To assess the knowledge of needle stick injury.
- Assess the impact of current training programs on healthcare workers knowledge and behaviour concerning needle stick injuries

Output: It refers to the result of the study.

In the present study, the output is based on responses of the subject to the questionnaire.

Feedback:

Feedback refers to the process by which information is received at each stage of the system and feedback as input to guide/direct in its evaluation.



Conceptual framework based on General System theory By LUDWIG VON BERTANLANFY-1968

INTRODUCTION

A needle stick injury (NSI) refers to the accidental puncturing of the skin by a needle or other sharp object that may be contaminated with blood or other potentially infectious materials. These injuries are a significant concern in healthcare settings due to the risk of transmitting blood borne pathogens such as hepatitis B, hepatitis C, and HIV.

Causes and Risk Factors Needle stick injuries

It often occurs during medical procedures such as injections, blood draws, and suturing. They can happen due to improper handling or disposal of needles, unexpected patient movements, or lack of protective equipment. Healthcare workers, including doctors, nurses, and lab technicians, are at the highest risk, but any worker handling sharps can be affected.

1. Improper needle disposal.
2. Accidental pricks during medical procedures.
3. Mishandling sharps containers.
4. Reusing needles.
5. Lack of adequate training.
6. Workplace distractions.
7. Needle recapping.

8. Improper needle disposal in common waste.
9. Needle disassembly.
10. Lack of awareness about needle safety.

Purposes of NSI prevention:

The purposes of needle stick injury prevention are numerous and critical for maintaining a safe and effective healthcare environment. Here are the key points:

- i. **Protect Healthcare Workers:** Reduce the risk of healthcare workers contracting blood borne infections such as HIV, hepatitis B, and hepatitis C.
- ii. **Enhance Workplace Safety:** Promote a safer working environment by minimizing the occurrence of accidental needle sticks.
- iii. **Improve Patient Safety:** Prevent cross-contamination and secondary infections, ensuring patient safety are upheld.
- iv. **Reduce Healthcare Costs:** Lower medical costs associated with treating infections and managing needle stick injuries.



- v. **Encourage Best Practices:** Promote the adoption of best practices in handling, using, and disposing of needles and other sharps.
- vi. **Preserve Workforce:** Maintain a healthy workforce by preventing work-related injuries that could lead to absenteeism or long-term health issues.
- vii. **Support Public Health:** Contribute to overall public health efforts by preventing the spread of infectious diseases within healthcare settings.

Types of NSI:

Needle stick injuries can be classified based on various factors, including the type of needle involved, the circumstances under which the injury occurs, and the source of contamination. Here are the main types:

1. **Hypodermic Needle Injuries:** These injuries occur from needles used for injections, drawing blood, or delivering medications.
2. **Suture Needle Injuries:** These are caused by needles used in surgical procedures to stitch wounds or surgical incisions.
3. **Intravenous (IV) Catheter Needle Injuries:** These involve needles used to insert IV catheters for administering fluids or medications directly into veins.
4. **Phlebotomy Needle Injuries:** These happen during blood draws, typically using a needle designed specifically for phlebotomy procedures.
5. **Winged Steel (Butterfly) Needle Injuries:** These occur with needles that have plastic "wings" and are often used for venepuncture in veins of difficult access.
6. **Dental Needle Injuries:** These involve needles used in dental procedures, such as local anaesthesia injections.
7. **Needle Recapping Injuries:** These occur when attempting to place a cap back on a used needle, often leading to accidental puncture.
8. **Needle Disposal Injuries:** Injuries that happen during the disposal process of used needles, typically from improper disposal techniques.
9. **Patient Movement-Related Injuries:** These occur when a patient moves unexpectedly during a procedure, causing the healthcare worker to be accidentally punctured.
10. **Occupational Non-Healthcare Needle Injuries:** These injuries can occur in non-healthcare settings, such as sanitation workers or law enforcement personnel encountering discarded needles.

Prevention of NSI:

Preventing needle stick injuries involves a combination of safe practices, proper equipment use, and adherence to protocols. Here are some key strategies:

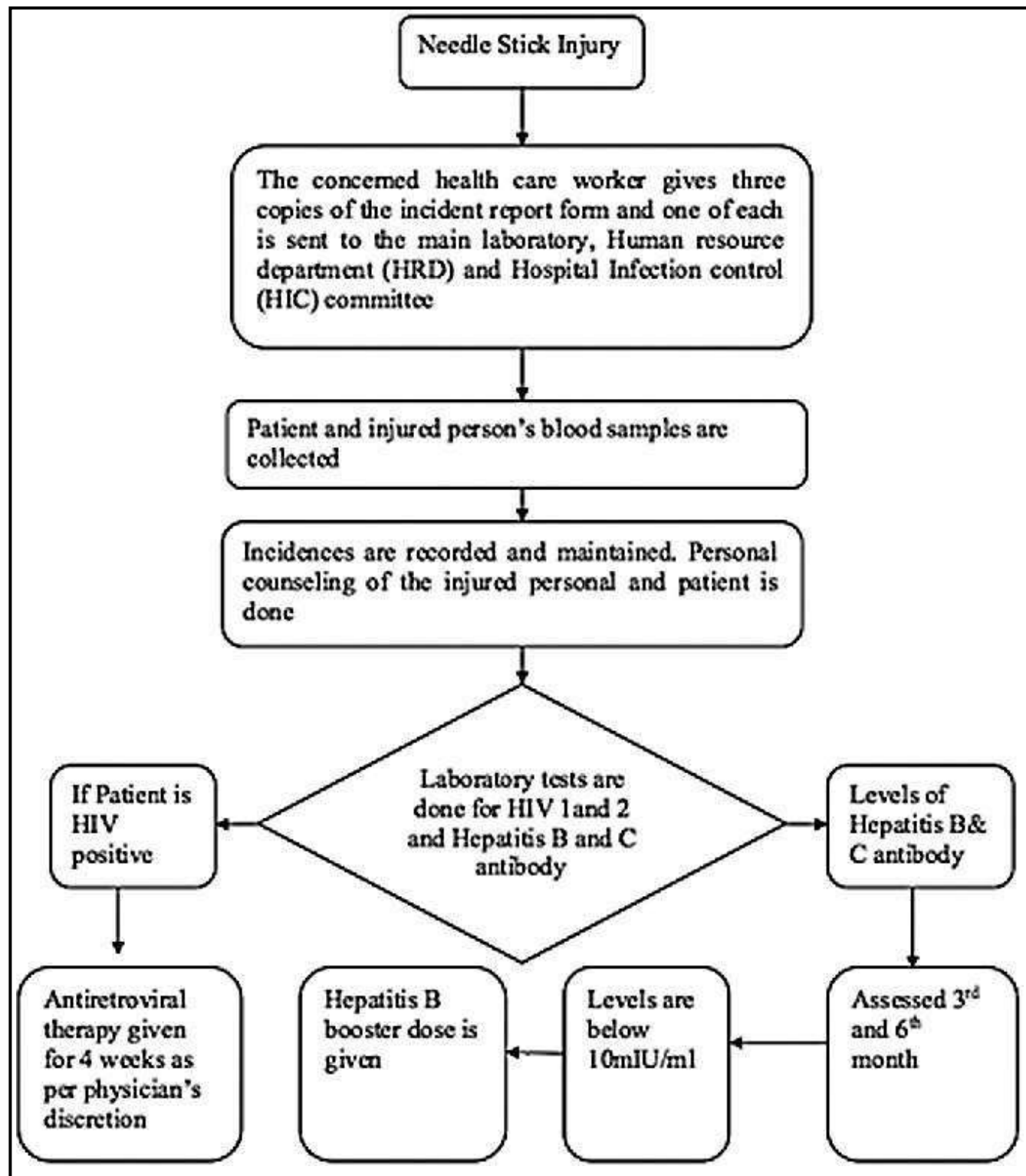
1. **Use Safer Devices:** Utilize needleless systems or needles with safety features, such as retractable needles or needle shields.
2. **Proper Disposal:** Immediately dispose of used needles in clearly labelled, puncture-resistant sharps containers. Never overfill these containers.
3. **Avoid Recapping Needles:** Do not recap needles unless absolutely necessary. If recapping is required, use a one-handed "scoop" technique or a mechanical device designed for this purpose.
4. **Training and Education:** Provide regular training on the correct handling and disposal of needles, as well as the risks and prevention strategies for needle stick injuries.
5. **Personal Protective Equipment (PPE):** Wear appropriate PPE, such as gloves, to provide an additional barrier against needle stick injuries.
6. **Safe Work Practices:** Develop and follow safe work practices, such as not passing sharps directly from hand to hand and ensuring a clear, uncluttered workspace when handling needles.
7. **Sharps Awareness Programs:** Implement programs to increase awareness about the risks associated with needle stick injuries and promote a culture of safety.
8. **Immediate Reporting and Follow-up:** Encourage prompt reporting of any needle stick injuries, and ensure there is a protocol in place for post-exposure evaluation and follow-up.



DON'T GET STUCK

HOSPITAL PROTOCOLS FOR NSI:

(Indian Journal of Ophthalmology, 2017)



ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data collected during the descriptive study to assess knowledge of needle stick injury among healthcare workers and its prevention in Maxfort Hospital, Sonipat (HR)

Analysis is to organize the data in the desired format and the most understandable way. It involves the statistical procedure that enables the investigator to organize, interpret, analysis, summarize, evaluate and communication of the data in numerical form.

RESULT:

Demographic Characteristics:		N (30)	%
Age	<20	1	3.33
	20-40	24	80
	40-60	5	16.66
	>60	0	0
Sex	Male	18	60
	Female	12	40
Job Category	Senior doctors	3	10
	Junior doctors	2	6.66
	Nurses	12	40
	Lab technician	5	16.66
	Sanitary Workers	5	16.66
	Others	3	10
Duration As Health Care Worker	<5 years	19	63.33
	6-10 years	9	30
	10-15 years	2	6.66
	>15 years	0	0

Immune Status Of HCWs (HBsAg, anti-HCV, anti-HIV)	Positive (HbsAg)	1	3.33
	Negative	6	20
	Don't know	23	76.66
Hep B vaccination	Done	24	80
	Not Done	6	20
If yes, no. of doses taken	1	10	33.33
	2	6	20
	3	4	13.33
	Booster	4	13.33

KNOWLEDGE AND ATTITUDE AND PRACTICES OF HEALTHCARE WORKERS AND PREVENTIVE MEASURES REGARDING EXPOSURE TO NSI:

Occupational hazards and preventive measures		N (30)	%
Do you know about needle stick injury?	Yes	27	90
	No	3	10
Which diseases are transmitted by needle stick injury?	Hepatitis B	19	63.33
	Hepatitis C	2	6.66
	HIV	9	30
	None	0	0
Do you have ever needle stick injury?	Yes	6	20
	No	24	80
Have you reported the incident of needle stick injury?	Yes	2	33.33
	No	4	66.66
Do you know about post exposure prophylaxis?	Yes	8	26.66
	No	22	73.33
Do you know about universal precautions?	Yes	28	93.33
	No	2	6.66

DISCUSSION

This chapter deals with the discussion of the findings related to the study, whether the present objectives are achieved or not.

INFORMATION REGARDING DEMOGRAPHIC CHARACTERISTICS OF

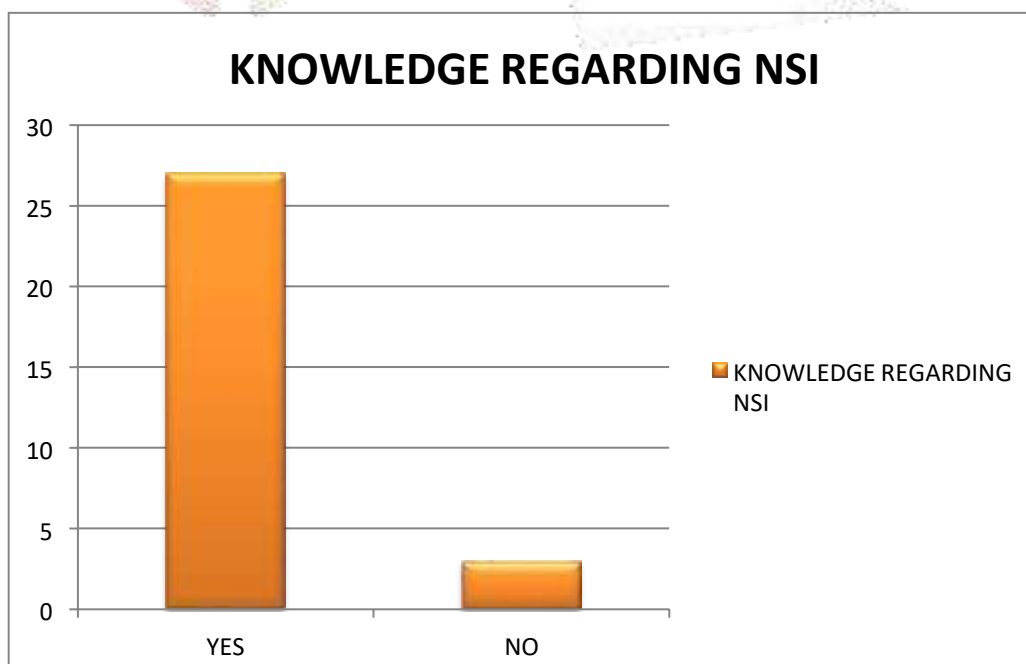
Total number of Participants= 30

THE STUDY

- In the present study, 3.33% are under 20 years of age, 80% are in b/w 20-40 years, 16.66% are in 40-60 years and none are above 60 years.
- 60% are male and 40% are female category.
- 40% are nurses, 16.66% are lab technicians, 16.66% are sanitary workers, 10% are other workers, 10% are senior doctors and 6.66% are junior doctors.
- 76.66% workers don't know about their immune status, 20% are negative and 3.33% is positive.

INFORMATION REGARDING KNOWLEDGE AND PREVENTIVE MEASURES OF NSI AMONG THE STUDY

- 90% have knowledge regarding NSI and 10% don't have.
- 80% never stuck with NSI and 20% got injured.
- 66.66% did not report about incident of NSI and 33.33% reported to concerned departments.
- 73.33% are aware about post-exposure prophylaxis but 26.66% did not.
- 93.33% are well aware about universal precautions but 6.66% did not.



SUMMARY, CONCLUSION and RECOMMENDATIONS

This chapter deals with summary of the whole study; which includes the statement of problem, objectives, assumptions, conceptual framework, review literature, research methodology, statistical inference, major findings of the study and the conclusion drawn from different areas of research.

SUMMARY

Laboratory technicians and other workers are at high risk of infection because of their daily exposure to micro-organisms. Needle stick injuries (NSIs) are a critical occupational hazard for healthcare workers, carrying the risk of transmitting blood borne pathogens such as HIV, hepatitis B, and hepatitis C. Despite established guidelines and preventive measures, the occurrence of NSIs remains a significant concern. This study seeks to evaluate the knowledge of healthcare workers regarding needle stick injuries, aiming to identify areas of strength and weakness in their understanding.

The statement of the problem was “A descriptive study to assess knowledge of needle stick injury among healthcare workers and its prevention in Maxfort Hospital, Sonipat (HR).”

The study was conducted with the following objectives:

- i. Determine the baseline knowledge of healthcare workers about the risks and prevention of needle stick injuries.
- ii. Assess the impact of current training programs on healthcare workers' knowledge and behaviour concerning needle stick injuries.
- iii. Provide data-driven recommendations for enhancing educational initiatives and safety measures in healthcare settings.

The study was based on the following assumptions:

- Participants will respond honestly.
- Participants may possess some basic knowledge regarding needle stick injury and its prevention.
- Healthcare workers accurately recall and report past incidents of needle stick injuries and the circumstances surrounding them.
- All participants have received some form of training on needle stick injury prevention and management, though the quality and comprehensiveness of this training may vary.

In the present study cross sectional research design was used that is a type of non- experimental research design. The sample size of 30 participants. Only those subjects were included in the study who were willing to take part and who were available at the time of the data collection. Tool validated by research committee members.

Major finding of the study:

- 90% have knowledge regarding NSI and 10% don't have.
- 80% never stuck with NSI and 20% got injured.
- 66.66% did not report about incident of NSI and 33.33% reported to concerned departments.
- 73.33% are aware about post-exposure prophylaxis but 26.66% did not.
- 93.33% are well aware about universal precautions but 6.66% did not.

Every HCWs need monthly induction and skill training to prevent any NSI and HAI.

CONCLUSION

After the result were analysed based on the calculated values from the previous output, this research makes the following conclusions:

- Further teaching is necessary to prevent NSI.
- Regular assignment must be provided by the team leader to upgrade knowledge.
- Workshop on requirement basis must be conducted in every Health care setup.

RECOMMENDATIONS

After analysis of the data, the following recommendations are hereby made:

- A similar study can be conducted by using the other strategies by developing information booklets or by educating teachers.
- Same study can be done in large setup or tertiary health centre.
- In the same setting experimental study with taking large samples can be done.
- The Comparative study can be done

LIMITATIONS

The limitations recognized in the study are:

- This study is only limited to one setup.
- The study was limited to the 30 samples only.
- The data was collected by using the Non probability consecutive sampling techniques.
- The study was limited to students who are willing to participate in the study.

LIST OF REFERENCES

1. [https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/needlestick-injury#:~:text=Some%20people%2C%20such%20as%20health,and%20hepatitis%20C%20\(HCV\)](https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/needlestick-injury#:~:text=Some%20people%2C%20such%20as%20health,and%20hepatitis%20C%20(HCV))
2. https://en.wikipedia.org/wiki/Needlestick_injury
3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6436289/>
4. <https://www.toppr.com/guides/essays/essay-on-role-of-youths-in-nation-building/>
5. <https://www.cdc.gov/coronavirus/2019-ncov/your-health/about-covid-19/basics-covid-19.html>
6. <https://www.unesco.org/en/covid-19/education-response>

