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ASSESMENT OF PERCUTANEOUS EXPOSURE INCIDENTS AND ASSOCIATED FACTORS AMONG HEALTH CARE PERSONNEL AT GANDHI MEMORIAL HOSPITAL, ADDIS ABABA

BY

EDEN GIRMAYE (BScN)

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BY: EDEN GIRMAYE

ADVISOR:

ASRAT DEMESSIE (RN, BS.N, MSCN, ASSISTANT PROFESSOR)

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EXAMINER

_____	_____	_____	_____
Full name	Rank	Signature	Date

ADVISOR

_____	_____	_____	_____
Full name	Rank	Signature	Date

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Acronyms

AAU	Addis Ababa University
AIDS	Acquired Immune Deficiency Syndrome
BBF	Blood and Body Fluid
CDC	Center for Disease Control
CSA	Central Statistical Agency
ENA	Ethiopian Nurse Association
EPINET	Exposure Prevention Information Network
GMH	Gandhi Memorial Hospital
HBV	Hepatitis B Virus
HCP	Health Care Personnel
HCV	Hepatitis C Virus
HCW	Health Care Workers
HIV	Human Immune Deficiency Virus
ILO	International Labor Organization
IV	Intravenous
NGOs	Non Governmental Organizations
NSI	Needle-Stick Injury
PEIs	Percutaneous Exposure Incidents
PEP	Post Exposure Prophylaxis
SPSS	Statistical Package for Social Sciences
WHO	World Health Organization

Abstract

***Background**: Percutaneous exposure incidents (PEIs) and blood splashes on the skin of health care personnel's are a major concern worldwide. It exposes the healthcare personnel to the risk of infectious diseases.*

***Objective:** this study was designed to assess percutaneous exposure incidents (PEIs) and associated factors among health care personnel in Gandhi Memorial hospital, Addis Ababa, Ethiopia.*

***Methods**: Institution-based quantitative cross-sectional study design was utilized involving 244 study subjects using systematic random sampling technique. The data was collected using a structured self-administered questionnaire & interview based data collection technique.*

***Analysis**: The data was compiled, cleaned and entered into a computer software using Epi Data 3.01 and then exported to statistical package for social sciences (SPSS) version 20.0 for analysis. The descriptive statistics includes frequencies, proportions and means were computed. Bivariate and multivariate logistic regression were also computed to assess statistical association between the outcome and selected independent variables using odd ratio, significance of association using 95% confidence interval and P-value (≤0.05).*

***Results:** The study revealed that 38.1% of healthcare personnel had experience needle-stick and sharp injuries within the previous 12 months. The prevalence of percutaneous injuries was high among females HCP (65.6%), HCP age group of 18-24 years (45.2%) were the highest exposed to needle stick injuries. Nurses had the highest prevalence of percutaneous injuries (26.9%) from other health professionals and Auxiliary staff (43.0%) had the highest prevalence of sharp injuries compared to other healthcare workers. The prevalence of mucocutaneous exposure to patient's blood and body fluid was highest among Auxiliary staff (janitors, laundry workers, housekeeping, and maintenance) (55.9 %) than other heath care workers due to lack of training on infection prevention, negligence of the HCWs on the use of personnel protective equipment. Factors associated with occurrence of NSIs and BBFs splash exposure were job category and working hours. Respondents with working hour >40 hours per week was found to be associated with the chance of sustaining NSI compared with those worked for less than 40 hours per week (AOR=9.80,95%CI=2.68-35.83 P-value=0.02). In line with this finding, respondents with working*

hour >40 hours per week were also found to be 6 times more at risk to blood and body fluids splash exposures compared with those worked for less than 40 hours (AOR=5.85, 95%CI=1.29-26.6, P-value=0.02).

***Conclusion and Recommendation**: The findings of this study indicated that occupational exposures were common among healthcare workers,* including *accidental needle-stick, cuts with contaminated instruments and blood splashes. The highest proportion of needle stick injuries among health care personnel were related to administration of injection, followed by recapping of needles. Auxiliary staff had the highest prevalence of sharp injuries, blood and body fluids splash from all healthcare personnel. The hospital should incorporate auxiliary staffs on training about infection prevention. Furthermore reducing the working hour or heavy work over load was also advantageous to healthcare workers.*

Key words: Occupational exposure, percutaneous exposure incidents, needle-stick injuries, health care personnel

1. Introduction

1.1 Background of the Study

Percutaneous exposure incidents (needle-stick injuries, sharp injuries, as well as splashes) leading to exposure of the skin or mucosa to blood) are a potential mode of exposure to and transmission of blood-borne infectious diseases among healthcare workers. It constitutes a major occupational hazard for health care workers (1). Needle stick injuries refer to penetrating wound with various types of needles (hypodermic blood collection, intravenous (IV) stylets and IV delivery systems connectors which are potentially contaminated with another person's body fluid (2).

These preventable injuries expose healthcare workers to over 20 different blood borne pathogens, and resulted in 1000 infections per year (3). It is estimated that through occupational exposure, 2.6% of healthcare workers are exposed to HCV, 5.9% to HBV and 0.5% to HIV, annually. This equates to approximately 16,000 HCV infections, 66,000 HBV infections and 200-600 HIV infection worldwide (4).

A study conducted in Serbian healthcare workers depicted that, within one year, 59% of healthcare workers had skin contact with patient blood followed by needle stick injuries, cut from sharp instrument in 38% and contact of eye and other mucosa with patient's blood in 34% (5).

The World Health Organization has estimated that in developing regions, 40%–65% of HBV and HCV infections in HCWs are attributable to percutaneous occupational exposure (6). Healthcare workers (HCWs) in Africa suffer two to four needle stick injuries per year on average (7), with Nigeria, Tanzania and South Africa reporting 2.1% injuries per year on average (8).

These injuries occur in a variety of procedures like during needle recapping, operative procedures, blood collection, intravenous line administration, suturing, checking blood sugar and poor sharp disposal system (9).

Preventing the occurrence of HIV infection resulting from such accidental injuries at work place and the use of HIV Post- exposure prophylaxis (PEP) is recommended by WHO/ILO (10). In line with these the Federal Ministry of Health of Ethiopia developed guidelines for infection prevention and PEP use in 2004 and 2005 respectively (11, 12).

1.2 Statement of the Problem

Work place-related health impairment, injuries and illness cause a great human suffering and acquire high costs, both for those affected and for the society in general (13). Each day thousands of health care workers around the world suffer accidental occupational exposures to blood-borne pathogens (14). Occupational exposure accounts for 2.5% of HIV cases and 40% of Hepatitis B and C cases among HCWs Worldwide (15). Consequence of occupational exposure, an estimated 66,000 Hepatitis B, 16,000 Hepatitis C and up-to 1,000 HIV infections occur among HCWs. each year. These infections are preventable through infection control measures, which significantly reduce the risk of HIV and Hepatitis transmission among health workers (16).

One serious blood borne infection can cost more than a million dollars in medications, follow up laboratory testing, clinical evaluation, lost wages, and disability payments. The exact costs of occupational exposures to hepatitis B and C and HIV are not available, but a 2007 article estimated the one-year cost for these incidents to be as high as $400 million (17).

The human costs after an exposure are immeasurable. Employees may experience anger, depression, fear, anxiety, difficulty with sexual relations, trouble sleeping, problems concentrating, and doubts regarding their career choice. The emotional effect can be long lasting, even in a low risk exposure that does not result infection (18). It is probably the most serious and causes the highest level of anxiety amongst the healthcare works in many counties including Ethiopia (19)

Developing countries, especially those in Sub-Saharan Africa, account for the highest prevalence of HIV-infected patients and more than 90% of occupational exposure occurs in these countries (20-23).

Ethiopia is one of the countries hit hardest by HIV/AIDS epidemic. Due to diversified clinical activities together with high patient flows, short staffing and less developed technologies, occupational exposure to HIV infection is a concern for HCWs in Ethiopia (24).

In face of the prejudice and stigma surrounding HIV/AIDS and its chronic and disabling effect, the healthcare personnel may fear that acquiring HIV infection ruin their career and livelihood.

Such fear may in turn compromise their ability to provide quality care or undermine their commitment to remain in the profession.

Available data from developing countries shows that adherence to the standards precaution and documentation of occupational exposure are suboptimal and knowledge about the risk factors among the healthcare workers is poor (25, 26).

Prevention of blood/body fluid exposure through safer practices, barrier precautions, safer needle device, and other innovations are the best ways to prevent HIV and other blood borne/ body fluid pathogens (27). Protocol needs to be adopted and implemented for the reporting and follow-up of percutaneous or per-mucosal exposures to blood or body fluids (28).

Hence, in this study was find out the major causes that led health care personnel to occupational exposure such as lack of training on infection prevention, negligence of the healthcare workers on the use of personal protective equipments. Likewise the output of the study added the pool of literature on the issue of accidental needle stick injury and the insights that have been drawn from the investigation can be used in undertaking further research.

As a result the study filled out the gap that were not treated by previous researchers and provided clear perspectives for different stake holders, government and non-governmental organization to comprise the health care workers and auxiliary staffs in infection prevention training and utilization of PEP at the hospital set-up.

1.3 Significance of the study

Nowadays, the issue of needle-stick and sharp injury among health care personnel is problematic. Exposure to blood, body fluid and needle stick injury face many health care workers at risk of HIV, HBV and HCV. Hence, investigating the issue was quite relevant identify the deep rooted causes of the problem so as to bring a feasible change in the area. In addition, identifying the magnitude and strategies to address the problem will reduce the health care workers from job dissatisfaction, burnout and resign. These also benefit the community at large.

The information gathered in this study could assist the hospital management in understanding of the cause of needle and sharp injury among the health care personnel. Likewise, when the causes are known, the hospital management will be in a good position to develop strategies to manage

an occupational exposure and subsequently increase Post exposure prophylaxis service and vaccine facilities for preventable disease such as hepatitis B virus.

The result of this study could be used to reduce the transmission of disease and illness among health care workers which occur due to exposure to sharp and needle stick injuries by implementing findings and recommendation of the study. The study also could be used for those who are responsible to solve the problems of HCP; they may be governmental, hospital administrator, NGOs and private organizations.

This research is also important for policy makers to revise the policy (if necessary) using the finding to fill the gap. Researchers will use this as a reference in order to do further study.

1.4 Research Question

i. What is the level or magnitude of percutaneous exposure incidents among health care personnel at Gandhi Memorial hospital?
ii. What are the factors associated with percutaneous exposure incidents among health care personnel at Gandhi Memorial hospital?

2. Literature Review

Occupational exposure to blood or other body fluids in healthcare facilities constitutes a significant risk of transmission of HIV and other blood borne pathogens to healthcare workers. HIV/AIDs in particular are a major threat in the workplace (29). Globally, NSIs are the most common source of occupational exposures to blood which result in transmission of blood-borne infections. (30, 31)

Occupational risks associated with exposure affects the quality of care delivered as well as health-care workers safety and wellbeing (32). As a result exposed workers experience significant fear, anxiety and emotional distress that can result in occupational and behavioral changes. (33)

2.1 Magnitude of Needle Stick and blood splash injuries

The World Health Organization (WHO) estimates that 3 million percutaneous exposures occur annually among 35 million HCW globally; over 90% occurring in resource constrained countries. (7).In the US, there are more than 600,000 parental exposures suffered by healthcare workers every year (34).

A study conducted in Northern Uganda (2005) revealed that 108 (46%) respondents were found to have been exposed to potentially infectious body fluids. Needle stick injuries was the common route of exposure, with a prevalence of 22.7%, followed by mucosal exposure (19.1%), contact with broken skin (5.5%) and lastly a cut with sharp objects (5.1%) (35). Likewise, a study conducted in Uganda 57% of the nurses and midwives had experienced at least one needle stick injury per year (36).

A study done on accidental exposure of health care workers in Kenya Rift Valley Provincial Hospital shows that 19% of health care workers reported having percutaneous injury, 7.2% splash to mucosa membrane, and 25% exposure to blood and other body fluids in the past 12 months Higher rate of percutaneous injuries was observed among nurses (50%) during stitching (30%) and in obstetric and gynecologic department (22%) (37).

A cross-sectional study at Bahirdar, Northwest Ethiopia showed that out of the total respondents 103 (31.0%) had experienced needle stick and sharp injury at 12 month while at the job career (38**).**

The important factors that influence the overall risk for occupational exposures to blood borne pathogens include the number of infected individuals in the patient population and the type and number of blood contacts. It has been estimated that up to 60% of patients admitted to public sector hospitals in South Africa are HIV infected (39).

2.2 Circumstances Leading to Needle Stick, Sharp Injuries and Blood Splash

Various circumstances associated with percutaneous injuries and splash exposures. The most common causes of needle stick injuries in various studies were high workload, working hastily, fatigue and a crowded work environment, lack of reporting system and lack of post exposure prophylaxis. Likewise, it is caused by inadequate disposal, recapping and overfilling, supported that despite the great attention given to the safe use of sharps, dangerous needles still find their way into the waste sacks instead of sharps bin (40).

Also, the highest rates of needle sticks occur during activities such as blood sampling, injections, IV catheter insertion, and disposal of contaminated needles, needle recapping and washing contaminated instruments (41).

Certain groups of individuals are at greater risk than others because of the nature of their work. Medical, dental, nursing and midwifery workers are at higher risk for occupational exposure to blood borne pathogens via sharp injuries (42).

In a study from three health institutions from Southeast Nigeria, observed that supplies of protective equipment were grossly inadequate and adherence to safety practices was poor, and all these could increase the risk of HCWs contracting blood-borne infections (43). Furthermore, Adesunkanmietal. , who explored the prevalence of accidental injuries and body contaminations among the operating personnel during general surgical operating personnel, showed that operating personnel sustained 62 sharp injuries (10.5%), these were caused suture needle in 57 cases (92.0 %), towel clips in three (4.8%),Knife cut in two (3.2%) (44).

Across sectional study conducted in Uganda showed that, almost 40% of the needle stick injuries reported in the last year was related to administering of injections (19% injecting a patient and 17% putting up an intravenous line). These procedures were followed by the process of disposing used needles, which caused about 16% of the injuries. Recapping of used needles, suturing, especially during episiotomies, and cleaning after patient care were related to about 13% of the

injuries each. Despite encouragement of the nursing staff not to recap the needles, it was still a common practice, as almost 50% of the participants were recapping most or all the time. Needle stick injuries were less commonly related to an unattended needle left after the procedure (5.6%) or to an accidental injury from a colleague (4%). Likewise: lack of safety devices in hospitals because of the low expenditure on health care, occupational safety and health services (45).

2.3 Strategy for prevention of occupational needle and sharp injuries

Strategies for a safer work environment are mandatory for protection of health care personnel from blood borne diseases such HIV, HBV, HCV. According to the American Nurse Association more than 80% of needle-stick injuries can be prevented with safer equipment (46). It is prevented by the use of goggles, face masks or face shields, gloves, gowns, aprons, boots .All employees have the right to be protected from blood and body substances and this protection includes: Availability of safety box at work place, infection prevention training, professional qualification and utilization of personal protective devices; and vaccination for infectious diseases Infection control policies and protocols should address issues in relation to blood borne diseases (47, 48)

2.4 Conceptual Framework

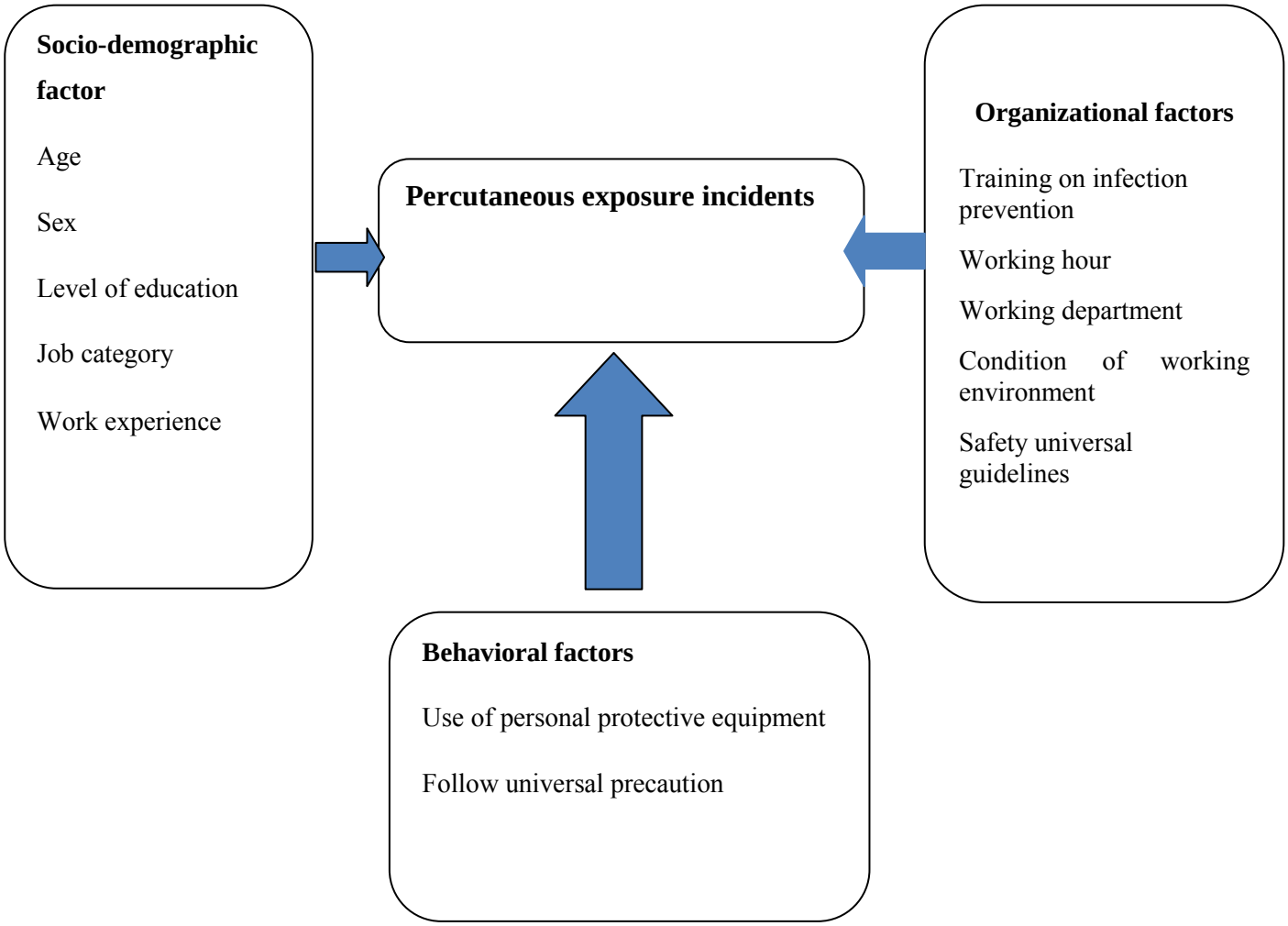


Figure 1: Conceptual Frame work, designed by the principal investigator.

3. Objectives

3.1 General objectives

To assess percutaneous exposure incidents and associated factors among health care personnel in Gandhi Memorial hospital, Addis Ababa, Ethiopia from Jan 2015 to May 2015.

3.2 Specific objectives

i. To determine the magnitude of percutaneous exposure incidents among health care personnel;
ii. To identify factor associated with percutaneous exposure incidents among health care personnel.

4. Methodology

4.1 Study area

The study was carried out in Addis Ababa at Gandhi Memorial hospital located near the National Stadium. It is a maternal public hospital that provides appropriate medical service in the obstetrical, gynecological and emergency department services.

Gandhi Memorial hospital is a governmental hospital which specializes in maternity services. The hospital was established in 1954 E.c with the collaboration of an Indian community that lived in Ethiopia and took its name from the famous Indian leader 'Mahatma Gandhi'. Starting from its establishment the hospital has been providing maternity services. The hospital has 383 staff including supportive staff and attends a total of 7,200 deliveries annually, bed capacity of 69 (According to the preliminary survey from the information desk).

The hospital serves as a teaching center for Addis Ababa University students who specialize in gynecology and obstetrics, as well as undergraduate medical students with signed memorandum of understanding with the university and the hospital. (Personal communication: HMIS information desk).

This hospital was selected since it is the only specialty hospital engaged in maternity service receiving clients from all corners of the country. It also has high flow of clients and health care workers are busy managing 25-30 delivery per day which may lead to vulnerability of occupational exposure of health care personnel.

According to central statistics agency house and population censuses report the dominant ethnic group of Addis Ababa City is Amara, language is Amharic, religion is Orthodox and the other dominant ethnic groups are: Gurage, Selte and Tigre respectively (24).

4.2 Study period

The study was conducted at Gandhi memorial hospital from March 7- 28, 2015.

4.3 Study design

A facility based quantitative cross-sectional study design was used to gather information from study participants to assess percutaneous exposure incidents among health care personnel in Gandhi Memorial Hospital during the study period due to the limited time and resource the study design was employed.

4.4 Source population

All health care personnel working at Gandhi Memorial hospital were source population of the study.

4.5 Target population

All Health care personnel working at Gandhi Memorial hospital who had contact with sharp instruments, patient's blood and body fluids within the previous 12 months were selected. Health care personnel included in this study involves: nurse, midwifery, physician (specialist, resident doctors, intern doctors & general practitioners), laboratory technician, health officer's anesthetists, students, and auxiliary staffs (janitors, laundry workers, maintenance workers, messengers).

4.6 Eligibility Criteria

4.6.1 Inclusion criteria

- ✓ All health care personnel (Nurses, midwives, physicians, surgeons, laboratory clinician, health officers, anesthetics, students (doctor, nurse and midwives) and auxiliary staffs (janitors, laundry workers, maintenance workers, messengers) working in Gandhi memorial hospital who had direct contact with patient's blood/body fluid and needle stick working within the previous 12 months were included in the study.

4.6.1 Exclusion criteria

- ✓ Administrative and technical workers (managers, secretaries, finance and pharmacists without contact with needle/sharps, patient's blood and body fluids were excluded.

4.7 Sample size determination

The actual sample size for the study was determined using the formula of single population. To determine the initial sample size the following assumption was used : assuming 5% margin of error (d), 95% confidence level (alpha, α =0.05, two tailed) and the proportion or prevalence of healthcare workers occupational exposure to needle stick and sharp injury to be 37% (49). So based on the above information the total sample size is calculated by using the following formula.

- $n=\frac{(Z\alpha/2)^2 p(1-p)}{d^2}$

Assumptions: A 95% confidence level, margin of error (0.05).

Prevalence (P): proportion of Needle stick injury, p= 37% (49).

Substituting in single population proportion formula, gives:-

$$n = \frac{(Z\alpha/2)^2 p(1-p)}{d^2}$$

$$= \frac{(1.96)^2(.37)(1-0.37)}{(0.05)^2} = \mathbf{358}$$

Where

- n= required sample size
- Z= critical value for normal distribution at 95% confidence level which equals to 1.96 (z value at α =0.05, two tailed)
- P= proportion of NSI (37%) (49).
- d= 0.05 (5% margin of error)

Since sampling was from a finite population (N= 583 which is less than 10,000, it needs the finite population correction. Therefore, n_f= n /1+n /N = 222

Where n= 358 and N = 583

By considering 10% non-response rate, the total final sample was **244**

The total sample size was **244**

4.8 Sampling technique and procedure

List of study participants was obtained from payroll of the institution and grouped based on their job category or profession into eight groups. Out of 583 populations of Health Care Personnel at GMH, 244 subjects were selected using systematic random sampling technique for all health care personnel.

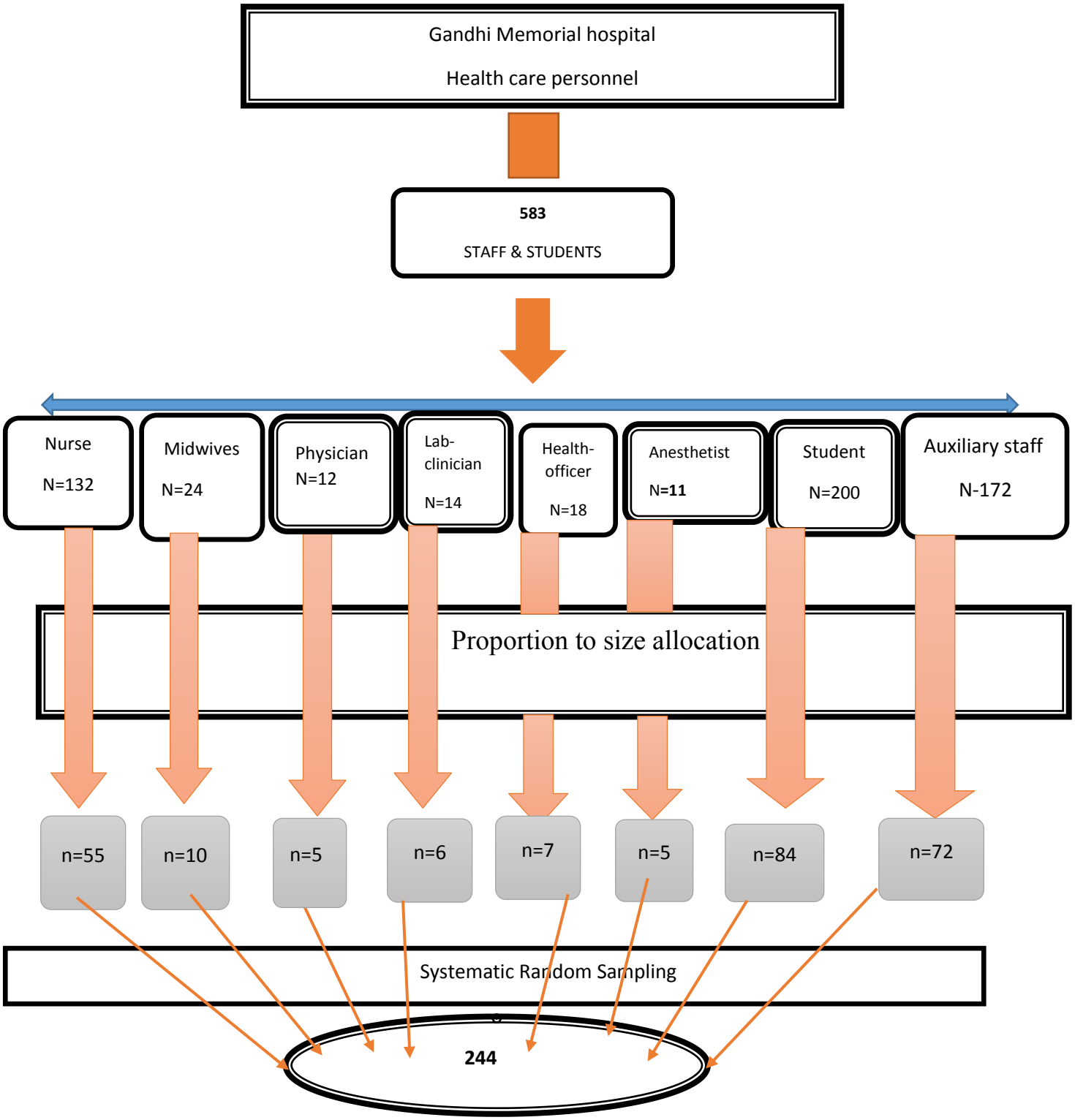
K value was calculated as $K= N /n_f$, K=2,

Where n_f= final sample size=244 and

N= the total number of all health care personnel who work at Gandhi memorial hospital =583

Using the k value, heath care personnel were selected based on their job category obtained from payroll of the institution in every 2 K^{th} number intervals and the first study subjects were selected by lottery method. The sample size was distributed into each job category or profession according to proportional allocation. For better clarity, see (**Figure 2)** next page.

Figure 2: Schematic presentation of sampling procedure on percutaneous exposure incidents among healthcare personnel in Gandhi Memorial hospital, Addis Ababa, Ethiopia, 2015



4.9 Study Variables

4.9.1 Dependent variables

Exposure of heath care personnel to needle-stick and sharp injury

Exposure of heath care personnel to blood and body fluid splash.

4.6.1 Independent variables

(i) Socio-demographic characteristics (Age, sex, educational level, job category, work experience)

(ii) Behavioral factors (needle recapping, usage of personal protective equipment, follow safety written guidelines

(iii) Organizational factors (training on infection prevention, working hour, working department, condition of working environment).

4.10 Operational definitions

Auxiliary staffs: those who are involved in the non-technical activity of a health facility or who were considered as supportive. It includes cleaners, laundry workers, maintenance, messengers.

Health care personnel: Health care personnel's are all paid and unpaid persons working in health care settings who have the potential for exposure to infectious materials, including body substances (e.g., blood, tissue and specific body fluids) and contaminated medical supplies and equipment's, and contaminated environmental surfaces. HCP might include but not limited to emergency medical service personnel, nurses, physicians, laboratory technicians, students and not employed by the health care facility and persons not directly involved in patient care but potentially exposed to blood and body fluids (e.g., dietary, house-keeping, maintenance and volunteer personnel).

Occupational Exposure: respondents who had history of needle-stick, sharp and splash in the course of a person's employments and involves contact with blood or other body substances.

Percutaneous Exposure Incidents: are needle-sticks, sharp injuries, as well as splashes having contact with skin or mucosa.

Sharp: Any object that can penetrate the skin including, but not limited to needles, scalpels, broken glass.

Sharp injury: An exposure event occurring when any sharp object penetrates the skin. This term is interchangeable with ‘’ percutaneous injury.’’

Hallow-bore needle: Needle (e.g.’ hypodermic needle, phlebotomy needle) with a lumen though which material (e.g., medication and blood) can flow.

Mucocutaneous Exposure: when blood or body fluid splashes into the eyes, nose or mouth or onto broken skin.

4.11 Data Collection Instruments and Techniques

Data was collected using self-administered structured and interview questionnaire was adopted and modified by reviewing from a free access EPINET/Exposure (Prevention Information Network and Agency for Healthcare Research and Quality) in such a way that could meet the objectives of this study.

The questionnaire consist all the variables that directly meet the objective of the study. The questionnaire includes socio demographic characteristics, the behavioral factors and the organizational factors.

The questionnaire was pre-tested in 10% of the required sample size. This was conducted at Rasdesta Hospital and the respondents were excluded from the actual study. Data was collected by two degree graduate Nurses with previous experience of data collection and one supervisor was recruited. Training was given to data collectors and supervisor for three days before the actual work about the aim of study, sampling procedures, ways of administering and collecting the questionnaire and art of interviewing was given on each doubt at GMH.

Continuous follow up and supervision was made by the principal investigator throughout the data collection period. Both the interviewers and supervisors assessed the clarity, understandability; uniformity and completeness of the questions, and then the results was edited and coded. Data collection was accomplished within two weeks duration (March 7- 28, 2015).

4.12 Data quality assurance

To assure quality of data the following measures was undertaken. Training and orientation was given to the data collectors. Validity of the questionnaire was maintained by using questionnaire adopted from EPINET/Exposure Prevention Information Network and Agency for Healthcare Research and Quality that were used by other researchers (50, 51). The questionnaire initially prepared in English and then translated in to Amharic version. The Amharic version was again translated back to in English to check for consistency of meaning. After identifying the study subjects, informed consent was obtained to confirm willingness and confidentiality was ensured to all of the study subjects. Moreover questionnaire was pre-tested and necessary corrections and amendment was considered. The collected data was reviewed and cross checked for completeness and consistency by principal investigator on daily bases at the spot during the data collection time.

4.13 Data Processing and analysis

After data collection, each questionnaire was checked visually for completeness and coded at the right margin of the questionnaire. The template scheme for data entry was developed and pre-tested for ranges, skipping patterns and allowed legal values by entering 20 questionnaires. The data entered in to Epi-data version 3.01, exported to SPSS version 20.0 statistical software packages for data cleaning and analysis. We were carried out descriptive analysis to determine frequencies, proportions and means of the proportion of needle-stick injuries and splashes.

The degree of association between independent and dependent variables was assessed using Odds ratio and other statistical tests with 95% confidence interval and P-value (<0.05). Bivariate & multivariate logistic regression analysis was employed to examine the relationship or statistical association between independent and outcome variables. Results were presented using tables, figure and texts.

4.14 Ethical clearance

Ethical clearance was secured from AAU-college of health science department of Nursing and Midwifery Ethical review Committee. Official permission was obtained from Addis Ababa health Bureau IRB (Ethical Review Board) then from GMH medical director office official permission was obtained. Informed written consent was secured from study subjects. Each respondent was informed about the purpose of the study and assurance of confidentiality, risks and benefits. Respondents were allowed to refuse and/or withdraw from the study at any time they want.

4.15 Dissemination of results

The result of the study will be presented and submitted to Department of Nursing and Midwifery, College of Health Sciences, Addis Ababa University, and other stake holders, like Gandhi, Memorial Hospital, Ministry of Health. Moreover, the results will be presented in local and international conferences as well as will be sent for publication in local and international journals.

5. Result

Socio-demographic characteristics of study participants

A total of 244 were enrolled in to the study in Gandhi memorial hospital, of whom 149 (61.1%) were females. 98 (40%) of the study participants were aged between 25-31 years, 75 (30.7%) were aged between18-24, 44 (18%) were 32-38 and 27(11%) were aged 39 and above with mean and S.D of 29±7.3). Concerning educational level of HCW, 66 (27.0%) of participants were BSc degree holders, 97 (39.8%) were university students, 30 (12.3%), diploma graduates, 31 (12.7%) and 20 (8.2 %) were secondary school and primary school respectively. Job category of the HCP 54 (22.1%) were nurses, 10 (4.1%) midwives, 11 (4.5%) physician and 117 (48.0%) auxiliary staff (janitors, laundry workers, maintenance). 177 (72.5%) of the participants had working experience between 1-4 years. For further details refer (**Table 1**).

Table 1: Socio-demographic characteristics of HCP (n=244) in GMH, Addis Ababa, Ethiopia, 2015.

Variable	Category	Frequency	Percent (%)
Age	18-24	75	30.7
	25-31	98	40.2
	32-38	44	18.0
	39-45	8	3.3
	46+	19	7.8
Sex	Male	95	38.9
	Female	149	61.1
Educational level	Primary school	20	8.2
	Secondary school	31	12.7
	Diploma	30	12.3
	Degree (BSc)	66	27.0
	Other higher level	9	3.7
	University students	88	36.1
Job category	Nurses	54	22.1
	Midwifes	10	4.1
	Physician	11	4.5
	Anesthetists	6	2.5
	Laboratory technician	8	3.3
	Health officers	9	3.7
	Students	29	11.9
	Auxiliary staffs	117	48.0
Year of experience (in years)	1- 4	177	72.5
	5 - 9	41	16.8
	10 -14	18	7.4
	15 -19	3	1.2
	≥20	5	2.0

Prevalence of occupational exposures

Of all study participants, 69 (28.3%) reported needle stick injuries, of which 24 (9.8%) sharp injuries, and 84 (34.4%) reported splashes among healthcare personal within the previous 12 months **(Table 2)**.

Table 2: Prevalence of occupational exposures at GMH, Addis Ababa, Ethiopia, 2015 (n=244)

Variable	Category	Frequency	%
Occupational exposures	Needle-stick injuries	69	28.3
	Sharp injuries	24	9.8
	Blood and body fluids splash	84	34.4

Prevalence of occupational exposures by potential risk factors

One hundred seventy seven (72.5%) incidents of percutaneous injuries and mucocutaneous exposures were reported by healthcare personnel within the previous 12 months. The majority of injuries were reported by females (65.6%).

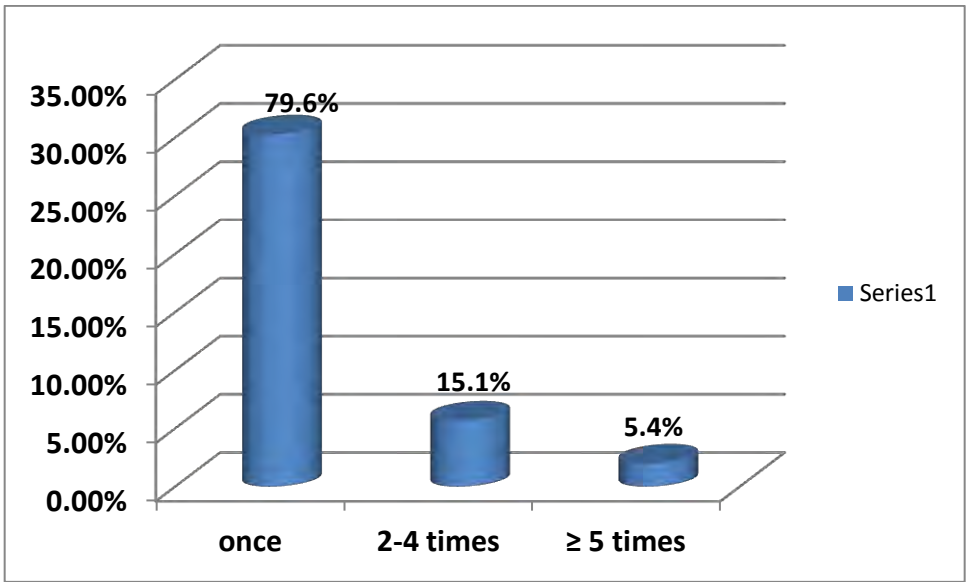
The prevalence of percutaneous injuries was high among female HCPs accounting (65.6%). Distribution of injuries between age groups of 18-24 years were (45.2%) with highest exposed to needle stick injury. The prevalence of percutaneous injuries was high among university students (33.8%), followed by degree (BSc) holders (23.8%).

Nurses had the highest prevalence of percutaneous injuries (26.9%) compared to other health professionals, Physicians (1.1%) and Midwives, Anesthetics and Laboratory technician had (4.3%) each. However other staffs such as students account for (16.1%), Auxiliary staff (43%) had the highest prevalence of sharp injuries from all healthcare workers and also The prevalence of mucocutaneous exposure to patient's blood and body fluid was highest among Auxiliary staff (janitors, laundry workers, housekeeping, and maintenance) 47 (55.9 %) than other health professionals. Respondents with year of experience 1-4 years (92.5%) and working hour >40 hour (58.1%) reported percutaneous injuries within the previous 12 months **(Table 3).**

Table 3: Prevalence of occupational exposure by potential risk factors, among HCP at Gandhi memorial hospital, Addis Ababa, Ethiopia, March, 2015.

Variable	Category	Prevalence, (%)	
		Percutaneous	Splashes
Age	18-24	42(45.2)	14(16.7)
	25-31	36(38.7)	39(46.4)
	32-38	11(11.8)	23(27.4)
	39-45	2 (2.15)	3 (3.6)
	≥46	2 (2.15)	5 (6.0)
Sex	Male	32 (34.4)	29(34.5)
	Female	61 (65.6)	55(65.5)
Educational level	Primary school	3 (11.3)	12 (143)
	Secondary school	14 (11.3)	15(17.9)
	Diploma	7 (15.2)	12 (14.3)
	Degree	30 (23.8)	22 (26.2)
	Other higher level	2 (4.6)	2(2.4)
	University students	37 (33.8)	21(25.0)
Job category	Nurse	25 (26.9)	23 (27.4)
	Midwives	4 (4.3)	9 (10.7)
	Physician	1 (1.1)	1 (1.2)
	Anesthetics	4 (4.3)	0 (0.0)
	Laboratory technician	4 (4.3)	0 (0.0)
	Student	15 (16.1)	4 (4.8)
	Auxiliary staffs	40 (43)	47 (55.9)
Year of experience	1-4	86 (92.5)	52 (61.9)
	5-9	4 (4.3)	21 (25.0)
	10-14	3 (3.2)	11 (13.1)
Working hour/week	≤40 hr	39 (41.9)	29 (34.5)
	>40 hr	54 (58.1)	55 (65.5)

Figure 3: **A Bar graph showing frequency of NSI among HCP at GMH within the previous 12 months, 2015.**



Among the 93(38.1%) who sustained needle stick and sharp injuries, 74 (79.6%) sustained at least once with mean number of injuries of 1.26 (SD 0.55), 14 (15.1%) 2-4 times and 5 (5.4%) ≥5 times **(Fig 3).**

Concerning depth of injury fifty one (54.84%) of sharp injuries was superficial without bleeding, 33 (35.48%) moderate injuries with some bleeding and 9 (9.68%) severe injuries with profuse bleeding.

For both the health professionals and auxiliary staff, the BBF exposure mainly affected the hand 48 (57.14%), followed by face 13 (15.48%), 10 neck and chest (11.9%) and 7 (8.33%) feet.
Study participants reported they were engaged in activities such as 5(5.95%) IV secure, 8 (9.52%) Dislodging blocked intravenous line, 5 (5.95%) Rapid gush of amniotic fluid, 4 (4.76%) Accidental splash by colleague, 2 (2.38%) Rapid expulsion of fetus during delivery, 7(8.33%) delivery Conducting delivery, 9 (10.71%) Withdrawal of blood for sampling, 5 (5.95%) Disinfecting reusable instruments, 6 (7.14) Laundry of patient used cloth, 16 (19.05%) Collection of waste placenta & blood, 12 (14.29%) Vaginal examination, 4 (4.76%) Glove breakage and 1(1.19%) Performing operation at time of accidental splash occurred. **(Table 4)**

Table 4: Characteristics of occupational exposures to blood and body fluids

Variable	Category	Frequency	%
Body part exposed	Eye	6	7.14
	Face	13	15.48
	Neck and chest	10	11.9
	Hand	48	57.14
	Feet	7	8.33
Activity at time of exposure	IV secure	5	5.95
	Dislodging blocked intravenous line	8	9.52
	Rapid gush of amniotic fluid	5	5.95
	Accidental splash by colleague	4	4.76
	Rapid expulsion of fetus during delivery	2	2.38
	Conducting delivery	7	8.33
	Withdrawal of blood for sampling	9	10.71
	Disinfecting reusable instruments	5	5.95
	Laundry of patient used cloth	6	7.14
	Collection of waste placenta, blood	16	19.05
	Vaginal examination	12	14.29
	Glove breakage	4	4.76
	Performing operation	1	1.19
Depth of injury	Superficial without bleeding	51	54.84
	Moderate with some bleeding	33	35.48
	Sever with profuse bleeding	9	9.68

Circumstance leading to occupational exposure to needle-stick and sharp injury

Various factors were associated with percutaneous injuries and splash exposures. These include work shift, working department, working hour, condition of working environment, procedure, occupation type of device.

Overall HCP 28 (30.1%) were commonly injured during administration of injection, 17(18.3%), recapping a used needle, 16 (17.2%) stitching, 13 (13.54%) disposal of sharp waste, 7 (7.5%) reported during patient movement and item were protruding from opening container each.

(74.2%) needle hallow bore and (25.8%) sharp instrument were associated with needle prick. Majority of injuries (65.5%) occurred with working hour >40 hr, (54.8%) working condition with dim light and most of injuries (79.6%) occurred during day time **(Table 5).**

Most of sharp injured occurred in the 28(30.1%) emergency department, 25(26.9%) delivery room, 22(23.7%) outpatient department, 10(10.4%) gynecology ward, 6(6.5%), Laboratory room, and 2(2.15%) Operation room **(Fig 4).**

Figure 4: Percentage of working room of HCP who had NSI within the previous 12 months at GMH, 2015

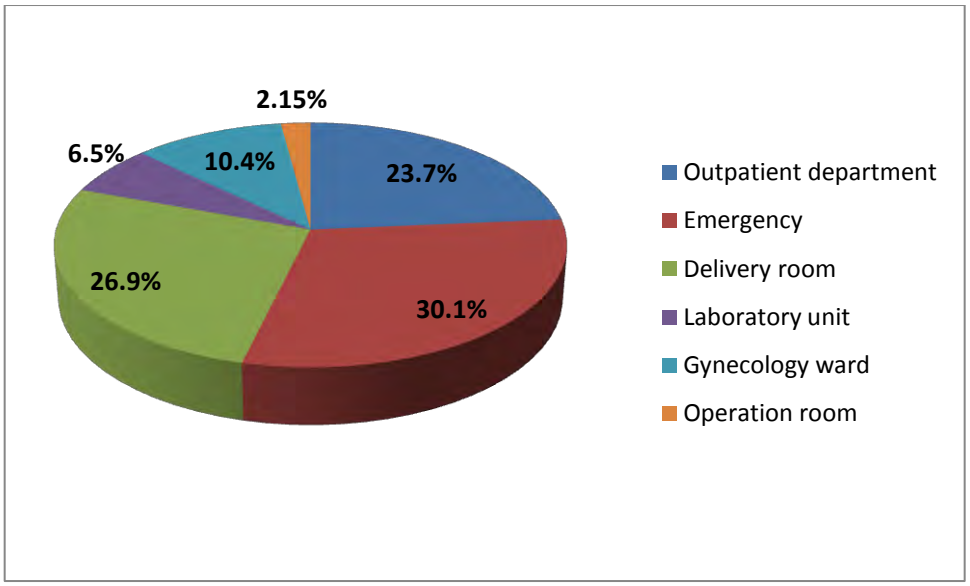


Table 5: Factors associated with needle-stick and sharp injury among HCP at GMH, Addis Ababa, Ethiopia, 2015 (n=244)

Variables	Category	Frequency (n=244)	%
Work shift	Day time	74	79.6
	Night time	19	20.4
Working department at time of NSI	Outpatient department	22	23.7
	Emergency department	28	30.1
	Delivery room	25	26.9
	Laboratory unit	6	6.5
	Gynecology ward	10	10.4
	Operation room	2	2.15
Working hour	≤40hr	29	34.5
	>40hr	55	65.5
Condition of working environment	Bright light	42	45.2
	Dim light	51	54.8
Device involved	Needle-hallow Bore	69	74.2
	Sharp instrument	24	25.8
Activity at time of accident	Administration of injection	28	30.1
	Stitching	16	17.2
	Recapping a used needle	17	18.3
	Patient movement	7	7.5
	Handling of blood sample	5	5.4
	Disposal of sharp waste	13	13.54
	Item protruding from pierced side of disposal container	7	7.5

Organizational and behavioral factors associated with needle stick and sharp injuries among HCP

Nearly all the respondents 241(98.8%) reported that the universal precautions and guidelines about infection prevention had been posted in their health institution; of whom 234 (95.9 %) followed the posted guidelines. Regarding the report protocol 26 (31%) reported that there was a protocol for reporting occupational exposure in the institution. Concerning use of personal protective equipments, 62 (73.8%) reported they use personnel protective equipment. Concerning the type of personnel protective equipment as they reported, 33 (53.2%) used examination glove, 23 (37%) used utility glove and 6 (9.7%) apron. On Hepatitis B virus Vaccination status (50.8%) of the respondents received hepatitis B virus vaccine and 4 (4.76%) of the respondents received post exposure prophylaxis. Of all respondents, (24.6%) of health professionals had training on infection prevention and 184 (75.4%) hadn't trained on infection prevention of the respondents (**Table 6).**

Table 6: Organizational and behavioral factors associated with needle stick and sharp injuries among HCP, at Gandhi memorial hospital, Addis Ababa, Ethiopia, March, 2015.

Variables	Category	Frequency (n=244)	%
Availability of safety working guidelines	Yes	241	98.8
	No	3	1.2
Availability of report protocol	Yes	26	31
	No	58	69
Training on infection prevention	Yes	60	24.6
	No	184	75.4
Vaccinated for hepatitis B virus	Yes	124	50.8
	No	120	49.2
Report exposure to the employee health service	Yes	18	21.4
	No	66	78.6
Use of personal protective equipment	Yes	62	73.8
	No	22	26.1
Type of personal protective equipment	Examination glove	33	53.2
	Utility glove	23	37
	Apron	6	9.7
Receive Post exposure prophylaxis	Yes	4	4.76
	No	80	95.23
Follow safety guidelines	Yes	234	95.9
	No	10	4.1

Factors associated with Needle-stick injuries Bivariate logistic regression

On bivariate analysis age, educational level, job category and working hour were found to be significantly associated with percutaneous injuries. However sex, work experience, work guidelines and training on infection prevention were not associated with exposure to sharp injuries. Age 18-24 years were protective to encounter the injury than those aged between 25-31years (COR=0.09, 95% CI=0.02-0.43, P-value=0.002).

Healthcare personnel's whose educational level secondary school (grade 9&10) were 4 times more at risk to sustain a needle-stick and sharp injury than those educational level above grade 9&10 (COR=4.1, 95% CI= 1.1-15.06).

Nurses were 50% less likely to encounter NSI than auxiliary staffs (COR=0.47, 95%CI=0.24-0.94, P-value=0.03)

Healthcare personnel who had extended working hours (>40 hrs/week) were more than 2 times at a higher risk to needle-stick and sharp injuries as compared to those who work (≤40 hrs/week) (COR=2.4,95%CI=1.42-4.10, P-value=0.001) **(Table 7).**

Table 7: Bivariate logistic regression analysis factors associated with Needle-stick injuries among HCP at GMH, Addis Ababa, Ethiopia, 2015

Variable	Category	Injured	Non-injured	COR	95% CI	P-value
Age	18-24	42	33	0.09	(0.02-0.43)	0.002*
	25-31	36	62	0.20	(0.044-0.93)	0.04*
	32-38	11	33	0.35	(0.7-1.78)	0.21
	39-45	2	6	0.35	(0.04-3.09)	0.35
Sex	Male	32	63			
	Female	61	88	1.36	(0.79-2.33)	0.26
Educational level	Secondary school	17	14	4.11	(1.12-15.06)	0.03*
	Diploma	23	7	0.88	(0.39-2.01)	0.76
	Degree	36	30	2.38	(0.93-6.14)	0.07
	Other higher level	7	2	0.87	(0.46-1.66)	0.67
	University student	51	37	2.54	(0.49-12.93)	0.26
Job category	Nurse	25	29	0.47	(0.24-0.94)	0.033*
	Midwife	4	6	0.61	(0.16-2.32)	0.47
	Physician	1	10	4.06	(0.49-33.20)	0.19
	Anesthetists	4	2	0.20	(0.035-1.17)	0.75
	Laboratory technician	4	4	17.7	(0.095-1.17)	0.22
	Students	15	14	027	(0.10-0.73)	0.01
	Other staffs	40	77	0.38	(0.16-0.88)	0.025*
Working hour/week	≤40 hr	39	96	2.42	(1.424-4.10)	0.001*
	>40 hr	54	55			
Training on infection prevention	Yes	14	79	2.47	(1.27-4.81))	0.008
	No	46	105			

* Significant for (P-value<0.05).

Factors associated with Splash exposure to blood and body fluid Bivariate logistic regression

On bivariate analysis job category and educational level were found to be significantly associated with mucocutaneous exposure to blood and body fluids. However age, sex, working hour, work experience, work guidelines and training on infection prevention were not significantly associated with mucocutaneous exposure to blood and body fluids splash.

Auxiliary staffs were 4 times more likely to expose to blood and body fluids than midwives (COR=4.03, 95% CI=1.27-12.3, P-value=0.016).

Healthcare personnel's whose educational level primary school (grade1-8) were protective for exposure to blood and body fluid splash than HCP whose educational level secondary school (grade 9&10) (COR=0.21,95% CI=0.75-0.58, P-value=0.003) **(Table 8).**

Table 8: Bivariate logistic regression analysis of factors associated with blood and body fluid splash exposures among HCP at GMH, Addis Ababa, Ethiopia,2015 (N= 244)

Variables	Category	Exposed	Non- exposed	COR	95% CI	P- value
Job category	Midwives	23	31	0.07	(0.01-0.59)	0.014*
	Auxiliary staff	47	70	4.03	(1.27-12.3)	0.016*
Educational level	Primary school	15	16	0.21	(0.75-0.58)	0.003*
	Secondary school	12	8	0.33	(0.14-0.79)	0.012*
Training on infection prevention	Yes	17	43	1.45	(0.77-2.74)	0.25
	No	67	117			
Sex	Male	29	66	0.307	(0.77-2.31)	0.307

* Significant for (P-value<0.05).

Multivariate logistic regression analysis on occupational exposure

On Multivariate analysis job category, educational level and working hour were found to be significantly associated with percutaneous exposure. However age, sex, work experience, work guidelines and training on infection prevention were not significantly associated with percutaneous exposure.

Job category was found to be associated with of NSI among laboratory workers than other health care personnel. The association showed protective effect in the laboratory workers compared to other healthcare personnel (AOR=0.06, 95%CI=0.11-0.28, P-value=0.000).
In addition respondents with educational level of BSc degree holders were found to be 33 times at risk for sustaining NSI than those with educational level of primary, secondary school and diploma (AOR=33.01, 95%CI=3.93-77.07, P-value=0.001

Healthcare personnel who had extended working hours (>40 hrs/week) were 10 times higher at risk to needle-stick and sharp injuries as compared to those who work (≤40 hrs/week) (AOR=9.8 ,95%CI=2.68-35.83, P-value=0.001 **(Table 9).**

Table 9: Multivariate logistic regression analysis of factors associated with needle-stick and sharp injuries among HCP at GMH, Addis Ababa, Ethiopia, 2015 (N= 244)

Variable	Category	Exposed	No-exposed	AOR (95%CI)	P-value
Job category	Nurse	25	29	0.09(0.001-0.29)	0.018*
	Laboratory technician	4	4	0.06(0.11-0.28)	0.000*
	Janitors	12	8	0.64(0.005-0.77)	0.03*
Educational level	Primary school	3	17	17.14(1.68-174.41)	0.016*
	Secondary school	14	17	8.29(1.42-48.37))	0.019*
	Diploma	7	23	13.29(1.604-110.06)	0.016*
Working hour/week	Degree	30	36	33.01(3.93-77.02)	0.001*
	≤40hrs	39	96		
	>40hrs			9.80(2.68-35..83)	0.001*
		54	55		

* Significant for (P-value<0.05).

On Multivariate analysis job category and working hour were found to be significantly associated with mucocutaneous exposure. However age, sex, educational level, work experience, work guidelines and training on infection prevention were not significantly associated with mucocutaneous exposure.

Respondents with job category had statistical significance for the occurrence of blood and body fluid splash. Midwives were less likely to be exposed than other healthcare personnel (AOR=0.02, 95%CI=0.001-0.41, P-value-=0.01) were found to be significantly associated with exposure to mucocutaneous exposure to blood and body fluid splash in multivariate logistic regression model.

Respondents with working hour >40 hour were also found to be 6 times more at risk to splash exposures compared with those worked for less than 40 hours (AOR=5.85, 95%CI=1.29-26.6. P-value=0.02) **(Table 10).**

Table 10: Multivariate logistic regression analysis of factors associated with blood and body fluid splash exposures among HCP at GMH, Addis Ababa, Ethiopia, 2015 (N= 244)

Variable	Category	Exposed	Non-exposed	AOR(95%CI)	P-value
Job category	Midwives	9	1	0.021(0.001-0.41)	0.01**
Working hour/week	≤40 hour	29	106	5.85(1.29-26.6)	0.02**
	>40 hour	55	54		

* Significant for (P-value<0.05).

6. Discussion

The issue of needle-stick and sharp injury among health care personnel is problematic. Exposure to blood, body fluid and needle stick injury face many health care workers at risk of HIV, HBV and HCV. This study provides descriptive epidemiological evidence of how much such injury occur, including what circumstances, with what devices, year of experience, work load, condition of working environment and during what types of procedures.

The prevalence of needle stick and sharp injury within the previous twelve months was 38.1%, implying that needle-stick and sharp injury were common occupational health hazard to HCPs in the study area. The finding was higher when compared to studies done in, Northern Uganda, Kenya and Bahirdar Northwest Ethiopia where the proportion of injury in the last 12 months was 22.7%, 19% and 31.0% respectively (36-38). But the proportion was lower than studies done in Southeast Nigeria 92.0% (44), Serbian 59% (5). The possible difference in the proportion of injury could be due to the study design, the sample size of the study participant, and the specificity of the study area.

This study indicated that HCP aged between 18-24 years were the highest exposed aged groups to needle stick (45.2%). The finding of this study also showed that the prevalence of percutaneous injuries was high among those with experience less than 1-4 years (92.5 %) which was comparable to the study conducted in Turkey in which young age was risk factors for occupational injuries (52). This could be due to limited work experience and the fact that young HCWs tend to be harry and aggressive in their work.

Majority of exposures occurred during the day shift 79.6%. This may attributed to busy schedule at time and the high work load, high patient flow during day time (53).

Despite the absence of statistical significant association between gender and occupational exposure to blood, accidental exposure to blood and body fluids was high among females (65.5%). This could be due to females HCWs were devoted to their work than males. In this study showed that the prevalence of mucocutaneous exposure to blood and body fluids were (34.4%) splashes were reported among healthcare personal within the previous 12 months as compared to a study conducted in Northern Uganda revealed that 46% (35) respondents were found to have been exposed to potentially infectious body fluids. Although all healthcare workers

in contact with patients were at risk exposure to blood and body fluids, (55.9%) auxiliary staff (janitors, laundry workers, housekeeping, and maintenance) were the highest splash exposed groups than other health professionals.

Concerning device- specific sharp injury, the study result revealed that Hallow bore needle accounts 74.2% and sharp instruments accounts 25.8% which was higher than study done in Southeast Nigeria sharp injuries 10.5% (7, 44).

The results of this study showed that 26.9 % of Nurses reported sustaining NSI within 12 months. Which was lower than a study done in Uganda (36) showed that 57% of the nurses had experienced at least one NSI in the last one year. However, this figure was slightly higher than our study. This difference could be due to the fact that the study population in the Ugandan study included only nurses where as our study included all categories of HCWs.

In our finding, procedure, that lead HCP to needle stick injury, 30.1% were commonly injured during administration of injection, 18.3% recapping a used needle, 17.2% stitching, 13.54% disposal of sharp waste and 7.5% during patient movement and 7.5% item were protruding from opening container, which was consistent with a study conducted in Uganda, almost 40% of the needle stick injuries reported in the last year was related to administering of injections, 19% injecting a patient and 17% putting up an intravenous line. Disposing used needles, which caused about 16% of the injuries. Recapping of used needles, suturing, especially during episiotomies, and cleaning after patient care were related to about 13% of the injuries each. Despite encouragement of the nursing staff not to recap the needles, it was still a common practice, as almost 50% of the participants were recapping most or all the time. 5.6% an unattended needle left after the procedure or likewise: lack of safety devices in hospitals because of the low expenditure on health care, occupational safety and health services (45).

In this study most of the respondents were exposed to risky condition sustained at least once 79.6%. This finding was similar with the finding of the study done in Northern Uganda (35).

In addition, this study showed that most of sharp injured occurred in the emergency department 30.1%, 26.9% delivery room, 23.7% outpatient department, 10.4% gynecology ward which was different from the results of the study done in Tigray region (53) that was 80% working in delivery room and 75% in gynecological wards. This discrepancy might be due to difference in the numbers of hospitals.

About 38.1% of respondents who encountered NSI in the last one year, only 7.4% of HCWs were report injuries to the employee health service. About 78.8 % of respondents who encountered NSI in the last one year didn't report to any responsible body in their facilities. The proportion was higher than that reported from Germany and UK (56). This indicated that there was no clear reporting system which was set in health facilities to take immediate measures accordingly. Protocol needs to be adopted and implemented for reporting and follow-up of percutaneous or mucocutaneous exposures to blood or body fluids (28).

The result of this study showed that 50.8% had been vaccinated against hepatitis B virus which was consistent with the study done by Gurubacharya et al., showed that 60% of healthcare workers had been vaccinated against hepatitis B virus (55).

In line with this finding, respondents with working hour >40 hour were also found to be 10 times more at risk to NSI compared with those worked for less than 40 hours (AOR=9.80, 95% CI=2.68-35.83, P-value=0.02). It has been previously associated with recapping and poor compliance with universal precaution (40).

In addition respondents with educational level of BSc degree holders were found to be 33 times at risk for sustaining NSI than those with educational level of primary, secondary school and diploma (AOR=33.01, 95% CI=3.93-77.07, P-value=0.001

7. Strengths and Limitations of the study

7.1 Strength

- ✓ High response rate and the inclusive nature of this research incorporate all health professionals, students and other than health professionals (supportive staffs) who were at risk to occupational exposures.
- ✓ Use of contextually adopted standardized questionnaires.
- ✓ Since there is no similar study conducted in the area (GMH), it can contribute a lot as baseline information for future studies.

7.2 Limitation

- ✓ Cross- sectional study design cannot establish cause and effects relationships and recall bias due to the retrospective nature of questions concerning the risks and the research was designed in a single setting.
- ✓ All safety precautions compliance data were self-reported. The reliability of the actual data might be under-reported. Therefore, the outcome of the above limitations may lead to draw backs in making meaningful conclusion beyond the context, but the results may be used as a baseline data for larger scale studies.

8. Conclusion and Recommendation

8.1 Conclusion

The aim of this study was to assess the prevalence of percutaneous exposure incidents and the associated factors. The prevalence of needle-stick and sharp injuries were 38.1% and the prevalence of blood and body fluid splash were 34.4%. The study demonstrates the highest prevalence of NSIs and BBFs splash were among auxiliary staffs. The highest proportion of needle stick injuries among health care personnel were related to 11.5% administration of injection followed by 7% recapping of needles. Even though most of health care personnel were informed as well as being familiar to universal standards and guidelines, this study revealed that majority of the respondents had experienced the risky occupational exposure during the previous the last 12 months. Concerning report exposure, only 7.4% of respondents were report NSIs to the employee health service the majority of exposed health workers didn't report their injury. The

statistically significant determinant factors for NSI were educational level, job category and working hour.

8.2 Recommendation

1. Gandhi Memorial hospital should incorporate auxiliary staffs (janitors, laundry workers, housekeeping, and maintenance) training on infection prevention. Furthermore reducing the working hour or work over load is also advantageous to reduce occupational exposure of healthcare workers. This can be addressed by increasing the number of staff at Gandhi memorial hospital.
2. Auxiliary staffs engaged at risk of exposure to needle-stick and blood and body fluids should be incorporated in the immunization programs to HBV vaccine.
3. A clear injury reporting protocol system is required including adequate counseling and testing as well as post exposure prophylaxis for victims whenever necessary.
4. Furthermore, large scale research may be needed to determine the actual incidence of needle stick and sharp injury as well as splash exposure to blood and body fluids.

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Annexes

Annex-I: Information Sheet for the Study Subjects

ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES ALLIED SCHOOL OF HEALTH SCIENCES DEPARTMENT OF NURSING AND MIDWIFERRY

Here, I the undersigned, at Addis Ababa University School of Graduate Studies Program, currently undertaking research on a topic entitled Assessment of Percutaneous Exposure Incidents and associated factors among health care personnel in Gandhi Memorial hospital, Addis Ababa, Ethiopia. For this study, you will be selected as a participant and before getting permission of your participation, you need to know all necessary information related to the study. Thus, this information will be detailed as:

Topic: - Assessment of Percutaneous Exposure Incidents and associated factors among healthcare personnel at Gandhi Memorial hospital, Addis Ababa, Ethiopia.

Purpose of the study:-The purpose of the study is to assess the magnitude of needle-stick, sharp injury and blood splash among health care personnel in relation to their nature of work which expose them to blood and body fluid exposure accidentally and the factor which predispose them to infectious disease at Gandhi Memorial hospital.

The response you give will be helpful: - To improve the health care worker to follow infection prevention protocol.

The questionnaire will include socio-demographic characteristics, behavioral factors and work environment. In addition it also includes the type of injury which commonly occurs, safety culture and utilization of Post-exposure prophylaxis.

Participants to be included: - Health care personnel who work in Gandhi Memorial hospital before one year of data collection period and who are voluntary to participate in the study are included.

Participation procedure and guidelines: - Your name will not be written on the question paper and your answers are kept secret.

Risks of the study: The study will be carried out by asking you the already prepared and structured questions. The procedure doesn't bear any physical or psychological trauma. Furthermore, you will not be forced to respond to the information you do not know.

Benefits of the study: Your participation in the study will let you develop adherence to universal precaution to health workers to be protected from work place injury and the work place to be improved. There is no harm to answer the question except that your precious time be utilized for this paper. What is asked in this paper is you are practicing it every day A study doesn't have intensive in kind or in money. On the other hand, participating in the study and giving your information to questions asked will have great input in efforts at reducing maternal deaths.

Confidentiality: All information you give will be kept confidential and won't be accessible to any third party. Your name won't be registered on the original question sheet so that you will not be identified.

Consent: Your participation in the study will be totally based on your willingness. You have the right not to participate from the beginning, or stop any time after starting participation. You will not be forced to respond to the information you do not know.

Finally, I would like to acknowledge you for your either responses after listening me.

Name of Principal Investigator Eden Girmaye Tel: 0916823476

Email: edengirmaye@gmail.com Sign____ and Date__

Ethical Review Committee Contact Address: Tel: 0115538734

E-mail: aaumfirb@yahoo.com

Annex II Consent Form

Hello. My name is _____ (data collector) and I am temporarily working as a researcher at Addis Ababa University (A.A.U). We are conducting a research on Assessment of percutaneous exposure incidents and associated factors among health care personnel in Gandhi Memorial hospital. The information we collect will help the hospital to plan infection prevention program, to know how many healthcare workers exposed and post exposure prophylaxis utilization. This interview usually takes about 30 minutes. All of the answers you give will be confidential and will not be shared with anyone other than members of this research team. You don't have to be paid in the survey, but we hope you will agree to answer the questions since your views are important. If I ask you any question you don't want to answer, just let me know and I will go on to the next question or you can stop the interview at any time.

Do you have any questions?

May I begin the interview now?

Signature of interviewer: _____

Date: _____

RESPONDENT AGREES TO BE INTERVIEWED: Name Sign_____

Annex III Questionnaire

Currently, I undertaking Research Thesis on a topic entitled Assessment of Percutaneous Exposure Incidents and associated factors among health care personnel in Gandhi Memorial hospital, Addis Ababa, Ethiopia.

Read the questions carefully and **circle** the number and for open question write the response given by the respondents in the space provided. According to the questions the respondents can select one option, select more than one option, or give a word/words or numbers.

Part 1 Sociodemographic Data of Health care Personnel's at Gandhi Memorial Hospital, Addis Ababa, Ethiopia, 2015.

No	Question	Response
1	Age	_____ (years)
2	Sex	1. Male 2. Female
3	Educational level	1.Primary school (1-8) 2.Secondary school (9-10) 3.Diploma 4.University/ college student 5.Digree (BSc) 6. Other higher level
4	Job category	1. Nurse 6. Laboratory clinician 2. Midwives 7. Health officers 3. General practitioner 8. Janitors / cleaners 4. Specialist 9. Student 5. Anesthetics 10. Other staff
5	Year of experience	_____(In completed years)
6	Working hour per/ week	1. ≤ 40hr 2. >40hr

Part II. Needle stick and Sharp object injury exposure

1. In the past 12 months, have you been injured by a sharp object, such as needle or scalpel that was previously used on patient?

1. Yes 2. No

If the above answer is yes, answer the following questions (2-8).

1. How many times did you sustain?
   1. Once
   2. 2-4 times
   3. ≥ 5 times
   4. Don't recall

3. What type of sharp instrument caused the injury?

   1. Needle-hallow Bore
   2. Suture needles
   3. Surgical device
   4. Glass

4. Which shift did you work at time of exposure?

   1. Day time 2. Night time

5. Where did the needle stick, sharp injury occur: (circle one)

   1. Outpatient department /office
   2. Emergency department
   3. Labor and delivery ward
   4. Laboratory unit
   5. Operation Theater Unit
   6. Intensive / critical care unit
   7. Surgical ward
   8. EPI (under five)
   9. Family planning
   10. Gynecology ward
   11. Waste handlers units

6. Condition of the working environment was

   1. Bright light
   2. Dim light
   3. Noise
   4. Room temperature (uncomfortable)

7. What you were doing at time of injury?

1. During administration of injection
2. Stitching
3. Cutting, drilling, electro cautery
4. Recapping a used needle
5. patient movement
6. passing instruments to other healthcare worker
7. Assembling device or equipment
8. In preparation for reuse of reusable instrument (sorting, disinfecting, sterilizing, etc.)
9. Handling of blood sample
10. Unsafe collection & disposal of sharp waste
11. after disposal, stuck by item protruding from opening item pierced side of disposal container

8. The injury was:

1. superficial (little or no bleeding)
2. moderate (skin punctured, some bleeding)
3. severe (deep stick/cut, or profuse bleeding)

Part III Blood and body fluid splash injury characteristics

9. In the past 12 months, have you been exposed by patients' blood or body fluid splash?

1. Yes 2. No

10. If the above answer is yes, when did the splash exposure occur?

1. During insertion of needles
2. Withdrawal of needless
3. Dislodging blocked intravenous line
4. Shaking specimen bottle
5. Handling of uncooperative patient
6. Accidental splash by a colleague
7. Rapid expulsion of fetus during delivery
8. Rapid gush of fluid during spontaneous rupture of amniotic membrane
9. Vaginal examination
10. Conducting delivery
11. Performing operation
12. Withdrawal of blood for sampling
13. Disposal of waste placenta, blood
14. Disinfecting reusable instrument
15. Laundry of patient's used sheet

11. Which of your body parts was exposed?

    1. Eye
    2. Face
    3. Neck and chest
    4. Hand and feet

12. Did you use personal protective equipment?

    1. Yes 2. No

13. If the above answer is yes, the type of personal protective equipment you used

    1. Double glove
    2. Single glove
    3. Eye shield/ goggle
    4. Mask
    5. Apron

14. Did you receive medical care after injury? (Post Exposure Prophylaxis)

    1. Yes 2. No

16. Was there protocol for reporting the injury in your organization?

    1. Yes 2. No

17. Did you report to your Organization for exposure to blood and body fluids?

    1. Yes 2. No

18. Was working guidelines available at your workplace?

    1. Yes 2. No

15. Did you take hepatitis B virus vaccine?

    1. Yes 2. No

19. Did you follow universal precaution?

    1. Yes 2. No

20. Ever had training on infection prevention?

1. Yes 2. No

Thank you for your cooperation

Annex IV Amharic Version Information Sheet

አዲስ አበባ ዩኒቨርስቲ የጤና ሳይንስ ኮሌጅ የነርስ አዋላጅ ነርስ ትምህርት ክፍል

የጥናት መጠይቅ

እኔ በአዲስ አበባ ዩኒቨርስቲ የድህረ ምረቃ ፕሮግራም መመረቂያ ጥናት በጤና ባለሙያ ላይ በሚደርስ በመርፌ ሹል መሳሪያዎች እንዲሁም በደም ንክኪ የሚደርስ ጉዳት ርዕስ ጋንዲ መታሰቢያ ሆስፒታል በመስራት ላይ ነኝ። በዚህም ጥናት የእርስዎ ተሳትፎ አስፈላጊ ነው።

መጠይቆዎን ከመመለስዎ በፊት ሊያውቁት የሚገባ ነጥቦች፦

ነ. የጥናቱ ርዕስ፦ በጋንዲ መታሰቢያ ሆስፒታል የሚገኙ የጤና ባለሙያዎች ላይ በሚደርስ በመርፌ ሹል መሳሪያወች እና የደም ንክኪ አደጋ እና ጉዳትን በተመለከተ ነው።

2. የጥናቱ አላማ፦

ሀ. የስራ ስፍራ ከአደጋ ነፃ እና ጤናማ እንዲሆን ይረዳል

ለ. ለጤና ባለሞያዎች ለተማሪዎች እና ለሌሎች የሆስፒታሉ ሰራተኞች እውቀትን ያዳብራል።

መጠይቁ የሚያካትተው ማህበራዊ እና ስነ ህዝባዊ ሁኔታ ፣ የሞያተኛው ባህሪ፣ የሞያተኛው ጥንቃቄ የመውሰድ ብቃት፣ የስራ አካባቢ ሁኔታ እና በተደጋጋሚ የሚከሰት የጉዳት አይነትን እንዲሁም በስራ ስፍራ በሚደርስ ጉዳት በሆስፒታሉ ሰራተኞች እና የተግባር ልምድ ሰልጣኞች ፣ ተማሪዎች ላይ የሚ ያመለክት ውይይት ይሆናል።

3. የተሳታፊነት ሂደት እና መመሪያ፦ ስም በጥናቱ ወቅት ላይ አይፃፍም።

4. የተሳታፊነት ጥቅምና ጉዳት፦

ሀ. ጥያቄዎን በመመለስዎ አለም አቀፍየጤና መጠበቂያ መርህ ለመጠቀምና ተግባራዊነቱን ለመጠበቅ ይረዳል። እንዲሁም የስራ ስፍራን ከጉዳት ነፃ እና ጤናማ እንዲሆን መሻሻልን ያመጣል። ተሳታፊ በመሆንዎ የሚጎዱት ነገር የለም። ካልዎት ጊዜዎን መጠቀም በስተቀር።

ለ. እንደ ጤና ባለሙያ እና እንደ ዜጋ የሙያ ሀላፊነትዎ መሰረት ጥናቱን ለመሳተፍ ፈቃደኛ እንዲሆኑ በማድረግ አገልግሎትን ጥራት ያለው እንዲሆን እና እራስዎን ከአደጋ እንዲጠብቁ ይረዳል።

ሐ. ጥናቱ በገንዘብም ሆነ ለሌሎች ጥቅማ ጥቅሞችን አይሰገኝም።

5. ተሳታፊያ ለመሆን መብት መረጃ:- ጥናቱ ላለመሳተፍ ጥያቄውን ላለመመለስ ሙሉ መብትዎ የተጠበቀ ነው::

   ጥያቄውን እየመለሱ በመሃሉ ማቋረጥ ወይም መተው ይችላሉ::

6. በተሳታፊነት ያልዎት መብት :- በዚህ ጥናት ሙሉ ተሳታፊ የመሆን መብትዎ ነው:: እንደ ጤና ባለሙያ የስራ ስፍራ አመቺ በሆነ ቦታ እንዳሉ ሊያስገነዝብበ ጥናቱ ውጤት ተጠቃሚ ያደርግዎታል::

   እባክዎ ጥያቄ ካለ ኤደን ግርማዬን በ0916823476 ማግኘት ይችላሉ:: እንዲሁም ኢሜል Email:adengirmaye@gmail.com. ለማንኛውም ገለፃ በሙሉ ነፃነት በአዲስአበባ ዩኒቨርስቲ የጤና ሳይንስ ኮሌጅ የጥናት ቦርድ ኢንስትትዩሽን በስልክ ቁጥር 0115538737 በመደወል ማ ቅረብ ይቻላል::

7. የተሳትፎ ስምምነት:- እሺ------ እንቢ------- ፊርማ----------ቀን ------

Annex V Amharic Version Informed Consent

የስምምት ቅፅ /ፎርም/

ይህን የስምምነት መጠይቅ ስፈርም የጥናቱ ርዕስ በአዲስአበባ ጋንዲ ሆስፒታል የሚሰሩ የጤና ባለሙያዎች /ሰራተኛም ሆነ ተማሪ/ በስራ ስፍራ ሊደርስ የሚችል ጉዳትን በተመለከተ የሚያጠነጥው ስለ ጥናቱ አላማ የተገለፀልኝ ሲሆን የጤና ባለሙያዎች ለመርፌ የደም ፍንጣሪ ጉዳት የጋለጡትን ብዛትና ለጉዳቱ የሚ ያጋልጣቸው ሁኔታዎችን ለማጥናት ነው። ጥናቱ ለመሳተፍ በፈቃደኝነት መሆኑም ተገልጦልኛል። ጥያቄዎን መመለስ መተው ወይም ማቋረጥ እንደሚ ቻል ተነግሮኛል።

በተጨ ማሪም ጥናቱን በመሳተፍም ሆነ ባለመሳተፍ በስራዎ ሆነ በትምህርቴ ላይ ምን ምጉዳት እንደማያመጣ ና በስራዬም ላይ ተጽኖ እንደሌለው ተገልጦልኛል። ጥናቱን በመሳተፎ የገንዘብ ጥቅም እንደሌለው ተነግሮኛል። የጥናቱም የስራ ስፍራን ከአደጋ ነፃ ናጤ ናማ እንዲሁም ህብረተሰቡን ከቀጥተኛ ና ቀጥተኛ ካልሆነ ንክኪ ለመታደግ እንደሚረዳ ተነግሮኛል።

የጥናቱ ውጤት ህትመት እንደ ጤና የሆስፒታል ሰራተኛ ባለሙያው ጥቅም እንደሚ ሰጠኝና ለራሴ ለስራ ስፍራ ለህብረተሰብ ጠ ቀሜ ታ ላውለው እንደምችል ተነግሮኛል።ስለ ጥናቱ ለመጠየቅ ኤደን ግርማዬን በ0916823476 ማግኘት እንደም ችል ተነግሮኛል።

የታስትፎ ስምምነት እሺ ---------- እንቢ----------

ፊርማ ---------- ቀን----------

Annex VI Amharic Version Questionnaire

ይህ መጠይቅ የተሰናዳው በስራ ገበታ ላይ ሊገጥም የሚችል ጉዳትን ለማጥናት ሲሆን በአዲስ አበባ ጋንዲ መታሰቢያ ሆስፒታል ብቻ ያካትታል።

መግቢያ

ይህ መጠይቅ የተዘጋጀው የድህረ ምረቃ ጥናትን ለማካሄድ በአዲስ አበባ ዩኒቨርስቲ የጤና ሳይን ስኮሌጅ አጠቃላይ ነርስ ትምህርትቤት ትብብር ነው።

የተወደዳችሁ የሆስፒታሉ ሰራተኞች

እኔ ነርስ እና በድህረ-ምረቃ ፕሮግራም የመጨረሻ አመት ተማሪ ስሆን በዚህ መጠይቅ እናንተን ልጠይቅ የምፈልገው በስራ ገበታችሁ ላይ ለበሽተኛው እንክብካቤ ስታደርጉ እና የተገለገላችሁበትን መሳሪያዎች ለቀጣዩ አገልግሎት ስታጥቡና ስታዘጋጁ እንዲሁም በሆስፒታሉ የጽዳት አገልግሎት ስትሰጡ ባለፉት 12 ወራቶች ያጋጠማችሁን ጉዳት በጥናት ለማካተት ነው።

ጥያቄውን ላለመመለስ መብትዎ ነው። ሆኖም ግን እርስዎ ጥያቄውን በመመለስዎ ጥናቱ በጥሩ ሁኔታ እንዲካሄ ድይጠቅማል። እንዲሁም የስራ ስፍራ ማሻሻል አስተዋፅኦ አለው። የጤና ባለሙያው ጤናማ እና ከአደጋ ነፃ የሆነ የስራ ስፍራ እንዲኖረው ያደርጋል።

የፈቃደኝት ማረጋገጫ ፎርም

ከላይየ ተፃፈውን መግለጫ አንብቤ የጥናቱን ጠቀሜታ ተረድቻለሁ። ስለዚህ የጥናቱ ተሳታፉ በመሆን በሙሉ ፍቃደኝነት ለመመለስ ትብብር አደርጋለሁ።

የስራ ድርሻ /ሙያ /----------

መጠይቁን የሚሰበስበው ስም---------- ፊርማ ----------

የተቆጣጣሪው ስም ---------- ፊርማ ----------

ጥያቄውን ሲመልሱ በተሰጠው ባዶ መስመር ላይ ያክብቡ

ለምሳሌ / መልሱ አዎ ቢሆን (1) አዎን 2. አይደለም

መልሱአዎ አይደለም ቢሆን 1. አዎን (2.) አይደለም

ክፍል አንድ የማህበራዊ እና የስነ ህዝባዊ መጠይቆች

ጥያቄ	መልስ
1. ፆታ	1. ወንድ 2. ሴት
2. እድሜ	_____
3. የት/ትደረጃ	1. 1-8 2. 9-10 3. ዲፕሎማ 4. ዲግሪ 5. ከዚያ በላይ 6. ዩኒቨርስቲ ተማሪ
4. የስራ ድርሻ/ ሙ ያ	1. ነርስ 2. አዋላጅ ነርስ 3. ዶክተር 4. ላብራቶሪ ቴክኒሺያን 5. አንስቴቲክስ 6. ተማሪ 7. ፅዳት ሰራተኛ 8. ሌሎች
5. የስራ ዘመን	_____
6. የስራ ጊዜ	1. ≤ 40 ሰዓት 2. >40 ሰዓት

ክፍል ሁለት የአደጋው ክስተት መጠይቅ

1. ለአለፉት 12 ወራት በመርፌ ወይም በሹል ስለታማ መሳሪያዎች ተነድተው ነበር?

   1.አዎ 2.አይደለም

2. መልስዎ አዎ ከሆነ ስንት ጊዜ በመርፌ ወይም በስለታም መሳሪያ ተወግተዋል?
   1. አንድ ጊዜ
   2. ሁለት ጊዜ
   3. ሶስትና ከሶስት በላይ
   4. አላስታውስም

3. አደጋ ያመጣው መሳሪያው ምን ይመስል ነበር?

   1. መርፌ
   2. ሹል መሳሪያ
   3. የቀዶ ጥገና መሳሪያዎች
   4. ብርጭቆ

4. በየትኛው የስራ መደብ ኖት

   1. በቀን 2. በማታ

5. አደጋው የደረሰው የት ነበር ?
   1. ድንገተኛ ክፍል
   2. ተመላላሽ ክፍል
   3. ቀዶ ጥገና ክፍል
   4. ላብራቶሪ
   5. የተለያየ አገልግሎት መስጫ ክፍል (ላውንደሪ፣ፀረ ጀርም)
   6. የታካሚ መቆያ
   7. የምጥና ማዋለጃ ክፍል

6. የስራ ክፍሉ ምን ይመስል ነበር?
   1. በቂ መብራት ነበረው
   2. በቂ መብራት አልነበረውም
   3. ጫ ጫ ታማ
   4. የክፍሉ የሙ ቀት መጠ ን ተስማሚ ነበር

7. አደጋው የደረሰው እንዴት ነው?
   1. በሽተኛው ሲንቀሳቀስ
   2. ሹል መሳሪያውን ሳቀብል
   3. መገልገያ መሳሪያዎችን ሲሰበስብ
   8. ሹል መሳሪያዎችን ለሚቀጥለው አገልግሎት ሳዘጋጅ
   9. መርፌው ክፍት በሆነ መጣያ ሳጥን ውስጥ ነበር
   10. ቆሻሻ መጣያ ውስጥ ስጥል

4. በሽተኛ የተገለገለበትን መርፌ ሲከድን
5. መ ርፌውን ሲነቅል
6. የሰውነት ፈሳሽ ደም ናሙና ለመውሰድ
7. ብርጭቆ የደምና ፈሳሽ ነገር ለመያዝ
11. መርፌ ለመወጋት (በደምስር፣ከቆዳስር)
12. ለመስፋት
13. ለመቁረጥ

8. የአደጋው ሁኔታ

    1. ከቆዳላይ (ጨ ረፍታ፣ደም አልደማም ነበር)
    2. ከቆዳ ስር (በመ ጠ ኑ፣ደም ደምቶ ነበር)
    3. ከቆዳ ስር (ብዙ ደም ፈሶ ነበር)

9. ላለፉት 12 ወራት ድንገተኛ የሆነ የደምና ደም ነክ ፈሳሽ ተጋልጠው ነበር?

    1. አዎ 2. አይደለም

10. ያከናወኑት የነበረው ተግባር ምን ነበር?

    1. መ ርፌ በሚሰጥበት ጊዜ በክንድ ወይም በደም ስር
    2. የደም ጉልኮስ ናሙና በሚወሰድበት ጊዜ
    3. የደም ናሙና በሚ ወሰድበት ጊዜ
    4. ማህፀን በመርመ ር
    5. በማወለድ ጊዜ
    6. ደም በሚ ቀዳ እና ደም ከተሰጠ በኋላ መ ርፌው በሚ ነቀልበት ጊዜ
    7. አገልግሎት የሰጡ መሳሪያዎችን በሚ ታጠቡበት ጊዜ
    8. ቆሻሻ በማጠራቀም ጊዜ

11. ከደረሰብዎ የትኛው የሰውነት ክልል ነው የተጎዳው?

    1. አይን
    2. ፊት
    3. አፍ
    4. አንገትና ደረት
    5. እጅና እግር

12. መ ከላከያ መ ሳሪያዎችን በግሎ ይጠቀማሉ?

    1. አዎ 2. አይደለም

13. የላይኛው ጥያቄ መልሶ አዎ ከሆነ ምን አይነት መሳሪያዎች ናቸው?

    1. ድርብ ጓንት
    2. አንድ ጓንት
    3. አይንና የሚሸፍን
    4. ፊት የሚሸፍን

5. ሙ ሉ ሰውነትን የሚ ሸፍን ላስቲክ

14. ከአደጋው በኋላ በቅ ህክምና አግኝተው ነበር?

6. አዎ 2. አይደለም

15. መ/ቤታችሁ በስራወቅት ከበሽተኛ ወደ ጤና ባለሙያ ለሚመጣ የደም እና የሰውነት ፈሳሽ ንክኪ ሪፖርት ማድረጊያ ቅፅ አለው ?

1. አዎ 2. የለውም

16. በደም እና የሰውነት ፈሳሽ አደጋ ሲደርስብዎ ሪፖርት አድርገው ያውቃሉ

1. አዎ 2. አይደለም

17. መ/ቤቱ ጥንቃቄ የመውሰድ ቅፅ አለው ?

1. አዎ 2.አይደለም

18. የጥንቃቄ መውሰጃ መመሪያን ተከትለዋል?

1. አዎ 2. አይደለም

19. የሔ ፓይተስ ቢ ቫይረስ ቅድመ ክትባት ወስደሀል/ሻል

1. አዎ 2. አልወሰድኩም

20. መ/ቤቱ ጥንቃቄ የመ ው ሰድ ትምህርት ይሰጣል?

2. አዎ 2. አይደለም

ሰለ ትብብሮ እናመሰግናለን!!

Annex VII Signed Declaration

I the undersigned declare that this thesis is my original work and has not been presented in this or any other University or will not be presented for a similar degree award and all sources of materials used for this thesis have been fully acknowledged.

Name: Eden Girmaye Tefera (BScN, MSN Candidates)

Signature: _____

Date of submission_____

This thesis has been submitted for examination with my advisor approval

Name of the advisor: Asrat Demisse (RN, BScN, MScN, Assit. Professor)

Signature: _____

Date _____

Annex VIII Ethical clearance

Eden Girmaye

ANNEX 2
Form AAUMF 02-008

Assessment Report

Review Date (D/M/Y):**...20 March 2015.....** Protocol number.....

Protocol Title : Assessment of percutaneous exposure incidents and associated factors among health care personnel in Ghandi Memorial Hospital		
Elements Reviewed (AAUMF 01-008)	☐ Attached	☐ Not attached
Review of Revised Application ☐ Yes ☐ No	Date of Previous review:	
DECISION :	☒ Approved ☐ Approved with Recommendation ☐ Resubmission ☐ Disapproved	
Comment:	The proposal satisfies most requirements for developing such materials	
Signature :	Basie Mekonnen	Date: 20 March 21, 2015

ADDIS ABABA UNIVERSITY

Annex IX Permission from the institution authorities

Reference AA,H/5911/227
Date 23/4/2015

To GHANDI MEMORIAL HOSPITAL
Addis Ababa

Subject: Request to access Health Facilities to conduct approved research

This letter is to support EDEN GIRMAYE to conduct research, which is entitled as "ASSESMENT OF PRECUTANIOUS EXPOSURE INCIDENTS AND ASSOCIATED FACTORS AMONG HEALTH CARE PERSONNEL IN GHANDI MEMORIAL HOSPITAL, ADDIS ABABA ". The study proposal was duly reviewed and approved by Addis Ababa Health Bureau IRB, and the principal investigator is informed with a copy of this letter to report any changes in the study procedures and submit an activity progress report to the Ethical Committee as required.

Therefore we request the mentioned HOSPITAL and staffs to provide support to the Principal investigator.

The Addis Ababa City Administration Health Bureau

With Regards
Eyobed Kaleb
Ethical Clearance committee

Cc EDEN GIRMAYE
Addis Ababa
To Ethical Clearance Committee
Addis Ababa

Dr Dereje Gizaw
Gynecologist & Obstetrician