



Original Article

Awareness in Nursing Students Regarding Prevention of Needle Stick Injuries

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ABSTRACT

An unexpected needle stick injury is one of the most common work-related hazards among health care workers, and it contributes to an increased risk of Blood related infection transmission. Students, as a vulnerable team of health providers, are more vulnerable to these deadly infections. In the situation of such blood-borne diseases, healthcare professionals pose a significant risk. **Objective:** To aware nursing students regarding prevention of needle stick injuries. **Methods:** This descriptive cross section study was conducted at the Lahore school of Nursing, the University of Lahore, Pakistan. Data were collected by self-administered questionnaire. Convenient sampling technique was used to collect data. The collected data were analyzed through descriptive as well as inferential statistics using SPSS software (22). The descriptive analysis was performed by using frequencies and percentages. **Results:** The study results showed "Did you experience needle stick injury?" 49 (64.5%) respond yes and 37 (35.5%) respond no. "Did you reported the NSI Event?" 24 (31.6%) respond yes and 52 (68.4%) respond no. "NSI may lead to significant anxiety for the affected person?" 33 (43.4%) respond yes and 43 (56.6%) respond no. Do you know about needles safety device? 15 (19.7%) respond yes and 61 (80.3%) respond no. **Conclusions:** Study showed that lack of awareness is one of the major factors for needle stick injury. Moreover, it was clearly evident that nursing students were careless in handling used and contaminated needles which was the greatest cause of needle stick injury.

INTRODUCTION

An unexpected needle stick injury is one of the most common work-related hazards among health care workers, and it contributes to an increased risk of Blood related infection transmission. Students, as a vulnerable team of health providers, are more vulnerable to these deadly infections. In the situation of such blood-borne diseases, healthcare professionals pose a significant risk [1]. Needle-stick injury (NSI) is outlined as an unintended penetrating damage to the skin induced by sharps such as disposable syringes, parenteral needles, blood sampling needles. Needle Stick Injuries are the most prevalent contributory factors which provide blood exposure and are leading cause of blood infections and conditions among healthcare workers [2]. Every year, more than 2 million Health workers are infected with pathogens causing diseases in blood According to the estimation of Centre of

disease control the annual cases of NSI among HCW are 385000 globally NSI among HCW globally [3]. Nursing students are the most vulnerable ones to injuries because of lack of experience [4]. Abuse of infusions, drawing blood samples, controlling an intramuscular or intravenous medication, absence of dispensable needles, more secure needle gadgets, sharps-removal compartments recap the syringe after using it securing it for future need, carrying equipment by one side to someone else in the wards or working area, lack of interaction with the danger, and lack of preparation are all extremely important causes of NSIs [5]. Viruses like including Hepatitis B and C, as well as the (HIV), are among the more than 20 types of blood induced infections that can be transmitted through needle stick wounds. Needle stick injury is one of the most workplace hazards for medical service workers, especially student

nurses, who are especially vulnerable due to their limited healthcare practice all through their nursing school student nurses are prone of needlestick injuries, which increases the risk of acquiring blood-borne pollutants by microbes such as HIV, Hepatitis B, and Hepatitis C. Additionally, NSIs can transmit various infections such as bowel disease, Tb, diseases such as measles, and communicable diseases while performing clinical exercises in medical centers. As per a study that evaluated their recognition of NSI rates and exposure to blood borne infectious vectors, nursing students were found to be lacking in knowledge in attempting to resolve such minor clinical hurdles on their own. As a result, nursing student's noncompliance with infection control protocols has adverse implications not only for patients, but also for the nursing students themselves. The study's objective was to check the awareness and instances of sharps injuries in order to create targeted prevention strategies. junior nurses tend to be more vulnerable to damage than staff nurses, owing primarily to an absence of professional qualifications and abilities. Universal precautions are standards of practice aims to discourage the spread of blood borne diseases, such as the use of Hand washing before and after procedures is advised, as is the use of barriers such as protective clothing, robes, and Personal protective equipment's when interacting with blood or other [6]. Nurses who worked in hospitals with lower staffing rates and high levels of emotional stressful events as a result of their jobs had a significantly higher risk of needle stick injuries [7]. Nursing students appear to be at a greater risk of suffering as compared to professional nurses, which is primarily due to the absence of medical capabilities. Nonetheless, there has been little investigations on NSIs on incidence between student nurses, notably throughout the various periods of their learning. In this occupational category, injuries can be drastic. As so many researchers have demonstrated, prevalent inadequately reported incidents limits the honest description of accident rates among student nurses, and sufficient application of precautionary measures and procedures, as well as improvements to reporting protocols should be done to reduce the chances of exposure [8, 9]. To instill descriptive infection control regulations and increase compliance in their nursing practice, all nurses must study customized teaching programs within the context of the nursing syllabus. As a result, there is an urgent need for better classroom instruction in the nursing clinical setting, as well as more effective NSI oversight [10-13]. Nursing undergraduates are sharpened to these dangers from the start of their preparation. The wellbeing of a working environment plays and significant component in forestalling mishaps at work

among HCWs Nursing teachers are to some extent answerable for the activities of their students as they give insufficient oversight of in the clinical setting. Furthermore, improved awareness among nursing students is expected to diminish the danger of NSIs [14].

METHODS

The cross-sectional descriptive study design was used in the study. This study was conducted in the Lahore school of Nursing department of The University of Lahore. The population of the study was 3rd year and 4th year nursing students. Male and female nursing students are included. Students of 3rd and 4th year nursing Students staff nurses, physicians, and paramedics. Individuals who have expertise in prevention of NSI. The goal was to gather a representative sample of each level of qualification within the target population using a convenient sampling approach. Sloven's formula was used to get the sample size: $n = N/(1+N(e)^2)$ Where N denotes the population, e denotes the margin of error, and n denotes the sample size. N=94, e=0.05, n=76. The study group consisted of 76 respondents [15]. The questionnaires were distributed to student nurses who were available during data collection. It took about 8-10 minutes to fill it. Data were analyzed on the Statistical Package for the Social Sciences (SPSS) version 22.

RESULTS

The data were analyzed by questionnaire and results are interpreted with the frequency and percentages. The table 1 showed the demographic data of this study in which total 24(31.6%) male and female 52 (68.4%) participants, total 6(7.9%) less than 20 years and 70(92.1%) 20-25 years of age, 70(92.1%) single and 6(7.9%) were married, 33(43.4%) were BSN third year and 43 (56.6%) were BSN fourth year student.

Variable	Frequency (%)
Gender	
Male	24(31.6)
Female	52(68.4)
Age	
Less than 20 years	6(7.9)
20-25 years	70(92.1)
Marital status	
Single	70(92.1)
Married	6(7.9)
Education level	
BSN third year	33(43.4)
BSN Fourth year	43(56.6)

Table 1: Demographic data

The table 2 showed the response of participants about awareness regarding prevention of needle stick injuries in which "Did you experience needle stick injury?" 49 (64.5%)

respond yes and 37 (35.5%) respond no. "Did you reported the NSI Event?" 24 (31.6%) respond yes and 52 (68.4%) respond no. "NSI may lead to significant anxiety for the affected person?" 33 (43.4%) respond yes and 43 (56.6%) respond no. Do you know about needles safety device? 15 (19.7%) respond yes and 61 (80.3%) respond no. Are you aware of universal precautions of NSI? 15 (19.7%) respond yes and 61 (80.3%) respond no. NSI can be prevented by taking universal precautions? 24 (31.6%) responds yes and 52 (68.4%) respond no. Do you need to wear gloves during phlebotomy? 40 (41.6%) responds yes and 35 (52.6%) respond no. Can HIV/AIDS be transmitted by NSI? 56 (73.7%) respond yes and 20 (26.3%) respond no. Do you wear gloves when withdrawing a needle or cannula from a patient? 35 (73.7%) respond yes and 41 (53.9%) respond no. Should needles be bent after use? 33 (43.4%) respond yes and 43 (56.6%) respond no. Do you manually dismantle used needles? (44.7%) respond yes and 42 (55.3%) respond no. Do you wear gloves when disposing contaminated needles? 34 (44.7%) respond yes and 42 (55.3%) respond no. Do you separate the needle from the syringe prior to disposal? 43 (56.4%) respond yes and 33 (43.4%) respond no. Do you separate the needle from the syringe prior to disposal? 21 (27.6%) respond yes and 55 (76.4%) respond no. Post exposure Prophylaxes should be initiated within 1 hour of the injury? 44 (57.9%) respond yes and 33 (42.1%) respond no. More than 20 pathogens have been transmitted by NSI injuries? 33 (43.4%) respond yes and 43 (56.6%) respond no. After NSI the practice to milk out more blood is not recommended by Centre for Disease Control? 35 (46.1%) respond yes and 40 (52.6%) respond no. Hepatitis B carrier has the greatest risk of transmission? 35 (46.1%) respond yes and 41 (53.9%) respond no. Do you know the five steps after NSI event occurred? 35 (46.1%) respond yes and 41 (53.9%) respond no.

Awareness of needle stick injuries	Yes (n)	No (n)	Yes (%)	No (%)
Did you experience needle stick injury?	49	27	64.5	35.5
Did you report the NSI Event?	24	52	31.6	68.4
NSI may lead to significant anxiety for the affected person	33	43	43.4	56.6
Do you know about needles safety device?	15	61	19.7	80.3
Are you aware of universal precautions of NSI?	15	61	19.7	80.3
NSI can be prevented by taking universal precautions?	24	52	31.6	68.4
Do you have to use gloves when performing phlebotomy?	40	35	41.6	52.6
Can HIV/AIDS be transmitted by NSI?	56	20	73.7	26.3
Can Hepatitis C be transmitted by NSI?	41	35	53.9	46.1
Do you wear gloves when withdrawing a needle or cannula from a patient?	35	41	46.1	53.9
Should needles be bent after use?	33	43	43.4	56.6
Do you manually dismantle used needles?	34	42	44.7	55.3
When disposing of infected needles, do you use gloves?	34	42	44.7	55.3
Do you separate the needle and syringe before throwing them out?	43	33	56.4	43.4
Do you immediately place used needles in the sharps container?	21	55	27.6	76.4
Post exposure Prophylaxes should be initiated within 1 hour of the injury	44	33	57.9	42.1
More than 20 pathogens have been transmitted by NSI injuries.	33	43	43.4	56.6
After NSI the practice to milk out more blood is not recommended by Centre for Disease Control.	35	40	46.1	52.6
Hepatitis B carrier has the greatest risk of transmission	35	41	46.1	53.9
Do you know the five steps after NSI event occurred?	27	49	35.5	64.5

Table 2: Awareness regarding prevention of needle stick injuries

DISCUSSION

Needle sticks injury is one of the consistent dangers to health care workers, particularly nursing students who are at high danger due to their restricted clinical experience during their clinical years. Our study was designed to see how much nurses and nursing students are affected with needle stick injury and what measures can be taken to prevent and minimize the cases of NSIs. On the basis of research and all the data collected we can say that experience and NSI are in direct relation with each other, and awareness is quite a reliable method to reduce needle stick injury [16]. In current study, attempt was made to learn about the experience of nursing staff and students regarding NSIs. Data were collected according to variables like awareness students were asked to fill the questionnaire and share their experience while working in the clinical setting. Both male and female students at university of Lahore were asked to fill the questionnaire. All the responses of the given questions and findings were noted. Data of 76 students was collected out of which 24 were males and 52 were females. Out of 76 students, 49 (64.5%) patients were those who experienced NSI, whereas 27 (35.5%) students were those who never experiences NSI. Out of total number of 76 students there are only 27(35.5%) students knew first 5 steps after occurrence of NSI whereas 49(64.5 %)patients had no idea about these steps. The maximum students were 20 to 24 years of age and few students were under 20 years. According to Askarian and Malekmakan, 71.1% (489/688) of students experienced NSIs, which usually occurred in patient rooms (43.6%), while 82% (401/489) of NSIs just weren't reported [17]. However, when compared to our study, only 30.3% of NSI events were reported, while 61.6% of the time just not disclosed at all. Similarly, a study found that NSIs occurred in 61.9% (438/708) of students during their internship years, 14.2% (62/438) among whom made an official report, and the majority (70.1%) did not report NSI reported incidents in the patient's room. (Beynon, 2015). A study conducted by Nusrath et al., out from 105 trainees approached, 78 completed the questionnaire, respondents of (74.28 %)[14]. The majority of participants (70.83 %) were aware of the risk of NSI exposure, the hepatitis immunization schedule (75 %), and universal precautions (90.28 %). Trainees were also aware that Hepatitis B has a higher transmission rate (95.83%). The highest rated type of knowledge on universal precaution was reading books (50%). More than half of respondents were unaware of the Centre for Disease Control's NSI recommendation (CDC). Only one-third of the respondents indicate the proper color source code for sharp trash

collection, with only 6.94% correctly responding to pointed sharps disposal. Comparing this information with the one we concluded only 19.7 % interns were aware of universal precaution of NSI. Similarly, according to our results 46.1 % students knew that hepatitis B carrier has the greatest risk and 56 (73.7%) students knew that HIV plus hepatitis C can also be transmitted through NSIs. In some other study, only 24 % of nurses were aware of the definition of NSI, i.e., they did not distinguish among both damaging and innocuous needle pricks, whereas 25.4 % of participants had adequate knowledge. NSIs are common between many student nurses and healthcare workers, but recurrence coverage is low. What should be investigated further are the mediators, such as management and preparedness of disease control laws, including systemic treatment and follow-up. This recurrence, however, can be reduced if appropriate action is taken. The introduction of new sharp-safe needles reduced NSI occurrence by 26% compared to previous years. Before participating in more serious training projects, students should be guided to increase their knowledge and adherence with Universal Precautions (UP) [18]. Commands on the transmission of disease conditions, standard safety precautions, and increasing the availability of health coverage procedures are required. According to Bagnasco *et al.*, after informative arbitral proceedings, the regularity of NSIs/SIs decreased from 50.5% pre-test to 25.2% post-test, while the report rate increased from 37 to 55.6% [19]. According to the findings of this study, the majority of people experienced anxiety as a result of NSI. According to Handiyani *et al.*, our research, 42.8 % of people suffer from this anxiety. NSI can be avoided if all precautions are taken or if nurses and assistants begin wearing Personal protective equipment's during phlebotomy [20]. According with data collected, only 35 students (46.1%) wear gloves during phlebotomy, and only 46.1% of students wear gloves when withdrawing a needle or cannula.

CONCLUSIONS

Lack of awareness is one of the major factors for needle stick injury. Moreover, it is clearly evident that nursing students are careless in handling used and contaminated needles which is the greatest cause of needle stick injury. It is important for trainers to understand the areas where students lack knowledge about handling needles and cannulas, and to guide them in a better and more elaborative way to minimize the cases to needle stick injuries. To reduce such issues there is a need to train students more efficiently and to arrange proper workshops to guide and help students about NSIs about their prevention and management and to realize students how they use Personal protective equipment like wearing

gloves to avoid any needle stick injury.

Conflicts of Interest

The authors declare no conflict of interest.

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