

ASSESSMENT OF KNOWLEDGE, ATTITUDES AND PRACTICE  
REGARDING NEEDLES STICKS INJURIES AMONG NURSES IN  
DISTRICT PESHAWAR

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**Abstract**

**Introduction:** Needle stick an injury is a wound or cut that is generated by needles that accidentally rip or puncture the skin. This can result in contact with tainted blood and the fluids of the body. Needle stick injuries are very harmful for the health care workers and it may cause severe infections diseases.

**Objective:** The study aims is to categorize and identify the knowledge, practice and attitudes about needle stick injuries among nurses.

**Methodology:** a cross-sectional study was carried out in district Peshawar. Participants were recruited from HMC. Data was collected from overall, 230 nurses. Permission was granted from the university and participants before collecting of the data. Data was collected using an adopted questionnaire.

**Results:** Overall, 230 participants were recruited in the study. The majority of the participants were from the age group 20 to 30 years. 136 of the participants were female while the majority (59%) of the nurses was holding BSN degree. Overall, 71% participants were reported Poor knowledge, 70% participants were reported unsatisfactory practices and 74% participants were reported unsatisfactory attitude regarding needle stick injuries.

*Conclusion: The findings of the study concluded that the nurses had poor knowledge towards needle stick injuries; also they have unsatisfactory practices and attitude towards needle stick injuries.*

## INTRODUCTION

### 1.1 BACKGROUND OF THE STUDY:

Needle stick an injury is a wound or cut that is generated by needles that accidentally rip or puncture the skin. This can result in contact with tainted blood and the fluids of the body (1). The analysis consisted of a total of 87 investigations, which were carried out on a combined total of 50,916 Health care workers throughout 31 nations around the world. The worldwide pooled estimate of the prevalence of Needle stick Injuries (NSIs) among Health care workers (HCWs) after one year was 44.5 percent. The South East Asia area has the highest prevalence of NSIs, coming up at 58.2 percent. The prevalence of non-work-related injuries was highest among dentists at 59.1 percent. The usage of hypodermic needles was the leading cause of non-work-related injuries at 55.1 percent (2).

NSIs are the source of not only physical injuries but also emotional affects and financial losses as well (3). It is estimated that injuries caused by needle sticks that occur while insulin is being administered cost the National Health Service in the United Kingdom approximately 600,000 pounds per year. These costs include post-needle stick injury prophylaxis, laboratory tests, counseling, treatment of transmitted diseases, and litigation (4). The financial cost of controlling NSIs is high, ranging from US\$51 to US\$3,766 (USD) for every incidence of NSIs in the United States (5).

Needle stick injuries, also known as NSIs, are one of the dangers and difficulties that might put healthcare workers at risk of contracting infections (6). The health of thousands of people who work in healthcare is put at risk by a number of biological hazards, including HIV, hepatitis B and c, and others. Injury caused by the accidental insertion of a needle into the skin is the most prevalent route of transmission for these infections (7). It is estimated that between 600,000 and one million needle sticks take place annually in the United States, and that around

16,000 of these needles carry the virus that causes HIV. The Centers for Disease Control and Prevention claim that just 10 percent of incidents of this kind are ever recorded (8).

According to the World Health Organization (WHO), the average number of non-fatal injuries that occur in the health care sector each year across Asia, Africa, and the western Mediterranean region is four per person (9). According to the World Health Organization (WHO), the term "safe injection" refers to an injection that does not cause any harm to the person receiving it, does not put the person administering it in any unnecessary danger, and does not produce any waste that could endanger the community. In many impoverished countries, irrational and sometimes dangerous injection practices are widespread (10).

Needle stick injuries can be prevented by applying "Universal precautions" as a protection measure (11). The risk of infection with blood-borne pathogens among healthcare workers is significantly increased when they are exposed to blood and other body fluids through the use of contaminated needle sticks and sharp equipment. This poses a significant professional danger (12).

In Pakistan the reported incidence of needle stick injuries is 0.29% in consultants, 24.5% in trainees, 44.7% in house officers and 16.3% in nurses Reported and non-reported needle stick injuries are highly common in medical injuries especially in nurses (13). Awareness about the severity of needle stick injury, blood borne pathogen and infections must be provided to nursing students, staff and professionals by organizing workshops and seminar to decrease the risk of Needle Sticks injuries (14).

### 1.2 PURPOSE OF THE STUDY:

Needle stick injuries are highly prevalent among nurses but there are very few studies which can explain its prevalence in nurses. As Nurses safety are more important than patient care so it is

required for professional nurse to know about needle stick injuries. The purpose of our study is to identify and evaluate the knowledge and attitudes among nurses about needle sticks injuries in Peshawar and plan for how to prevent needle sticks injury in future.

#### a1.3 OBJECTIVES OF THE STUDY:

1. The study aims is to assess the level of knowledge, determine attitudes and observe practice about needle stick injuries among nurses.

#### 1.4 OPERATIONAL DEFINITIONS

1. **Knowledge:** the information, understanding and skills that you gain through education or experience about needle sticks injuries among nurses.

2. **Nurse:** Nurses as one of the health service providers and members in health system who are responsible for giving care to the clients by giving medication and expose to needles sticks injuries.

3. **Needle sticks injuries:** Needle sticks injuries are wound caused by needles that are unintentionally puncture the skin among nurses.

4. **Attitudes:** A process that nurses perceive needle sticks injury and determine its prevention in nursing practice among nurses.

5. **Practice:** Practice that nurses doing on the basis of knowledge.

#### LITERATURE REVIEW

##### 2.1 SEARCH STRATEGY:

Literature review is the most important component of the study. Literature review provides the existing literature about the problem of concern. Different search engines have been used to search the literature for the study such as Google Scholar, Pubmed and Medline. Currently, needle sticks injuries are one of the most important occupational hazards among health care worker globally. According to World Health Organization, more than two million occupational exposures to sharp injuries occurs among 35 million health care personnel annually.

A cross sectional study was done by Anisa, et al 2020 in one of the hospital of Bojonegoro in

Indonesia. The purpose of the study to assess the needle pricked injuries and related factors on health care workers. The study includes 91 sample size and data were acquired by observation, questionnaire, hospital data and other supportive data. The Chi-Square Test was used for data analyzing. This study shows that education level and unsafe actions are related to needle pricked injuries in health care workers in this hospital (15).

A retrospective study was carried out at King Hussain Medical Center in Saudi Arabia between 2013 -2018. The purpose of the study is to evaluate the most exposure group to needle sticks injuries among health care workers. A 393 sample size was taken in this study by using Convenient Sampling technique. They take all health care workers and conclude that most cases of needles sticks injuries were identified of nurses and cleaners (16).

A cross sectional study was done in Tehran Iran in six hospitals. The purpose of the study is to find HCV and HBV among Iran Surgeon causes due to needle sticks injuries. They take 318 sample sizes and the data was analyzed by Fisher exact test and Kruskal Walls test. This study show the prevalence of Hepatitis B and C is not very high among them (17).

The randomized control trails was done by Bijani M, et al J Natl med associated in 2018. Nurses are the most prone group that is faced with professional injuries caused by contact to needle stick injuries. In this study a group of nurses were selected in the experimental and control groups. A persistent education program for experimental group was performed. After having this program, the effectiveness was according to Kirkpatrick's model. Data analysis was conducted by different test. The result from the execution of continuing education program showed that through designing training programs and awareness in nursing personnel we can reduce occupation exposure to needle stick injuries (18).

A study was done by Santos, et al in 2018 to control the strength of needle sticks with safety devices to alleviate questionnaire of job-related bad luck. Although search for original articles and organized analysis on the main root of

Health area, published from 2000 to 2016 in Portuguese, English and Spanish. Most probably eleven articles were considered which enlightens the fact that passive safety inventions helps to overcome the risk of injuries by needle sticks which conduct huge solvency when merged with grounding of workers (19).

A study was done by Rituja V. Sardesai, et al in Jan. 2018. The objective of this study was to check the awareness about health hazards associated with needle stick injuries (NSIs) and hepatitis B vaccination in house care personnel (HCWS). This cross sectional study was conducted among 100 HCWs in tertiary care government hospitals. Questionnaires were used and answers were conducted. Out of 100 HCWs, 45% had history of NSIs during their career. Only 21% of HCWs knew about diseases transmitted by NSIs. The conclusion of this study is that the questions regarding health hazards due to NSIs was inadequate (20).

A prospective cross-sectional study was conducted in three hospitals of Sri-lanka in 2017. The aim of the study is to purpose is to find out the existing prevalence rate of needle pricked injuries among nurses in Sri-lanka health system. Their Sample size was 422 which were selected by Simple Random Sampling technique. A self-administered questionnaire was used for data collection. This study indicate that prevalence rate is still high, negligence and ignorance are the main causes (21).

A study was held in 2017 by Ahmed Saleh, et.al. It is very significant that the nurses should have the knowledge how to control infections because they have the closest contact with the patients. They should have the latest information about the infections and their protections. The program "Training for nursing staff related to blood parasites by needle stick injury" was carried in two military hospitals. 90 staff members participated in this study. 50 nurses from The Military General Hospital and 30 nurses from The Military Fever Hospital. Educational need, knowledge questionnaire, checks list, behavior and participant's assessment form was the basic criteria. As such no change occurs through the study. Therefore, training related to blood

parasites by needle sick injury must be provided more often, so that the nursing staff can advance them according to the study tools (22).

A survey was established by Williams GJ, et al in 2016. Suture needle handling methods vary extensively between units. Securing the needle tip by locking it against the shaft of the needle holder earlier to handover has been suggested to improve safety, although this is not confirmation based. The method used in the survey was that the Scrub nurses from different universities selected their favorite method (protected, unprotected or either), and directed prior NSIs with either technique. Multinomial regression analysis and  $\chi^2$  with Yates correction were used to evaluate associations. One hundred and seven scrub nurses from 12 specialties were interviewed. There was no important association between needle-mounting preference and years of scrub experience or specialty. Significant differences between preferences and four of the six hospitals were observed. After all we conclude that protected needle transfer seems safer than the unprotected method (23).

A study was done by Prasuna J, et al in 2015. The present investigation demonstrated a high rate of needle stick injuries among nursing students with increasingly under-detailed cases and subjects didn't know about post demonstration measures. Needle stick injury turned into a important problem and the majority of the examination centers around Nurses, Doctors and other health care workers and yet nursing students in clinical duties are at high threat. The current examination is scheduled to measure the incident of needle stick injury along with post introduction measures and assessment of the evidence in respects to needle stick injury among nursing student. Students were addressed in regards to their incident to Needle Stick Injury all through their clinical training and measures taken after the presentation (24).

A cross-sectional survey was conducted in September 2012 using qualitative interview based questionnaire was administer on 200 dental professionals in a dental college of Bangalore (India) to assess the knowledge, attitudes and Practice of dental professionals about NSIs. This

study show that the knowledge of dental professionals about NSIs and their preventive measure are inadequate (25).

## METHODOLOGY

### 3.1 STUDY DESIGN:

Cross-sectional study design was used to conduct the study.

### 3.2 STUDY SETTING:

Peshawar District was the focus of the research endeavor. In the province of Khyber Pakhtunkhwa, data was gathered at Hayatabad Medical Complex Hospital. The data collection was place in several departments throughout these hospitals.

### 3.3 STUDY DURATION:

The study was completed in two months. Before the data were collected in the beginning, approval had to be obtained from the management of the hospital.

### 3.4 SAMPLING SIZE:

Sample size was calculated using online sample size calculator. With 95% confidence interval and Margin of error of 5%, with previous proportion of 82% the anticipated sample size was calculated to be 227. Eventually, a sample size of 230 was selected for the collection of data.

**Formula:**  $n = z^2 * p(1-p) / d^2$

- n is the preferred sample size
- p= the estimated prevalence
- d= Margin of error set at 0.05
- z= the standard normal deviation usually put at 1.96 which is equal to 95% confidence interval. 95% confidence interval  $\alpha=0.05$

### 3.5 SAMPLING TECHNIQUES:

Methods of sample random sampling were utilized in the selection process in order to find participants for the study. The nurses came from a variety of departments throughout the hospital, such as the operating room, medical and surgical units, acute care units, and gynecological units.

### 3.6 SAMPLING SELECTION:

#### 3.6.1 INCLUSION CRITERIA:

- All the nurses working in Hayatabad Medical Complex (HMC) Peshawar from at least one year were included in the study.

#### 3.6.2 EXCLUSION CRITERIA:

- Student nurses and nurses on the management level were excluded to participate in the study.

### 3.7 DATA COLLECTION TOOL:

Data wa gathered using an adoptive questionnaire. There were four sections to the questionnaire. Socio-demographic information on the nurses was included in Section "A." section "B" is consisting of seven questions regarding Knowledge, section "C" is consisting of 7 questions regarding Attitude and section "C" is consisting of 7 questions regarding practices towards needle stick injuries. All the questions will be responded as yes and No.

### 3.8 DATA COLLECTION PROCEDURE:

The administration of the relevant hospitals initially approved the study. The hospital management also gave their consent for data collecting. All the nurses were assessed in the different units of the concern hospitals. Data was collected using an adopted questionnaire. Data was collected by primary investigator of the study.

### 3.9 DATA ANALYSIS:

Data was analyzed using SPSS version 24. Frequencies and percentages were calculated for all the variables. Mean and standard deviation was calculated for contentious variables.

### 3.10 ETHICAL CONSIDERATION:

- Every person who took part in the research project was required to sign a permission form.
- The participants in the study were given a comprehensive rundown of the aims and objectives of the research before data collection began.

- It was made clear to the volunteers that their participation in the study would not result in any positive or negative outcomes.
- In order to maintain the anonymity of the participants, the data collection took place in a separate room, and the participants were assured that the information they provided would never be disclosed to anyone other than the supervisor.

**RESULTS**

**4.1 SOCIO-DEMOGRAPHIC PROFILE:**

Overall, 230 participants were recruited in the study. The majority of the participants were from the age group 20 to 30 years followed by 31 to 40 years (21%) and 41 to 50 years (20%). Results are shown in Figure 1.

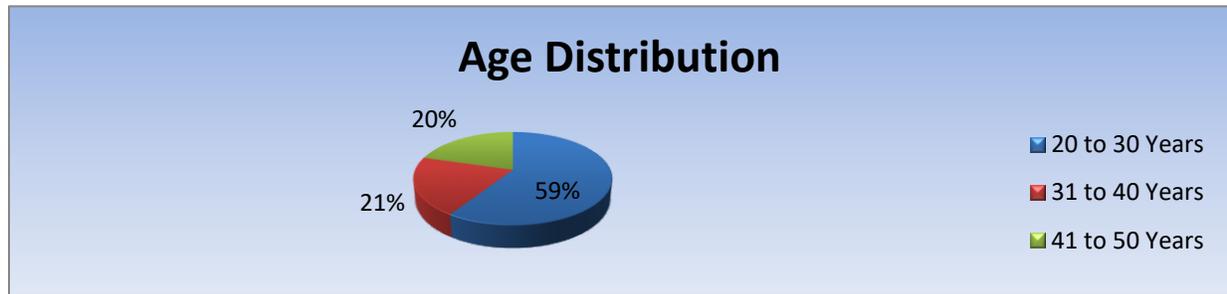


Figure 1: Pie-Chart depicting age distribution of the age.

Out of 230 participants the majority (136) of the participants was female while the remaining (94) were male (Figure 2).

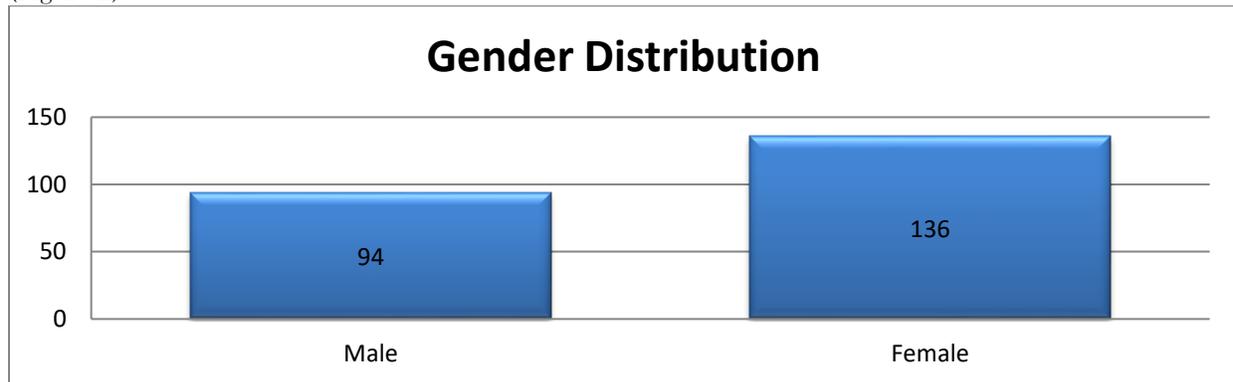


Figure 2: Gender distribution of the participants

The qualification of the participants was asked. The majority (59%) of the nurses were holding BSN degree while the remaining (41%) nurses were holding diploma in nursing. Results are shown in Figure 3.

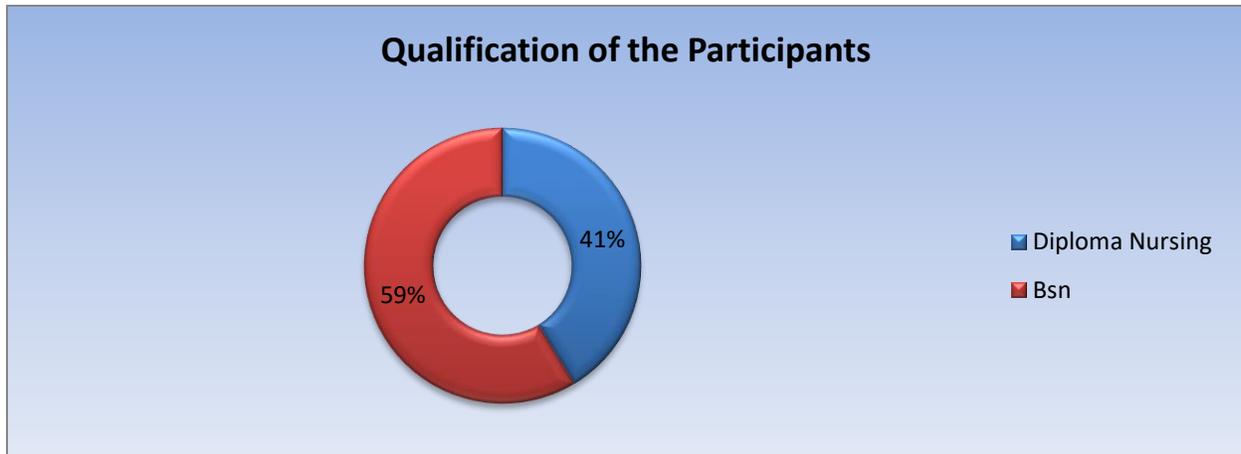


Figure 3: Pie-Chart depicting qualification of the participants

The majority (72%) of the participants were having 1 -5 years’ experience, followed by 6 – 10 experience (15%) and 11 – 15 years’ experience (13%). Results are shown in Figure 4.

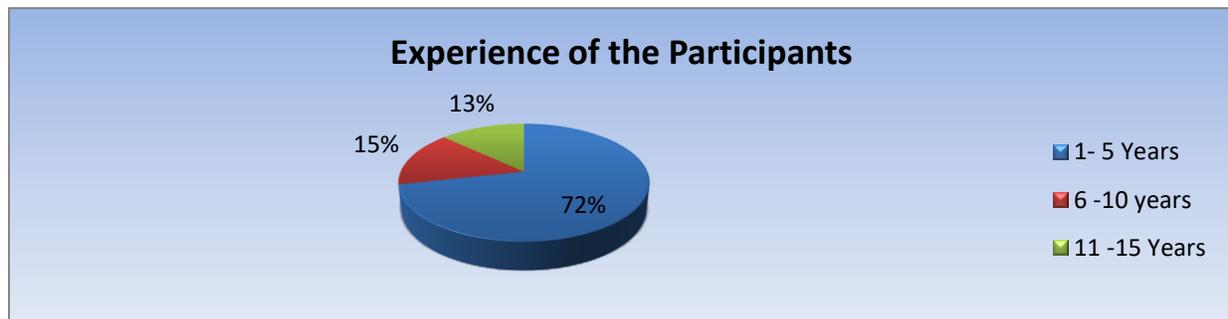


Figure 4: Pie-Chart depicting experience of the participants

**4.2 KNOWLEDGE REGARDING NEEDLE STICK INJURIES:**

The knowledge of the participants was assessed. The majority (71.3%) of the participants were reported that Needle sticks injury a percutaneous wound. 86.1% of the participants were reported that the person exposed to needle stick injury need tetanus vaccination. 56.5% of the nurses were reported that there is no risk of HIV transmission during needle sticks injury. The

majority (56.6%) of the participants were reported that there is no risk of HIV transmission during needle sticks injury. 97% of the participants were reported that there is no availability of HCV vaccine after needle stick injury. 97% of the participants were reported that the infection transmitted does not from needle stick injuries life threatening. 75.2% of the nurses were stated that the affected area be washed with soap and water. Results are given in Table 1.

Table 1: Knowledge of the Nurses towards needle stick injuries, n=230

Items		Yes	No
Needle sticks injury a percutaneous wound?	f	164	66
	%	71.3%	28.7%
The person exposed to needle stick injury need tetanus vaccination?	f	198	32
	%	86.1%	13.9%
	f	100	130

There the risk of HIV transmission during needle sticks injury?	%	43.5%	56.5%
there availability of HCV vaccine after needle stick injury	f	7	223
	%	3.0%	97.0%
every nurse has chance to get needle stick injury	f	173	57
	%	75.2%	24.8%
the infection transmitted from needle stick injuries life threatening	f	7	223
	f %	3.0%	97.0%
the affected area be washed with soap and water	f	173	57
	%	75.2%	24.8%

**4.3 ATTITUDE TOWARDS NEEDLE STICK INJURIES:**

The majority (63.9%) participants were reported that post-exposure prophylaxis therapy should not be initiated within 1 hour of exposure of needle stick injury. 64.8% of the participants were reported that needle cannot be recapped by using one hand to hold the cap and other to hold the needle. 67.8% of the participants were stated

that Needle stick injuries avoidable things for nurses. All the participants were reported that increase workload lead to needle stick injury. 67.8% of the participants were stated that availability of protective equipment predisposes a person to get needle stick injuries. 4.8% of the participants were reported that reporting after needle stick injury is not much useful (Table 2).

**Table 2: Attitude of the participants towards needle stick injuries**

Items		Yes	No
Post-exposure prophylaxis therapy should be initiated within 1 hour of exposure of needle stick injury	f	83	147
	%	36.1%	63.9%
needle be recapped by using one hand to hold the cap and other to hold the needle	f	81	149
	%	35.2%	64.8%
Needle stick injuries unavoidable things for nurses	f	74	156
	%	32.2%	67.8%
increase workload lead to needle stick injury	f	230	0
	%	100.0%	0.0%
standard precautions to handle the sharp objects must always follow, as improper handling can lead to get infection	f	230	0
	%	100.0%	0.0%
unavailability of protective equipment predispose a person to get needle stick injuries	f	74	156
	%	32.2%	67.8%
reporting after needle stick injury is not much useful	f	11	219
	%	4.8%	95.2%

**4.4 PRACTICES:**

All the participants were reported that health education for universal precaution on Needle Sticks Injuries to the students and healthcare workers reduce the prevalence of needle stick injuries among them. The majority (80.9%) of the participants were reported that there is a risk of infection, Can confidence and skillfulness

prevent injury. 53.9% of the participants were state that we do not learn about standard precaution for needle stick injury. Similarly, 66.1% of the participants do not recapping needle prevents risk for needle stick injuries. In addition, 44% participants were reported that needle stick injuries, the risk of transmission of blood-borne disease. 48 participants were

reported that needle sticks injury cause transmission of pathogens. 60.8% participants

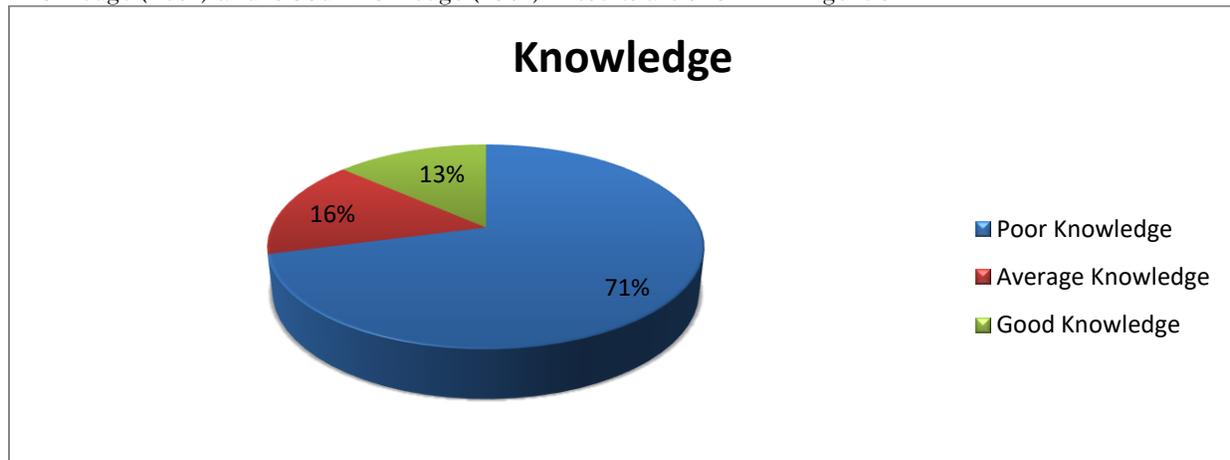
were reported that bleeding should not be encouraged at the site of injury (Table 3).

**Table 3: Attitude of the nurses towards needle stick injuries n=230**

Items		Yes	No
health education for universal precaution on Needle Sticks Injuries to the students and healthcare workers reduce the prevalence of needle stick injuries among them	f	230	0
	%	100.0%	0.0%
there is a risk of infection, Can confidence and skillfulness prevent injury	f	186	44
	%	80.9%	19.1%
we not learned about standard precaution for needle stick injury	f	106	124
	%	46.1%	53.9%
recapping needle prevents risk for needle stick injuries	f	78	152
	%	33.9%	66.1%
needle stick injuries, the risk of transmission of blood-borne disease	f	230	130
	%	44%	56%
needle sticks injury cause transmission of pathogens	f	120	120
	%	48%	52%
bleeding should be encouraged at the site of injury	f	90	140
	%	39.2%	60.8%

**4.5 OVERALL, KNOWLEDGE, ATTITUDE AND PRACTICES TOWARDS NEEDLE STICK INJURIES**

Overall, 71% participants were reported Poor knowledge regarding needle stick injuries, followed by average knowledge (16%) and Good knowledge (13%). Results are shown in Figure 5.



**Figure 5: Pie-Chart depicting knowledge of nurses towards needle stick injuries**

Overall, 70% participants were reported unsatisfactory practices regarding needle stick injuries, followed by satisfactory (30%). Results are shown in Figure 6.

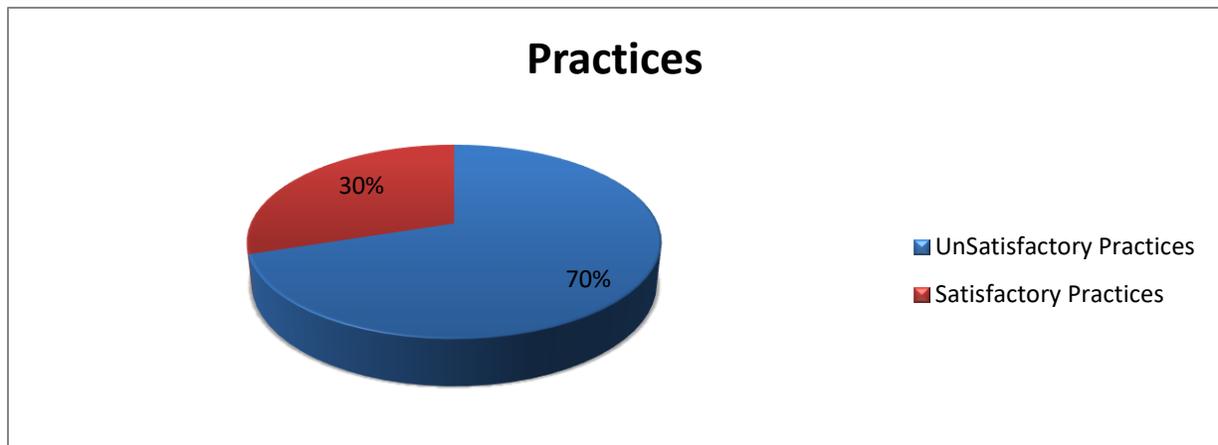


Figure 6: Pie-Chart depicting practices of nurses towards needle stick injuries

Overall, 74% participants were reported unsatisfactory attitude regarding needle stick injuries, followed by satisfactory attitude (26%). Results are shown in Figure 7.

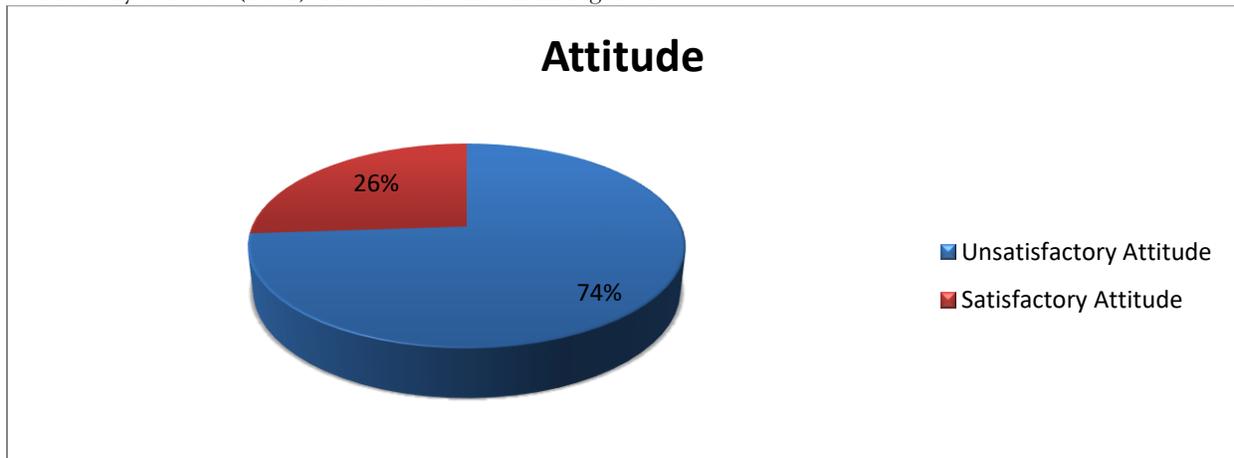


Figure 7: Pie-Chart depicting attitude of nurses towards needle stick injuries

#### DISCUSSION:

In the current study knowledge, attitude and practices of the nurses towards needle stick injuries were assessed. Overall, 71% participants were reported Poor knowledge regarding needle stick injuries, followed by average knowledge (16%) and Good knowledge (13%). In addition, 70% participants were reported unsatisfactory practices regarding needle stick injuries; followed by satisfactory (30%) and 74% participants were reported unsatisfactory attitude regarding needle stick injuries, followed by satisfactory attitude (26%).

There are a limited number of studies that explore nursing students' awareness of NSI. The nurses in this study had intermediate knowledge

on how to avoid NSIs (6.6 out of 10, SD = 2.1), which is comparable to the findings of other studies (26,27). The results of studies conducted on medical and dental professionals indicate a moderate to high level of knowledge; however, the level of knowledge displayed by nurses and other healthcare workers was disappointingly low (28–30).

It is essential to keep in mind that the degree of one's knowledge has a considerable bearing on whether or not conventional procedures are followed (31). The lower the level of understanding, the lower the level of adherence; hence, this may lead to a larger prevalence of NSIs. It is necessary to have educational programs

that last for an extended period of time and are geared at improving nurses understanding.

In the contrast to the findings of the recent study, a study carried out in the United States of America in 2019 to evaluate the knowledge of staff nurses regarding the prevention of needle stick injuries found that 20% of Nurses have inadequate knowledge, 66% of Nurses have Moderate Knowledge, and only 14% of Nurses have adequate knowledge regarding the prevention of needle stick injuries (32).

In a different cross-sectional study that was carried out in Rawalpindi, Pakistan, it was found that the majority of people questioned, or 73.3% were aware of the definition of needle stick injuries and the diseases that are caused by them. However, out of the total number of HCW, 13.3% were unaware of the fact that hepatitis B and hepatitis C can be transmitted by this route Only one in ten health care workers (n=9) were aware that HIV might be transmitted in this manner. A total of 248 healthcare personnel were vaccinated against hepatitis B, which represents an 82.7 percent vaccination rate (33). According to the findings of this Pakistani study, nurses have sufficient information regarding NSIs and the prevention of them.

A study on knowledge and practice concerning needle stick injuries was conducted in Nigeria in 2009, and the results showed that a lack of adherence to safety procedures and a significant lack of expertise among medical workers contribute to the risk of NPIs (34).

In the current study, 86.1% of the participants were reported that the person exposed to needle stick injury need tetanus vaccination. 56.5% of the nurses were reported that there is no risk of HIV transmission during needle sticks injury. The majority (56.6%) of the participants were reported that there is no risk of HIV transmission during needle sticks injury. supporting the current findings a variety of studies reported that nurses had low knowledge regarding tetanus vaccination after needle prick injuries, risk of HIV and HCV after needle prick injures and risk for other infectious diseases (35–38).

### 5.1 CONCLUSION

Our study main objective is to identify knowledge, attitude and practice of nurses working in district Peshawar. The findings of the study concluded that the nurses had poor knowledge towards needle stick injuries; also they have unsatisfactory practices and attitude towards needle stick injuries. Educational interventions are needed to educate the nurses regarding the precautions and knowledge towards needle stick injuries.

### 5.2 RECOMMENDATION

After the completion of this research study, it has been determined that it is strongly recommended that in order to carry out additional research, the researcher must take an equal number of male and female subjects. This ensures that the KAP level will be correctly identified equally among subjects of both genders. In addition, there is not a lot of research being done in Pakistan, and this number ought to be expanded. In order to reduce the number of people who get injured by needles, it is important to follow the standards that have been established for the safe handling of needles and other sharp objects.

### 5.3 LIMITATIONS

In spite of the fact that our investigation was fruitful, we did encounter some challenges along the way. One of them was a dearth of earlier research on the same subject as our own, which made it challenging for us to do a literature review. Our sample size was a little on the high side, which caused us to spend additional time. Nevertheless, that is successfully managed by our team.

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