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PREVALENCE OF NEEDLE STICK INJURIES AMONG NURSES WORKING IN THE MINISTRY OF HEALTH HOSPITALS

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Abstract:

Exposure to needle stick injuries during any procedures involving sharps are the major problem threatens Healthcare workers life. Healthcare workers are exposed to needle stick injuries during performing any procedures involving sharps. The study aims to assess the prevalence of needle stick injuries or sharps stick injuries among nurses working in the Ministry of Health and Population Hospitals in Dakhlia Governorate. A Crosssectional study design was used to utilized this study and four tools were used in this study. 1) Self- administered structured questionnaire about nurse's personal and occupational data, 2) Self-administered structured questionnaire about nurse's knowledge regarding needle stick injuries, 3) Self-administered structured questionnaire about nurse's behavior regarding measures obtained after needle stick injuries, 4) Self-administered structured questionnaire about nurse's subjective practice. The study was consists of 364 nurses when the population size = 6908 nurses who were working at hospitals affiliated to the Ministry of Health and Population Dakahlia Governorate. Results. This study showed that 304 (83.6) from studied nurses exposed to needle stick injuries and the average score of nurses' knowledge about NSI was significantly higher among the young age nurses while the average practice score was significantly increased with age. Conclusion. Most of nurses had good and fair knowledge about NSI. While more than two third of them had unsatisfactory practice of correct behavior in their work. Recommendations. Evaluate the impact of Needle Stick Injury on nurses' quality of life by using health assessment questionnaire in the different department.

Keywords: needle stick injuries, nurses, prevalence

Introduction

Needle stick and sharp injury are referring to any penetration of skin by contaminated needles, scal¬pels, broken glass or other sharp objects that permit healthcare workers exposed to infected blood or infected body fluids (Department of Health and Human Services [DHHS], 2012, & Mekonnen R et al., 2018).

Needle stick injuries (NSI) can be occurring when drawing blood, injecting

drugs, or performing other procedures involving sharps. The needle can slip and injure the healthcare workers and allowing for transmission of pathogens such as; bacteria, viruses or any microorganism. Lack of access or failure to follow universal precautions as appropriate using of personal protective equipment, recapping needles after use and also a result of failure to place used needle in approved sharp containers (Lavoie M et al., 2014 & Albert Holgate, 2015).

Moreover, overuse of injections and unnecessary sharps, lack of supplies such as disposable syringes, safer needle devices and sharps disposal containers, failure to use sharps disposal containers immediately after an injection (Kelly M and Pyrek, 2014). Also disposing of needles attached to tubing, using, needles or glass equipment to transfer body fluid between containers work quickly and bump into a needle, a sharp or another worker while either person is holding a sharp passing instruments from hand to hand in the operating room, lack of hazard awareness and training (DHHS, 2012).

Every day health care workers are exposing to more than 20 dangerous and deadly blood through contaminated needle stick and sharp injuries or splash exposures. According to United States Occupational Safety and Health Administration, about 5.6 million healthcare workers in the healthcare industry are at risk of occupational blood-borne exposure to diseases (Mekonnen R et al, 2018).

According to Parantainen et al (2011), study, a surgical needle may inadvertently penetrate the glove and skin during surgery in operating room. Personnel scalpel injuries tend to be larger than a needle stick. Generally, needle stick injuries cause only minor visible trauma or bleeding; however, even in the absence of bleeding the risk of viral infection remains primary prevention of needle stick injuries and can be achieved through the elimination of unnecessary injections and the elimination of used needles.

Needle stick injuries can be reduced by 80 percent if implementing education programs for health care workers to adhere of universal precautions (Kelly M and Pyrek, 2014).

Aim of the study: The aim of this study is to assess the prevalence of needle stick injuries or sharps stick injuries among nurse's working in the Ministry of Health and Population Hospitals in Dakahlia Governorate. Method:

Design: cross- sectional study design was used to utilized this study.

Setting: The study was conducted at all (27 hospitals) affiliated to the Ministry of Health and Population in Dakahlia Governorate.

Participants:

Participant were nurses who working at all (27 hospitals) affiliated to the Ministry of Health and Population in Dakahlia Governorate (Table1). By using Convenient sampling technique, the minimum required sample size was 364 nurses when the population size= 6908. Nurses who were working at hospitals affiliated to the Ministry of Health and Population, Dakahlia Governorate, the precision=5%, desired Expected prevalence of needle stick to be 50%, Design effect=1 (Schaeffer RL, Mendenhall w, Ott L, 1990) Tools:

After reviewing the relevant literature, four self-administered structured questionnaires were used in this study for data collection.

Tool I: Self- administered structured questionnaire about nurses' personal and occupational data. This questionnaire was developed by the researcher and used to assess the personal data such as: (age, sex, qualification) and the occupational data such as: (years of experience, job classification, and history of needle stick injuries, occupational setting and training courses about infection control).

Tool II: Self-administered structured questionnaire about nurses' knowledge regarding needle stick This injuries. questionnaire was developed by the researcher and used to assess nurses' knowledge regarding needle stick injuries such as: (Definition, Causes and factors, Symptoms of NSI and Disease transmitted by NSI).

Tool III: Self-administered structured questionnaire about nurses' behavior regarding measures obtained after needle stick injuries. This questionnaire was developed by the researcher and used to assess nurses' action regarding measures obtained after needle or sharps stick injuries such as: (Reporting to supervisor, Reason for not reporting, Action towards needle sticks injury, Care of injury and Using PPES).

Tool IV: Self-administered structured questionnaire about nurses' subjective Practice: - This questionnaire was developed by the researcher and used to assess nurses' subjective practice after needle stick injury which include 20 questions such as: (wearing gloves during injection procedure, using one hand technique to cove the needle and collecting sharp waste in their own places).

Phases of the Study:

This study was accomplished throughout two main phases:

Preparation phase. It included the following:

Administrative process: An official permission was obtained from the dean of faculty of nursing at Mansoura University.

An official permission was obtained from the Ministry of Health and Population Hospitals Directors in Dakahlia Governorate.

Literature review:- A review of local and international literatures on the

various aspect of needle stick injuries among nurses working in the Ministry of Health and population Hospitals using scientific published Articles, internet search, and textbooks. This review was a guide for developing the study tools.

Developing of the study tools: -Four tools were developed by the researcher based on reviewing the relevant Literature.

Validity of the developed tools was tested by the following: Content validity by submitting the tools to a jury of five experts in the field of 'community health nursing" Face validity by conducting a pilot study on 10% of study sample (n= 36).

Based on the collected information, the necessary modifications were done, some questions were added, and others were clarified or omitted.

Operational phase

Data collection: - Data was collected from 364 nurses who working at 27 hospitals affiliated to the Ministry of Health and Population in Dakahlia Governorate. The duration of data collection approximately five months from January to May 2018. The researcher visited 27 hospitals of the Ministry of Health and population in Dakahlia. The visits were ranged from one to three times / week based on the number of nurses in each studied hospital. Each nurse was consumed from 20 to 25 minutes to fulfill their questionnairs. The researcher introduced herself to the head nurses in each hospital to gain their cooperation and tell them about the number of selected nurses of their hospitals to gave them a brief orientation about the aim of the study. Self-administered structured questionnaires for tools were developed by the researcher and used to assess occupational nurses personal and

characteristics, knowledge, behavior and subjective practice related to needle stick injuries by using tools I, II, III and IV (Appendix I).

Statistical analysis:

coded, Data were sorted, organized, categorized and then transferred into especially designed formats. Analysis performed using SPSS (Stands for Statistical Product and Service Solution) version 20.0. Data were presented by using descriptive statistics in the form of frequencies and percentage. Arithmetic mean (standard deviation) was used for continuous variables and percentages for categorical variables. P> 0.05 was considered to be statistically significant.

Ethical considerations: -

An ethical approval was obtained from the Faculty of Nursing Research Ethics Committee (FNREC)/ Mansoura University to conduct the study. Oral consent was obtained from the nurses to participate in the study after clarifying the aim of the study and confidentiality of data was ensured.

Results

Table (1): portrays the distribution of the studied nurses according to their personal and occupational characteristics. The mean age of the studied nurses was 30.87(4.62 y). Regarding to their qualification, 34.6% of them had nursing diploma, 20.6% had institute degree and 44.8% had bachelor nursing. of Regarding to their experience, 74.2 % of them had experience more than 5 years, 79.6% working bedside nurses and 20.4% were supervisor nurses. Nurses working units, 14.3% were working in ICU, 18.7% in dialysis unit, 18.1% in operation room, 19.8% in emergency room and 29.1% in inpatient section.

Table (2): show distribution of the nurses according to past studied experience of studied nurses regarding to needle stick injury and occurrence of infection. 83.6 % from studied nurses were exposed to needle stick injuries, Whereas Hepatitis C was prevailing among 12.17% of the studied nurses due to needle stick injury, 88.4% of them had exposed to injury at the night shift. Needle stick injury in the fingers and hands were occurred between 55.2% & 44.7% of nurses respectively. 88.9% of the studied nurses were reported that injury occurred from 1-2 times in last month of study time.

Table illustrates the (3): distribution of studied nurses according to their knowledge about needle stick injuries. It was noticed that 100% of the studied nurses were aware of definition of needle stick injury, 15.4% exhibited good knowledge score about times when there is a high incidence of NSIs, 31.6% presented good knowledge score about factors lead to needle stick injury, 38.5% the studied nurses indicated of knowledge good score about symptoms of needle stick injury, and 64.0% of them had a good knowledge score about diseases transmitted by needle stick Table (4): portrays injury. the distribution of studied nurses according to their immediate action after needle stick injuries. All of the studied nurses (100%) washing the site of injury with soap and water, 99.3% cleaning the site of injury with alcohol, 76.6% cover the affected area. Only 37.5% of them told the supervisor about the injury. 23.6% &16.3% of the studied nurses were not reported the incident of injury because the syringe was sterile & they afraid of outcome respectively. As regard the behavior of the studied nurses after injury, 49.3% did not care while 10.2%

had blood investigations and 40.5% of them took a post exposure prophylaxis. All nurses mentioned that they were disposing needle in safety box. Beside all of them reported that they applying infection control measures and using PPEs as a preventive action.

Table (5): portrays distribution of the studied nurses according to their Subjective practice to prevent NSIs. All of nurses were reported that they wearing gloves during injection procedure, putting warning signs on contaminated sharps, changing safety box after filling 3/4 size, collecting sharp waste in their own places. While 55.2% using one hand technique to cover the needle, 99.5% using PPEs to prevent NSI and 99.7% taking vaccines to prevent infection. Table (6): reveals relationships between personal and occupational characteristics of the studied nurses, total knowledge and practice scores about needle stick injury. It was observed that knowledge

score about NSI was significantly higher among the young age nurses while the practice score was significantly increased with age. The average knowledge score was significantly increased among nurses with bachelor degree 16.94 (3.07) compared to institute graduated nurse 16.21 (2.98) and nurses with diploma 15.95 (3.55), while average practice score did not significantly differ in relation to qualification. Both knowledge and practice scores were increased among the studied nurses with years of experience but the difference is not statistically significant. As regard job classification, nurses were working as supervisor had a significant higher average knowledge score than bedside nurses while average practice score did not significantly differ. Lastly, the average knowledge and practice scores did not significantly differ among the studied nurses working in different department.

Table (1): Personal and occupational characteristics of studied nurses

Items	N = (364)	(%)	
Age			
20-29 years	139	38.2	
30-39 years	217	59.6	
40-49	8	2.2	
XS.D 30.87(4.6	52 years)		
Qualificat	tion		
Diploma	126	34.6	
Institute	75	20.6	
Bachelor	163	44.8	
Years of exp	erience		
<1 - < 5 years	94	25.8	
> 5 years	270	74.2	
Job classific	cation		
Bedside nurses	290	79.6	
Supervisor nurses	74	20.4	
Current work units			
-Intensive Care Unit	52	14.3	
-Dialysis Unit	68	18.7	
-Operation Room	66	18.1	
-Emergency Room	72	19.8	
-Inpatient Section	106	29.1	

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Table (2): Past experience of studie	d nurses regarding to needle stick injury and	loccurrence
of infection.		

Item	N = (364)	%	
Occurrence of needle stick injury.	304	83.6	
Item	N = (304)	%	
-Hepatitis C due to needle sticks injury.	37	12.17	
Tim	ne of injury		
-In the day shift	35	11.6	
-In the night shift	269	88.4	
Site of injury			
-In the finger	168	55.2	
-In the hand	136	44.7	
Injury occurrence rate last month			
-1-2 times	48	88.9	
-3-4 times	6	11.1	

 Table (3): Knowledge about needle stick injuries.

Knowledge level	Test time N =	
Knowledge level	Ν	%
Definition of Needle stick injury.		
Good	364	100
Times when there is a high incidence of	of needle stick inju	ſy.
Good	56	15.4
Fair	234	64.3
Poor	74	20.3
Factors lead to needle stick injury.		
Good	115	31.6
Fair	172	47.3
Poor	77	21.1
Symptoms of needle stick	injury.	
Good	140	38.5
Fair	158	43.4
Poor	66	18.1
Diseases transmitted by needle	stick injury.	-
Good	233	64.0
Fair	118	32.4
Poor	13	3.6

Items	N = (304)	(%)
First aid.		•
1-Pressing on the site of injury.	101	33.2
2-Washing the site with soap & water.	304	100
3-Cleaning the site with alcohol.	302	99.3
4-Cover the affected area.	233	76.6
Reporting		
1-reported.	114	37.5
2- Not reported.	190	62.5
Behavior after exposure to needle sticks injury.		
1- Did not care.	150	49.3
2- Blood investigations.	31	10.2
3- Post exposure prophylaxis.	123	40.5
Disposing of the needles af	ter injury.	
Safety box.	304	100
Preventive action after needle stick injury.		
Appling infection control measures.	304	100
Using Personal Protective Equipment's.	304	100
Items	N = (190)	(%)
Reason for not reporting.		
1- The syringe was sterile.	45	23.6
2- Afraid of outcome.	31	16.3
3- Not necessary.	144	60

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 Table (5): Subjective practice to prevent needle stick injuries.

Itoms			
Items	Ν	%	
Wearing gloves during injection procedure.	364	100	
Using one hand technique to cover the needle.	201	55.2	
Using PPEs to prevent NSI.	362	99.5	
Taking vaccines to prevent infection.	363	99.7	
Putting warning signs on contaminated sharps.	364	100	
Changing safety box after filling 3/4 size.	364	100	
Collecting sharp waste in their own places.	364	100	
Wearing heavy-duty gloves.	192	52.7	

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Items	N	Knowledge score	Practice score
		Mean(SD)	Mean(SD)
	A	Age in year	
20-29 years	139	16.22 ± 2.97	13.72 ± 1.27
30-39 years	217	16.83 ± 3.16	13.83 ± 1.34
40-49 years	8	10.43 ± 4.46	15.27 ± 2.92
Significance test		F= 12.441	F= 3.987
Significance test		P=0.000	P=0.008
	Q	ualification	
Diploma	126	15.95 ± 3.55	13.96 ± 1.42
Institute	75	16.21 ± 2.98	13.71 ± 1.25
Bachelor	163	16.94 ± 3.07	13.77 ± 1.38
Significance test		F= 3.610	F= 1.016
Significance test		P=0.028	P=0.363
	Year	s of experience	
<1 - < 5 years	94	16.38 ± 2.49	13.68 ± 1.24
>5 years	270	16.50 ± 3.48	13.89 ± 1.41
Significance test		F= 0.895	F= 1.273
Significance test		P=0.409	P=0.281
	Job	classification	
Bedside nurses	290	16.13 ± 3.29	13.84 ± 1.36
Supervisor nurses	74	17.72 ± 2.79	13.77 ± 1.39
Significance test		F = 3.820	F = 0.379
Significance test		P=0.000	P=0.705
Current work place			
-Intensive Car Unit	52	16.69 ± 2.91	13.69 ± 1.31
-Dialysis Unit	68	16.60 ± 3.75	13.51 ± 1.37
-Operation Room	66	16.06 ± 3.46	14.03 ± 1.50
-Emergency Room	72	16.35 ± 2.89	13.90 ± 1.27
-Inpatient Section	106	16.45 ± 3.25	13.91 ± 1.37
Significance test		F = 0.385	F= 1.529
Significance test		P=0.819	P=0.193

 Table (6): Relationships between personal and occupational characteristics of the studied nurses, total knowledge and practice scores about needle stick injury.

Discussion:

Needle stick and sharp injuries are the most prevalent injuries faced by health care staff in health care facilities. Additionally, Health care professionals are exposed every day to dangerous and deadly blood borne pathogens through contaminated needle sticks, sharps or splash exposures. Possible reasons of needle stick injuries are lack of adequate PPEs, non-adherence to standard precautions and basically the absence of trainings and safety guidelines that advocate for proper safety measures for patients and health care personnel (Mekonnen R et al., 2018).

Among healthcare workers nursing staff are the fundamental part of clinical services and take the main responsibility for patients' care with different health conditions in most of our health care settings. So, they are at high risk for occupational hazards and injuries including infectious disease. environmental and psychosocial risks along the course of their day to day activities in the health care environment (Kebede A& Gerensea H. 2018).

Few studies have examined the prevalence of needle stick and sharp injuries among nurses in different health care settings. Therefore, the current study concentrated on assessing the prevalence of needle stick injuries among nurses working in the ministry of health

In relation to personal and occupational characteristics of the studied nurses. The present study revealed that more than one third of the studied nurses were located in the age group between 20-less than 30 years, and more than half were located in the age group between 30-less than 40 years with mean (SD) age of 30.87 (4.62 y). The result of the present study agreed with the finding of the study carried out by Quinn M M et al., (2009) about sharp injuries and other blood and body fluid exposure among home health care nurses and aides which found that more than one third of nurses were in the age group of 20- less than 30 years.

As regards to nurses' qualification, the present study showed that about one third of the studied nurses had nursing diploma and nearly half of them had bachelor degree. These findings were in agreement with the findings of the studies carried out by Kebede A& Gerensea H, (2018) and Mekonnen R et al., (2018) they reported that the majority of their studied nurses had bachelor degree. This finding explicated as the better the education the better the nurses' practice

As regards to nurses' experience, the present study showed that about three quarters of the studied nurses had experience for more than 5 years. These results agreed with previous studies done by Martinsa A, Coelhob CA, Manuela M, (2012) and Ahmed K E & Aziza A, (2011) as they revealed that most of nurses shared in their studies had experience more than 5 years. This may be referring to that more duties and responsibilities are lies on qualified and most experienced nurses.

As regards to job classification, the current study showed that more than quarters of the studied sample are bedside nurses. This results were consistent with the results of the study carried out by Mekonnen R et al., (2018) who revealed that the majority of his studied participants were bedside nurses. These results clearly highlighted the important and basic role of bedside nurses in patients' care

As regards to work units, the present study revealed that less than one third of the studied nurses working in inpatient section whereas less than one fifth of them occupying Intensive Care Unit. This result was disagree with Mekonnen R et al., (2018) who mentioned that most of his participated nurses were working in inpatient section and less of them were working in Intensive Care Unit. This may be attributed to numbers of patients' admission to inpatient section so nurses were distributed in each section according to this number

Concerning the training of infection control measures, the present

study illustrated that all studied nurses received training related to infection prevention and control. This may be due to increased nurses' awareness in our health care settings and their willingness to get more knowledge and experience to protect themselves and patients from infection. In the same line with our results study by Sonia et al., (2019), documented that most of nurses received training courses regarding infection control measures to prevent transmission of infection. However, this finding contradicts with Trayner K M A et al., (2018) who mentioned that less than two thirds of nurses in United Kingdom received training on primary care related to sharp injuries and perception of access to occupational health support.

According to hospital vaccination, our results revealed that near to two thirds of nurses received vaccination to protect them from infectious diseases. This may be attributed to increased nurses' awareness regarding the importance of vaccination for their health. These results come in accordance with Mekonnen R et al., (2018), who stated that the majority of nurses received vaccination as a protective measure that limits transmission of infection.

In relation to occurrence of needle stick injuries among the studied nurses, the majority of them were exposed to needle stick injuries. This may be attributed to increased workload, lack of safetv training. injection and disassembling of syringe and needle. This results were in agreement with the finding of the studies carried out by Siddique K et al., (2008), Mekonnen R et al., (2018) they reported that the majority of their studied nurses exposed to needle stick injuries and study by Hanafi M et al., (2011), reported that more than two thirds of studied nurses exposed to NSI. While, the finding of Zafar A et al., (2008), reported that near to two fifth of nurses exposed to NSI.

When studying the percentage of hepatitis C infection among nurses as a result of needle stick injury, the present study confirmed that the majority of nurses who shared in this study didn't infected with hepatitis C infection. This may be due to increased nurses' concerns regarding infection control measures and its related training courses, added to that, the effort of infection control team and supervisors' follow-up for nurses to ensure their adherence to infection control measures. These results were disagreed with the finding of the study carried out by Mekonnen R et al., (2018), who documented that more than half of their studied nurses had infected with hepatitis C as a result of direct contact with patients and sharp injuries. Another study carried out by Kebede A & Gerensea H, (2018), reported that most of their studied nurses had hepatitis C infection through their working period in health care setting.

In relation to time of injury, the present study reported that the majority of nurses with needle stick injury had exposed to injury during night shift. The results of the present study were in the same line with the finding reported by Kebede A & Gerensea H, (2018), they documented that nurses exposed to needle stick injury during night shift were higher than those with day shift, this may be explained by deficiency of the nursing staff in comparison to the number of patients and increased nurses' neglection to infection control measures during night shift whereas nurses' in day shift appears more active, and follow infection control measures.

When studying the occurrence of injury last month of the study time, less than one fifth of the studied nurses were exposed to injury from 3-4 times. This may be due to nurses adhere to infection control measures. The result of present study was disagreed with the finding of the study carried out by Kebede A& Gerensea H, (2018), they mentioned that the majority of their studied sample exposed to needle stick injuries more than two times.

In relation to studied nurses' knowledge. The present study mentioned that the most of the studied nurses had good knowledge about definition and near to two third of them had good knowledge about diseases transmitted by injuries. These results come in the same line with the finding of the study carried out in Jordan by Madhavan A et al., (2019) & Suliman M et al., (2018), they reported that the majority of the studied nurses had a good knowledge about needle stick injury including definition, and diseases transmitted by injures. This may be correlated to educational level as the majority of studied nurses had bachelor degree in addition to increased awareness about the importance of attending infection control courses

Concerning to total score level of knowledge of studied nurses. The current study represented that the majority of the studied nurses had a good total knowledge score. Similar results were also founded in the study done by Sharma K & Adhikari S (2019), they found their studied participants commonly had a good total knowledge score regarding needle stick injuries and its related health hazards between health care professionals caring for patients in different health care setting. However, this finding contradicts with the finding of the study carried out by Suliman M et al., (2018), who revealed that there is a limited knowledge regarding needle stick injuries between their studied nurses demonstrated by decreased their total knowledge score.

Regarding to immediate action of the studied nurses after needle stick injuries. The current study reported that all of nurses washing the site of injury with soap & water and most of them cleaning the site of injury with alcohol after needle stick injuries. The results of present study were disagreed with the finding documented by Gupta D et al., (2019), who stated that nurses' awareness about proper practice after needle stick injuries are limited and for others appears not beneficial as the minority of them washing the site of injury with soap & water followed by antiseptic solution for disinfection as a measure to minimize the probability of infection from needle stick injury.

Moreover, the current study reported that all of the studied nurses reported using of PPEs, following infection control measures and using safety box to dispose the infected needles correctly, but near to half of them didn't care with the needle stick injury. These findings were in the same line to the findings of the study done by Ali I et al., (2019), who reported that most of nurses didn't care about needle stick injuries and use usual first aid only to manage such types of injuries & on the other hand the majority of them use PPEs regularly and appreciate its importance in protection from infection, whereas only one fourth of them uses sharp box to dispose sharps after use. This may be attributed to

nurses' neglection, work load, and expensive lab tests.

As regards to subjective practice of the studied nurses to prevent needle stick injuries. The current study reported that all of them using gloves when giving injection for patients and more than half of studied nurses using one hand technique to cover needle. These results disagreed with the previous study done by Gupta D et al., (2019), highlighted that high percentage of nurses caring for patient without gloves especially during injection procedure and didn't using one hand technique to cover needle. Additionally, the minority of them practically not competent in one hand recapping technique for needle before injection as a protective measure from needle stick injury. This may be attributed to nurses' experience, presence of written protocol for infection control measures and continues training courses about up to date infection control measures in hospitals.

Moreover the current study reported that most of nurses were interesting to taking vaccines to prevent infection. These findings go well together with Sonia et al., (2019), who reported that most of nurses following preventive practices like vaccinations to prevent transmission of infection especially from needle stick injuries.

Regarding the relationship between characteristics of the studied nurses and their averages scores of knowledge and practice. The present study founded that nurses' knowledge about NSI was significantly higher among the young age nurses and according to qualification. Contrary to our results the finding of Sharma K& Adhikari S, (2019), stated that no significant correlation between nurses' knowledge and socio demographic variables including age, sex and qualification.

On the other hand, nurse's knowledge significantly increased with year of experience. The result of present study was agreed with the finding carried out by Sharma K & Adhikari S, (2019), who documented significant correlation between nurses' level of knowledge and working experience.

All workers in health care institutions handling needles and sharp instruments have a significant risk for NSI specially nurses and can cause myriad psychological harm. These effects can self-destructive cause behavior or functional impairment in relationships and daily life. So, there is much need to protect the nurses from needle stick and sharp injuries through health education and training programs regarding occupational health hazards of NSI, protective measures, and sharp management training.

Conclusion:

Based on findings of the present study, it can be concluded that, despite of the most of nurses had good and fair knowledge about NSI, the injury was prevalent among the majority of studied nurses. Moreover, the studied nurses showed unsatisfactory practice of correct behavior among more than two thirds.

Recommendations:

In the light of the findings of the present study, the following recommendations are advised:

Evaluate the impact of Needle Stick Injury among nurse's working in the Ministry of Health and population Hospitals to improve nurse's practice and behavior by using health assessment questionnaire in the different department. Website education program should be activated for nurse's working in the Ministry of Health and population Hospitals about Needle Stick Injuries to improve nurse's practice and behavior in relation to infection control measure.

References

- Ahmed K E, Aziz A (2011). Prevalence and factors associated with needle stick injuries among registered nurses in public sector tertiary care hospitals of Pakistan. Int J Collab Res Intern Med Public Health.3 (2)124-30.
- Albert Holgate (2015). Implications of needle stick injuries on veterinary nurses.
- Ali I, Hameed F, Maqbool A, Kazim M, Aslam M A, Siddiqui S U and Hafeez N (2019). Incidence of Needle Stick Injury (NSI) among Dental Students and Dental House Officers of Bhitai Medical and Dental College, Mirpur Khas.
- Department of Health and Human Services (DHHS), (2012). National Institute for Occupational Safety and Health (NIOSH). Centers for Disease Control and Prevention. Available at:

www.cdc.gov/niosh/topics/health care.

- Gupta D, Saxena S,Kumar V, Agrawal V K, Singh M, Mishra S,(2019). Study of knowledge, attitude and practice of needle stick injury among nurses in a tertiary care hospital. International Journal of Community Medicine and Public Health. 2019 Feb;6 (2):865-869
- Hanafi M, Mohamed A, Kassem M & Shawki M (2011). Needle stick injuries among health care workers of University of Alexandria hospitals

- Kebede A and Gerensea H (2018). Prevalence of needle stick injury and its associated factors among nurses working in public hospitals of Dessie town, Northeast Ethiopia, 2016.
- Kelly M and Pyrek,(2014). Occupational Health Experts Call for Greater Commitment to Sharps-Injury Prevention.
- Lavoie M, Verbeek, JosH, Pahwa, Manisha (2014):
- Devices for preventing
- Percutaneous exposure injuries caused by needle in healthcare personnel. The Cochrane Data base of Systematic Reviews3:CD009740doi:10.1002/ 14651858.CD009740.Pub2.ISSN1 469-493x. PMID24610008.
- Madhavan A, Asokan A, Vasudevan A, Maniyappan J and Veena K(2019). Comparison of knowledge, attitude and practices regarding needle-stick injury among health care providers. Journal of family medicine and primary care.
- Martinsa A, Coelhob CA, Manuela M, (2012). Age and years in practice as factors associated with needle stick and sharps injuries among health care workers in aportuguese hospital.
- Mekonnen R, Henok Yosef, Kidist Teklegiorgis, Firehiwot Tesfaye and Imam Dagne, (2018). Medical Safety & Global Health. Magnitude and Impact of Occupational Related Needle Stick and Sharp Injuries and Associated Factors among Health Care Workers in Dire Dawa, Eastern Ethiopia.
- Parantainen, Annika, Verbeek, Josh, Lavoie, Marie, Claude, Pahwa

and Manisha (2011). "Blunt versus Sharp suture needles for preventing percutaneous exposure incidents in surgical staff.

- Quinn MM, Markkanen PK, Galligan CJ, Kriebel D, Chalupka SM, et al (2009). Sharps Injuries and other blood and body fluid exposures among home health care nurses and aides. Amer Jouof Public Health 3:710.
- Schaeffer, RL., Mendenhall, W., OttL, L., (1990): Elementary Survey Sampling, 4th ed., Duxbury Press, Belmont, California.
- Sharma K and Adhikari S (2019). Nurses knowledge on post exposure prophylaxis for Hepatitis B Virus infection in Tertiary Care Hospital. Journal of Chitwan Medical College 9;(28):72-78.
- Siddique K, Mirza S, Tauqir S, Anwar I, Malik A.(2008). Knowledge Attitude and Practices regarding needle stick injuries amongst health care providers. Surgical Unit II, holy Family Hospital, Rawalpindi. Professor and Head of Department, Surgical Unit II, Holy Family Hospital, Rawalpindi.
- Sonia, Singh Su, Singh B, Singh Sa, Khurana A, Verma R (2019). Study of knowledge, attitude and

practice among nurses regarding needle stick and sharp item injuries. International Journal of Community Medicine and Public Health. ;6(5):2064-2068.

- Suliman M, Al Qadire M, Alazzam M, Aloush S, Alsaraireh A and Alsaraireh F A(2018) . Students nurses' Knowledge and prevalence of Needle Stick Injury in Jordan. Department of Community, Mental Health Nursing and Adult Health Nursing princess Salma, Faculty of Nursing, Al-alBayt university, Mafraq, Jordan. Nurse Education Today 60 23-27.
- Trayner K. M. A, Hopps L, Nguyen M, Christie M, Bagg J and Roy K (2018). Cross-sectional survey of a sample of UK primary care dental professionals' experiences of sharps injuries and Perception of access to occupational health support. British Dental Journal, Volume 225 NO.
- Zafar A, Aslam N, Nasir N, Meraj R, Mehraj V (2008). Knowledge, attitudes and practice of health care workers regarding needle stick injuries at a tertiary care hospital in Pakistan. Department of Pathology and Microbiology, Medical College, Aga Khan University, Karachi.