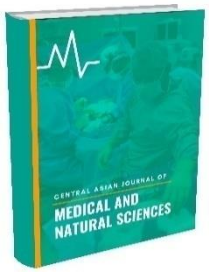
CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES



Volume: 04 Issue: 06 | Nov-Dec 2023 ISSN: 2660-4159

http://cajmns.centralasianstudies.org

ASSESSMENT THE KNOWLEDGE OF NURSES ABOUT NEEDLE STICK INJURIES AT AL-ZAHRAA TEACHING HOSPITAL

1. **Duaa Malik**
2. **Mubarak Hejab**
3. **Hussain Abd Alrada1**

Received 20th Sep 2023,
Accepted 21st Oct 2023,
Online 23th Nov 2023

Higher Health Institute in Wasit , wasit – Iraq

Abstract: In Hospitals, Nurses Are The First Level Of The Staff Who Contact With Risk Of Infection From Unsafe Practices Related To Needles And Sharps.They Are Expected To Undertake Activities Related To Patient Care With The Beginning Of Their Clinical Years. Being Amateurs, They Lack Experience And Skill, Therefore; At A Higher Risk Of Infection From Unsafe Practices Related To Needles And Sharps .The Objectives Of The Study Are To Determine Needle Stick Injuries And Their Risks Among Nurses At Al-Zahraa Teaching Hospital And To Provide The Information That Nurses Need To Avoid Needle Stick Injuries And To Assess The Knowledge Of Nurses About Needle Stick Injuries At Al-Zahraa Teaching Hospital The Method Includeincludeed Study Design, Study Population, Setting,Sample (Participants), Sampling Method, Sample Size Tool Of Study,Data Collection, Ethical Considerations, Limitation Of The Study The Results Of The Present Study Suggest That Maybe Most Nurses Have Inadequate Knowledge About Needle Stick Injuries .This Study Concludes That The Needle Stick Injury Is The Most Important Occupational Health Hazard In Nurses With Alarmingly High Rates. This Study Showed That Occasional Needle Injuries By Nurses (72.5%). There Is A High Prevalence Of Cases And Episodes Of Injuries

Among Nurses Because They Do Not Fully Practice Standard Precautions, Though They Have Sufficient Knowledge Of Them. Most Nurses Did Not Report The Nsis To The Supervisor Of The Infection Control Unit. This Study Showed That A Majority (85%) Of Them Have Attended Any Training Courses, While Most Of The Participants Shouldn't Interest By PPE

Key words: nurses, risk of infection, occasional needle injury, amateurs, Al-Zahraa.

Introduction

In hospitals, nurses are the first level of the staff who contact with risk of Infection from unsafe practices related to needles and sharps. They are expected to Undertake activities related to patient care with the beginning of their clinical years. Being amateurs, they lack experience and skill, therefore; at a higher risk of infection From unsafe practices related to needles and sharps(1).Every day, health care workers are exposed to dangerous and deadly blood Borne pathogens through contaminated needle sticks, sharps, or splash exposures. It is One of the greatest risks faced by the frontline health care worker , who (2017) reported, that of the 35 million health-care workers, 2 million Experience percutaneous exposure to Infectious diseases each year. It further notes That 37.6% of Hepatitis B, 39% of Hepatitis C and 4.4% of HIV/AIDS In Health-Care Workers around the world are due to needle stick Injuries. WHO and others show on Average: four NSIs per worker per year In the African, Eastern Mediterranean, and Asian populations . Seventy percent of the world's HIV population lives in Sub- Saharan Africa, but only 4% of worldwide occupational cases of HIV Infection are Reported from this region In Vietnam, 38% of physicians and 66% of nurses Reported sustaining a sharp stick Injury in the previous nine months (2 (Numerous studies have found nurses to be the commonest group of healthcare Workers experiencing needle stick Injuries . Needle pricks and sharps Injuries represent a significant hazard in professional nursing. Researches also have shown That, between all health care workers, nurses are the ones who sustain a high needle Pricks injuries burden (3) Effective measures to prevent Infections from occupational exposure of Healthcare workers to blood includeincludee immunization against, eliminating unnecessary injections, implementing Universal Precautions, eliminating needle recapping and Disposing of the sharp Into a sharps container Immediately after use, use of safer Devices such as Needles that sheath or retract after use, provision and use of personal Protective equipment, and training workers In the risks and prevention of transmission (4) Importance of studying

In Iraq the health care system is still in its primitive stages but a careful Developmental program needs to begin to provide appropriate care for the Iraq People. To achieve better Infection control

measures the following areas are In need Of improvement; education, resources, overload of patients on health care workers And encouragement from the Regional Health Governor and Ministry of Health. So This study was conducted to determine needle stick injuries and their risks among nurses. Needle stick / sharps Injuries and contamination incidents must be Managed correctly as set out In this study. Transmission of these Blood Borne Viruses (BBV) Occurs from blood, visibly bloodstained body fluids, Cerebra Spinal Fluid, peritoneal, pleural And amniotic fluids. This study has been developed to Inform the AlZahra hospital Employees of the correct way to Manage NSI / sharps Injuries and contamination Incidents within the hospital and, by Doing so, to Improve the safety and wellbeing of both staff and patients(5) Therefore, Prevention of sharps Injuries and contamination Incidents is extremely important. Hepatitis B (HBV), Hepatitis C (HCV) and Human Immunodeficiency Virus (HIV) can be transmitted by Percutaneous injury e.g. where the skin Is cut or penetrated by needles or other sharp Objects (a Needle stick / 'sharps' Injury); or mucocutaneous Injury (splash to mucous Membranes or broken skin) from patients to health care workers (and vice versa to a lesser Extent)(6) -needle sticks Injuries as injuries are caused by needles such as Hypodermic Needle, blood collection needles, Intravenous styles And needles used to connect parts Of IV delivery system. (7) -Blood Borne Virus (BBV): a virus which is carried In the blood Of an Infected Individual and Which can be transmitted to another Person exposed to the Individual's blood. E.g : HBV: Hepatitis B Virus. HCV: Hepatitis C Virus and HIV(8) Theoretical knowledge means learning anything without adopting practical approach. It helps you understand why one technique is successful while the other fails. Theory teaches you the experience of others. Practical knowledge' refers to knowledge of how to do the things one does intentionally. This kind of knowledge is mainly discussed in the first part, which is focused on the nature of intentional action and what it is to intend to do something; to do something intentionally; and to do things for reasons Objectives of study

To assess the knowledge of nurses about Needle stick injuries at Al-Zahraa teaching hospital

Methodology

This chapter outlines the analysis methodology used in the study. Included are the research setting, research sample, study equipment, collection of data , and analysis of data.

Study Design:

The design of this study is descriptive. A descriptive design was used for determine nurses knowledge about needle stick injuries and blood borne viruses at Al-Zahraa teaching hospital. From 1 / December / 2022 to 1 /March/ 2023. This research was directed at Al-Zahraa teaching hospital.

Study Sample

The sample we used in our study was (80) sample. Nurses in the

AlZahraa teaching hospital are chosen during the sampling process by using non- probability convenience sample for the aim of the research

Methods of Data Collection: Throughout the use of the questionnaire and the self-report, the data collected from those nurses who are working at Al-Zahraa teaching hospital . The data collected on individual base the questionnaire was filled by nurses themselves under the researcher supervision The data collection was carried out for the period of (3th December 2022to 10th December 2022).

Statistical Analysis:

The software of statistical analysis was preferred for data analysis and data entry. SPSS named as statistical package for social sciences was used in all statistical procedures and data management, additionally, Microsoft excel software was used in graphical presentation of some variables. All data were checked for and prepared for analysis using the statistical and transformation methods

Ethical considerations

Written permission from higher health institute in Wasit and also from the nurses at Al-Zahraa teaching hospital but the permission was orally

Discussion of the Result

As presented in table and figure below, out of 80 nurses participated in this study, most of them were those aged between 20- to 25-years at institute nursing level (28.8%), followed by those aged between 25- to 30-years at Institute Nursing level (16.3%), then at BSN level (11.3%).

Table 1 Cross distribution of participants between Education level and Age Categories

			Education level			
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	Total
Age Categories	20-25yrs	Count	8	23	2	33
		% of Total	10.0%	28.8%	2.5%	41.3%
	25-30yrs	Count	2	13	9	24
		% of Total	2.5%	16.3%	11.3%	30.0%
	30-35yrs	Count	1	7	4	12
		% of Total	1.3%	8.8%	5.0%	15.0%
	>35yrs	Count	3	5	3	11
		% of Total	3.8%	6.3%	3.8%	13.8%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=11.334, at p-value=0.079

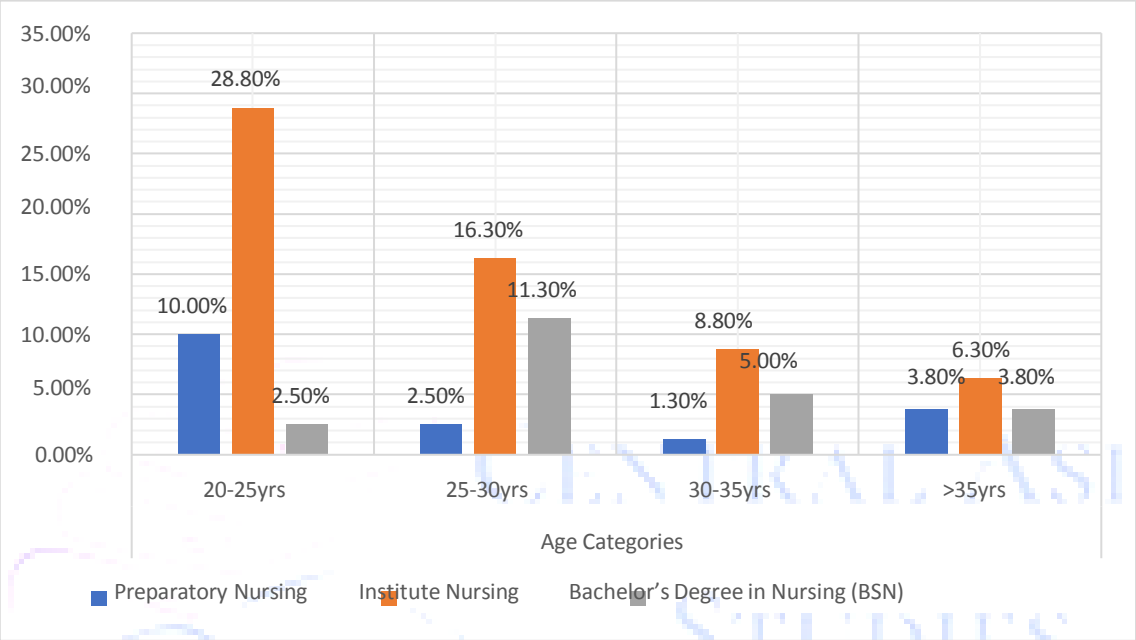


Figure 1 Cross distribution of participants between Education level and Age Categories

As presented in table and figure below, out of 80 nurses participated in this study, most of them were males at institute nursing level (35%), followed by females at Institute Nursing level (25%), then males at BSN level (13.8%)

Table 2 Cross distribution of participants between Education level and Gender

			Education level			
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	Total
Gender	Male	Count	5	28	11	44
		% of Total	6.3%	35.0%	13.8%	55.0%
	Female	Count	9	20	7	36
		% of Total	11.3%	25.0%	8.8%	45.0%
Tc al		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=2.591, at p-value=0. 274

Figure 2 Cross distribution of participants between Education level and Gender

As presented in table and figure below, out of 80 nurses participated in this study, most of them were single at institute nursing level (35%), followed by married at Institute Nursing level (22.5%), and at BSN level (15%).

Table 3 Cross distribution of participants between Education level and Marital Status

			Education level			
Institute Nursing	Preparatory Nursing				Bachelor's Degree in Nursing (BSN)	Total
Marital Status	Single	Count	5	28	5	38
		% of Total	6.3%	35.0%	6.3%	47.5%
	Married	Count	8	18	12	38
		% of Total	10.0%	22.5%	15.0%	47.5%
	Divorced	Count	1	2	1	4
		% of Total	1.3%	2.5%	1.3%	5.0%
Total		Count	14	48	18	80
22.5%	60.0%	17.5% 100.0%	% of Total			

Pearson Chi-Square=5.952, at p-value=0.203

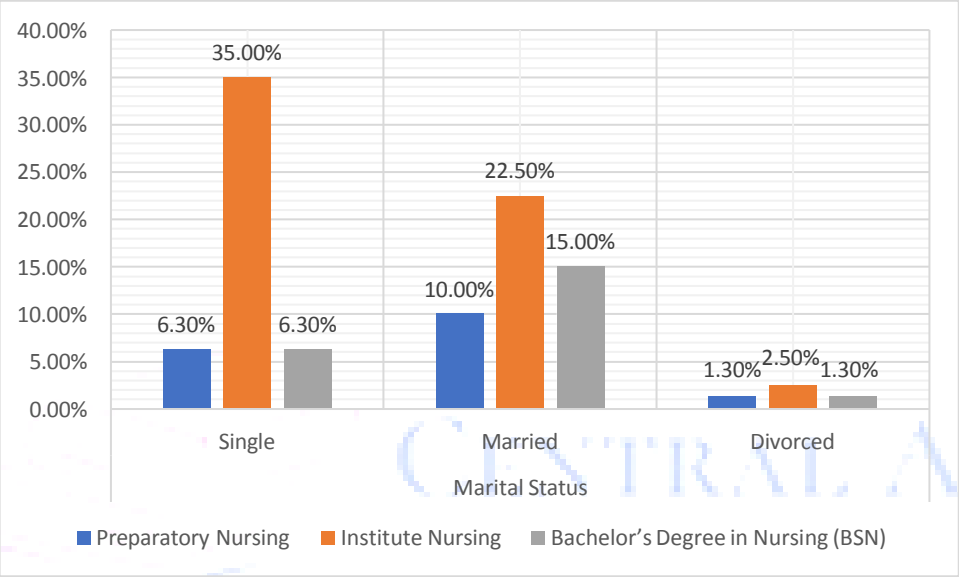


Figure 3 Cross distribution of participants between Education level and Marital Status

As presented in table and figure below, out of 80 nurses participated in this study, most of them were with insufficient economic status at institute nursing level (42.5%), followed by sufficient at Institute Nursing level (17.5%), then males at BSN level (13.8%).

Table 4 Cross distribution of participants between Education level and Economic Status

			Education level			
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	Total
Economic status	Insufficient	Count	8	34	7	49
		% of Total	10.0%	42.5%	8.8%	61.3%
	Sufficient	Count	6	14	11	31
		% of Total	7.5%	17.5%	13.8%	38.8%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=5.749, at p-value=0. 056

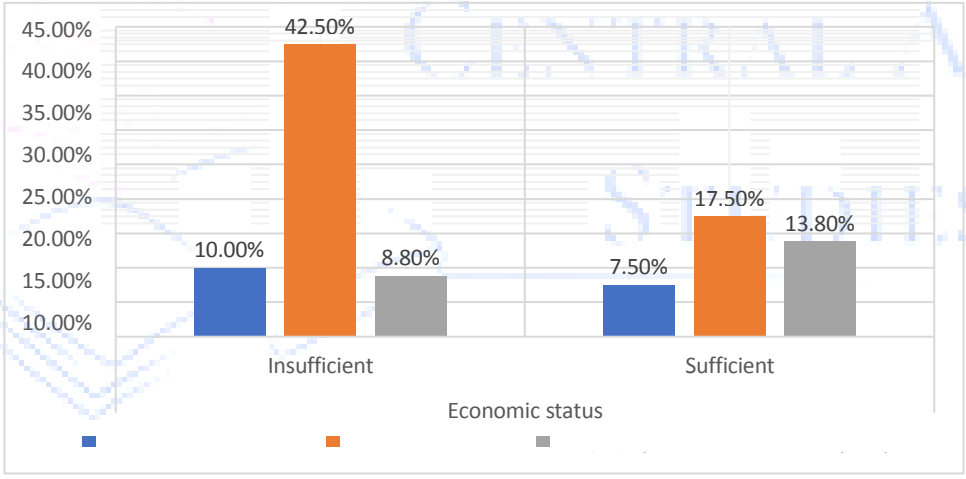


Figure 4 Cross distribution of participants between Education level and Economic Status

As presented in table and figure below, out of 80 nurses participated in this study, most of them lived at urban area at institute nursing level (53.8%), and at BSN level (18.8%).

Table 5 Cross distribution of participants between Education level and Residency

			Education level			
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	Total
Residency	Rural	Count	2	5	3	10
		% of Total	2.5%	6.3%	3.8%	12.5%
	Urban	Count	12	43	15	70
		% of Total	15.0%	53.8%	18.8%	87.5%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=0.517, at p-value=0.772

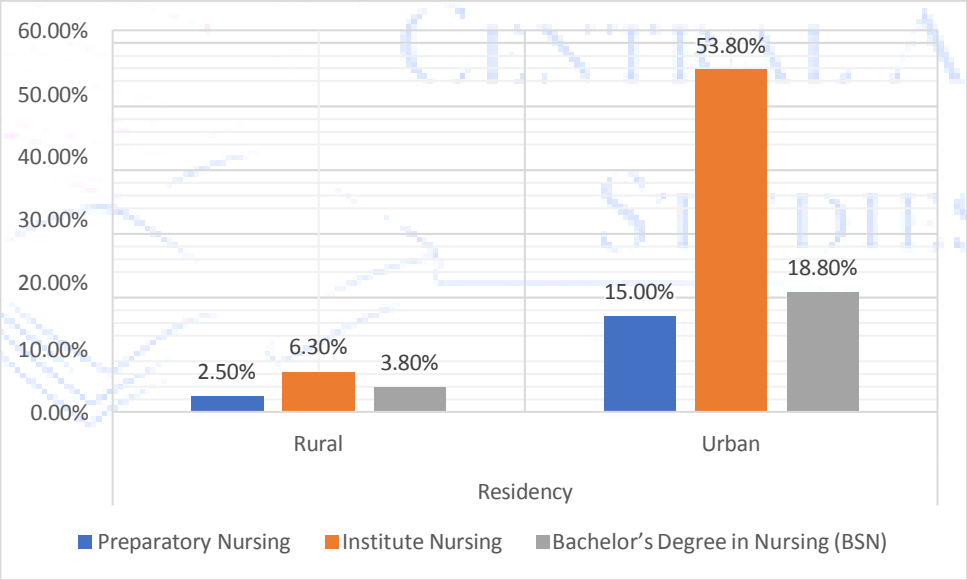


Figure 5 Cross distribution of participants between Education level and Residency

As presented in table below, out of 90% of the total participants in this study answered correctly about "Needlestick injuries are wounds caused by needles that accidentally puncture the skin.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (53.8%, 20%, and 16.3%, respectively).

			Education level			Total
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	
Q1	Yes	Count	13	43	16	72
		% of Total	16.3%	53.8%	20.0%	90.0%
	No	Count	1	5	2	8
		% of Total	1.3%	6.3%	2.5%	10.0%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=0.161, at p-value=0.923

As presented in table below, out of 87.5% the total participants in this study answered correctly about "Needlestick injuries are a hazard for people who work at healthcare centers.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (50%, 20%, and 17.5%, respectively).

			Education level			Total
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	
Q2	Yes	Count	0	8	2	10
		% of Total	0.0%	10.0%	2.5%	12.5%
	No	Count	14	40	16	70
		% of Total	17.5%	50.0%	20.0%	87.5%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=2.794, at p-value=0.247

As presented in table below, out of 72.5% of the total participants in this study had a past Needlestick injury, most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (43.8%, 15%, and 13.8%, respectively).

			Education level			Total
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	
Q3	Yes	Count	11	35	12	58
		% of Total	13.8%	43.8%	15.0%	72.5%
	No	Count	3	13	6	22
		% of Total	3.8%	16.3%	7.5%	27.5%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=0.57, at p-value=0.752

As presented in table below, out of 77.5% of the total participants in this study answered correctly about "Needlestick injuries transmit infectious diseases, especially hepatitis viruses.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (45%, 20%, and 12.5%, respectively).

			Education level			Total
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	
Q4	Yes	Count	10	36	16	62
		% of Total	12.5%	45.0%	20.0%	77.5%
	No	Count	4	12	2	18
		% of Total	5.0%	15.0%	2.5%	22.5%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=1.807, at p-value=0.405

As presented in table below, out of 67.5% of the total participants in this study answered correctly about "Needles disposed properly at Safety box to avoid the Needlestick injuries.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (41.3%, 13.8%, and 12.5%, respectively).

			Education level			
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	
Q5	Yes	Count	4	15	7	26
		% of Total	5.0%	18.8%	8.8%	32.5%
	No	Count	10	33	11	54
		% of Total	12.5%	41.3%	13.8%	67.5%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=0.468, at p-value=0.792

As presented in table below, out of 88.8% of the total participants in this study answered correctly about "Bacteria and viruses is the blood-borne infectious diseases.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (52.5%, 21.3%, and 15%, respectively).

			Education level			Total
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	
Q6	Yes	Count	12	42	17	71
		% of Total	15.0%	52.5%	21.3%	88.8%
	No	Count	2	6	1	9
		% of Total	2.5%	7.5%	1.3%	11.3%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=0.789, at p-value=0.674

As presented in table below, out of 80% of the total participants in this study answered correctly about "Contaminated needles transmit the infections.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (43.8%, 20%, and 16.3%, respectively).

			Education level			Total
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	
Q7	Yes	Count	1	13	2	16
		% of Total	1.3%	16.3%	2.5%	20.0%
	No	Count	13	35	16	64
		% of Total	16.3%	43.8%	20.0%	80.0%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=3.841, at p-value=0.147

As presented in table below, out of 81.3% of the total participants in this study answered correctly about "Needlestick injuries occur at intramuscular and intravenous injection or blood transfusion.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (51.3%, 16.3%, and 13.8%, respectively).

			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	Total
Q8	Yes	Count	3	7	5	15
		% of Total	3.8%	8.8%	6.3%	18.8%
	No	Count	11	41	13	65
		% of Total	13.8%	51.3%	16.3%	81.3%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=1.576, at p-value=0. 455

As presented in table below, out of 97.5% of the total participants in this study told that "There are methods and techniques to avoid the Needlestick injuries at their work location.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (58.8%, 22.5%, and 16.3%, respectively).

			Education level			Total
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	
Q9	Yes	Count	13	47	18	78
		% of Total	16.3%	58.8%	22.5%	97.5%
	No	Count	1	1	0	2
		% of Total	1.3%	1.3%	0.0%	2.5%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=1.734, at p-value=0.420

As presented in table below, out of 97.5% of the total participants in this study told that "Encouragement to inform the field healthcare authorities if they had an infectious disease.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (58.8%, 21.3%, and 17.5%, respectively).

			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	Total
Q10	Yes	Count	14	47	17	78
		% of Total	17.5%	58.8%	21.3%	97.5%
	No	Count	0	1	1	2
		% of Total	0.0%	1.3%	1.3%	2.5%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=1.083, at p-value=0.582

As presented in table below, out of 93.8% of the total participants in this study answered correctly about "One of the most of preventing injuries method is use the needles properly.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (56.3%, 22.5%, and 15%, respectively).

	Education level			Total
	Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	

Q11	Yes	Count	12	45	18	75
		% of Total	15.0%	56.3%	22.5%	93.8%
	No	Count	2	3	0	5
		% of Total	2.5%	3.8%	0.0%	6.3%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=2.743, at p-value=0.254

As presented in table below, out of 67.5% of the total participants in this study answered correctly about "One of the most of preventing injuries method is training the healthcare workers.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (45%, 12.5%, and 10%, respectively).

		Education level			Total
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	
Q12	Yes	Count	6	12	8	26
		% of Total	7.5%	15.0%	10.0%	32.5%
	No	Count	8	36	10	54
		% of Total	10.0%	45.0%	12.5%	67.5%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=3.086, at p-value=0.214

As presented in table below, out of 90% of the total participants in this study answered correctly about "Improvement the work technologies are another method of preventing injuries.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (55%, 18.8%, and 16.3%, respectively).

			Education level			
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	Total
Q14	Yes	Count	13	44	15	72
		% of Total	16.3%	55.0%	18.8%	90.0%
	No	Count	1	4	3	8
		% of Total	1.3%	5.0%	3.8%	10.0%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=1.164, at p-value=0.559

As presented in table below, out of 48.8% of the total participants in this study answered correctly about "If you infected, you shouldn't wound washing by ample amount of soap.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (28.8%, 10%, and 10%, respectively).

			Education level			
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	Total
Q15	Yes	Count	6	25	10	41
		% of Total	7.5%	31.3%	12.5%	51.3%
	No	Count	8	23	8	39
		% of Total	10.0%	28.8%	10.0%	48.8%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=0.542, at p-value=0.763

As presented in table below, out of 58.8% of the total participants in this study answered correctly about "One of the ways to prevent NSI is to take the available vaccines.", most of them were within institute nursing education, followed by preparatory nursing education and BSN education as (35%, 13.8%, and 10%, respectively).

			Education level			Total
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	
Q22	Yes	Count	3	20	10	33
		% of Total	3.8%	25.0%	12.5%	41.3%
	No	Count	11	28	8	47
		% of Total	13.8%	35.0%	10.0%	58.8%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=3.793, at p-value=0.15

As presented in table below, out of 73.8% of the total participants in this study answered correctly about "NSI transmit the cutaneous infection.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (45%, 15%, and 13.8%, respectively).

			Education level			Total
			Preparatory Nursing	Institute Nursing	Bachelor's Degree in Nursing (BSN)	
Q23	Yes	Count	11	36	12	59
		% of Total	13.8%	45.0%	15.0%	73.8%
	No	Count	3	12	6	21
		% of Total	3.8%	15.0%	7.5%	26.3%
Total		Count	14	48	18	80
		% of Total	17.5%	60.0%	22.5%	100.0%

Pearson Chi-Square=0.673, at p-value=0.714

Needle stick injuries (NSIs) are defined by the National Institute of Occupational Safety and Health (NIOSH) as injuries produced by objects such as needles relating to beneath the skin, blood collecting needles, intravenous injections, and needles utilized to connect parts of IV delivery systems.(51),(52)Needlestick injury (NSI) is an accidental percutaneous piercing wound caused by a contaminated sharps instrument, usually a hollow-bore needle from a syringe, and is one of the most frequent routes of transmission in occupationally acquired bloodborne infections.(53)

More than twenty blood-borne infections may be transmitted by NSI. In the most severe cases, the transmission of human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV) may severely impair quality of life and reduce life expectancy, while incurring substantial costs, especially in the long term.(54) Nosocomial infection or hospitalacquired infection (HAI) refers to infection that is acquired during the process of care and not manifested at the time of admission to a

hospital or other healthcare facility.(55) It has been estimated that the risk of HAI is 2–20 times higher in developing countries compared with developed countries and 5 and 10% of patients admitted to hospitals in developed countries acquire these infections.(56) Bloodborne pathogens (BBP) are microorganisms that cause infections to human through the blood stream. Pathogens include, and are not limited to, hepatitis B virus (HBV), hepatitis C virus (HCV), and HIV. Needle sticks and other sharpsrelated injuries may expose workers to BBP.(57)Nurses are likely to be exposed to microorganisms during their daily practice because of their close and frequent direct contact with patients.Regarding qualification and experience, most of nurses in this study (60.0%) had diploma in nursing, this result higher than another by Karim, M., et al.(58), which reported most of subjects (41.63%) had diploma in nursing. In this study, 72.5% of nurses had a past Needlestick injury, and 87.5% the total participants answered correctly about "Needlestick injuries are a hazard for people who work at healthcare centers". And 75% told that "Needle stick injuries are common is healthcare work." And 88.8% told that "The healthcare workers are most predisposing with blood-borne infections." This could be one of the main causes of transmission of infection to nurses and patients as well.(59)In this study, 88.8% of the total participants answered correctly about "Bacteria and viruses is the bloodborne infectious diseases.". In this study, 87.5% of nurses answered correctly about "Hepatitis B virus, hepatitisC virus, or HIV are the most blood-borne infections." And 86.3% answered correctly about "There are many bloodborne virus.". Transmission of HBV, HIV, and HCV has been related to injuries and frequency of exposure. According to the WHO 2002, 2.5% of HIV cases and 40% of both HBV and HCV cases worldwide are the result of occupational exposure among HCWs.(60) In this study, 77.5% of nurses answered correctly about "Needlestick injuries transmit infectious diseases, especially hepatitis viruses." And 80% of nurses answered correctly about "Contaminated needles transmit the infections.". The first report of HIV transmitted to a HCW because of a NSI was published in 1984.(61) In this study, 82.5% of nurses answered correctly about"Needlestick injuries transmit infectious diseases such as hepatitis B virus, hepatitis C virus, or HIV." The prevalence of NSIs was 72.5% among the studied sample

indicating that there is a high danger ofNSIs among nurses. Another study by(62) reported it was 84.7%. In Hamadan teaching hospitals, incidence of needles and sharp objects injury was 24.1%.(63)The rate of needle stick injury in Africa is 4.2 per person annually.(64)The prevalence of exposure to blood and other body fluids among health care workers in a hospital in Fars Province was 79%.(65) In another study, the incidence of needle stick injuries was as follows: Nigeria, 31%, Turkey 62%,India (72%),Eypt,35.6%,China(82%),Taiwan(93%).(66)

Similarly, in another study conducted in Egypt(67) reported NSI in 273/371 nurses (73.5%). Moreover, among the 526 nurses and midwives in Uganda(68).

The incidence of needle stick injuries among nursing students has been reported as endemic in northern

India,48.1%(69),Taiwan (61.9%)(75), and Iran 71%(70). A study conducted in Saudi Arabia reported that 74% of the nurses had needlestick injury, the frequency of needlestick injury per year 67% one to two times, 29% three to four times, 4% five to six times.(71) The results of the present

study are in contrast with the results of PARSA-PILI, et al. which reported it was 18.8%.(72) It can be suggested that the lower incident of needle stick injuries in their study may be attributed to a number of factors, including the existence of a comprehensive program to pursue occupational health by occupational health clinic and providing periodic preventive education program for staff and as well as other factors. Centers for Disease Control and Prevention (CDC) estimated that 500-300 thousand cases of skin injuries occur annually among the health care professionals in United States although actual

figures can be more. Occupational Safety and Health Administration (OSHA) has stated that one million health care workers are damaged by sharp instruments.(73) Injuries from prick sticks and sharp objects are widespread among healthcare workers in hospitals and other healthcare settings. Because of their viable work environment and work-related stress, they are always in danger of needle-sticks and sharp injuries.(74) Out of 90% of the total participants in this study answered correctly about

"Needlestick injuries are wounds caused by needles that accidentally puncture the skin.", most of them were within institute nursing education, followed by BSN education, and preparatory nursing education as (53.8%, 20%, and 16.3%, respectively). In the study by(75) most of nurses (45%) had good knowledge, (28.3%) had fair knowledge, and (26.7%) of them had poor knowledge, (76) their findings showed that 54.3% of Health workers had good knowledge score of key injection safety issues, while 16.7% and 29% had had fair and poor general knowledge scores respectively.)(77) revealed that knowledge of health care workers about the risks associated with needle stick injuries and use of preventive measures was inadequate., (78) reveals inadequate knowledge amongst health care workers about the risk associated with needle-stick injuries and lack of use of preventive measures. Knowledge among health care workers regarding risks and hazards associated with NSI is inadequate.Also, NSI transmit the cutaneous infection, (73.8%) of nurses in this study told that. The World Health Organization (WHO) recommends the use of safety injection devices and instructs governments to transition to their exclusive use since 2020.(79) Out of 97.5% of the total participants in this study told that "There are methods and techniques to avoid the Needlestick injuries at their work location.". Most of nurses in this study (93.8%) told that "One of the most of preventing injuries method is use the needles properly." (83.8%) of them told that "Improper disposal of needles is one of the most causes of needlestick injuries." And (67.5%) told that "Needles disposed properly at Safety box to avoid the Needlestick injuries." Most of nurses in this study (67.5%) used Medical gloves to prevent injuries. The study by Alwabr, G. M.

A.(80)also showed that 35.9% of the participants did not wear the safety devices to prevent needlestick injuries. Most of them (75.3%) considered unavailability the safety devices in the hospital to be the reason for did not wear it, whereas 11.8% considered inappropriate environment such as overcrowding to be the cause, 7.5% neglect and 5.4% forget to wear the safety devices. This result differs with previous studies. A study conducted in Pakistan in Tertiary Care Hospitals indicated that 40% of study participants did not wear the safety devices to prevent

needlestick injuries.(81) A study conducted in Mongolia at public tertiary hospitals in an urban community indicated that 66.2% of the nurses did not wear the safety devices.(82) A study conducted

in Southeast Nigeria in Tertiary Health Institutions indicated that 43.9% of the nurses did not wear the safety de.(83)

Reference

1. World Health Organization. The World Health Report. Geneva: WHO. Available online at: http://www.who.int/whr/2002/chapter4/en/index8.html.g (accessed January 15, 2022).
2. Centers for Disease Control and Prevention: NIOSH Publications and Products. Preventing Needlestick Injuries in Health Care Settings (2000-108). Available online at:http://www.cdc.gov/niosh/docs/2000-108/ (accessed June 11, 2015).
3. Memish ZA, Assiri AM, Eldalatony MM, Hathout HM. Benchmarking of percutaneous injuries at the Ministry of Health hospitals of Saudi Arabia in comparison with the United States hospitals participating in Exposure Prevention Information Network (EPINetTM). Int J Occup Environ Med. (2015) 6:26–33. doi: 10.15171/ijoem.2015.467
4. Memish ZA, Assiri AM, Eldalatony MM, Hathout HM, Alzoman H, Undaya M. Risk analysis of needle stick and sharp object injuries among health care workers in a tertiary care hospital (Saudi Arabia). J Epidemiol Glob Health. (2013) 3:123–9. doi: 10.1016/j.jegh.2013.03.004
5. Samargandy SA, Bukhari LM, Samargandy SA, Bahlas RS, Aldigs EK, Alawi MM, et al. Epidemiology and clinical consequences of occupational exposure to blood and other body fluids in a university hospital in Saudi Arabia. Saudi Med J. (2016) 37:783–90. doi: 10.15537/smj.2016.7.14261
6. El-Hazmi Malak M, Al-Majid Fahad M. Needle stick and sharps injuries among health care workers: a 5-year surveillance in a teaching center in Saudi Arabia. Biomed Res. (2008) 19:133–40.
7. Jahan S. Epidemiology of needlestick injuries among health care workers in a secondary care hospital in Saudi Arabia. Ann Saudi Med. (2005) 25:233– 8. doi: 10.5144/0256-4947.2005.233
8. Hashmi A, Al Reesh SA, Indah L. Prevalence of needle-stick and sharps injuries among healthcare workers, Najran, Saudi Arabia. Epidemiology. (2012) 2:117. doi: 10.4172/2161-1165.1000117
9. Elsherbenny E, Niazy NA. Incidence of Needle Stick and Sharps Injuries Among Health Care Workers in a Tertiary Hospital, KSA Egypt. J Occup Med. (2018) 42:271–84. doi: 10.21608/ejom.2018.6810
10. Al Shaikh H, Al Mahdi M, Naik B. Sharps injuries among health care workers in Al Ahsa region, Saudi Arabia. Int J Infect Control. (2019) 15:1– 8. doi: 10.3396/ijic.v15i4.017.19
11. Elder A, Paterson C. Sharps injuries in UK health care: a review of injury rates, viral transmission and potential efficacy of safety devices. Occup Med (Lond). (2006) 56:56674. doi: 10.1093/occmed/kql122

12. Prüss-Üstün, A, Rapiti E, Hutin YJF. (2003). Sharps Injuries: Global Burden of Disease From Sharps Injuries to Health-Care Workers. Available online at: https://apps.who.int/iris/handle/10665/42743 (accessed January 15, 2022).
13. Wilburn SQ, Eijkemans G. Preventing needlestick injuries among healthcare workers: a WHO-ICN collaboration. Int J Occup Environ Health. (2004) 10:451–6. doi: 10.1179/oeh.2004.10.4.451
14. Gupta A, Anand S, Sastry J, Krisagar A, Basavaraj A, Bhat SM, et al. High risk for occupational exposure to HIV and utilization of post-exposure prophylaxis in a teaching hospital in Pune, India. BMC Infect Dis. (2008) 8:142. doi: 10.1186/1471-2334-8-142
15. Sohn JW, Kim BG, Kim SH, Han C. Mental health of healthcare workers who experience needlestick and sharps injuries. J Occup Health. (2006) 48:474– 9. doi: 10.1539/joh.48.474
16. Tarigan L, Cifuentes M, Quinn M, Kriebel D. Prevention of needle-stick injuries in healthcare facilities: a meta-analysis. Infect Control Hosp Epidemiol. (2015) 36:823–9. doi: 10.1017/ice.2015.50
17. Benn P, Fisher M, Kulasegaram R. UK guideline for the use of post-exposure prophylaxis for HIV following sexual exposure (2011). Int J Std AIDS. (2011) 22:695–708. doi: 10.1258/ijsa.2011.171011
18. Mahfouz AA, Abdelmoneim I, Khan MY, Daffalla AA, Diab MM, Shaban H, et al. Injection safety at primary health care level in south-western Saudi Arabia. East Mediterr Health J. (2009) 15:443–50. doi: 10.26719/2009.15.2.443
19. Ismail AA, Mahfouz MS, Makeen A. Injection safety among primary health care workers in Jazan Region, Saudi Arabia. Int J Occup Environ Med. (2014) 5:155–63.
20. Alzahrani W, Almatrafi Y, Alzahrani Y, Alahmadi Y, Allehyani E, Alahmadi A. Frequency of needlestick injury with associated risk factors and knowledge about blood borne transmitted diseases among health care workers in Alnoor Specialist Hospital, Makkah, Saudi Arabia. Int J Sci Res. (2017) 6:830– 3. doi: 10.21275/28121601
21. Alam M. Knowledge, attitude and practices among health care workers on needle-stick injuries. Ann Saudi Med. (2002) 22:396–9. doi: 10.5144/0256-4947.2002.396
22. AlDakhil L, Yenugadhati N, Al-Seraihi O, Al-Zoughool M. Prevalence and associated factors for needlestick and sharp injuries (NSIs) among dental assistants in Jeddah, Saudi Arabia. Environ Health Prev Med. (2019) 24:60. doi: 10.1186/s12199-019-0815-7
23. Khabour OF, Al Ali KH, Mahallawi WH. Occupational infection and needle stick injury among clinical laboratory workers in Al-Madinah city, Saudi Arabia. J Occup Med Toxicol 13, 15. (2018). doi: 10.1186/s12995-018- 0198-5
24. Lwanga SK, Lemenshow S. Sample Size Determination in Health Studies. A Practical Manual. Geneva: World Health Organization (1991).
25. Ministry of Health. Employee Health Program Policy. (2018). p. 0–55. Available online at: http://gdipc.org/wp-content/uploads/2018/07/Employee-HealthProgram-Policy-2018.pdf (accessed January 15, 2022).

26. "GCC Infection control manual 2013 revised OPT," 2013, [Online]. Available: https://www.moh.gov.sa/CCC/Documents/GCC Infection control manual 2013 revisedOPT.pdf. (accessed January 15, 2022).
27. Jacob A, Newson-Smith M, Murphy E, Steiner M, Dick F. Sharps injuries among health care workers in the United Arab Emirates. Occup Med (Lond). (2010) 60:395–7. doi: 10.1093/occmed/kqq039
28. Yarahmadi R. The prevalence of needle sticks injuries among health care workers at a hospital in Tehran. Iran J Health Saf Environ. (2014) 1:23–9.
29. Sabbah I, Sabbah H, Sabbah S, Akoum H, Droubi N. Occupational exposures to blood and body fluids (BBF): Assessment of knowledge, attitude and practice among health care workers in general hospitals in Lebanon. Health. (2013) 5:70–8.
30. Hanafi MI, Mohamed AM, Kassem MS, Shawki M. Needlestick injuries among health care workers of University of Alexandria Hospitals. East Mediterr Health J. (2011) 17:26–35. doi: 10.26719/2011.17.1.26
31. BouyaS, Balouchi A, Rafiemanesh H, Amirshahi M, Dastres M, Moghadam MP, et al. Global prevalence and device related causes of needle stick injuries among health care workers: a systematic review and meta-analysis. Ann. Global Health. (2020) 86:35 doi: 10.5334/aogh.2698
32. Dafaalla MD, Suliman A. Knowledge, attitude and practice towards needle stick injury among health care workers in a tertiary Sudanese Hospital. S Am J Clin Res. (2016) 3:88–96. doi: 10.21522/TIJCR.2014.03.01.Art010
33. Sharma S, Gupta A, Arora A. Knowledge, attitude and practices on needle-stick and sharps injuries in tertiary care cardiac hospital: a survey. Indian J Med Sci. (2010) 64:396–401. doi: 10.4103/0019-5359. 101174
34. Lal D, Sidhu TK, Coonar PS, Singh G. Needle stick injuries among health care workers in a tertiary care hospital in District Bathinda, Punjab. Indian J Commun Health. (2017) 29:429–33.
35. Kim OS, Jeong JS, Kim KM, Choi JS, Jeong IS, Park ES, et al. Underreporting rate and related factors after needlestick injuries among healthcare workers in small- or medium-sized hospitals. Korean J Nosocomial Infect Control. (2011) 16:29–36.
36. Garus-Pakowska A, Górajski M. Behaviors and attitudes of polish health care workers with respect to the hazards from blood-borne pathogens: a questionnaire-based study. Int J Environ Res Public Health. (2019) 16:891. doi: 10.3390/ijerph16050891
37. Elmiyeh B, Whitaker IS, James MJ, Chahal CA, Galea A, Alshafi K. Needlestick injuries in the National Health Service: a culture of silence. J R Soc Med. (2004) 97:326–7. doi: 10.1177/014107680409700705
38. Zaidi MA, Griffiths R, Beshyah SA, Myers J, Zaidi MA. Blood and body fluid exposure related knowledge, attitude and practices of hospital based health care providers in United Arab Emirates. Saf Health Work. (2012) 3:209–15. doi: 10.5491/SHAW.2012.3.3.209

39. Singh B, Paudel B, Kc S. Knowledge and practice of health care workers regarding needle stick injuries in a tertiary care center of Nepal. Kathmandu Univ Med J. (2015) 51:230–3. doi: 10.3126/kumj.v13i3.16813
40. Rajkumari N, Thanbuana BT, John NV, Gunjiyal J, Mathur P, Misra MC, et al. Prospective look at the burden of sharps injuries and splashes among trauma health care workers in developing countries: true picture or tip of iceberg. Injury. (2014) 45:1470–8. doi: 10.1016/j.injury.2014.03.001
41. Afridi AAK, Kumar A, Sayani R. Needle stick injuries– risk and preventive factors: a study among health care workers in tertiary care hospitals in Pakistan. Glob J Health Sci. (2013) 5:85–92. doi: 10.5539/gjhs.v5 n4p85
42. Makeen AM, Alharbi AA, Mahfouz MS, Alqassim AY, Ismail AA, Arishi HM, et al. Needlestick and sharps injuries among secondary and tertiary healthcare workers, Saudi Arabia. Nurs Open. (2021) 9:816–23. doi: 10.1002/nop2.1136
43. Wang C, Huang L, Li J, Dai J. Relationship between psychosocial working conditions, stress perception, and needle-stick injury among healthcare workers in Shanghai. BMC Public Health. (2019) 19:874. doi: 10.1186/s12889-019-7181-7
44. Jankovic S, Bojanic J, Jovic-Vranes A, Marinkovic J, Jankovic J. Knowledge, attitudes and practices towards blood-borne pathogens in healthcare workers in Banja Luka, Bosnia and Herzegovina. Cent Eur J Med. (2009) 4:409– 14. doi: 10.2478/s11536-009-0087-5
45. Rampal L, Zakaria R, Sook LW, Zain AM. Needle stick and sharps injuries and factors associated among health care workers in a Malaysian hospital. Eur J Soc Sci. (2010) 13:354–62.
46. Ö'Connor MB, Hannon MJ, Cagney D, Harrington U, O'Brien F, Hardiman N, et al. A study of needle stick injuries among non-consultant hospital doctors in Ireland. Irish J Med Sci. (2011) 180:445–9. doi: 10.1007/s11845-010-0667-z
47. Butsashvili M, Kamkamidze G, Kajaia M, Morse DL, Triner W, Dehovitz J, et al. Occupational exposure to body fluids among health care workers in Georgia. Occup Med (Lond). (2012) 62:620–6. doi: 10.1093/occmed/kqs121
48. Singh S, Singh B, Singh S, Khurana A, Verma R. Study of knowledge, attitude and practice among nurses regarding needle stick and sharp item injuries. Int J Community Med Public Health. (2019) 6:2064– 8. doi: 10.18203/2394-6040.ijcmph20191819
49. Hebo HJ, Gemeda DH, Abdusemed KA. Hepatitis B and C Viral Infection: Prevalence, Knowledge, Attitude, Practice, and Occupational Exposure among Healthcare Workers of Jimma University Medical Center, Southwest Ethiopia. Sci World J. (2019) 2019:9482607. doi: 10.1155/2019/9482607
50. Abuduxike G, AcarVaizoglu S, Asut O, Cali S. An assessment of the knowledge, attitude, and practice toward standard precautions among health workers from a hospital in Northern Cyprus. Saf Health Work. (2021) 12:66–73. doi: 10.1016/j.shaw.2020. 09.003
51. Becker MH. Department of Health Behavior and Health Education, School of Public Health. Ann Arbor, ML: The University of Michigan. 52. M, Cowman S, Al-Shagag A. and

Aboabdo M. Needle stick injuries and compliance among doctors and nurses, Bahrain. Med Bull. (2017) 39:225– 8. doi: 10.12816/0047772

52. Talaat, M., Kandeel, A., El-Shoubary, W., Bodenschatz, C., Khairy, I., Oun, S., & Mahoney, F. J. (2003). Occupational exposure to needlestick injuries and hepatitis B vaccination coverage among h H care workers in Egypt. American journal of infection control, 31(8), 469-474.
53. Phipps, W., Honghong, W., Min, Y., Burgess, J., Pellico, L.,Watkins, C. W., … &Williams, A. (2002). Risk of medical sharps injuries among Chinese nurses. American journal of infection control, 30(5), 277282.
54. Shiao, J., Guo, L., & McLaws, M. L. (2002). Estimation of the risk of bloodborne pathogens tohealth care workers after a needlestick injury in Taiwan. Americanjournal of infection control, 30(1), 15-20.
55. Askarian, M., & Malekmakan, L. (2006). The prevalence of needle stick injuries in medical, dental,nursing and midwifery students at the university teaching hospitals of Shiraz, Iran. Indian journal of medical sciences, 60(6), 227-232.
56. Hanafi, M. I., Mohamed, A. M., Kassem, M. S., & Shawki, M.(2011). Needlestick injuries among health care workers of University of Alexandria Hospitals. EMHJ-Eastern Mediterranean Health Journal, 17 (1), 26-35, 2011.
57. Kermode, M., Jolley, D., Langkham, B., Thomas, M. S., & Crofts, N. (2005). Occupational exposureto blood and risk of bloodborne virus infection among health care workers in rural north Indian health care settings. American journal of infection control, 33(1), 34- 41.
58. Shiao, J., Guo, L., & McLaws, M. L. (2002). Estimation of the risk of bloodborne pathogens to health
59. care workers after a needlestick injury in Taiwan. American journal of infection control, 30(1), 15-20.
60. Askarian, M., & Malekmakan, L. (2006). The prevalence of needle stick injuries in medical, dental
61. nursing and midwifery students at the university teaching hospitals of Shiraz, Iran. Indian journal of medical sciences, 60(6), 227-232.
62. Alam, M. (2002). Knowledge, attitude and practices among health care workers on needle-stick injuries. Annals of Saudi Medicine, 22(5-6), 396-399.
63. PARSA-PILI, J. A. B. E. R., IZADI, N., & GOLBABAEI, F.(2013). Factors associated with needle stick and sharp injuries among health care workers. International Journal of Occupational Hygiene, 5(4), 191- 197.
64. Ali, A. T., & Othman, S. M. (2022). Needle stick injuries and their safety measures among nurses in Erbil Hospitals. Diyala Journal of Medicine, 23(2), 1- 13.
65. Karim, M., Ahmed, S., Qadir, K., & Nasrabadi, A. (2015).Assessment of nurses' knowledge regarding needle prick injury in Erbil Hospitals. KufaJournal for Nursing Sciences, 5(1), 213-219.

66. Onyemocho, A., Anekoson, J. I., & Pius, E. O. (2013). Knowledge and practice of injection safety among workers of Nigerian prison service health facilities in Kaduna state. Am J Public Health Res, 1(7), 171-176.
67. Shah, R., Mehta, H. K., Fancy, M., Nayak, S., & Donga, B.N. (2010). Knowledge and awareness regarding needle stick injuries among health care workers in tertiary care hospital in Ahmedabad, Gujarat. National Journal of Community Medicine, 1(02), 93-96.
68. Siddique, K., Mirza, S., Tauqir, S. F., Anwar, I., & Malik, Z.(2008). Knowledge attitude and practices regarding needle stick injuries amongst healthcare providers. Pakistan J Surg, 24(4), 243-8.
69. World Health Organization. (2016). WHO guideline on the use of safety-engineered syringes for intramuscular, intradermal and subcutaneous injections in health care settings. World Health Organization.Alwabr, G. M. A. (2018). Knowledge and practice of needlestick injury preventive measures among nurses of Sana'a city hospitals in Yemen. Indian Journal of Health Sciences and Biomedical Research (KLEU),11(1), 70.
70. Afridi, A. A. K., Kumar, A., & Sayani, R. (2013). Needle stick injuries–risk and preventive factors:a study among health care workers in tertiary care hospitals in Pakistan. Global journal of health science, 5(4), 85.
71. Kakizaki, M., Ikeda, N., Ali, M., Enkhtuya, B., Tsolmon, M., Shibuya, K., & Kuroiwa, C. (2011). Needlestick and sharps injuries among health care workers at public tertiary hospitals in an urban community in Mongolia. BMC research notes, 4(1), 1-6.
72. Adinma, E. D., Ezeama, C., Adinma, J. I. B., & Asuzu, M. C. (2009). Knowledge and practice of universal precautions against blood borne pathogensamongst house officers and nurses in tertiary health institutions in southeast Nigeria. Nigerian journal of clinical practice, 12(4)