

**Exploring the Needle Stick Injuries among Nursing in Benghazi Medical Centers**Muftah .A. ELFaituri<sup>1</sup>, Mailud El-Amari<sup>1</sup>, Fadya .A. Menesi<sup>2</sup>, Zahzahan Saiti, Heba .W.Elsahli<sup>1</sup>, S.M. Al-Ojali<sup>1</sup>, Khulod .F. Eftaita<sup>1</sup>Faculty of public health, Benghazi University Libya<sup>2</sup>Faculty of Medicin, Tubruk University Libya**\*Corresponding author**

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**Abstract:** Needle sticks and other sharps-related injuries which involve workers to expose to blood borne pathogens is continue to be a significant hazard for hospital employees. Needle sticks are a common occurrence in the health care profession. It is estimated that 600 to 800 thousand needle stick injuries occur per year in the United States. Needle stick injuries may be prevented by educating, health care providers about the dangers syringes and other objects contaminated with blood. The present study explores the needle stick injuries among nursing staff working in a general hospital in Benghazi, as a main occupational risk factor for health care worker, especially for nursing group. The study was a descriptive 'cross section study'. Including of 101 nurse working morning time, and accept to participate in our study, working in the medical centers at the time of conducting the study in Benghazi city. The study tools was constructed by the investigators as questionnaire about knowledge and practice of nurses regarding needle and sharp instruments risks. Data collected was sorted and cleaned than simple descriptive statistics was applied. The present study included 101 participants from the nursing staff working in medical centers in Benghazi city, participating nursing staff believe that needle sticks and sharp injuries are the most serious injuries in their work environment, as 65.3% expected to get needle stick injury during work. Present study revealed that the procedures followed in case of needle stick injury as 42.5% depend on request of the colleague for assistance, followed by personal first aid by 37.6%. Initiate the injury reporting system, and document the exposure in workplace, especially for nursing and others.

**Keywords:** needle sticks, workplace, nursing staff, sharp instrument

**INTRODUCTION**

Needle stick injuries are wounds caused by needles that accidentally puncture the skin [1]. Needle stick injuries are a hazard for people who work with hypodermic syringes and other needles equipment [2]. These injuries can occur at any time when people use it, disassemble, or dispose of needles. When not disposed of properly, needles can become concealed in linen or garbage and injure other workers who encounter them unexpectedly [3].

WHO reports in the World Health Report 2002, that of the 35 million health-care workers, 2 million experience per coetaneous 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 [4], to reduce the exposure to HIV and other sharps-related infections in health care workers associated with injections. The risk of acquiring HCV as a result of an occupational needle stick injury when the source was infected varies from 3% to 10% [2]. HCV is thought to be a fragile virus

which would be unlikely to survive in the environment, but there are little data at this time. There has been a case report of HCV acquisition after an injury from a discarded needle [4].

Needle sticks, and other sharps-related injuries which involve workers to expose to blood borne pathogens is continue to be a significant hazard for hospital employees [3]. OSHA estimated that, 5.6 million workers in the healthcare industry and related occupations are at risk of occupational exposure to blood borne pathogens. Blood borne pathogens are pathogenic microorganisms that are present in human blood and can cause disease to humans. These pathogens includes, Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and others. Accidental exposure to blood caused by needle injuries or injuries following, cutting, biting or splashing incidents carries the risk of infection by blood-borne viruses [1].

Any worker handling sharp devices or equipment such as scalpels, sutures, hypodermic

needles, blood collection devices, or phlebotomy devices is at risk. Nursing staff are most frequently injured. Data shows that needle stick injuries occur most frequently in the operating room and in patient rooms [2].

Needle sticks are a common occurrence in the health care profession. It is estimated that 600000 to 800000 needle stick injuries occur per year in the United States [1]. Of these, many, if not most, go unreported [2]. In response to the risk of exposure, institutions have focused on primary prevention as a means of reducing the incidence of Needle sticks and thereby decreasing the number of blood borne pathogens transmissions. Needle stick injuries still occur, however, it is important that individuals in the health care field become well informed about the exposure risks and educated regarding the appropriate response [5].

This risk has significantly declined, in part to an compulsory vaccination campaign geared toward hospital staff [3]. The protocol which should be followed after any needle stick include:-

First, do not panic. Protocols are in place to minimize the risk of infection after exposure. Second, do not ignore the exposure. Acting within outlined time frames can lead to a significant decrease in the transmission rate of certain infections [1]. The following measures also should be taken [1]:

- The site should be immediately washed with soap and water.
- The incident should be reported and an exposure report sheet completed.
- The exposure should be assessed (type of fluid, type of needle, amount of blood on the needle, etc).
- The exposure source should be evaluated:
  - a. HIV, HBV, and HCV status of the patient;
  - b. Consent and testing of the patient for these diseases if the status is unknown.
  - c. Likelihood of infection based on the community served by the hospital if the patient is not available to be tested.
- Appropriate management of any positive exposure is necessary. However, accidental contact with blood occurs especially in the following situations [6]:
  - During re-capping
  - During surgery, especially during wound closure
  - During biopsy
  - When an uncapped needle has ended up in bed linen, surgery clothing etc
  - When taking an unsheathed used needle to the waste container

- During the cleaning up and transporting of waste material
- When using more complex collection & injection techniques
- In A&E (Accident and Emergency) departments
- In high-stress interventions (diagnostic or therapeutic endoscopy in patients with gastrointestinal bleeding)

Although this does not occur very often, there are other blood-borne microorganisms which can be transmitted via blood exposure including : ( Other hepatitis viruses, Cytomegalovirus (CMV), Epstein-Barr virus (EBV), Parvovirus, Treponema pallidum (syphilis), Yersinia, Plasmodium) [5].

Accidental exposure to blood following a needle stick injury is probably one of the most common occupational health accidents in medical care field. Needle stick injuries may be prevented by educating health care providers about the dangers syringes and other objects contaminated with blood [7].

#### **Aim of Study**

The present study explores the importance of needle stick injuries among nursing staff working a general hospital in Benghazi, as a main occupational risk factor for health care worker, especially for nursing group.

#### **METHODS AND MATERIALS**

The study was conducted as a descriptive ' cross section study. Including of 101 nurse working morning time , and accept to participate in our study , out of total of 263 nursing staff working in the medical centers at the time of conducting the study in medical centers in Benghazi city. 'Addiction center, Kidney center, Radiology center, Endocrine & DM center, Dental care center and Cardiology center '.

The study tools used for present study was constructed by the investigators including general characteristics of the study participants and questions regarding knowledge and practice of nurses regarding needle and sharp instrument risks. Data collected was sorted and cleaned than simple descriptive statistics was applied as percentage and cross tabulation of some variables, using the SPSS package version 16 for analysis.

#### **RESULT**

The present study included 101 participants of nursing staff working in medical center of Benghazi city. Regarding age group more than half were in group 21-30years old, majority of the participants were Libyans. Marital status of the participants over the half unmarried with experience of 5-10 years, 41.6%.

The nursing staff who exposed to risk of needle sticks or sharp instruments 65.3% of them had expose sometime during their work, while just one third had not been exposed regarding the time when they exposed was about one fourth of the participants while recapping the needle, 5% during the patient’s movement and 20.8% might have been exposed more than once. Looking at the place where they were exposed to injury about half of the participants in patient’s room.

Considering the preventing measures within the medical center, such an immunization against some

infections decrease before starting work 62.4% only take the vaccine, routine medical examination participant majority 70.5% did know about, medical work management for the centers about half stated that it was not theirs, when an event of injury about 37.6% run for personal first aid practice while about 42.5% run for colleague assistance.

Regarding disease expected from exposure to injury more than half of the participants 55.6% think of HBV. The presence of medical records of causes of injury in medical centers less than half thought it present 41.6%.

**Table-1: The main general characteristics of nursing staff in medical centers**

General characteristics	No	%
Age groups:		
21-30	59	58.4
31 and above	42	41.6
Gender:		
Male	24	23.8
Female	77	76.2
Nationality:		
Libyan	84	83.2
Non-Libyan	17	16.8
Education level:		
Intermediate	67	66.3
Higher diploma	34	33.7
Work experience:		
< 5 years	26	25.7
5 - 10 years	42	41.6
> 10 years	33	32.
Marital status:		
Single	53	52.5
Married	43	42.5
Divorced	5	5.0

**Table-2: Risk of exposure to needles and sharp instruments during nursing work in medical centers:**

Risk	Numbers	Percentage
During practice:		
Yes	66	65.3
No	35	34.7
Reason of injury:		
Recapping needle	34	33.7
Patient movement	5	5.0
Disposing needle	6	5.9
Can be all	21	20.8
Location of Exposure:		
Patient room	49	48.5
Treatment room	15	14.9
Emergency room	19	8.8
Blood bank	12	11.9
Operation room	6	5.9

**Table-3: Preventing practice considered within medical centers**

Practice	No.	%
Immunization against infectious diseases before work:		
Yes	63	62.4%
No	38	37.6%
Routine medical examination:		
Every 6 months	8	7.9%
Yes	16	15.8%
No	77	76.3%
Medical waste management committee:		
Present	59	58.4%
Absent	42	41.6%
Practice in case of injury:		
Report to authority	20	19.8%
Follow personal first aid	38	37.6%
Request colleague assistance	43	42.5%
Disease expected from exposure:		
HBV	10	9.9%
HIV	2	2.0%
Other	6	5.9%
Non	83	82.2%
Medical record of cases:		
Yes	42	41.6%
No	59	58.4

## DISCUSSION

Nursing staff in health and medical settings are the most frequently expose to have needle sticks and sharp injuries, which put them under the risk to acquire serious blood borne diseases.

The present study included 101 participants from the nursing staff working in medical centers in Benghazi city, considering the risk of exposing to needle stick and sharp injuries mostly happens during work practice of the participants ( as 65.3% ), while that the injury happens during capping of the needle 33.7% as it has been reported by our study nursing staff, compared to a study in the UK and Saudi Arabia which states that injury counted as 13% and 6% respectively (4), which means that nursing staff in our settings might need more training and education, in case of when injury expected to happen, also found in our study that during movement of patients as 5.0% compared to finding in a study in UK was 32%, while during the disposal of the needle and sharp instruments as 5.9% compared to a study in Saudi Arabia as 14% (6). However, participating nursing staff believes that needle sticks and sharp injuries are the most serious injuries in their work environment, as 65.3% expected to get needle stick injury during work.

## CONCLUSION

Our study revealed that the procedures followed in case of needle stick injury as 42.5% depend on the think request of the colleague in assistance, followed by personal first aid by 37.6%. Needle stick injuries may be prevented by educating, educators and health care providers about the dangers of handling

used needles, syringes and other objects contaminated with blood

## RECOMMENDATIONS

- initiate the injury reporting system used in all workplace, specially for nursing and other who particular involve in needle stick, sharp instruments, blood donation unites and similar.
- document the exposure in detail.
- advice related to such risk should be frequently up dated by authority.
- Education related to needle stick & sharp instruments should be provided for general people.

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