



Assessment of knowledge, attitude and practice among health care workers regarding needle stick and sharp object injuries in Army force Referral and teaching hospital, Addis Ababa, Ethiopia

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A thesis paper to be submitted to Addis Ababa University, College of Health Science, school of Medicine, department of Emergency Medicine as partial fulfillment of degree of Masters in Emergency Medicine and Critical Care

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Approval by the board of examiners

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Background

Needle stick injury has been recognized as one of the potential occupational hazards for health care workers which results in transmission of blood borne pathogens such as HBV, HCV, and HIV/AIDS while performing their clinical activities in the Hospital.

Abstract

Objective: This study aimed to assess the knowledge, attitude and practices among health care workers on needle stick injuries.

Methods:

Hospital based cross-sectional descriptive survey was conducted among HCWs in army force referral and teaching hospital AA, Ethiopia. Pre tested structured questionnaire were administered to health care workers on other hospital in the same professional. Data was entered in to a computer using EPI-3 Info version 5.4 and Data was analyzed using SPSS version 16.0

Result

The response rate of the survey was 99.3% and the results showed maximum participant were in the age group of 20-53 years. 97.2% of health care workers were aware of the fact that hepatitis B, hepatitis C, and HIV could transmitted by needle-stick injuries. 82(57.3%) had participated in any training related to infection prevention program. 40(27.9%) and 38(26.6%) were exposed blood /body fluids and had needle stick or sharp injuries in the last one year's respectively. 104(72.8%) were of the impression that needle should be recapped after used. 24 (16.8%) had been vaccinated against hepatitis B. The prevalence of NSSIs was highest among nurses 21 (55.5%) and injuries had occurred while sudden movement of the patient was the most common source of NSSIs.

Conclusion; The survey revealed that over all knowledge of health care workers about the risk associated with needle-stick injuries and use of preventive measures was adequate, however, the domains of attitude and practices need to be improved.

Acronyms

AARHB-Addis Ababa Administration regional Health Bureau

AAU-Addis Ababa University

AFRTH-Army Referral and Teaching Hospital

AIDS- Acquired Immune Deficiency Syndrome

AMJ- Australia Medical Journal

DHSC -Defense health Science College

ED-Emergency Department

FMOH-Federal Ministry of Health

HBV- Hepatitis B Virus

HCV- hepatitis C Virus

HCWs-Health Care Workers

HIV -Human Immune suppression Virus

IP-Infection Prevention

KAP -Knowledge Attitude and practice

NASH- National surveillance system from health care workers

NIOSH- National Institute for Occupational Health Safety

NSSI -needle stick and sharps object injuries

OR- Operation Room

OSHA -Occupational safety and health administration

SPSS (PASW) -Statistical Package for the Social Sciences and Predictive Analytics Software.

TASH-Tikur Anbessa Specialized Hospital

VCT -Voluntary Counseling and Testing

WHO -World Health Organization

Acknowledgment

I would like to thank AAU, collage of health science, school of medicine, department of emergency medicine for financing this research project. My special thanks go to staff of army force referral and teaching hospital for their assistance in collection of the data. My gratitude also extends to Dr. Aklilu Azaje for his valuable and constructive advice in developing this research paper.

1. **Introduction**

1.1 **Background**

Health care workers (HCWs) are persons working in health care setting and they are potentially exposed to infectious materials such as blood, tissue, specific body fluids, medical supplies, equipment or environmental surfaces contaminated with these substances.¹ They are frequently exposed to occupational hazards through percutaneous injury such as needle stick or cut with sharps, contact with the mucus membrane of eyes or mouth of an infected person, contact with non intact skin exposed with blood or other potentially infectious body fluids.²

One of the potential hazards for healthcare workers (HCWS) is needle stick and sharp object injuries (NSSIs). NSIs are associated with a number of different health hazards for HCWs; the most important of which is the risk of acquisition of potentially fatal diseases such as hepatitis B virus (HBV), hepatitis C virus (HCV), and HIV /AIDs. The National Institute for Occupational Health and Safety (NIOSH) has estimated that 600,000 to 800,000 needle stick and other percutaneous injuries occur annually in hospitals in the United States.³

The risk associated with transmission after percutaneous exposure to infected blood varies according to the specific blood borne pathogen. For HBV, this risk can be up to 30% depending on the presence of various serological markers in the blood of the patient. For HCV, the transmission rate is around 3-4%. At 0.3%, this risk of transmission is lowest for HIV.⁴ HBV and HCV infections are among the biggest health challenges facing the developing world today. An estimated one-third of the global population has been infected with HBV; approximately 350 million people are lifelong carriers. For HCV, the World Health Organization estimates that 170 million individuals worldwide are infected.⁵ According to UNAIDS; around 39 million people worldwide are living with HIV as of December, 2006.⁶

People involved in jobs such as garage removal, cleaning, housekeeping, are also at risk of being pricked by a syringe or needles thrown on the street, in bedding and bath room, a needle stick injured can happen as easily as accidentally pricking a finger with contaminated needle.

The use of precautionary latex gloves can minimize exposure to distribute there is no guarantee that a needle stick injured won't occur any filed of work.⁷

The WHO estimated that at least 50% of the 12 billion injection administered each year in developing world are unsafe-posing serious health risk to recipients health workers and the public.^{8,9,10} Injuries from sharp devices have been associated with the transmission of more than 40 pathogens, including hepatitis B Virus (HBV), hepatitis C virus (HCV), and HIV/ AIDs.^{9, 11, and 12}

1.2. Statement of the problems

People who provides or receives health care service whether in hospital, clinic, or any other health care setting are the risk of acquiring and transmitting potential life treating infectious through accidental exposure to blood and body fluids or contaminated objects.¹¹

World wide it has been estimated that in the years, 2000, alone contaminated needle stick injuries lead to 16,000 cases of hepatitis C viruses, lead to 66,000 hepatitis B viruses and 1,000 HIV/AIDs.¹³ These chronic infections had lead to a high morbidity and mortality.¹³ The cost of managing one post exposure evaluation after HCV exposure has been estimated at \$650.00 per event.¹⁴

European survey of needle stick injury found that nurses are exposed more commonly (91%) than doctors which is (6%). In a study by Akuna etal conducted in Iran in 2003 70%medical, 74% of dental and 72% nursing students reported having at least one sharps injuries since beginning of their clinical practice.¹⁵ Over the past two decades, considerable progress has been made globally in understanding the basic principles of preventing such infections, but they continue to be a significant cause of morbidity and mortality.¹⁶ At the same time, there is lack of evidence the number of needle stick injuries and their consequences to HCWs, although unsafe injection practice have been linked to the transmission of blood borne pathogens between patients and health care providers. To prevent the transmission of blood borne pathogens that result from unsafe injection use must be reduced and injection safe achieved. Safe injection does not harm the recipient, does not expose the HCWs to any risk and does not result in waste that is dangerous for the community.¹⁷

Health care workers are considered necessary to study because they are essential in prevention and management of diseases. This study applies the concepts to HCWs as a group likely to be at risk due to the nature of their occupation, since they may expose to infection while on routine duty through either accident, negligence, inadequate protection or other unforeseen circumstances. Infection prevention is critically important to effective provision and management of health care services. So far, very few studies were conducted in Ethiopia to assess frequency of exposure of HCWs to occupational injuries and status of knowledge and practice of HCWs on preventive measures. In army force referral and teaching hospital there is no research available that has been done concerning on HCWs regarding to needle stick and sharp object injuries (NSSI).

Behavioral factors that frequently put health care workers at greater risk of needle stick injuries and sharp object, including drawing blood, administering drug, or performing other procedures. This injury also commonly occurred during needle recapping and as result of failure to place used needles in approved sharps containers. Therefore, this study will help to identify practice of HCWs on safe precautions and would have a significant input for improving practice of preventive measures in the clinical areas.

1.3. Significance of the Study

Exposure to specific fluid through mucous and needle stick injuries as sharp objects is a great concern among HCW. Now days the focus is increasing the awareness of health care workers by providing infection prevention, but a lot of healthcare workers have misconception and neglected about needle stick & sharp object injuries. Because of these and other unmentioned problems put health care workers at greater risk of needle stick, and sharp object injuries.

As a result I believe evaluating KAP of health workers on needle stick and sharp object injuries and identifying existing problems will contribute to reduction of the gaps, and it will serve as baseline document for army force referral and teaching hospital to those who are interested for future research under taking area.

2. Literature Review

The WHO estimated that at least 50% of the 12 billion injections administered each posing serious health risk to recipients health workers and public.^{8,9,10} In many countries for many years health care workers have been infected with HIV/AIDs. The main cause of HIV/AIDs infection in occupational setting is exposure to infected blood via percutaneous injury.^{10, 13}

Center for Diseases Control and prevention(CDC) studies have shown that risk of disease after exposure to hepatitis B viruses from a single needle stick injury ranges from 27%-37% while the risk following a single exposure to HIV/AIDs is much lower 0.2% to 0.4% and 3%-10% for hepatitis C viruses.^{18,19,20}

A study conducted in American College of Midwives 1784 out of 2963(60.2%) a response rate of midwives reported frequent exposure to blood and body fluid. Sixty five percent reporting being soaked to the skin with blood or amniotic fluid, twenty percent experienced one or more needle stick injuries, only 50.1% reported using universal precaution.²¹

The International Health Care Worker Safety Center at the University of Virginia has gathered data on needle stick injuries from 29 cooperating healthcare facilities in the United States.²² Data from 2007 in United States demonstrated that the overall rates for percutaneous sharp object injuries was greater in teaching hospitals than in non-teaching hospitals; the top three sites where exposures occurred included the operating room, patient rooms, and the emergency department. Nurses are the most frequent exposures (34%), followed by physicians who are residents or fellows (18 %), attending physicians (14 %), surgery attendants (6 %), phlebotomists (5%), and non-laboratory technologists (4%). Long work hours and sleep deprivation among medical trainees result in fatigue, which is associated with a threefold increase in the risk needle stick injuries.^{23, 24}

On the study conducted in 2008 from Iran showed that 89 (47.3%S) cases of needle stick injuries and exposure to septic body fluids in the health care centers. Nurses were the most exposed group (39.3%).The most exposed age group was 25-34 year (51.6%).²⁵

A study done in Pakistan of 80 participants, 29 was doctors and 51 were registered nurses. About 45% reported having a needle stick injury in one year. Frequency of injury was significantly higher among doctors ($p < 0.001$). The most common reason identified was stress or being over burdened followed by careless attitude. More than 50% of the injuries occurred while injecting or drawing blood samples. The majority of injuries had occurred while recapping syringes (32%), injecting or drawing blood samples(27%) and from glass equipment like broken vials (21%), during suturing and surgery were an infrequent occurrence overall (8%) and NSIs' reporting rate of 53% to the infection control office ²⁶

Another study conducted in India showed maximum participant was in the age group of 20-30 years.190 (94.7%) were aware about standard precautions. 91.5% knew about the procedure for reporting of NSSIs. Only 50.2% HCWs gave correct answers regarding disease transmission through needle stick and sharp injury. The prevalence of NSSIs was highest among nurses (38.4%), and needle on the disposable syringe (76.9%) was the most common source of NSSIs.²⁷ In a study at Mulgo national Regional hospital Kampala Uganda 526 nurses and midwives 57% had experience at least one needle stick injury. Only 18% had not experience in their work life. ²⁸

A study done in south Africa individuals with occupational exposure were interviewed and then 3% of the staff reported injuries with HIV positive patient, the registration in training is the highest risk group 60% of the injuries, 94% were percutaneous, and 95% occurring during emergency surgery. The commonest place of injury is the operating theatre 46% and the commonest procedure associated with accidental exposure is cesarean section 57% and 83% initiated post exposure prophylaxis 48% discontinued the treatment due to the side effect of the drug.²⁹

A study done in Africa on safety injection was problematic in Chad, Cameron, and Cote de-Voire, Guinea-Bissau and Uganda. In these countries there were no health centers that had facility for safe hospital disposable of used materials.³⁰

A study done in Ethiopia at South nation nationalities and people region (SNNPR) showed that 32.4% of health care workers (HCW'S) reported as they had sustained at least one form of accidental injury by needle or other sharps. Among these injuries, both deep penetration injuries constitute 63.8%. Nurses and heath assistant sustained the highest proportion of accidental

injuries by needles or sharps ($P < 0.05$). Male HCWs had, less chances of sustaining injury either needle or by sharps than the female ($P < 0.05$).³⁰

Another study conducted in Ethiopia, among health care workers of Gondar University Hospital, showed that 92.8% heard about PEP, 50.8% were received PEP within one hrs.³¹

Similarly study conducted in Ethiopia, north wollo showed that 55(61.1%) of the injection were completed by recapping needle; of these 17(30.9%) of them use single hand scoop technique and 38(69.1%) use two hand technique, 100(53%) of HCWs report that they ever had needle stick/sharp injuries. 56(16%) of HCWs had sustained needle stick injuries in one year's, 51(27.4%) during sudden movement patients, 43(23.1%) disposing sharp materials, 5(1.5%) recapping during surgical procedure.³²

2.1 Safety working practices

WHO defined safe injection is an injection practice that does not harm to the recipient, does not exposure the provider to any avoidable risks, and does not result in waste that is dangerous to others people.¹¹ In transitional and developing countries where unnecessary injection are common, the average number of health care injections preparation was estimated to be 3.7 per year this includes all health care injection, including those given to diabetics for administrating injuring any are also infection or inappropriate and unsafe.^{8,12}

When we focus on HCWs that are found in developing countries, they are at serious risk of infection from blood borne pathogens like HIV, Hepatitis B and C viruses because of the high prevalence and increased occupational risk of these pathogens in the areas.^{9,10} Unsafe practices like careless handling of contaminated needles, unnecessary injections on demand, reuse of inadequately sterilized needles, and improper disposal of hazardous waste (major problem in developing countries) can increase the potential risk of occupational transmission of these blood borne pathogens.¹¹ Injuries from sharp devices have been associated with transmission of more than 40 pathogens, including HBV, HCV, and HIV/AIDs.¹²

2.2 Magnitude of work related injuries

The health care workers (HCWs) have become increasingly concerned with blood born infections by exposure of infected blood and body fluids. Needle stick injuries present the single greatest risk to health care workers.³³ In addition to this in many areas, there is lack of understanding on many levels in the health sectors of what comprises an unsafe injection. Common miss-conception is safe to reuse the syringe between patients if the needle is changed.³⁴ WHO report published data demonstrated that at 2.5% of HIV cases among HCWs and 40% of HBV&C worldwide are result of occupational exposure.²⁶

A research done in the US about source of needle stick injury revealed that the majority of needle stick and other sharp related injuries are hypodermic needles(32%), suture needle(19%), winged steels (butterfly)needle(12%), scalp blades (7%).³⁵

WHO survey done on the most common circumstances that causes injuries in international surveillance system for health hospital involves hollow bore needles which are the most risky because the needle can be filled with blood. And needle stick injury situation include: Manipulating the needle in the patient (26%), disposal (23%), collection with workers or sharps (10%), during clean up (10%), accessing IV line (6%), and two handed recapping needles (6%).³⁶ Nurses use many types of needles and others devices to provide patient care. Data from hospitals participating in National Surveillance System for Hospital health workers in United States and from hospitals included in the EPIET research data base show that nearly 500 percutaneous injuries reported (62%) were associated primarily hypodermic needles attached to disposable syringes(29%) and winged steel (butterfly type) needle (13%).³⁷

Another study done in sub-Saharan Africa showed that 36% reported having experienced at least one needle stick injury in one month, while 57% reported at least one needle stick injury in one year .In the same source 82% reported having ever experienced such injury, while 18% had no experienced any such injury in their entire career.³⁸

2.3 Occupational hazards

Health care workers (HCWs) can be exposed to blood and other body fluids through needle stick and other sharp injuries as well as through muco-cutaneous exposures. Needle stick injuries (NSIs) are, therefore, among one of the potential occupational hazards for HCWs. NSIs are associated with a number of different health hazards for HCWs; the most important of which is the risk of acquisition of potentially fatal diseases such as Hepatitis B and C (HBV, HCV) and Human Immunodeficiency Virus (HIV).³⁹

The study conducted in United States, France, and United Kingdom in 31 HIV positive health care workers, 29(94%) were needle sticks (all with hollow needles) and 2(7%) involved other sharp objects. Of the 679 exposure sustained by control –HCWs, 620(91%) were needle stick s (including 594 hollow and 26 solid needles) and 59(9%) involved other sharp objects.³¹

Study conducted in 2007 in Tigre regarding exposure to blood, body fluids, and needle stick injuries in three months shows that among 618 health care workers interviewed of all 106(17.5%) had needle stick injury, 384(56.3%) were exposed to their skin, 154(24.9%) to their mucous membrane.⁴⁰

2.4 Risky working environment

Health care workers are at significant risk of infection because they are exposing to potential infectious blood and other body fluids, on a daily basis. Health care workers who have contact with blood and sharp, process instrument, and other items, clean up after procedure, clean operating theaters, and procedure room, and dispose of waste are particularly at risk.⁴⁰ Client to health care workers transmission can occur through exposure to infectious blood and other body fluids when health care worker's skin is pierced or cut by contaminated needle or sharp objects, when fluid are splashed on the mucous membrane of health care workers.⁴¹

Study conducted at the University of California among 1022 medical students sustained 129 exposures and of the reported occupational exposure, 82% occurred on four services: obstetrics-gynecology, surgical, medicine, and emergency medicine.⁴²

2.5 Safe Sharp waste Management

It is important to collect and properly contain syringes and needles at the point of use in sharps container that is puncture and leak proof and that is selected before it is completely full. Unsafe sharp waste collection cause 5% to 28% of needle stick injuries needle and sharp collection boxes should be designed to be puncture and liquid proof and closed. The presence designed for collection of contaminated sharps is associated with a low risk of needle stick injures particularly those related to recapping of needles.⁴³

WHO has recognized that, if disposable are to be used in developing countries, such countries must have similar systems as the developed countries, however at present the least determinant option for destruction is incineration.⁴⁴ Observational study in Tanzania hospital found that all except four wards 15% had at least one puncture proof container for disposable of sharp objects, through only one fifth of such containers were covered. For about half of the department, waste was disposed of in a pit.⁴⁵

3. Objective

3.1 General Objective: - Assessment of knowledge, attitude, and practice among health care workers regarding needle stick and sharp object injuries in army force referral and teaching hospital during 2013/14 Addis Ababa, Ethiopia.

3.2 Specific Objective

-To assess the level of knowledge among health care workers regarding needle stick and sharp object injuries in army force referral and teaching hospital.

-To assess the attitude of health care workers in army force referral and teaching hospital to ward needle stick and sharp object injuries.

-To assess the practice among health care workers regarding needle stick and sharp object injuries in army force referral and teaching hospital.

-To identify vulnerable group of professionals regarding needle stick and sharp object injuries in army force referral and teaching hospital.

-To assess the response of health care workers regarding needle stick and sharp object injuries in army force referral and teaching hospital.

-To assess knowledge of HCWs on post exposure prophylaxis and preventive measures for infections.

4. Methodology

4.1 Study area

The study was conducted in army force referral and teaching hospital, is located in Addis Ababa, Lideta sub city, at old air port known as “Tor Hay loch” formerly known as Princess Tsehay memorial Hospital and was renamed in 1974 revolution after the fall of Empire Haile Selase. The stakeholder is minister of defense. It is referral hospital serving army members, army families and serving as teaching hospital for defense health Science College (HSHC).

4.2 Study period

The study was conducted in army force referral and teaching hospital from December 2013 to may 2014.

4.3 Study design.

Hospital based cross-sectional descriptive study was employed from December 2013 to may 2014.

4.4 Study population

All health care workers working at army force referral and teaching hospital.

4.4.1 Inclusion criteria:-All nurses phlebotomist, laboratory technician, health officers, and physician working at AFRTH.

4.4.2 Exclusion Criteria:-Those who were absent at the time of data collection due to annual leave, work resignation or absent for long period as a result of personal problem/illness.

- Health care worker who were not willing to participate in the study.

4.5 Sample size determination:

The sample size was determined by using single proportion formula ($n = [Z \alpha / 2]^2 P (1-p) / d^2$) at 95% confidence interval, where, $Z \alpha / 2 = 1.96$, $P =$ prevalence of 50% was taken since there was no previously research data in this area and $d = 5\%$ of marginal error.

$$\begin{aligned} n &= Z^2 p (1-P) / d^2 \\ &= 1.96^2 (0.5 \times 0.5) / 0.05^2 \\ &= 384 \end{aligned}$$

Since the exact number of source population of respondent is less than 10,000, then correction formula of $n_o = n_i / (1 + n_i/N)$ where $n_o =$ corrected sample size $n_i =$ uncorrected sample size, and $N =$ total number of all the source population. Therefore, $(384/ 1 + 384/209 = 135)$ and 5% non-respondent rate, finally the sample size is 144

4.6 Sampling technique and procedure.

The sampling technique employed was Convenience, non-probability type.

4.7 Data collection instrument

Data was collected using self-administered structured questionnaire to achieve the desired objectives, on health care workers at AFRTH in specific period. The questionnaire was prepared in English.

4.8 Data collection personnel

For administering the structured questionnaire, four data collectors was recruited. Information was given to them on the objective, relevance of the study, confidentiality, respondent's right, and informed consent.

4.9 Data quality control and management.

The structured questionnaire would be pre tested on health care workers on other hospital in the same professional for the achievement of the required goal before the actual data collection time in order to check for their clarity and consistency. Data collectors will be trained for one day.

4.10. Variables

-Independent variables

- Socio demographic (age, sex, educational category, marital status, religion, ethnicity, Work experience, training given and types).

-Dependent variables

- Knowledge, attitude, and practice of needle stick & sharps object injuries

4.11. Data analysis

EPI- Info version 3.4.5 and SPSS version 16 statistical analysis of data used for the quantitative data. Data entry and analysis was clear, edited and updated using commands of browse and update SPSS was use

d for analysis. Percentage and chi-square will be used when necessary.

4.12. Ethical consideration

Ethical approval of the research was obtained from the institutional review board of Addis Ababa University. A formal letter was written by Department of Emergency Medicine to AFRTM for their willingness and cooperation to provide the necessary information at the time of study. Then the objective and outcomes of the research was explained for participants, names were not being written in the questionnaires for confidentiality and was kept by coding.

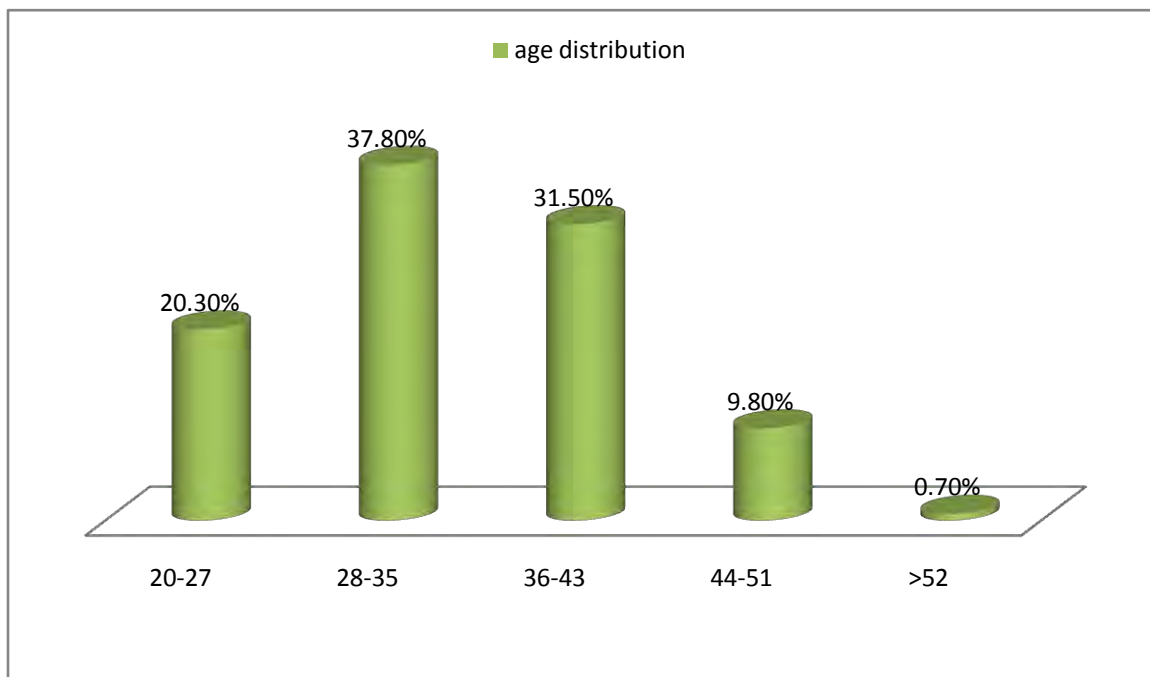
4.13. Dissemination and utilization of result

The final report will be presented as partial fulfillment of degree of masters in emergency medicine and critical care department and the result of the study will be disseminated through provision of hard copies to TASH and AFRTM.

5. RESULT

A Total of 146 Health care workers participated giving a response rate of (97.9%). Among the respondents 85(59.4%) were male and 58(40.6%) were female. The age distribution of the respondents ranges from 20-53 years with the mean age of (\pm SD) of 34.4 ± 7.09 and median age was 35 years, 24.5% of the participants were age between 35-39yrs (figure 1).

Figure 1 age distribution of health care workers in Army force Referral and teaching hospital Addis Ababa, Ethiopia, 2014.



The majority of the respondents were nurses 75(52.4 %) followed by health officers 20(14%) and the others as presented in table 1

Table 1 professional category of health care workers in Army force Referral and teaching hospital Addis Ababa, Ethiopia, 2014.

Professional category	N (%)
Anesthetist	9(6.3%)
Medical doctor	17(11.9%)
Health officer	20(14%)
Laboratory technician	12(8.4%)
Midwifery	4(2.8%)
Nurse	75(52.4%)
Phlebotomist	6(4.2%)
Total	143(100%)

Among the respondents 139(97.2%) of health care workers from each professional category were aware on the possibility of acquisition of HIV/AIDs, Hepatitis B virus, and Hepatitis C virus from exposure of dirty needle/ sharp injuries could transmit disease causing agents. The most common disease transmitted by dirty needle/ sharp injuries known by the respondents were HIV/AIDs, HBV and HCV 77(53.8%) followed by HIV/AIDs and HBV 34(23.8%), HBV 17(11.9%), HIV/AIDs 9(6.3%), HCV 4(2.8%) and 2(1.4%) were others. And 98(68.5%) of the participants knew that HBV can persist for up to seven days on the surface of medical devices.

More than half of the respondents 82(57.3%) had participated in trainings related to infection prevention program. Of these the majority of respondents were 48(58.2%) received training within one to three years, 20(24.4%) were attained within >3 yrs and 14(17.1%) were received within one yrs (table2).

From the participants 81(56.6%) gave multiple responses for the reason needle stick /sharp object injuries. The other respondents 62(43.4%) gave single response, of these

Negligence 27(18.9%) was the most common reason followed by due to work load 26(18.2%), lack of experience 4(2.8%), and knowledge deficit 2(1.4%).

The findings from this study showed that 114(79.7%) of health care workers who participated in this survey heard about post exposure prophylactics and from those who heard about PEP majority of the respondents were mentioned that the place where PEP service was given in ART clinic 56(49.1%), followed by any ward of the hospital 8(7%), Infection prevention office 7(6.1%), ED 6(5.3%), pharmacy 1(0.9%) and 36(31.6%) of them had no clue where PEP service was.

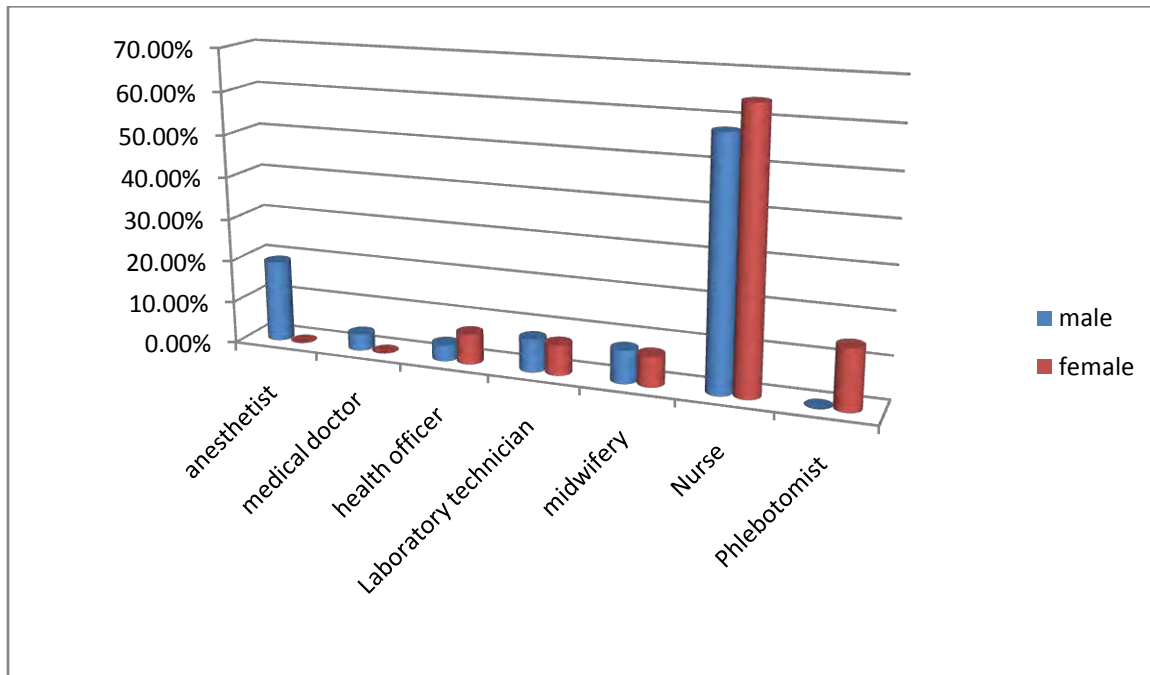
Table 2 Knowledge and attitude of health care workers on selected variables, Army forces Referral and teaching hospital Addis Ababa, Ethiopia, 2014.

characteristics of study variables	Total(n=143)	
	Yes	%
Knowledge variables		
Aware that dirty needle /syringes can transmit disease causing agents ...	139	97.2
Ever attained training on IP/ Time of attained	82	57.3
One to three years	48	58.5
More than three years	20	24.4
Within one years	14	17.1
Which of the following diseases can be transmitted through dirty needles /sharps injuries?		
HIV/AIDs, HBV, and HCV	77	53.8
HIV/AIDs and HBV	34	23.8
HBV	17	11.9
HIV/AIDs	9	6.3
HCV	4	2.8
Others	2	1.4
Hepatitis B virus can persist for up to seven days on surface of sharp medical devices.		
Agree	51	35.7
Strong agree	47	32.9
Attitude variables		
The main reason for needle stick/sharp object injury(n=143)**		
Negligence	27	18.9
Due to work load	26	18.2
Lack of experience	4	2.8
Due to knowledge deficit	2	1.4
Have you reported the incident of NSI?	20	50.0

Among the participants 40(27.9%) were exposed to blood /body fluids in the last one years. Nurses were the most frequent exposures 24(60%) followed by anesthetist 5(12.5%) and others as described in figure 2. Among those who were exposed 19(48.7%) received PEP.

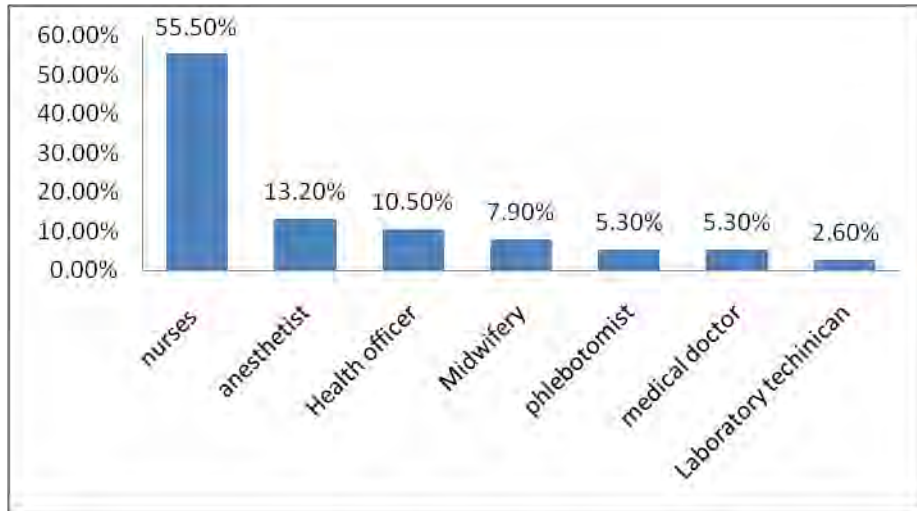
Twenty (50.0%) of health care workers were reported they had splash to their consultant or infection control office. 20(50.0%) never reported the incident to hospital authority to get post-exposure treatment. The most common reason cited by health care workers for not reporting splash to blood fluids to appropriate authority or concerned body were 5(22.7%) taking some prophylactics measures on their own, 4(18.2%) fear of getting trouble, 1(4.5%) were direct ART clinic without reporting, and the majority of those who didn't report 12(54.5%) mentioned they took their own measure by washing with water and antiseptic detergents after splash of the blood/body fluid.

Fig 2 Exposure of health care workers for blood/body fluids in Army force Referral and teaching hospital Addis Ababa, Ethiopia, 2014.



Out of 143 participants 38(26.6%) of health care workers they had needle stick or sharp injuries in the last one years. nurses 21(55.5%) were the most frequent exposed followed by anesthetist 5(13.2%) and 4(10.5%) were health office (figure 3).

Figure 3:- Distribution of needle sticks/sharp object injuries on Health care workers in Army force Referral and teaching hospital Addis Ababa, Ethiopia, 2014



The main reason of injury stated by health care workers were injuries that occurred while sudden movement of the patient during procedure 14(36.8%), proceeded by recapping syringe 9(23.7%), during injecting or drawing blood samples 7(18.4%), while sharp collection showed up unexpected place like bed, sheet 6(15.8%) and from glass equipment like broken vials 2(5.3%). Of these 34(89.5%) were received PEP and the majority of them 23(67.7%) received PEP within 24 hrs, 6(17.6%) were within 72 hrs, and 5(14.7%) were received within 48hrs. Among those needle stick and sharp object injuries the majority of the victims 31(81.6%) sustained one time, 5(13.2%) sustained injury more than three times, and 2(5.3%) injured two times. The type of injuries observed in this study were slight skin penetrations, superficial injuries, and deep injuries constituted 42.1 % (16), 31.6 % (12) and 26.3 % (10) respectively.

From the total respondents 24(16.8%) received hepatitis B vaccinations. Of those 18(75.0%) were received all three doses, 4(16.9%) received two doses, and 2(8.3%) received one dose. And 72.8 % (104) the participants stated they recap used needles; from those who recap needles 82(78.8%) of them used one hand recapping technique and the others 22(21.2%) used two hand recapping technique. In addition to this 141 (98.6%) of health care workers reported that safety box was used to collect needles and other sharp materials in their hospital and the rest 2(1.4%) used open container material.

Table 3 practice of health care workers in Arm force Referral and teaching hospital selected Variables Addis Ababa, Ethiopia, 2014.

Variables	(n=143)	
	Yes	%
Recapping used needles	104	72.7
Single hand technique	82	78.8
Two hand recapping technique	22	21.1
Types of needle, syringe and Sharp collection box		
Safety box	141	98.6
Open container	2	1.4

6. Strength and limitation of the study

6.1. Strength of the study

-It includes large proportion of health care workers 143(68.2%) for study.

6.2 Limitation of the study

-Other supportive staffs were not part of the study.

-Lack of similar studies in this hospital to made comparative discussion

7. DISSCUTION

This study shows an overall good knowledge level of health care workers regarding the transmission of important diseases through NSSIs. The response rate of the survey was 99.3%. On average 97.2% of health care workers were aware that HBV, HCV, and HIV can be transmitted through NSSIs. This was higher than the study done in India only 50.2% HCWs, gave correct answers regarding disease transmission through needle stick and sharp injury.²⁷ and 95.5 % of the participants were aware of the Universal Precaution principles, this is consistent to the study conducted in India five years ago which was 94.7%.²⁸

Large number of health care workers 38(26.6%) reported as they had been exposed for needle stick injuries in the last one year and nurses were the most frequent victims for needle stick/sharp object injuries and blood/body fluids. This finding was less than the result found in a study conducted in Iran, Pakistan, and in Ethiopia at South nation nationalities and people region (SNNPR) that was 47.3%, 45%, 32.4% had sustained needle stick injuries respectively.^{25 26 30} However when compared to similar study conducted in Ethiopia in north Wollo eight years ago showed that 16% of HCWs had sustained needle stick injuries in one year which was lower than the percentage of needle stick and sharp object injuries in this study.³² The difference between the this study and the others might be due to the variation in the setting and study time.

The findings from this study demonstrated that 36% accidents had occurred while sudden movement of the patient, this result was higher than the study done in north Wollo 27.4% on health workers.³² Followed by 23% while recapping and 18.4% during drawing blood or injection, it is less when comparing this findings with other studies which done in Pakistan while recapping syringes 32% and injecting or drawing blood samples 27%.²⁶ And avoidance of needle recapping as well as breaking needles by hand was also reported.

Eight two (72.8%) of health care workers reported that needle should be recapped after use. 22 (21.2%) of them used two hand recapping technique; this is high when it compared to WHO report which was 6%.³⁶ This high rate could be due to lack of knowledge and negligence of the health care workers to the Occupational Safety standard it says recapping of needles has been strictly prohibited.⁴⁷

From the total participant 50% of health care workers reported to infection control office they had splash, this is consistent with the study which was conducted in Pakistan 53% and America college of midwives 50.1%.^{26, 21} The majority of the respondents in this study shows that 42.1% of them were sustained slight skin penetration. Numbers of reasons were cited by health care workers for not reporting a NSIs which need to be addressed for better reporting statistics as well as for effectiveness of interventions to reduce NSIs in health care occupations.

In this study 79.7% of participants had heard about PEP. This was lower than the study which was conducted in Gondar university hospital before two years (92.8%).³¹ the lower rate could be due to poor information dissemination strategy in the hospital. 67.7 % of those had sustained needle stick injuries or exposed to blood /body fluids received PEP within 24 hrs, this shows that delay in initiation of post exposure prophylaxis when compare to similar study conducted in Gondar university Hospital in 2012 where 50.8% received within one hrs.³¹ However none of the respondents started PEP after 72 hours and knowledge of participants on the initiation time of PEP was high in our setting because 89.5% of the respondents stated it is better to start PEP before 72 hours.

Most health care workers reported using glove and sharp disposal container to reduce the occurrence of NSI. In these studies the majority of health care workers 98.6% affirmed they dispose sharp objects in safety box. Prevention of NSIs can be achieved through elimination of needle recapping and the use of safer needle devices and sharps collection boxes.

This survey revealed that from the total respondents only 24(16.8%) received hepatitis B vaccinations and from those who started immunization 18(75.0%) were received all three doses, 4(16.9%) received two doses, and 2(8.3%) received one dose. From all respondents in this survey only 12.6% had received all 3 doses of Hepatitis B vaccination. This finding is in controversy with the principle to decrease incidence of infection of HBV largely due to the widespread immunization with hepatitis B vaccine⁴⁹. This may result in an increased Hepatitis B prevalence in the hospital, due to HCWs are not routinely vaccinated.

8. Conclusion and recommendation

This survey revealed that knowledge of health care workers about the risk associated with needle-stick injuries and use of preventive measures was adequate. However still at risk of needle- stick and other sharps injuries, which were resulted from recapping of used needle and medical manipulation. Special and comprehensive measurements for preventing the needle-stick and other sharps injuries should be taken actively. Such as

- ✓ Anticipate and take measures to prevent sudden patient movement during and after procedures.
- ✓ Avoid recapping and others hand manipulation of needles. If recapping is necessary, use a single-handed scoop technique.
- ✓ Reporting accidental exposure to blood and body fluids including needles sticks injuries and proper management of accidental injuries.
- ✓ Using safety box for any sharp object in any setting
- ✓ Advice health care workers to avoid using their hand to break needles and ampoules

I also recommend onsite training for better management of health care workers who sustained needle and sharp object injuries like early PEP. Hospital based hepatitis B immunization program should also be started.

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10. Annex I

Addis Ababa University College of Health Sciences, school of medicine, Department of Emergency Medicine and Critical care.

Individual consent form

For the study Assessment of Knowledge, Attitude and Practice among health care workers regarding to needle stick and sharp object injuries in army force referral and teaching hospital. The purpose of this study is to assess knowledge, attitude and practice of Phlebotomist, Nurses, Laboratory technician, Health officer, Midwifery, and Physician working at Army force referral and teaching hospital. In order to generate useful information for infection prevention and interventions.

To attain this purpose, your genuine participation in filling the questionnaire with real information is very important and highly appreciated. We would like to assure you, your name will not be written on this form and all the information gathered will be kept strictly confidential. You have full right to refuse, to take part of, or to interrupt the study at any time. But the information that you will give us is quite useful to achieve the study and to bring change in health services rendered by professionals working at AFRTH.

Thank you!

Are you willing to participate in the study?

Yes

No

11. Annex II Questionnaire

Instruction: Choose and Tick (~) in the box the one that seems best for you from the alternatives that are beneath each question and for those that you give direct answer, write the answer in the space provided.

PART 1 SOCIO DEMOGRAPHIC CHARACTERISTICS

1 Age _____

2. Gender

Male

Female

3. Professional category

Phlebotomist

health officer

Nurse

Laboratory technician

midwifery

anesthetist

GP

senior physician specify _____

Others specify _____

Knowledge and Attitude

1. Do you think that dirty needles /sharps injuries can transmit diseases?

Yes

No

I don't

2. Which of the following diseases can be transmitted through dirty needles /sharps injuries?

(Multiple responses are possible).

Hepatitis (HBV)

Hepatitis (HCV)

Other's specify _____

HIV/AIDs

3. Have you attained any training related to infection prevention?

Yes

No

4. If you say yes for Q-no 3 When did you attained?

- With in one year 1-3 years >3 years

5. Hepatitis B virus can persist for up to seven days on surface of sharp medical devices.

- Strongly agree Agree Disagree No opinion

6. What do you think the main reason for needle stick/sharp object injury? (Multiple responses are possible).

- due to work load lack of experience
 Carelessness Other specify _____
 knowledge deficit

7. Does the hospital have a system for reporting accidental exposure to blood and body fluids including needle stick and sharp object?

- Yes No I don't know

8. Have you ever heard of post exposure prophylaxis?

- Yes No

9. Do you know the place where post exposure prophylaxis is available if health professional have needle stick and sharp object injury? _____

10 Do you know about Universal Precaution Guidelines?

- yes No

PRACTICES

PRACTICES

1. Have you had exposure of blood /body fluid since one year?
 Yes No
2. If the response to Q- no 1 is yes have you reported to concerned body or infection control office?
 Yes No
3. If you say no to Q no 2 what is the most important reason for not reporting it?
 Fear of getting into Trouble taking some prophylactic measures on their own
 Waiting to feel unwell or symptomatic other specify _____
4. If you say yes have taken any post exposure prophylaxis?
 Yes No
5. If you say yes at what time did you received post exposure prophylaxis?
 Within 24 hours within 48 hours within 72 hours more than 72 hours.
6. Are needles, syringe and sharps immediately discarded after used in your hospital?
 Yes No
7. Have you had with needle /sharp injuries in the last one year?
 Yes I don't know
 No
8. If you say yes for Q-no 7 have you received any PEP?
 Yes No
9. If you say yes for Q no 8 how did you sustain the injury?
(Multiple responses are possible).
 during drawing blood/injection By sudden movement of patients
 during recapping & surgical procedure When sharp collection showed up unexpected place like bed, sheet
 By glass equipment like broken vials during suturing and surgery procedure
 Other specify _____

10. Types of injury sustained?

- Deep injury. Other specify _____
- Superficial injury.

- Slight skin penetration

11. How many times needle stick injury did you sustained in the last one year?

- One times I don't know
- Two times
- Three or more

12. Have you received Hepatitis B vaccination?

- Yes No

13. If you say yes for Q no 12 how many dose did you received?

- One dose two dose all three dose

14. Did you recap used needles?

- Yes No

15. If you say yes for Q no 14 what types of techniques used?

- One hand recapping techniques Two hand recapping techniques

16. Types of needle, syringe and Sharp collection box?

- Safety box
- Open container others specify _____

Name of data supervisor _____ date _____ signature _____

Declaration

I the undersigned declare that the thesis is my original work has not been presented for a degree in any other university and that all sources of materials used for the thesis have been duly acknowledged

Name of the candidate _____ signature _____

Advisors

1) _____ signature _____