

Knowledge and Practice of Nurses Regarding Needle Stick Injuries in Public Hospitals Lahore, Pakistan

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Abstract: Needle stick injury (NSIs) is the main transmission source of blood borne infection among health care workers all over the world. Nurses are at high risk of needle stick injury with acquisition of blood-borne infection by pathogens while performing their clinical activities in the hospitals. Thus, this study aim was to assess the knowledge and practice of nurses regarding needle stick injury in Public Hospitals Lahore, Pakistan. Cross sectional study technique was used in the current study. Self-administered questionnaire was distributed among 186 nurses through convenient random sampling. Descriptive analysis was used to analyze the data. Finding of this study shows that most of the nurses have good knowledge about needle stick injury but application of the knowledge in their practical work was poor. The study recommends that the health education program for needle stick injury and prevention measure should be introduced to all the nurses intensively and encourages them to apply during their daily practice.

Keywords: Needle sticks injury, Knowledge, Practice, Nurses

INTRODUCTION:

Needle stick injury, percutaneous injury, or percutaneous exposure incident is the penetration of skin by a needle or other sharp object, which was in contact with blood, tissue, or other body fluid before the exposure [1]. Needle stick injury (NSIs) is one of the major causes of blood body fluid transmitted infections among health care personals, especially nurses [2]. Among these blood body fluids transmitted infections, Hepatitis B and Hepatitis C are very common, according to different literature, and Hepatitis B and C are the most common pathogenic transmitted infections [3]. Health care professional's especially clinical nurses and doctors are at a high risk as compare to those who are not directly involved in patient's care [4]. Worldwide millions of staff nurses are serving and taking care of patients at different departments of hospitals. Majority of these are at a high risk of such sharps pricks. Mainly, the sharps and used needles are contaminated with different pathogenic microorganisms and can lead to very bad consequences.

A research study shows a very high rate that is twenty seven percent of sharps pricks was found among nurses [5]. Most of the researches show that nurses face a particularly high risk of needle stick injury compared to other health professionals because most of the time nurses are in direct contact with patients' care [6]. Especially in developing countries, this rate of needle stick injuries is very high because there is lack of proper awareness about needles sticks injury consequences. There must be proper practical guidelines to avoid needle stick injury and in case if needle stick injury occurs, what will be the protocol to prevent from serious infections. When someone affected by needles stick injuries they can be affected by infectious diseases and then the infections transmitted to other people due to blood contact or direct contact to someone and it transmitted to more people and create a immense problem for health care sector, if the nurses have good practice and good knowledge this issue will be never occur and the nurses also the patients and other health care workers will be safe from this issue. The nurses need to have a good practice on medication when inject the medicines to the patient and give the medicines to the patient carefully because carefully medication cans also minimize this issue [7].

The above argument clearly reflects the aim of the study is to assess the knowledge and practices of nurses regarding needles stick injuries. If the nurses have full knowledge and good practice regarding this issue then by the help of good practice this issue can be minimized. In most hospitals the nurses have very low knowledge about needles stick injuries and some of them don't know that what to do when the needles stick injuries occur. While performing patients'

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tasks, nurses have a very high risk of exposure to a variety of different blood-borne diseases. Top of the list among these blood borne diseases are hepatitis B infection, hepatitis C disease and human immunodeficiency virus [8].

In this Study Needle Stick Injury is dependent variable while Knowledge and Practice is independents variables.

Research Problem:

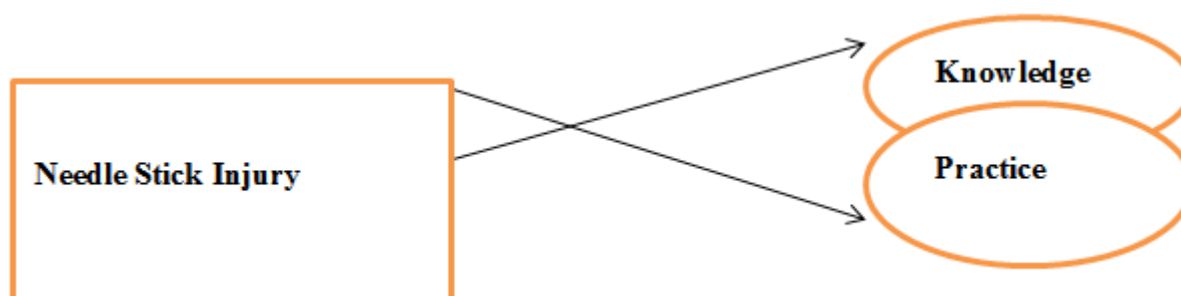
Nurses from all over the world taking care of clients. They are at high risk to have needle stick injury because of shortage and greater work load. While performing patients' tasks, nurses have a very high risk of exposure to a variety of different blood-borne diseases. Top of the list among these blood borne diseases are hepatitis B infection, hepatitis C disease and human immunodeficiency virus [8]. That is why this is a highly required problem to assess and explore.

Significance of the Study:

This study will enhance the nurse's awareness about needle stick injuries and likewise, finding of the study will help the administrators and authorities of the hospital to arrange different workshops or seminar to get proper knowledge to their staff about needle stick injury and how to protect them from needle stick injury. Furthermore, the results of the current study will help the Ministry of Health to provide proper nursing staff to every hospital to minimize the workload on nurses and protect them from infectious diseases which is causes due to needle stick injury.

Research Framework:

The research framework comprises of one dependent variable while two independent variables. The framework shows that the dependent variables i.e. Knowledge and Practice may reflect changes in the independent variable i.e. Needle Stick Injury.



LITERATURE REVIEW:

The nosocomial infection which is a contagious & transmitted from blood to blood contact among health care professions e.g. Hepatitis B, Hepatitis C and HIV are the main contagious diseases which are mainly caused by needle injuries. Nurses, as well as all health providers are at high risk because of contact directly or indirectly with these types of injuries. About eleven to fifty percent of student's nurses had infection story regarding needles stick injuries during their clinical training [9]. During administering IV injections or IM injections, blood transfusion, recapping a needles or needles disposing, blood specimen, blood transfusion from syringe to specimen are common situations related to sharp or needle stick injuries [10].

Knowledge among health care providers must have generate about blood born disease in which the needle stick injuries is on top listed because the professional experience or contact with affected person bodily fluid is interlinked with cross infection whenever knowledge is deficit [11]. Some study also explored about the awareness among medical students regarding needle stick injuries and its related factors were almost poor [12]. Medical personnel as well as all health providers should know about the blood borne diseases and its prevention to educate the patient and community people in the high risk places e.g. patient to patient contact, few diseases in which the immune system of the patient is low and contact with affected person's blood or other bodily fluid [13]. Universal precautions against nosocomial infection among health care providers in which most of the participants were not able to explore the universal precautions against infection, which is proportion to knowledge and awareness and the main point regarding this study was that, how these precautions should be adapted against blood borne infections so this would be the way to prevent the infections and steps will be taken from the behalf of medical or health care providers [14].

Practice of universal precautions, in which he found that despite the standard of procedure (SOP) that is available on sustaining needle stick injuries, in which fifty nine percent were not practiced to minimize the needle stick

injuries and its contamination even they were considered low practice category although it was comparative study among those people who adapt and practice about its prevention and the other side those who did not practice and adapted the universal precautions against needle stick injuries so half the people were infected due to low practices [15]. Nagandla stated in his study that the practice of needle recapping has long forbidden according to the WHO guidelines since 1987 but it is still widely practiced. This clearly shows that there is a redundancy between the knowledge and practice of the Universal Work Precaution [16].

Rapiti found in his study that lack of experience and practice, increased workload and tiredness were the main reasons for the occurrences of needle stick injuries which are similarly observed in medical students where it was noted that it is likely due to an increase in the number of procedures to be performed by the students as they progress through their semesters, inexperience and lack of practice in performing the medical procedures, increased workload and fatigue thus leading to needle stick injuries [17].

A study was completed on gloves practice during surgical procedures, was found poor practice, up to time the health care providers are so busy enough in their work that they forgot gloves during procedures, although it is a high risk procedure when contact with blood because there is no optional or alternative way to fill the gaps during poor practices [18].

METHODOLOGY:

The current study is quantitative descriptive, cross sectional study which assesses the knowledge and practice of nurses regarding needle stick injury in public hospitals in Lahore, Pakistan. The site of the study was the two public hospitals in Lahore. Targeted population of the study was staff nurses of the different departments of the two public hospitals in Lahore. The simple size of the study was (220) nurses, 110 from each hospital and calculated through solvin formula $n = N/1+N (E)^2$.

The study participants were selected through random simple method. All staff nurses from the two public hospitals who were willing to participate have equal opportunity of being part of the study. All other health care workers were not considered as a part of the study. Enough information was provided to participants and this was achieved through a letter of consent attached questionnaire

The tool for this study was a self-reported questionnaire adopted from the article written by Kavitha Nagandla (2015) for the purpose of examining the knowledge and practice of nurses reading needle stick injury. The questionnaires consist of 17 questions. . A five likert scale questionnaire will be used to measure the responses 1 strongly Agree to 5 strongly Disagree. The collected data was analyzed by descriptive of frequency and tables through SPSS version 20.

RESULTS:

Section A: Demographic Analysis

Gender

Data was collected from both male and female nurses. The statistics of Table No.1 show that there were 30 (13.6%) male participants and 190 (86.3%) female participants.

Table 1: Gender

Gender	Frequency	Percentage %
Male	30	13.6
Female	190	86.3
Total	220	100.0

Age Group

Data was collected from the nurses without any age restriction. The results in the Table No. 2 show that 95 (43.18%) of the participants were in the age group of 18-25 years, 80 (36.36%) of the nurses were in the age group of 25-35 years and 45 (20.45%) were in the age group of 35-45 years of age.

Table 2: Age group

Age group	Frequency	Percentage %
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18-25	95	43.18
25-35	80	36.36
35-50	45	20.45
Total	220	100.0

Qualification

Table No. 3 illustrates about the qualification of the participants. There were 153 (69.54%) Diploma nurses in the study, 67 (30.45%) of the nurses were BSN.

Table 3: Qualification

Qualification	Frequency	Percentage %
Nursing Diploma	153	69.54
BS Nursing	67	30.45
Total	220	100.0

Section B: Analysis of Research Questions (Knowledge Questions)

Research Question 1:

Absence of pierced, overflowing, or open sharps containers can cause needle stick injury

Table No. 4 illustrates that 40 (18.1%) participants responded to strongly disagree and 35 (15.9%) were response to disagree and 28 (12.7%) respondents were neutral about this question. And a significant number 37(16.8%) of the respondents were agree and 80 (36.5%) were strongly agree.

Table 4: Absence of pierced, overflowing, or open sharps containers can cause needle stick injury.

Absence of pierced, overflowing, or open sharps containers can cause needle stick injury.	Frequency	Percentage %
Strongly disagree	40	18.1
Disagree	35	15.9
Neutral	28	12.7
Agree	37	16.8
Strongly agree	80	36.5
Total	220	100.0

Research Question 2:

Needle stick injury can be occurring due to absence of two-handed recapping of syringe.

Table No. 5 reveals that 10 (4.5%) participants responded to strongly disagree and 30 (13.6%) responded to disagree and 65 (29.5%) of respondents were neutral about this statement. A lot of the respondents 50 (22.7%) were agree and 65 (29.5%) respondents were responded to strongly agree which reflect positive response.

Table 5: Needle stick injury can be occurring due to absence of two-handed recapping of syringe.

Needle stick injury can be occurring due to absence of two-handed recapping of syringe.	Frequency	Percentage %
Strongly disagree	10	4.5
Disagree	30	13.6
Neutral	65	29.5
Agree	50	22.7
Strongly agree	65	29.5
Total	220	100.0

Research Question 3:

It is necessary to sterilize sharp instruments before reuse.

Table No. 6 describes that only 13 (5.9%) participants were responded to strongly disagree and 20 (9.0%) were responded to disagree that it is necessary to sterilize sharp instruments before reuse and 55 (25%) of responded were neutral. 67 (30.4%) of the respondents mentioned that they were agree and 65 (29.5%) were strongly agreed. The result revealed that these sterilization of sharp instruments before reuse id important.

Table 6: It is necessary to sterilize sharp instruments before reuse.

It is necessary to sterilize sharp instruments before reuse.	Frequency	Percentage %
Strongly disagree	13	5.9
Disagree	20	9.0
Neutral	55	25
Agree	67	30.4
Strongly agree	65	29.5
Total	220	100.0

Research Question 4:

Hand washing after any direct contact with patients.

Table No. 7 indicates that only 20 (9%) participants responded to disagree, 48 (21.8%) respondents were neutral about the statement, 72 (32.7%) respondents were agree and 80 (36.3%) were strongly agree which reflects that most of the respondents believe that hand washing after any direct contact with patients..

Table 7: Hand washing after any direct contact with patients

Hand washing after any direct contact with patients.	Frequency	Percentage %
Disagree	20	9.0
Neutral	48	21.8
Agree	72	32.7
Strongly agree	80	36.3
Total	220	100.0

Research Question 5:

Needle recapping is necessary.

Table No. 8 shows that just 9 (4.0%) of the respondents were responded to strongly disagree, 11 (5.0%) were responded to disagree and 35 (15%) respondents were neutral about this statement. And 78 (35.4%) respondents were responded to agree and 87 (39.5%) were strongly agree to the above statement which clearly shows that needle recapping is necessary.

Table no 8: Needle recapping is necessary.

Needle recapping is necessary.	Frequency	Percentage %
Strongly disagree	9	4.0
Disagree	11	5.0
Neutral	35	15.0
Agree	78	35.4
Strongly agree	87	39.5
Total	220	100.0

Research Question 6:

A safe collection and disposal sharp is important to prevent from needle stick injury.

Table No. 9 reveals that 7 (3.1%) of the respondents were strongly disagreed, 13 (5.9%) were disagreed and 27 (12.2%) of the participants were neutral about the question. 65 (29.5%) of respondents were agree and 108 (49%) were strongly agree to this statement, which indicates that these respondents significantly agreed that safe collection and disposal sharp is important to prevent from needle stick injury.

Table 9: A safe collection and disposal sharp is important to prevent from needle stick injury.

A safe collection and disposal	Frequency	Percentage %
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sharp is important to prevent from needle stick injury.		
Strongly disagree	7	3.1
Disagree	13	5.9
Neutral	27	12.2
Agree	65	29.5
Strongly agree	108	49.0
Total	220	100.0

Research Question 7:**Wearing glove is not always necessary.**

Table No. 10 mentions that a few 8 (3.6%) of respondents were strongly disagree, 16 (7.2%) were agreed and 35 (15.9%) of respondents are neither agree nor disagree to the statement. Moreover a significant number of the nurses i.e. 70 (31.8%) of the respondents were agree and 91 (41.3%) were strongly agree about the statements that wearing glove is not always necessary.

Table 10: Wearing glove is not always necessary.

Wearing glove is not always necessary.	Frequency	Percentage %
Strongly disagree	8	3.6
Disagree	16	7.2
Neutral	35	15.9
Agree	70	31.8
Strongly agree	91	41.3
Total	220	100.0

Research Question 8:**Safe system for hospital waste management is important.**

Table No. 11 indicates that 7 (3.1%) of respondents' response were strongly disagree and 15 (6.8%) were disagree and 58 (26.8%) of respondents were neutral about the statement. Most of the students 76 (34.5%) were agree and 64 (29.5%) were strongly agree, which revealed that safe system for hospital waste management is important.

Table 11: Safe system for hospital waste management is important.

Safe system for hospital waste management is important.	Frequency	Percentage %
Strongly disagree	7	3.1
Disagree	15	6.8
Neutral	58	26.8
Agree	76	34.5
Strongly agree	64	29.0
Total	220	100.0

Research Question 9:**Take post exposure prophylaxis regime.**

Table No. 12 shows that 5 (2.2%) of the respondents were strongly disagree, 11 (5%) were disagree and 55 (25%) of the respondents were neutral about the statement. A significant number of the nurses i.e. 66 (30%) agree and 83 (37.7%) were strongly agree to the stated question.

Table 12: Take post exposure prophylaxis regime.

Take post exposure prophylaxis	Frequency	Percentage %
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regime.		
Strongly disagree	5	2.2
Disagree	11	5
Neutral	55	25
Agree	66	30
Strongly agree	83	37.7
Total	220	100.0

Research Question 10:

Clean the wound with water.

Table No. 13 reveals that only 5 (2.2%) of respondents replied in strongly disagree, 10 (4.5%) were disagree and 46 (20.9%) of the respondents were neutral to the statement. While a significant number of respondents i.e. 87 (39.5%) remained agree and 72 (32.7%) were strongly agree to the statement that Clean the wound with water.

Table 13: Clean the wound with water.

Clean the wound with water.	Frequency	Percentage %
Strongly disagree	5	2.2
Disagree	10	4.5
Neutral	46	20.9
Agree	87	39.5
Strongly agree	72	32.7
Total	220	100.0

Analysis of Practice Questions

Research Question 1:

I protect myself against blood and body fluids of all patients regardless of their diagnosis.

Table No. 14 mentions that 69 (31.3%) of the respondents were strongly disagree, 58 (26.3%) were disagree to the statement and 46 (20%) of respondents remained undecided about the statement. Most of the nurses 20 (9.0%) responded as agree and 27 (12.2%) were strongly agree, which reflects negative response that protect yourself against blood and body fluids of all patients regardless of their diagnosis.

Table 14: I protect myself against blood and body fluids of all patients regardless of their diagnosis.

I protect myself against blood and body fluids of all patients regardless of their diagnosis.	Frequency	Percentage %
Strongly disagree	69	31.3
Disagree	58	26.3
Neutral	46	20.9
Agree	20	9.0
Strongly agree	27	12.2
Total	220	100.0

Research Question 2:

I put used needles and other sharp objects into the designated sharps containers.

Table No. 15 shows that 56 (25.4%) of the respondents were strongly disagree, 65 (29.5%) were disagree and 40 (18.1%) of the respondents remained neutral. A lot of the respondents i.e. 31 (14.0%) were agree and 28 (12.7%) was strongly agree to the statement.

Table 15: I put used needles and other sharp objects into the designated sharps containers.

I put used needles and other sharp objects into the designated sharps containers.	Frequency	Percentage %
Strongly disagree	56	25.4
Disagree	65	29.5
Neutral	40	18.1
Agree	31	14.0
Strongly agree	28	12.7
Total	220	100.0

Research Question 3:

I wear gloves whenever there is a possibility of exposure to blood or other body fluid.

Table No. 16 mentions that 63 (28.6%) of the respondents were strongly disagree, 70 (31.8%) were disagree and 30 (13.6%) of the respondents were neutral about the statement. Only 27 (12.2%) of the respondents were agree and 30 (13.6%) of the respondents were strongly agree about the question; hence the overall responses indicate that most of the nurses were not wearing gloves whenever there is a possibility of exposure to blood or other body fluid.

Table 16: I wear gloves whenever there is a possibility of exposure to blood or other body fluid.

I wear gloves whenever there is a possibility of exposure to blood or other body fluid.	Frequency	Percentage %
Strongly disagree	63	28.6
Disagree	70	31.8
Neutral	30	13.6
Agree	27	12.2
Strongly agree	30	13.6
Total	220	100.0

Research Question 4:

Prevention of hospital acquired infection is a valuable part of health care workers role.

Table No. 17 reveals that 51 (23.1%) of the participants were strongly disagrees, 46 (20.9%) were disagree and 34 (15.4%) were neutrals about the statement. A very few number of the nurses i.e. 45 (20.4%) and 44 (20%) were agree and strongly agree respectively which indicates that prevention of hospital acquired infection is a valuable part of health care workers role.

Table 17: Prevention of hospital acquired infection is a valuable part of health care workers role.

Prevention of hospital acquired infection is a valuable part of health care workers role.	Frequency	Percentage %
Strongly disagree	51	23.1
Disagree	46	20.9
Neutral	34	15.4
Agree	45	20.4
Strongly agree	44	20
Total	220	100.0

Research Question 5:

I believe I have the power to change poor practices in the workplace regarding needle stick injury.

Table No. 18 illustrates that 60 (27.7%) of the respondents were strongly disagree and 74 (33.6%) were agree to the statement and 28 (12.7%) of the respondents were neutral about the statements. A minor number i.e. 25 (11.3%) of the respondents replied as agree and 33 (15%) of the respondents were strongly agree to the stated question; hence they are agreed that we have the power to change poor practices in the workplace regarding needle stick injury.

Table 18: I believe I have the power to change poor practices in the workplace regarding needle stick injury.

I believe I have the power to change poor practices in the workplace regarding needle stick injury.	Frequency	Percentage %
Strongly disagree	60	27.7
Disagree	74	33.6
Neutral	28	12.7
Agree	25	11.3
Strongly agree	33	15
Total	220	100.0

Research Question 6:

I wear eye protective (goggles/glasses) whenever there is possibility of blood or other body fluids splashing on my face.

Table No. 19 reveals that 81 (36.8%) of the participants were strongly disagrees, 60 (27.2%) were disagree and 20 (9.0%) were neutrals about the statement. Some of the nurses i.e. 23 (10.4%) and 36 (16.3%) were agree and strongly agree respectively which indicates that wearing eye protective (goggles/glasses) whenever there is possibility of blood or other body fluids splashing on face.

Table 19: I wear eye protective (goggles/glasses) whenever there is possibility of blood or other body fluids splashing on my face.

I wear eye protective (goggles/glasses) whenever there is possibility of blood or other body fluids splashing on my face.	Frequency	Percentage %
Strongly disagree	81	36.8
Disagree	60	27.2
Neutral	20	9.0
Agree	23	10.4
Strongly agree	36	16.3
Total	220	100.0

Research Question 7:

Performing hand hygiene after caring for a wound can protect from infections and from needle stick injury.

Table No. 20 mentions that 61 (27.7%) of the respondents were strongly disagree, 83 (37.7%) were disagree and 21 (9.5%) of the respondents were neutral about the statement. 28 (12.7%) of the respondents were agree and 27 (12.2%) of the respondents were strongly agree about the question; hence the overall responses indicate that performing hand hygiene after caring for a wound can protect from infections and from needle stick injury was poor.

Table 20: Performing hand hygiene after caring for a wound can protect from infections and from needle stick injury.

Performing hand hygiene after caring for a wound can protect from infections and from needle stick injury	Frequency	Percentage %
Strongly disagree	61	27.7
Disagree	83	37.7
Neutral	21	9.5
Agree	28	12.7
Strongly agree	27	12.2
Total	220	100.0

DISCUSSION:

The current cross-sectional study sought out the score of knowledge and practice regarding needle stick injury included 220 nurses both male and female aging between 22-50 years from two public hospitals in Lahore, Pakistan . The findings of this study show that most of the nurses have good knowledge about needle stick injury but their application in practical life is poor. According to this study, almost nurses had misconception about preventive measures for needle stick injury as responses showed, toward preventive measures in which most of nurses i.e. 69 (31.3%), 56 (25.4%), 63

(28.6%), 51(23.1%), 60(27.7%), 81 (36.8%) and 61 (27.7%) respectively were completely poor practice that how to protect from needle stick injury.

Pattinaik highlighted in his study that 66.7% prevalence rate among the nurses in East India and similar reasons are noted in several studies. The practice of needle recapping has long forbidden according to the WHO guidelines since 1987 but it is still widely practiced. This clearly shows that there is a redundancy between the knowledge and practice of the Universal Work Precaution [19].

Similarly the questions related to knowledge most of the nurses i.e. 80 (36.5%), 65 (29.5%), 65 (29.5%), 80 (36.5%), 87 (39.5%), 108 (49.0%), 91 (41.3%), 83 (37.7%) and 76 (34.5%) were marked to the strongly agree which indicated that nurses have good knowledge about needle stick injury.

Kavitha emphasized in his study done among 345 HCWs in Serdang Hospital, it has been reported that the prevalence of the needle stick injury was high. Staff nurses had the highest prevalence reporting with an incident. It has been reported that the hypodermic needles were among the highest with cases were recapping. However only 30.9% have reported the incident of needle stick injury and this indicates that, there is a gap between the knowledge and practice among the HCWs. Although the knowledge on Universal Precaution is good, the prevalence of needle stick injury is still high and there are loop holes between the knowledge and practice of the reporting thus it can be safely concluded that needle stick injury continue to pose a serious occupational problem [20].

CONCLUSION:

The current study examines the knowledge and practice of nurses regarding needle stick injury. The result indicate that the knowledge of needle stick injury among the nurses were quite high. The study revealed that the nurses aware about needle stick injury and preventive measure satisfactorily but application on their practical training was poor. It would be recommend that the health education program for needle stick injury and prevention measure should be introduced to all the nurses intensively and encourage them to apply during their daily practice. Since, nurses were also at the risk of getting infection, they should have been immunized with Hepatitis B vaccine.

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