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A Study On Knowledge And Practices Related To Safe Injection Practices Among Nursing Students In A Tertiary Care Hospital, Chennai, Tamil Nadu, India.

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ABSTRACT

Injections are one of the most frequently used medical procedures. In India around 3-6 billion injections are given per year. Injection overuse and sometimes unnecessary use of injections in low-income countries facilitate transmission of bloodborne pathogens such as hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV). Accidental exposure to blood and body fluids is frequent among nursing students. Therefore in this study we aim to study the safe injection practices among nursing college students. This cross-sectional study was carried out among all the general nursing students of 2nd & 3rd year in a tertiary care hospital. Data was collected using self-administered pre-tested questionnaire. Out of the 112 nurses who returned a completed questionnaire, about 56% followed safe injection practices. About 43.5% nurses washed their hands with soap and water before administering injection. Sterile gloves were used by 43.7% nurses, while needles were recapped in 42.5% of cases. Nearly one-third (33.5%) of study population recalled having sustained at least one Needle stick injury over the last one year, 58.9% (66 out of 112) nurses recalled having sustained between 1 and 4 injuries in the past 12-months. Around 35% did not have any training in injection safety. There is a need to educate, train and motivate service providers in proper method of handling injection equipments. To improve the facilities for hand washing & ensure adequate supply of gloves, hub cutters.

Keywords: injection safety, blood-borne viruses, HIV/AIDS, Needle stick injury.

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INTRODUCTION

An injection is a skin-piercing event performed to introduce a substance into the body for prophylactic, curative or recreational purposes [1]. The WHO estimates that worldwide ~12 billion injections are given annually, of which 5% are administered for immunization and 95% for curative purposes [2].

A safe injection is defined as one that does not harm the recipient, expose the health worker to avoidable risk, or result in waste that puts other people at risk [4]. On the contrary, an injection is therefore considered unsafe if it harms the recipient and the administer to any avoidable risks and which results in the waste that is dangerous for the administer, recipients and also the community.

The World Health Organization (WHO) estimates that 20 million new hepatitis B virus (HBV) infections, 2 million new hepatitis C virus (HCV) infections, and 260,000 new HIV infections are associated with unsafe injections each year worldwide [7].

Each year deaths due to unsafe injections is estimated to be 1.3 million, and also lead to a loss of 26 million years of life and an annual burden of 535 million US \$ in direct medical costs [8]. In developing countries, the use of injections for management of serious and even minor medical problems is common and often unnecessary and are used unsafely. Unsafe injection practices not only harm the patient but also carry risks to the health care workers (HCWs). Needle stick injury (NSI) is commonly encountered by the provider. About thirty different infectious diseases can be transmitted by NSI among which the chances of acquiring hepatitis B infection is much higher than other infections [8].

AIMS and Objective

To study the prevalence of knowledge and practices related to safe injection practices among nursing students

MATERIALS AND METHODS

Study design

Cross-sectional study

Study population

2nd & 3rd year nursing college students. There are totally 6 nursing colleges in Kanchipuram district. The principals of all the colleges were approached for permission of which one college gave permission. The study was carried out in this college.

Study area: Kanchipuram district.

Sample size

All students in 2nd and 3rd year in the nursing college. There were a total of 112 students (57 from 2nd yr & 55 from 3rd yr).

Study period

Two months from June to July 2014.

Inclusion criteria

- All participants of age 18 years and above.
- All participants who gave informed consent.

Exclusion criteria

- General nursing students of 2nd & 3rd year who are not willing to participate

Permission was obtained from the Institutional ethical committee.

Permission was also obtained from the principal of the college where the study was conducted.

A brief introduction was given and the objective of the project was explained. After getting written informed consent from the students, data was collected by direct interview using a pre-tested and structured questionnaire including knowledge about safe injection practices, prior training in injection safety, following of universal precautions, method of disposal of sharps, use of hubcutters was administered. Pilot study was done on 15 general nursing students and based on the results of pilot study, necessary modifications were made and final version of the self administered questionnaire was prepared.

Data analysis

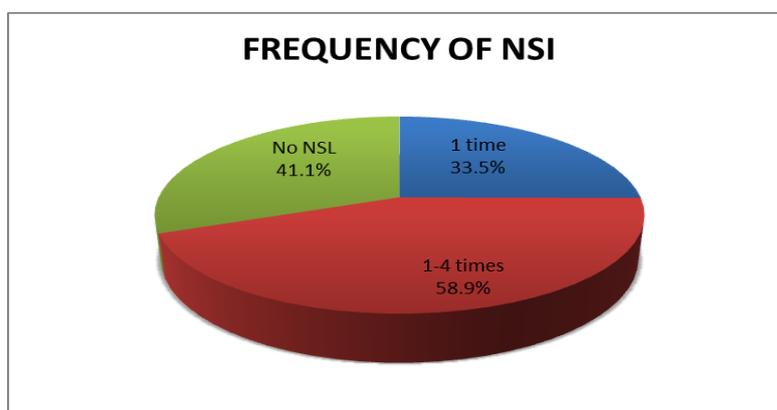
Data was analysed using SPSS software version 17.00 and MS-Excel 2010. Data was presented as tables and pie diagrams.

RESULTS

Table 1: Knowledge of safe injection practices among the study population

KNOWLEDGE OF SAFE INJECTION PRACTICES	YES	NO
SAFE INJECTION PRACTICE	56%	44%
UNIVERSAL PRECAUTIONS	61%	39%
HEPATITIS B VACCINATION	78%	22%
HAND WASHING	43.5%	56.5%
GLOVES USAGE	43.7%	56.3%
PRIOR TRAINING IN INJECTION SAFETY	65%	35%
DISPOSAL OF SHARPS	30.5%	68.5%

Out of the 112 general nursing students who participated in the study about 56% followed safe injection practices. A large majority (61%) of the study population were aware of universal precautions; about 78% were protected by hepatitis B vaccination. 43.5% nurses washed their hands with soap and water before administering injection. Sterile gloves were used by 43.7% nurses. About 65% of study population had some prior training in injection safety.



Pie chart 1: Prevalence of NSI (needle stick injuries) among respondents

Nearly one-third (33.5%) of study population recalled having sustained at least one Needle stick injury(NSI) over the last one year, 58.9% (66 out of 112) nurses recalled having sustained between 1 and 4 injuries in the past 12-months.

Table 2: Causes of NSI

Sl.no.	CLINICAL ACTIVITY CAUSING NSI	%
1.	BLOOD WITHDRAWAL	38.5%
2.	RECAPPING NEEDLES	21%
3.	SUTURING	19.5%
4.	VACCINATION	12%
5.	PATIENT AGGRESSIVENESS DURING INJECTION	9%
	TOTAL	100%

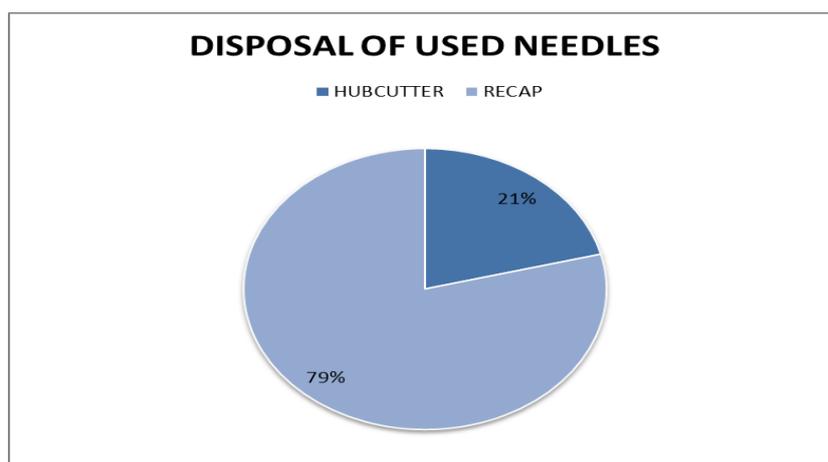
COMMON ACTIVITIES CAUSING NSI:

The most common clinical activity to cause the NSI was blood withdrawal (38.5%), followed by recapping of needles(21%), suturing (19.5%) and vaccination (12%). About 9 per cent of the nurses received the NSI due to patient aggressiveness. Majority (85%) responded that reporting of needle stick injury to the authority is necessary. Majority of them (90%) believe immediate measures must be taken in case of accidental needle stick injury like using antiseptic or soap water to clean the injured site.

Table 3: Knowledge of diseases transmitted by unsafe injection practices among the study population

Sl.no.	Disease	Frequency
1.	HIV and HBV	46.50%
2.	HIV,HBV and HCV	23.70%
3.	HIV	20.30%
4.	HIV and HCV	7.70%
5.	NONE	1.80%

Out of the 112 nurses who were in the study population almost half the population (46.50%) were aware that HIV and HBV infections could be spread by unsafe injection practices.23.70% were aware that HBV, HCV and HBV can spread through unsafe injection practices. One- fifth of the study population believed that only HIV could spread through unsafe injections. A small percentage (1.8%) of the study population was not aware of any disease transmission through unsafe injections.



Pie Chart 2: Disposal of Waste (Used Needles) by Study population

In the present study only 21% used hub cutters, while only 65% disposed the needles in puncture proof container and 74% disposed cotton swabs in yellow container.

DISCUSSION

In this study 56% nurses followed safe injection practices, a similar study done in healthcare workers in China reported higher rate of safe injection practices (80%)[7]. In this study about 78% were protected by hepatitis B vaccination which is better than in a similar study done in Pokhara city [15] where only 71% of healthcare workers (including doctors) received vaccination. In this study about 65% of the nurses had prior training in injection safety, in a similar study conducted in western Nepal, it was reported that most of the injection providers (90%) had been sent for training on safe injection practice [16]. About 43.5% nurses washed their hands with soap and water before administering injection. Nearly one-third (33.5%) of study population recalled having sustained at least one Needle stick injury over the last one year, 58.9% (66 out of 112) nurses recalled having sustained between 1 and 4 injuries in the past 12-months.

The most common clinical activity to cause the NSI was blood withdrawal (38.5%), followed by recapping of needles(21%). In a study conducted in a tertiary care hospital of Pakistan, it was witnessed that the most common cause of NSI (33%) occurred during recapping of needle [14]. Similarly, a study from Pokhara, Nepal revealed that recapping needle (25%) was the important cause of NSI [15]. In the present study only 43.7% of nurses at the using gloves at the time of injury. S Salelkar et al [3] reported that 58% of healthcare workers had worn gloves during the procedure. In the present study only 21% used hub cutters, while only 65% disposed the needles in puncture proof container and 74% disposed cotton swabs in yellow container.

The WHO estimates that ~12 billion injections are given annually, of which 5% are administered for immunization and 95% for curative purposes. Majority of these injections are often unnecessary [2] . If unnecessary injections are avoided, not only would it decrease the administration of unsafe injections by over half, it would also reduce the transmission of blood-borne pathogens, save medical resources and reduce the economic burden of patients.

The establishment of “Safe Injection Global Network (SIGN)” by WHO was a milestone towards safe injection practice globally. Some institutions in India [13], have a staff student health service facility in place, which maintains records, and registers the incidence of NSI and has protocols for management and follow-up of NSI cases. This is a dire necessity in all large health care facilities with a large turnover of patients and a high rate of NSI.

Auto-disable syringes, which cannot be reused, would do much to cut down infection. To seek alternatives to use of needles wherever possible, using newer devices with safety features, ensuring adequate training in safe use and disposal of needles, putting in place a culture of accident reporting, especially sharps-related, and following preventive practices like vaccinations for hepatitis B[10-12].

CONCLUSION

Certain safe injection practices were noticed in the studied health care facilities but there remain a number of grey areas where unsafe practices still persists placing patient and health workers at risk of associated hazards. Training concentrating on injection safety, guidelines to dispose biomedical waste and monitoring of the activity is needed.

Ensuring safe injection practice is one of the greatest challenges for healthcare system in developing countries. To address the problem, interventions with active involvement of a number of stakeholders is essential. A combination of educational, managerial and regulatory strategies is found to be effective and economically viable. Evidence based interventions, with honest commitment and participation from the service provider, recipient and community with aid of policy makers are required to ensure safe injection practice. Rational use of injections, proper management and disposal of injectable products can lead to safe injection practice and for this honest commitment and participation is required from service provider; recipient and community with support from policy makers. Training concentrating on injection safety, guidelines to dispose biomedical waste should be made mandatory. . Efforts should be made to improve the education and supervision of healthcare workers with the aim of reducing unnecessary injections and promoting injection safety.

Selected Abbreviations and Acronyms:

NSI (needlestick injury), HCW (healthcare workers), HBV (hepatitis-b virus), HCV (hepatitis-c virus), HIV (human immunodeficiency virus)

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