ADDIS ABABA UNIVERSITY COLLEGE OF HEALTHSCIENCE

SCHOOL OF NURSING AND MIDWIFERY

POSTGRADUATE PROGRAM

PREVALENCE OF OCCUPATIONAL EXPOSURE TO HIV AND UTILIZATION OF HIV POST EXPOSURE PROPHYLAXIS AMONG NURSES AT TIKUR ANBESSA SPECIALIZED HOSPITAL ADDIS ABABA ETHIOPIA, 2019.

BY: SHIFERAW GELCHU

ADVISORS: Dr. AMSALE CHERIE (PhD, Associate Professor)

Sr. NETE T (Bsc N, Msc N)

RESEARCH PROPOSAL SUBMITTED TO THE NURSING DEPARTMENT, SCHOOL OF NURSING AND MIDWIFERY, COLLEGE OF HEALTH SCIENCES, ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE MASTER OF SCIENCE IN ADULT HEALTH NURSING.

JANUARY, 2019

ADDIS ABABA, ETHIOPIA

ACHNOWLEDGEMENT

First, I would like to lhanks to almighty God to encourage me throughout the course this thesis process starting from the initial development of proposal to final thesis.

Secondly, I would like to thanks Addis Ababa University, College of Health Science, School of Nursing and Midwifery for giving chance doing the thesis.

Thirdly, thanks to My Advisors: Dr. Amsale Cheri and Sr. Nete Towfek for gave their invaluable comments and concerns from the very inception of the proposal till end.

In addition, my special thanks go to Tikur Anbessa Specialized Hospital human resource director and Matron Nurse for giving me necessary information and study participants.

Lastly, a great deal of gratitude goes to AAU library workers and my friends for their contribution.

ABBREVIATIONS

AAU	Addis Ababa University
AIDS	Acquired immune deficiency syndrome
AOR	Adjusted odd ratio
CI	Confidence interval
COR	Crude odd ratio
HCW	Health Care Workers
HIV	Human Immunodeficiency Virus
ILO	International labour organization
IRB	Institutional Review Board
NIS	Needle stick Injury
PEP	Post Exposure Prophylaxis
PPE	Personal Protective Equipment
SPSS	Statically package for social science
TASH	Tikur Anbessa specialized hospital
TB	Tuberculosis
WHO	World Health Organization

TABLE OF CONTENTS

LIST OF TABLE

LIST OF FIGURE

SUMMARY

Back Ground of the Study: - Occupational acquisition of HIV and low utilization of post exposure prophylaxis among nurses is becoming a global public health concern. Within health sector HIV post exposure prophylaxis should be provided as part of comprehensive universal precaution package that reduces exposure to infectious hazard occurred at work place.

Objective: - To assess the prevalence of occupational exposure to HIV and utilization of HIV post exposure prophylaxis among Nurses at Tikur Anbessa Specialized Hospital Addis Ababa Ethiopia, 2019

Methods and materials: Institutional based cross-sectional study design was employed from March 01 –April 01/2019. The data was collected using pre tested self administered questionnaire. From 751 nurses currently working at Tikur Anbessa Specialized Hospital, 218 were selected using stratified random sampling technique. Epidata version 4.4.3.1 and SPSS version 20 were used in this study for data entry and analysis. Descriptive statistics and Logistic regression was used to analyze the data and Odds Ratio was used to check association, P< 0.05 was considered significant and 95 % confidence interval was used.

Result: The Findings of this study indicated that 128 (61.5%) respondents had Occupational exposure to HIV. About 40.6%, 39.1% participants experienced blood splash and needle stick injury. Giving injection 36 (28.1) and uncooperativeness of the patients 26 (20.3%) were among the common activities that put nurses on exposure to HIV. Study participants that had no training on infection prevention were 3 times more exposed than that had training on infection prevention (P=0.038, AOR= 3.29795% CI= 1.066-10.199) and participants working at night shift were 6 time more exposed (P=0.008, AOR= 6.395, 95% CI=1.606-25.471). Of all exposed, 32(25%) started HIV-PEP. From those started HIV-PEP 8 (25%) did not complete PEP medication and the main reason for discontinuation of the PEP was fear of drug adverse effect. The mean time to initiate the first PEP drug after exposure was 8.88± 7.97 SD.

Conclusion: Occupational exposure to HIV among nurses is high and utilization of HIV post exposure prophylaxis is low. Therefore, providing training for all nurses on infection prevention, including PEP is recommended to lower the occupational exposure and to enhance the use of PEP.

Key Words: Occupational exposures, Post exposure prophylaxis, Nurses and Addis Ababa

CHAPTER ONE: - INTRODUCTION

1.1 Back Ground of the Study

Occupational exposure to HIV is defined as skin, eye, mucous membrane, or parenteral contact with blood, bodily fluids, or other potentially infectious material that may result from the performance of one's professional duties (1). According to International labour organization estimates, 2.02 million people die each year from work-related accidents or diseases. More than 317 million people suffer from work-related diseases, and there are an estimated 337 million fatal and non-fatal work-related accidents per year (2). WHO report indicates, more than 59 million workers employed in Health care facilities around the world are exposed to a complex work related biological hazards such as Tuberculosis (T B), Hepatitis virus and Human Immunodeficiency Virus (HIV) infection every day (3). Particularly, they are at risk of dangerous blood borne pathogen like Human Immunodeficiency Virus, Hepatitis B and C Virus (4). WHO report on global burden of disease from sharps injuries to health-care workers shows that 37% of hepatitis B virus infection among health workers was the result of occupational exposure and around 10% of HIV among health workers is the result of an exposure to needle stick injuries (3).

Nurses are exposed to numerous work related injuries because of the nature of the working environment and their duties and responsibilities that put them in frontline of occupational exposures (5). Nurses are at most risk of needle-stick incidents than other health care workers (6). As a result, they are easily exposed to communicable diseases including dangerous blood borne pathogens which is transmitted via needle stick injury, blood and body fluid splash. Study conducted in Iran shows that the prevalence of exposure to work place hazard among nursing and midwife were 308 (50.7%) and another study conducted in Serbia also revealed that the highest prevalence (68.6%) of work related accidents was among nurses (7,8).

In sub-Saharan Africa, the prevalence of occupational exposures was also high. Study conducted in Tanzania, In Kenya and Ethiopia revealed that the prevalence of occupational exposures to HIV were 50.6%, 50% and 78.3% respectively (9,10,11).

Among sub-Saharan Africa, the prevalence of occupational exposure is higher in Ethiopia, where there is also higher prevalence of HIV infection (11,12,13).

HIV post exposure prophylaxis (PEP) is short term use of antiretroviral drugs to reduce the likelihood of HIV infection after potential exposure either occupational or through sexual intercourse. Within health sector HIV post exposure prophylaxis should be provided as part of comprehensive universal precaution package (14). The use of HIV PEP brings significant efficacy by preventing HIV sero-conversion. Studies done on animals shows risk of sero-conversion among animals exposed to PEP were lowered by 89% (15). Immediate uses of HIV post exposure prophylaxis reduces occurrence HIV infection by 80% (16).

Despite an increased occupational hazard in health care setting, there is low practice against HIV risk condition including low utilization of HIV post exposure prophylaxis among nurses. Study conducted in Cameron revealed that from 67.5% of those exposed to work related health hazards, only 18.9% received PEP and 50% of them started after 24 hours. (17).

1.2 Statement of the Problem

Globally, since the beginning of the epidemic more than 70 million (13%) of the world population have been infected with HIV (18). Among the infected people, Sub-Saharan Africa share 70% (19). Following its official discovery in 1984, HIV/AIDS has seen a rapidly spread all over Ethiopia (20). But the prevalence of HIV is varies across the Ethiopian regions. HIV prevalence is higher in Gambela (4.8%), Addis Ababa (3.4%), Dire Dawa (2.5%), and Harari (2.4%) (13).

Occupational acquisition of HIV is becoming a common problem. Risk of HIV infection after a needle stick or cut exposure to HIV-infected blood is estimated to be 0.3% (3 in 1000). The risk of HIV infection after exposure of mucous membranes to HIV-infected blood is estimated to be 0.1% (1 in 1000). However, risk could vary depending on severity of injury and viral load in the source patient (16). WHO report of 2009 showed that around 10% of HIV infection among health care workers resulted from occupational injuries (3). In United States during 1985–2013, among 58 confirmed and 150 possible cases of occupationally acquired HIV infection reported among healthcare workers, the highest number were nurses which were 24(41.4%) confirmed and 37(24.7%) possible cases (21).

In Ethiopia there is higher prevalence of occupational exposures among health professionals. An institution-based study conducted among 318 nurses working in Jima zone public hospitals indicated that the overall prevalence of blood/body fluid exposure and needle stick/sharp injury was found to be 249 (78.3%) (11). Nurses are prone to occupational exposure because of their duties, responsibilities and nature of their working environment (5,11).

There are several factors that put health care workers at risk of occupational exposure to HIV. These are socio demographic, institutional and behavioral factors (7-11,22). Once an individual is exposed to HIV infection either due to occupational or non occupational exposure, the only possible solution is the use of HIV post exposure prophylaxis (14,23-25).

Study findings indicated that there are several practices that enhance exposure to HIV at work place among health care workers including nurses. These practices are lack of reporting hazards,

late initiation of PEP, incompleteness of PEP medication and no use of HIV PEP (10, 17, 28, 30, 35).

Cross sectional survey conducted in Cameron shows that among 54 (67.5%) exposed nurses, only 18.9% received PEP and 50% of them start after 24 hours (17).

Another cross sectional study conducted in Uganda indicated that among exposed to occupational injuries 100 participants, (55.0%) not seek any services after exposure and only 15(15%) utilized HIV PEP (30). Survey carried out in Nigeria revealed that among health care workers exposed to HIV risk condition, majority of them 62% not report the incident (28). Cross sectional study done in Gondar suggested that among 66 (33.8%) exposed 25.7 % not use PEP and 10(20.4%) not completed the medication (35)

Over all occupational exposure to HIV is becoming common among health care workers mainly among Nurses. Thus, the aim of this institutional based cross-sectional study design was to assess the magnitude of occupational injuries related to HIV and to determine level of utilization of PEP among nurses at Tikur Anbessa specialized hospital.

2.3 Significance of the Study

Occupational transmission of HIV is non reversible, fatal biological health hazards, yet it was not an issue of concern. For this reason, the magnitude of the problem is becoming high and there is low utilization of HIV post exposure prophylaxisis in Ethiopia. Thus, this study was designed to assess the magnitude of occupational exposure and to determine the level of utilization of HIV post exposure prophylaxisis among nurses at Tikur Anbessa Specialized Hospital.

- The results of the study provide valuable information for policy makers, for the programs designers and all concerned bodies to develop intervention capable of addressing the problem such as providing training on;

  -Infection prevention and

  - Uses of HIV post exposure prophylaxisis.

- The findings of this study also help nurses to take corrective measures towards the problems like;

  -Proper procedural practices following procedural protocol.

  -Immediate reporting of the hazards and

  -Early initiation of HIV post exposure prophylaxisis.

- It helps as a baseline data for other researchers.

- Finally, this study expands literature and builds existing knowledge regarding occupational exposure to HIV in health care setting and utilization of PEP.

CHAPTER TWO: LITERATURE REVIEW

Occupational exposure is one of the major risk factor for transmission of HIV among health care workers at work place. The problem is higher among nurses due to their duty and responsibility but there is low Utilization HIV PEP among health care workers in general (3,5,17).

HIV/AIDS is a worldwide pandemic. Since the beginning of the epidemic, more than 70 million people have been infected with the HIV and about 35 million people have died of HIV. Globally, 36.9 million (31.1–43.9 million) people were living with HIV at the end of 2017. An estimated 0.8% (0.6-0.9%) of adults aged 15–49 years worldwide are living with HIV, although the burden of the epidemic continues to vary considerably between countries and regions. As WHO report of 2015 indicated that, African region remain most severely affected, with nearly 1 in every 25 adults (4.1%) are living with HIV and accounting for nearly two-thirds of the people living with HIV worldwide (18).

Sharp injuries and blood/body fluid splash are means of HIV transmissions at work place. According to /WHO/ global burden of disease from sharps injuries to health-care workers show that around 10% of the HIV among health workers is the result of an exposure to needle stick injuries (3). Another report of Centers for Disease Control and Prevention of December 31, 2013, 58 confirmed occupational transmissions of HIV and 150 possible transmissions had been reported in the United States. Health care workers who are exposed to a needle stick involving HIV-infected blood at work have a 0.23-0.3% risk of becoming infected (16)(31). Splashes of infectious material to mucous membranes (e.g., conjunctivae or oral mucosa) or broken skin also may transmit HIV infection (estimated risk per exposure, 0.09-0.1%) (16,25).

HIV post exposure prophylaxis is short term use of antiretroviral drugs to reduce the likelihood of HIV infection after potential exposure either occupational or through sexual intercourse. Within health sector HIV post exposure prophylaxis should be provided as part of comprehensive universal precaution package that reduce staff exposure to infectious hazard at work (14).

2.1 Prevalence of Occupational Exposure

Occupational exposure to HIV is common among health care workers. Cross sectional study conducted in Three Teaching Hospitals, South east Iran show that totally 236 incidents of occupational exposure were registered during the study period. Nurses (82, 34.7%) were the most frequently exposed to blood and body fluids, followed by physicians (57, 24.2%). Two hundred and nineteen (92.8%) of the personnel sustained needle stick injuries, and 17 (7.2%) had splashes to mucus membranes (32). Another survey conducted in Serbia reveals those of the 983 participants, 291 (29.6%) HCWs had had at least one accident during the previous year. The highest prevalence (68.6%) of accidents was among nurses (8).

In Africa the situation is worst, Systematic review of relevant published article from 2000–2017 in 21 African country indicated, exposures to occupational injuries estimated that pooled lifetime prevalence of all types of exposure to blood and body fluids and of percutaneous injury was 65.1% (95% CI: 59.0–71.3) and 53.6% (95% CI: 47.3–60.0), respectively (33). Cross-sectional study done Among Health Workers in Two Tertiary Hospitals of Nigeria suggest that Out of 290 health workers studied, 75.8%, 44.7%, 32.9%, 33.9% and 84.4% had skin contact with patient's blood, needle stick injuries, cut by sharps, blood/body fluid splashes to mucous membranes and one or more type of exposures respectively. Ninety one percent, 86%, 71.1%, 87.6%, 81.3%, and 84.4% of house officers, resident doctors, consultant doctors, staff nurses, principal/chief nursing officers and laboratory scientists, respectively had one or more type of exposures in the previous year (34). Another study carried out among health-care workers at a tertiary care hospital in north-western Tanzania shows that Out of 436 HCWs who participated in this study, 212 (48.6%) reported incidents of NSIs and splash exposures within the previous 12 months. NSIs were reported by 65.1% (n= 138) and splash exposures by 27.4% (n = 58). Sixteen (7.5%) respondents had both NSIs and splash exposures. High rates of NSIs were observed among nurses (71.0%) (29). Survey conducted among health workers at teaching hospital in Nigeria suggest that the prevalence of NSIs 12 months preceding the study was 51.0% (50/98). Doctors 8/10 (80.0%) and nurses 28/40 (70.0%) had the highest occurrence. (28) Recent study done in Tanzania indicates out of the study participants 239, 121(50.6%) experienced occupational exposure. Two leading types of exposure were blood splash 57(47.1%) and needle stick injuries 45 (37.2%), respectively (9).

In Ethiopia the prevalence of occupational injuries is increasing. Cross-sectional study conducted in Gondar shows that from study participant, 66 (33.8%) had been exposed to blood, body fluids, needles or sharp objects once or more times while giving care for patients (35). Another study carried out among health Professionals of Governmental Health Institutions in Mekelle Town revealed that occupational exposure to blood, non bloody body fluids, needle stick injuries and mucocutaneous were 82.5%, 74.9%, 49.1% and 42.7% respectively (36). A descriptive cross-sectional institution based study was conducted in selected four health institutions in Debre Berhan town suggested that The overall prevalence of occupational exposure of the health care workers was found to be 88.6% . Contact to potentially infectious body fluids accounts for the largest proportion (56.7%) followed by needle stick injury (31.5%) (22). An institution-based census conducted among 318 nurses working in Jima zone public hospitals done show that the overall prevalence of blood/body fluid exposure and needle stick/sharp injury was found to be 249 (78.3%). Blood/body fluid exposure and needle stick/sharp injury incidents were reported by 62.6 and 58.8% of respondents, respectively (11) and in Hawassa, 46 % were exposed to percutaneous injuries in their professional life (38).

2.2 Factors Related To Occupational Exposure

There were several Factors that are related to Occupational exposure to HIV at health care setting. Those are Sociodemographic, Institutional and Behavioral factors. Cross-sectional study conducted among Health-Care Workers in Serbia indicates, the highest prevalence (68.6%) of accidents was among nurses ($p = 0.001$) and the injuries occurred more often in large clinical centers (81.1%; $p < 0.001$) and in the clinical ward, intensive care unit and operating theater ($p = 0.003$) than in other departments. Seventy-six (13.1%) nurses/medical technicians had an accident during needle recapping ($p < 0.001$) (8). Another cross-sectional survey done Among Healthcare Workers in Tehran, Iran shows that the lowest number of the injuries occurred in the start of working shift (7:00 am, 01:00 pm and 07:00 pm) and increased along the time, the greater number of the injuries occurred in the evening and night, and Most of the NSIs occurred through taking blood and injection 182 (29.9%) (7).

WHO/ systematic review and meta-analysis of 21 African Countries suggest that health-care workers who worked 40 hours or more per week were significantly more likely to be exposed than those who worked fewer hours (RR: 2.221; 95% CI: 1.001–4.926) and the risk of

occupational exposure among health-care workers without training was significantly higher than in trained staff (RR: 1.791, 95% CI: 1.234–2.071) (33).

Cross-sectional study design conducted on Needle-stick injuries and splash exposures among health-care workers at a tertiary care hospital in north-western Tanzania reveals, that healthcare workers aged ≤ 40 years; those with work experience of ≤ 5 years and those not trained on issues related to infection prevention and occupational risk reduction were more likely to be exposed to any type of occupational exposure. While male healthcare workers were less likely to be exposed to NSIs, female were more likely to encounter both NSIs and mucocutaneous splashes (29).

Another institution-based census was conducted among 318 nurses working in Public Hospitals of Southwest Ethiopia in Jima Zone shows that Majority of the hazards occurred during morning shift. Being male [AOR: 2.20, 95% confidence interval (CI): 1.09, 4.4]), and having no training on infection prevention (AOR: 5.99, 95% CI: 3.14, 11.41) were positively associated with blood/body fluid exposure and needle stick/sharp injury; while working in chronic illness follow-up clinic (AOR: 0.19, 95% CI: 0.05, 0.71) showed negative association at *p* value of 0.05 (11).

Non availability of personal protective equipment (PPE) was one of the risk factors that results occupational exposure to HIV among health care workers. Study done in Tamil Nadu among health care providers showed, reasons for inappropriate use of PPE was non availability PPE 562 (78%) (39).

2.3 Utilization of HIV Post Exposure Prophylaxis

Utilization of HIV post exposure prophylaxisis low among health care workers. even though, high prevalence of occupation injuries that put them on risk of HIV infection (3,17). Survey takes place in India showed that among 47 (21.4%) exposed to blood or body fluids or needle stick injuries, only 7 (14.9%) had taken PEP (40). . Other study carried out in India teaching hospital in Pune suggested that among 557 reported exposures, only 49.5% completed PEP (27). Another study conducted among health-care workers in a provincial hospital in Kenya shows, out of 305 reported exposure, only 20% (n=83) taking PEP against HIV (10). Cross-sectional study conducted among health-care workers at a tertiary care hospital in north-western Tanzania reveals that from 212 reported incidents of NSIs and splash exposures, only 16.7% of exposed HCWs received post-exposure prophylaxis for HIV (29). Study cared out in Cameroon regarding Occupational Post-Exposure Prophylaxis (PEP) use against Human Immunodeficiency Virus (HIV) Infection indicates that out of 54 experienced an exposure, ten (18.9%) received PEP and the 50% started after 24 hours (26). Recent study done among health care workers in Singida District Council of Tanzania shows that Among the 121 exposed participants, 83(68.6%) reported the exposure incident, 32 (26.4%), started HIV PEP after testing, 28 (23.1%), completed HIV PEP (9).

In Ethiopia uses of PEP low, study conducted among Health Professionals of Governmental Health Institutions in Mekelle Town, Northern Ethiopia declare that Among the exposed health professionals 19.6% use PEP (36) and another study done in Eastern Ethiopia,Hiwot fana hospital indicated 53(17.0%) individuals who had exposures for HIV risky conditions,15 (28.3%) of the exposed respondents did not take PEP (41).

2.4 Factors Related To Utilization of HIV Post Exposure Prophylaxis

As study findings indicates that there were many factors that affect utilization of HIV PEP among nurses. Sociodemographic factors, patient related factors, organizational and behavioral factors are related to utilization of HIV PEP.

Study conducted in Uganda reveled that among those exposed, 55(55.0%) stated that they had not sought advice about HIV PEP and the reasons they gave was not knowing where and whom to report to, not aware of HIV PEP program and did not want to take ARVs. Other barriers stated were difficulty in accessing ARV drugs, side effects and tolerability of ARV and unavailability

of PEP services at night, weekends and on public holiday and unclear protocol for accessing PEP services (30). Cross sectional study done in Tanzania showed that Being female (COR: 7.9, CI: 1.01-62.82), reporting exposures (COR: 21.4, CI: 4.66-98.30), and knowing HIV status of the source patient (COR: 4.08, CI: 1.41-13.24) were significantly associated with PEP use (6).Survey conducted in Gaborone suggested that 107(53.7%) participants had been exposed to HIV risky conditions and of exposed 27(25.2%) did not take PEP and from the respondents that took PEP, 21(26.6%) did not complete PEP, with 15(71.4%) quitting because of adverse side effects, 1(4.76%) assuming it was enough treatment and 1(4.76%) doubting drug efficacy (42). Another study carried out in Ethiopia Mekelle Town indicated, The main reasons for not using PEP was source patient HIV test result negative (65.5%), followed by negligence (25%). For those who started PEP, 5(83.3%) discontinue the PEP due to adverse effects of the drugs. Training of health professionals on PEP had statistically significant association with PEP utilization (AOR=2. 864, 95% CI=1. 152-7.122 (36).

Over all from the literature, it is concluded as high prevalence of occupational exposure to HIV and low utilization of PEP and also there are several factors that related to occupational exposures to HIV and utilization of HIV PEP among health care providers including nurses.

2.5 Conceptual Frame Work:

Conceptual framework is developed from different source (6-11, 17, 22,28, 33-34).The concepts are categorized into themes, socio demographic, institutional, Nurse and patient behavioral, Nurse and organizational, and patient related factors.

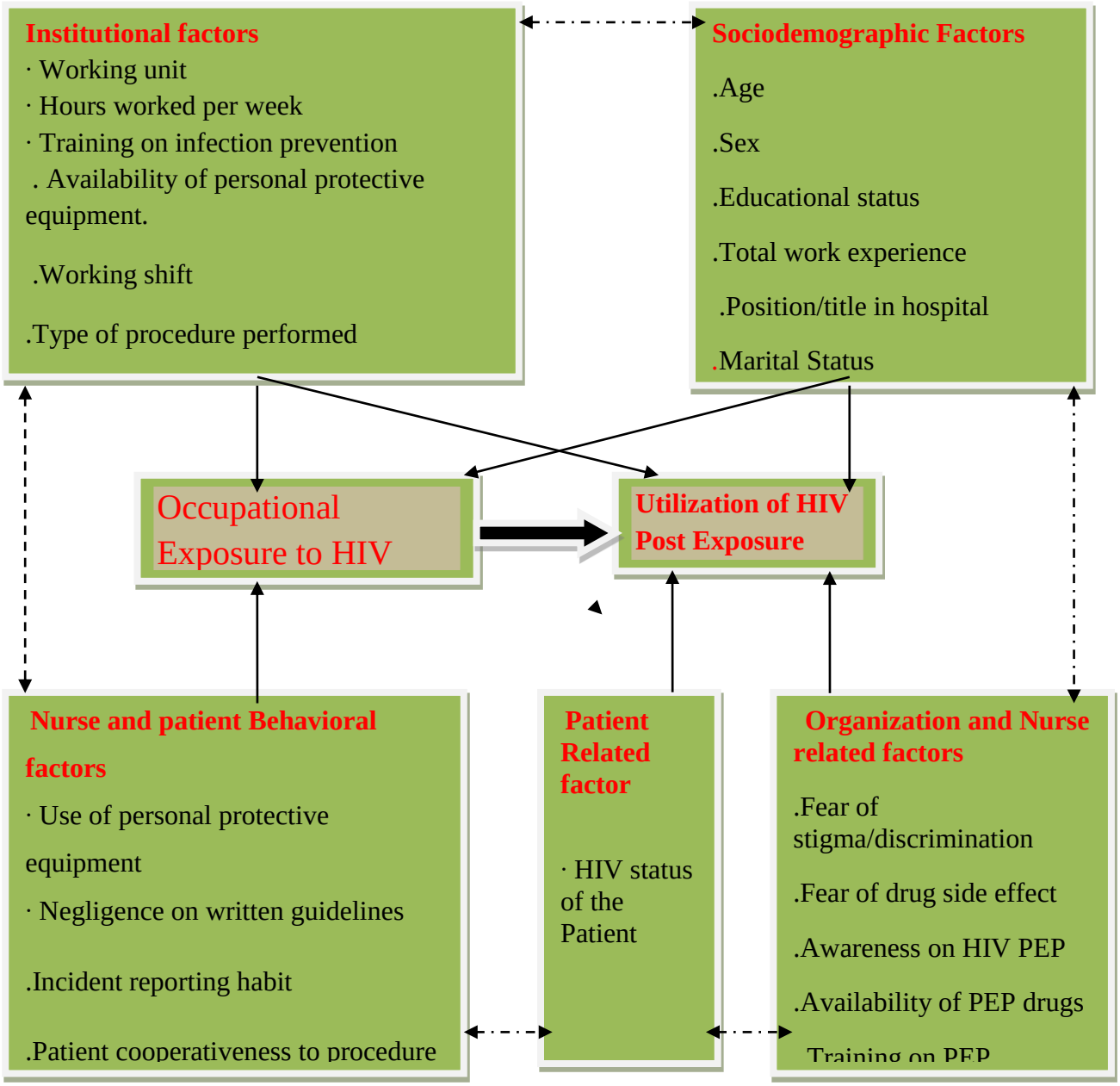


Figure 1: Schematic representation of Conceptual framework for study conducted at Tiqur Anbessa Specialized Hospital, 2019.

CHAPTER THREE: OBJECTIVES

3.1 General Objective

To assess the prevalence of occupational exposure to HIV and Utilization of HIV post exposure prophylaxis among Nurses at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2019.

3.2 Specific Objectives

1. To assess the prevalence of occupational exposure to HIV among Nurses at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2019.

2. To determine the magnitude of utilization of HIV post exposure prophylaxis among Nurses at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2019.

3. To identify factors associated with occupational exposure to HIV among Nurses at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2019.

4. To identify factors related with utilization of HIV post exposure prophylaxis among Nurses at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2019.

CHAPTER FOUR: METHODOLOGY

4.1. Study Area and Period

The study was conducted at Tikur Anbessa specialized hospital which is located in Addis Ababa the capital city of Ethiopia. Addis Ababa lies between 2,200 and 2,500 meters above sea level. The city lies at the foot of the 3,000 meters high Entoto Mountains. Despite its proximity to the equator, Addis Ababa enjoys a mild, Afro-Alpine temperate and warm temperate climate. The lowest and the highest annual average temperature is between 9.89- 24.64c^0. According to 2007 census, All Ethiopian ethnic groups are represented in Addis Ababa; the largest groups include the Amhara (67.04%), Oromo (19.00%), Gurage (16.34%), Tigrayan (5.18%), Silt'e (2.94%), and Gamo (1.68%).

TASH is the largest referral and teaching hospital which has 800 beds and sees approximately 370,000 – 400,000 patients a year. It has totally of 2920 Academic and hospital staff, of whom 267Medical Doctors, 210 Specialist and 43 Subspecialist. There are 811 Nurses with different level of qualification. Thus, 49 of them are Diploma, 31 nurse specialist degree, 621 Bsc and 50 Msc nurses currently working in BLSH of whom 60 are academic and 751 are Hospital staff (37).

The study was conducted from February 01 to March 30/2019.

4.2 Study Design: Institution based cross-sectional study design was employed.

4.3 Population

4.3.1 Source Population:- All Nurses working Addis Ababa public Hospital.

4.3.2 Study Population:-All hospital nurses working at Tikur Anbessa Specialized Hospital.

4.3.3 Inclusion Criteria:-All Nurses working at Tikur Anbessa Specialized Hospital (hospital staff nurses).

4.3.4 Exclusion Criteria: - Nurses on annual vacations, sick leave, delivery vacation and academic staff nurses.

4.4 Sampling Methods

4.4.1 Sample Size Determination:-Sample size was determined using standard formula for single population proportion based on the following assumptions**.**

$$n = \frac{z\left(\frac{\alpha}{2}\right)2 * P(1-p)}{d^2}$$

Where;

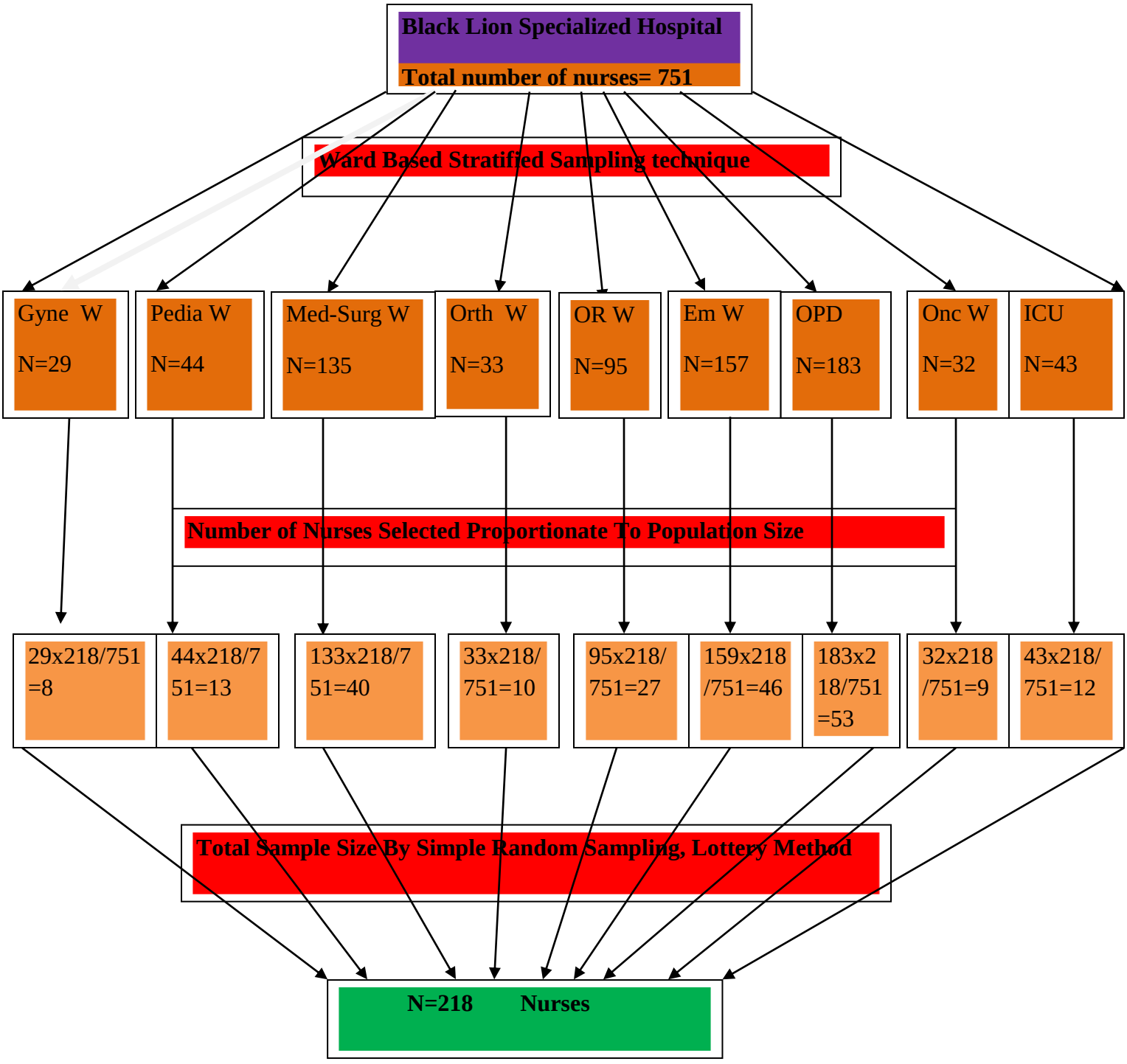
- **n= the desirable calculated sample size**
- **Z (a/2) =1.96 (95% confidence level of the survey)**
- **P = prevalence of occupational injuries from survey among nurses in Jima public hospital (78.3%)**
- **d = degree error tolerated (5%)**

From Formula, no= $(1.96)^2$ (0.783)(0.217) =261 since study population less than 10.000, we need correction formula to get final sample size

$$nf = \frac{n}{1 + n/N}$$

- ❑ We get **198** and after adding **10%** of non respondent, final sample size = **218**

4.4.2 Sampling Technique:- Stratified random sampling technique used; nurses are stratified into nine (9) strata. Then by proportionate to size of population, number of nurses selected from each stratum was determined. Finally, using simple random sampling method, the required numbers of nurses were selected from each stratum.



Figure, 2 Schematic Representation of Sampling Procedure for study conducted at Tiqur Anbessa Specialized Hospital Addis Ababa Ethiopia, 2019

4.5 Operational Definition

Occupational Exposure to HIV: - The nurses who were exposed to needle stick cut, blood or other body fluids splash occur at work place during performing procedures.

Post Exposure Prophylaxisis Use: - is the timely provision of ARV medication following an exposure to potentially infected blood or other body fluids in order to minimize the risk of acquiring infection; The drugs should be provided within 72 hours, daily for 28 days; recommended drugs for low risk HIV exposures are a combination of Tenofovir (TDF) + Lamivudine(3TC) or Zidovudine (AZT) +Lamivudine(3TC) while for high risk exposures triple therapy should be used i.e.Tenofovir (TDF)/ Zidovudine (AZT) +Lamivudine (3TC) and Efavirenz (EFV).

Body Fluid:-Body fluid includes; Amniotic fluid, Cerebrospinal fluid, Exudative or other tissue fluid from burns or skin lesions, Human breast milk, Pericardial fluid, Peritoneal fluid, Pleural fluid, Saliva during dental procedures, Synovial fluid, Semen and Vaginal secretions.

4.6 Study Variable

4.6.1 Dependent Variable: - The dependant variable included in the study were:

-Exposure to Occupational hazard related to HIV and Utilization of PEP

4.6.2 Independent Variables: **-** The independent variable will be included in the study were;

Sociodemographic factors: age, sex, educational status, marital status, work experience and position/title in hospital

Organizational Factors: working unit**,** working hours per week, training on infection prevention, availability of PPE, working shift and type of procedure performed.

Nurse and patient Behavioral factors: use of personal protective equipment, negligence on written guidelines, incident reporting habit and patient cooperativeness to procedure.

Organization and Nurse related factors: fear of stigma/discrimination, fear of drug side effect, awareness on HIV PEP, availability of PEP drugs and training on PEP.

Patient factor: - HIV status of source

4.7 Data Collection Tools and Technique

The data collection instrument was adopted by reviewing relevant articles that able to gather required information from nurses (8-11, 22, 26-28, 35, 36). The date was collected using pretested, semi structured self administered questionnaires. The questionnaire has three parts; part one: Sociodemographic characteristics of the nurses, part two: Prevalence of occupational exposure and part three: Utilization of HIV-PEP medications. It is prepared in English language and was reviewed by language expert. Four Bsc nurses for data collection and two Msc nurses for supervision of the data collection were recruited in this study. The study assistants were trained for one day intensively on the study instrument and data collection procedure that includes the relevance of the study, objective of the study, confidentiality of the information and informed consent. Before data collection all study subjects were well informed about the objective of the study, importance, consequences of the study and confidentiality of the collected data.

During data collection each respondent invited to participate in the study voluntarily and also be able to stop participation when necessary. The questionnaire was distributed and they were asked to return the filled questionnaire to data collectors within 24 to 48 hours. The supervisors were check questionnaires daily during the study period.

4.8 Quality Control Measures: The quality of the data was assured by using standard, pre-tested questionnaires and proper data collection procedure. Prior to the actual data collection, pre-testing was done on 5% of the total study subjects at Yekatit 12 Hospital which was not included in the actual study and based on the findings necessary amendments were made regarding it`s consistency, clarity and logical adequacy. The data collectors were work under close supervision of the supervisors to ensure adherence to correct data collection procedures, supervisors and investigator reviews the filled questionnaires at the end of data collection every day for completeness. And every morning the principal investigators and data collectors were conduct morning session to solve faced problem and took corrective measures accordingly. Moreover, the data was carefully entered and cleaned before the beginning of the analysis.

4.9 Data Processing and Analysis

The data was coded, checked for error, missing value must dealt with and cleaned data(edited) will be entered into Epi-Data version 4.4.3.1 and exported to SPSS Statistics Version 20 for analysis.

The results of descriptive statics were summarized and presented by tables, charts and graphs. Percentage, frequency and mean will be calculated. Bivariate logistic regression analysis was done to check association between variables and to obtain odd ratio and confidence interval (OR, CI). Then variable that have association at $p< 0.05$ were entered in to multivariate logistic regression analysis to control cofounders and obtain adjust odds ratio. Statically significance declared at $p < 0.05$ and 95% confidence intervals

4.10 Ethical Consideration

Ethical clearance obtained from Addis Ababa University, College of Health Science School of Nursing and Midwifery Institutional Review Board (IRB). Permission from respective authorities and verbal consent of respondents' was secured by explaining the objective of the study before the data collection. To get full co-operation, respondents' were reassured about the confidentiality of their response. They were also be ensured their voluntarily participation and right to take part or terminate at any time they wanted. The research assistants were trained by the principal investigators on how to keep the confidentiality and anonymity of the responses of the respondents in all aspect.

4.11 Dissemination of the Findings

The finding of the study will be disseminated to all relevant stakeholders through presentation and publication on peer reviewed scientific journal after final defense.

The copy of result will be given to nurse matron and clinical service director office for urgent utilization of results and to benefit the study participants.

5. Results:

5.1 Socio-demographic Variable of Nurses working at TASH, 2019

The study was conducted among 218 nurses with a response rate of 208 (95.4 %). Majority of (59.6 %) the participants were female. The age of study participants ranged from 22 to 57 with 28 median age. About 118 (56.7%) were single in marital status and all most all 195 (93.8%) were staff nurses. In addition 172 (82.7%) were Bsc degree holder. With regard to the departments they are working 52 (25%), 40 (19.2%) and 40 (19.2%) of nurses were working in outpatient department, medical-surgical and emergency wards respectively. The average service year of respondent was 5.44± 5.29 SD.

Table1: **Socio-demographic Variables of the study Subject working at TASH, 2019 (n=208)**

Variable	**Response**	**Frequency (N)**	**Percent (%)**
Sex	Male	84	40.4
	Female	124	59.6
Age	≤ 30	155	74.5
	31-40	41	19.7
	>40	12	5.8
Marital Status	Single	118	56.7
	Married	90	43.3
Title in the hospital	Staff nurse	195	93.8
	Head nurse	13	6.3
Education level	Diploma	11	5.3
	Bsc Degree	172	82.7
	Master Degree	25	12
Working Ward	Pediatric ward	13	6.3
	Medical-surgical ward	40	19.2
	Gynecology ward	8	3.8
	Orthopedic ward	10	4.8
	Oncology ward	9	4.3
	Operating Theatre	24	11.5
	Outpatient department	52	25
	Emergency ward	40	19.2
	Intensive care unit (ICU)	12	5.8
Service Year	≤ 5 years	138	66.3
	>5 years	70	33.7

5.2 Prevalence of Occupational Exposure to HIV among nurses at TASH, 2019

The prevalence of occupational exposure to HIV among 208 study population is 128 (61.5%). About 52(40.6%), 50(39.1%) and 16(12.5%) nurses experienced blood splash, needle stick and had more than two exposures respectively. Giving injection 36 (28.1) and uncooperativeness of patients 26 (20.3%) were among the common activities that exposed nurses to occupational exposure to HIV. Majority of nurses 62 (56.3%) had one exposure in their professional performance and 60 (49.9%) experienced occupational exposure to HIV in the past 12 months. In availability of equipments and negligence were the reasons for not using personal protective equipment. Nearly 2/3 (69.5%) of nurses have taken training on infection prevention and more than half (60.9%) of the injuries occurred at day time. The average working hours of study participants was 49.2 $\pm$ 11.15 SD per week. Most source of exposures were screened 91(71.1%) and 37(40.7%) were HIV positive.

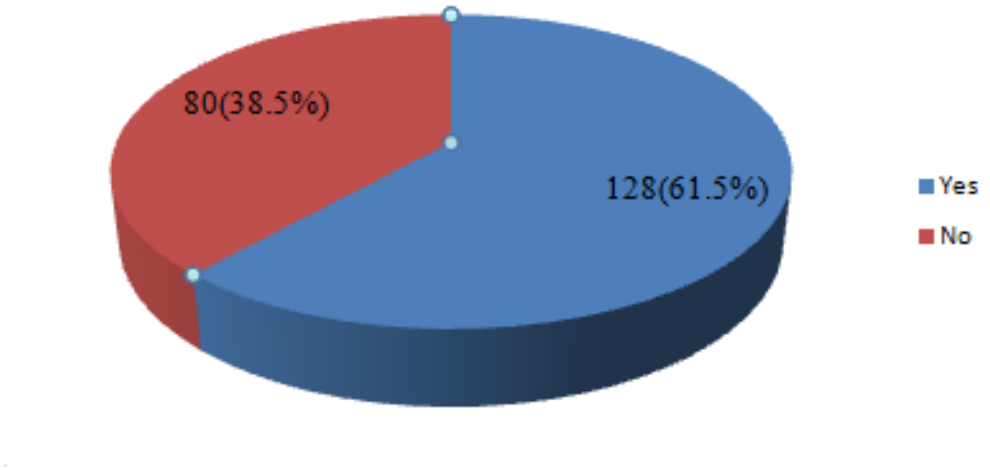


Figure 3: Occupational exposure to HIV among nurses at Tikur Anbessa Specialized Hospital in 2019

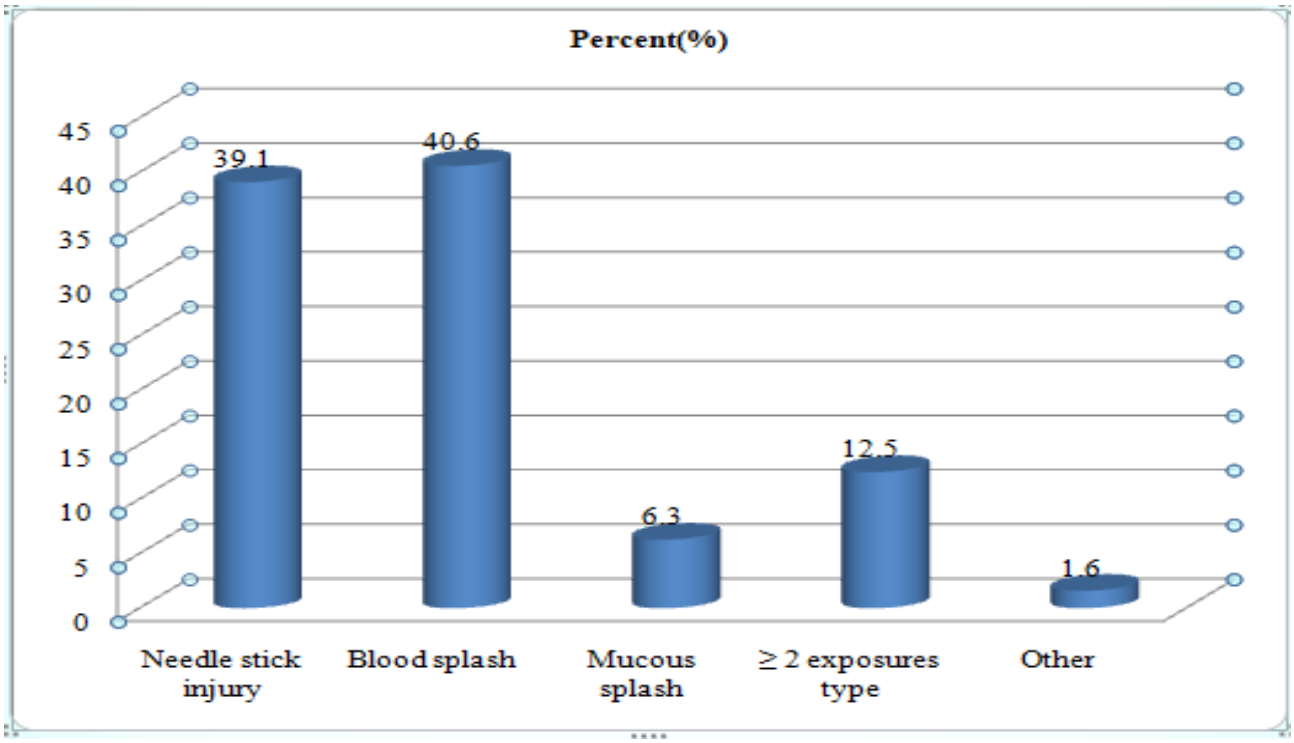


Figure 4: Types of exposures experienced by nurses at TASH, 2019

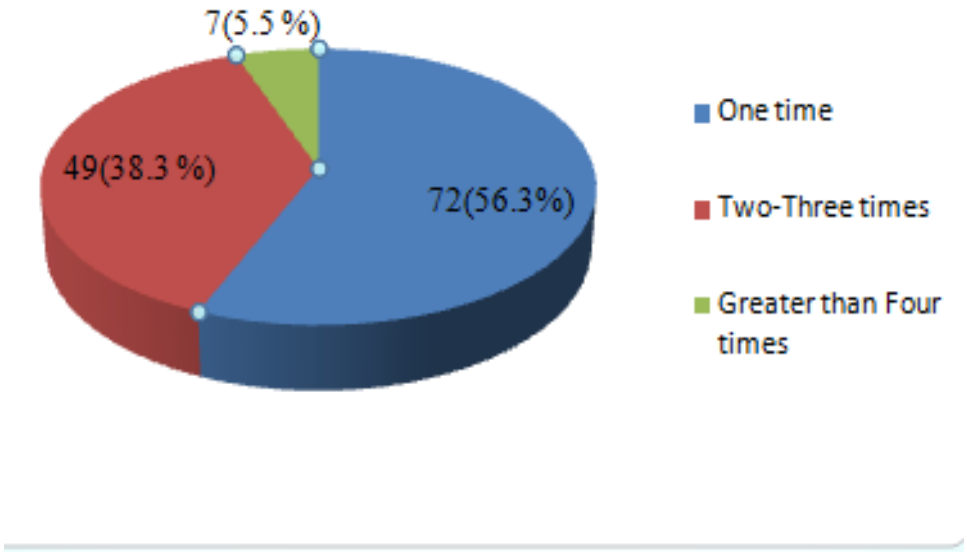


Figure 5: Occurrence of exposures by the nurses in the past 12 months at TASH, 2019

Table 2: Prevalence of occupational exposure to HIV among nurses at TASH, 2019(N=128)

Variable	Response	Frequency	Percent (%)
Exposed activities	Giving injections	36	28.1
	Recapping needles	7	5.5
	During surgery	17	13.3
	Sudden movement of the patient	26	20.3
	Collection of wastes	15	11.7
	≥ 2 activities	27	21.1
Time of last exposures experienced.	Within 3 months	28	21.9
	Within 6 months	33	25.8
	In the past 12 month	60	46.9
	Greater than a year	7	5.5
Use of personal protective equipment at time of exposure.	Yes	79	61.7
	No	44	34.4
	I don't remember	5	3.9
Reason for not using Personal Protective Equipment.	Equipment not available	24	54.5
	Negligence	20	45.5
Training on infection prevention including PEP	Yes	89	69.5
	No	39	30.5
Working shift at exposure time	Day	78	60.9
	Night	50	39.1
Total working hour/week	<=40	64	50
	>40	64	50
Reporting the accident	Yes	64	50
	No	64	50
Post exposure screening of the source of exposure.	Yes	91	71.1
	No	37	28.9
HIV status of the source of exposure.	Positive	37	40.7
	Negative	54	59.3
Mean working hours per week	49.2 ± 11.15 SD		

5.3 Utilization of HIV-PEP Medications among Nurses at TASH

Over all among 128 (61.5%) who had occupational exposure to HIV, 32 (25%) used HIV-PEP. Of this 118 (92.2%) heard about PEP but more than half 79 (61.7%) have not taken training on PEP. Majority of nurses reported as PEP medication is available and 51(39.8%) of the participants know that PEP services are provided 24hours and 51(39.8%) do not know the availability of the service at TASH. Of the 37(40.7%) participants exposed to HIV positive sources, 20 nurses did not use PEP immediately (> 2 hours), 12 use PEP immediately and 5 of them did not use PEP at all. The mean time to initiate the first PEP drug after exposure was 8.88 ± 7.97 SD. Among those who started PEP, only 24(75%) completed. However 8 (25%) did not complete PEP medication and the main reason for discontinuation of the PEP was fear of adverse drug effect and assuming that the drug was not effective.

Table 3: Utilization of HIV-PEP Medications among Nurses at TASH, 2019 (n=128)

Variables	Response	Frequency	Percent (%)
Ever used HIV-PEP	Yes	32	25
	No	96	75
Ever heard about HIV-PEP	Yes	118	92.2
	No	10	7.8
Ever had training PEP	Yes	49	38.5
	No	79	61.5
HIV-PEP medications availability	Yes	98	76.6
	No	30	23.4
24 hours HIV-PEP medications administered	Yes	51	39.8
	No	77	60.2
Immediately start HIV-PEP medications post exposure.	Yes	12	32.4
	No	20	54.1
	Not used PEP at all	5	13.5
Time lapse from exposure to which PEP was received.	Within 2hrs	12	37.5
	After 2hrs	20	62.5
Complete your HIV-PEP medications.	Yes	24	75
	No	8	25
Reason for discontinuation of the drug.	Fear of adverse effect	7	87.5
	Drugs not effective	1	12.5
Mean time initiation of HIV PEP	8.88 ± 7.97SD		

5.4 Factors Associated with Occupational Exposure To HIV among Nurses at TASH

Factors associated with occupational exposure to HIV were assessed using binary logistic regression based on the developed conceptual framework. Variables which reach a P value of less than 0.05 were considered as having association with occupational exposure to HIV.

Accordingly, the independent variable that had statistically significant association with occupational exposure to HIV were: Sex, females were less likely exposed (COR= 0.585, CI= (0.376-0.911), Age group 31-40 years less exposed to occupational exposures to HIV (CI= 0.667, CI= 0.483-0.919). Regarding marital status study subjects who are married were 0.5 times less likely exposed (COR= 0.518,95% CI= 0.331-0.811) and Head nurses were 0.6 times less likely exposed (CI= 0.625, CI= 0.468-0.834). Regarding educational level masters were less likely exposed as compared with diploma (COR= 0.654, 95%CI= 0.482-0.888) and also those working in outpatient department 0.333 times less likely exposed (COR= 0.333, 95%CI=0.132-0.840).

Study participants that had greater than five years service were 0.7 times less likely exposed to accident (COR= 0.683, 95% CI= 0.486-0.959).However, participants who had no training on Infection Prevention were 2 times more exposed as compared to that had training (COR= 2.423, 95%CI= 1.534-3.826) and in terms of Working Shift, nurses on evening shift were 3 times more exposed (COR= 3.588, 95%CI=2.096-6.142). Regarding working hours per week participants working more than 40 hours were 2 times more exposed (COR= 2.556, 95% CI =1.482-4.407) than those working less than 40 hours per week.

Multivariable logistic regression was also done to check strength of association between independent variable and occupational exposures to HIV. The result showed, married were 2 times more exposed to occupational exposures (AOR= 2.914, 95% CI= 2.190-3.877) as compared with singles. Study participants that had no training were 3 times more exposed than that had training on infection prevention (AOR= 3.29795% CI= 1.066-10.199) and participants on night shift were 6 time more exposed (AOR= 6.395, 95% CI= 1.606-25.471) as compared with day shift.

Table 4: Factors Associated with Occupational Exposure To HIV among Nurses at TASH, 2019.

Variable	COR With 95% CI	P value	AOR With 95% CI	P value
Sex				
Male	1		1	
Female	0.585(0.376-0.911)	0.018*	1.381(0.716-2.665)	0.333
Age Group				
≤ 30	0.577(0.306-1.089)	0.090	0.678(0.114-4.027)	0.669
31-40	0.667(0.483-0.919)	0.013*	0.658(0.128-3.377)	0.616
>40	1		1	
Marital Status				
Single	1		1	
Married	0.518(0.331-0.811)	0.004*	2.914(2.190-3.877)	0.000*
Position/title in the hospital				
Staff Nurse	1		1	
Head Nurse	0.625(0.468-0.834)	0.001*	6.711(0.27-164.274)	0.243
Educational Level				
Diploma	1		1	
Msc degree	0.654(0.482-0.888)	0.006*	0.233(0.040-1.341)	0.103
Working Ward				
Pediatrics	1		1	
Medical-Surgical ward	0.625(0.204-1.910)	0.410	0.210(0.040-1.106)	0.066
Gynecology	0.818(0.439-1.525)	0.528	0.168(0.018-1.554)	0.116
Orthopedic	1.667(0.398-6.974)	0.484	0.222(0.028-1.749)	0.153
Oncology	0.667 (0.188-2.362)	0.530	0.300(0.036-2.504)	0.266
Operating theatre	0.500(0.125-1.999)	0.327	0.462(0.074-2.880)	0.409
OPD	0.333(0.132-0.840)	0.020*	0.304(0.059-1.573)	0.156
Emergency	0.677(0.389-01.179)	0.168	0.218(0.040-1.183)	0.078
ICU	0.667(0.354-1.255)	0.209	0.324(0.047-2.216)	0.151
Service Year				
≤ 5 year	1		1	
>5 year	0.683(0.486-0.959)	0.028*	0.964(0.336-2.763)	0.945
Had training on IP				
Yes	1		1	
No	2.323(1.534-3.826)	0.000*	3.297(1.066-10.199)	.038*
Working Shift				
Day	1		1	
Night	3.588(2.096-6.142)	0.000*	6.395(1.606-25.471)	0.008*
Total working hour/week				
≤ 40 hours	1		1	
>40 hours	2.556(1.482-4.407)	0.001*	1.330(0.562-3.145)	0.516

5.4 Factors Associated With Utilization of HIV PEP among Nurses at TASH

Bivariate analysis indicated that sociodemographic variable, type of exposure, exposed activate, training on infection prevention and awareness about HIV-PEP were significantly associated with use of HIV-PEP. In terms of age group participants <=30 and 31-40, 6 times (COR= 6.045, 95% CI=3.850-9.492) and 5times (COR= 4.857, 95% CI= 2.153-10.957) more likely used HIV-PEP as compared with age group > 40 respectively. Regarding marital status married were 3 times (COR: 3.72295% CI, 2.212-6.263)) and staff nurse 3 times (COR= 3.722, 95% CI=2.212-6.263) more likely used HIV-PEP head nurses. Masters were 6 times more likely used [COR=6.167, 95% CI=4.006-9.492] the medication than diploma. Nurses working in Emergency ward were 3 times more likely used (COR=3.444, 95% CI=1.640-7.235) and Operating theatre 2 times more likely used HIV-PEP (COR= 2.429, 95% CI= 1.007-5.856). Participants who had less than five years of experience were 7 times more likely used [COR= 7.118, 95% CI= 4.284-11.825] the drugs than service year greater than five years. In terms of exposure type participants exposed more than two exposures uses PEP 4 times [COR= 4.333, 95% CI= 1.235-15.206]. Collection of wastes and giving injection 4, 3.5 times used [COR= 4.000, 95% CI= 1.129-14175), COR= 3.500, 95% CI= 1.595-7.679) HIV-PEP. Study subjects that got training on infection prevention and had awareness on HIV PEP 2 times used [COR= 2.423,95% CI= 1.534-3.826), COR= 2.687, 95%CI= 1.791-4.033)] more than that had not got training and unaware about HIV-PEP.

Multivariable logistic regression revealed no statically significant association between independent variables and use HIV post exposure prophylaxis.

Table 5: Factors Associated With Utilization Of HIV PEP among Nurses at TASH,2019

Variable	COR With 95% CI	P value	AOR, 95% CI	P value
Age Group				
<=30	6.045(3.850-9.492)	000*	5.559(0.381-81.056)	0.210
31-40	4.857(2.153-10.957)	000*	2.062(0.171-24.875)	0.569
>40	1		1	
Marital Status				
Single	1		1	
Married	3.722(2.212-6.263)	000*	0.535(0.017-16.592)	0.721
Title in the hospital				
Staff Nurse	5.724(3.858-8.492)	000*		
Head Nurse	1			
Educational Level				
Diploma	1		1	
Bsc degree	1	0.999	0.350(.071-1.717)	0.196
Msc degree	6.167(4.006-9.492)	000*		
Working Ward				
Pediatrics	1		1	
Medical -Surgical	4.000(0.203-25.285)	0.083	0.334(0.031-3.549)	0.363
Gynecology	7.000(.861-56.895)	0.069	6.196 (.103-371.82)	0.383
Orthopedic	0.333(.603-9.023)	2.220	2.128(.130-34.775)	0.596
Oncology	5.000(1.001-63.963)	0.086	.221(0.009-5.634)	0.361
Operating theatre	2.429(1.007-5.856)	0.048*	.843(.058-12.201)	0.900
OPD	1.361(0.327-33.278)	0.287	.254(.024-2.745)	0.259
Emergency	3.444(1.640-7.235)	0.001*	0.710(.063-7.942)	.781
ICU	1.353(0.560-12.287)	0.170	0.189(0.007-4.837)	0.314
Service Year				
≤ 5 year	7.118(4.284-11.825)	0.000*	.374(.054-2.589)	.319
>5 year	1		1	
Type of exposures				
Needle stick	2.846(1.513-5.354)	0.001*	2.5(0.485-12.886)	0.273
Blood splash	2.467(1.354-4.494)	0.003*	2.400(0.846-6.812)	1
Mucous Splash	7.000(0.861-56.895)	0.069	2.200(0.975-5.175)	0.562
≥ 2 exposure type	4.333(1.235-15.206)	0.022*	1.253(0.595-7.679)	0.320
Other body fluid	1		1	
Exposed activities				
Giving injection	3.500(1.595-7.679)	0.002*	1.117(.216-5.760)	.895
During surgery	2.400(0.846-6.812)	0.100	.737(.102-5.319)	.762
Sudden mov`t of pt	2.2500.978-5.175)	0.056	1.901(.357-10.126)	.451
Collection of wastes	4.000(1.129-14175)	0.032*	.630(.068-5.869)	.685
>=2 activities	1		1	
Training on infection prevention				
Yes	2.423(1.534-3.826)	0.000*	1.724(.464-6.404)	.416
No	1		1	
Heard about HIV-PEP				
Yes	2.687(1.791-4.033)	0.000*		
No	1		1	

6. Discussion

This study assessed the prevalence of occupational exposure to HIV, post exposure prophylaxis use and associated factors among Nurses at Tikur Anbessa specialized Hospital. This study detected high levels of occupational exposures to HIV 128(61.5%). This finding is in line with studies conducted in Serbia (68.6%) (8) and WHO report of 21 African countries 65.7% (33) and lower than similar studies conducted in Jima zone public hospitals and Debre Berhan town in which the prevalence of occupational exposure to HIV were 249 (78.3%) (11) and 88.6% (22) respectively. The finding of this study is higher than studies done in Tanzania 121(50.6%) (9), Kenya (50%) (10), Nigeria 51.0% (28) , Southeast Iran (34.7%) (32) , in Gondar town 66 (33.8%) (35) and Hawassa (46%) (38). The reason for the observed difference might be due to difference in study setting, study population (this study done only among nurses), study time and awareness level of study participants regarding implementation of universal precaution package.

In this study, the two leading type of exposures were blood splash 52(40.6%) and needle stick 50(39.1%) injuries. This result is comparable with study in Tanzania which is blood splash 57(47.1) and Needle stick cut 45(37.2%) (9) . But lower than study done in Jima Zone in which body fluid exposure and needle stick injury were 62.6% and 58.8% respectively (11) and study done in Mekele town that blood splash 82.5%, needle stick injury, 49.1% (36). The difference may be due to difference in awareness level of respondents regarding universal precaution package, study setting and difference in study population.

According to this study, giving injection 36 (28.1) and uncooperativeness 26 (20.3%) of patients were among the common activities that exposed nurses to occupational exposure to HIV. This finding is in agreement with studies conducted in Hawassa that Emergency situation (28.6 %), sudden movement of the patient (23.8 % (38). In this study, majority of nurses 72 (56.3%) had one time occupational exposure to HIV in their professional performance. this finding is in line with study done in Cameroon that twenty-nine (53.7%) of nurses exposed one time in their working time (17) .

In the present study, 60 (46.9%) study participants experienced occupational exposure to HIV in the past 12 months. This finding supported study done in north-western Tanzania (48.6%) reported incidents of NSIs and splash exposures within the previous 12 months (29)

In this study, 44(34.4%) nurses did not use personal protective equipments during time of exposures. This finding is lower than study done in North western Tanzania that 45.3% of the participants were not used PPE at time of exposure(29). The difference is may be due to difference in study setting and study population.

The result of this study showed that non availability of equipments 24(54.5%) was the reasons for not using personal protective equipments among who were not used PPE. This result is lower than study conducted in Tamil Nadu that reasons for inappropriate use of PPE was non availability of PPE 562 (78%) (39). The difference may be due to study setting and population size difference.

The finding of this study revealed that 79 (61.7%) of nurses have taken training on infection prevention. This finding is lower than study conducted in Debre Berhan Town, 94 (76.4%) nurses were trained on infection prevention (22). This difference might be due to study population. Thus, present study done among nurses only.

In this study 64(50%) nurses among the exposed reported the accidents to the responsible person. This result is lower than study done in Tanzania (68.6%) (9) and Uganda (74%) (30). But higher than study conducted in Nigeria (48%) (28), and Serbia (40.2%) (8). The variation of the findings happen may be due to difference in study setting, study population and awareness level of participants regarding infection prevention protocol.

According to this study, among 128 (61.5%) exposures, 32(25%) nurses used HIV-PEP. This result is comparable with study done in Kenya out of 305 reported exposure, only 20% (n=83) took PEP against HIV (10). But higher than studies done inTanzania that 212 reported incidents of NSIs and splash exposures, only 16.7% of exposed HCWs received post-exposure prophylaxis for HIV (29), Cameroon that out of 54 experienced an exposure, ten (18.9%) received PEP (26) and study conducted in Mekelle Town, Northern Ethiopia that among the exposed health professionals, 19.6% use PEP (36) and in India 47 (21.4%) exposed , only 7 (14.9%) had taken PEP (40). The difference may be due to study population, setting, study time and difference in level of awareness regarding HIV PEP utilization

This study revealed, most nurses 118 (92.2%) heard about HIV- PEP. This finding almost similar with study conducted in Eastern Ethiopia, Hiwot fana hospital that 191(97.4%) of the study

participants were aware of HIV PEP (42) and study conducted in Cameroon that 137 (89%) participants heard about HIV-PEP (26). Higher than study done in Cameroon that (83.8%) had heard about PEP (17) and in India (65.5%) of participants have heard about HIV- PEP. This difference is may be due to variation in study time and study setting

In this study, majority of nurses 98(76.6%) reported as PEP medication is available and 51(39.8%) of the participants know that PEP service provided 24hours. This finding in line with similar study conducted in Tanzania that 179 (74.9%) reported that the HIV PEP was available at their work place and more than half 104 (58.1%) reported to have a person available to administer the HIV PEP, 24 hours a day (9).

The result of the present study revealed that 12(32. 4%) nurses used PEP immediately. This finding is comparable with study done in Eastern Ethiopia, Hiwot fana Hospital that Timely initiation of PEP 10 (26.3%) (41) and lower than study conducted in Uganda 58% study subjects (30), in Gondar 46.9% of study participants used HIV-PEP immediately (35). The observed difference may be due to difference in awareness level of study participants regarding HIV-PEP and study population.

The result of this study showed that 24(75%) study participants completed PEP among who started HIV-PEP. this finding is higher than WHO report of 2018, that 57% of the people completed the full course of PEP (14) and in Hiwot Fana Specialized University Hospital, 26 (44.8%) completed taking post exposure prophylaxis correctly (41). The difference is maybe due study population and level of awareness difference regarding HIV PEP use.

As this survey, 8(25%) nurses not completed PEP and major reason for discontinuation of HIV-PEP among who used the drugs was fear of adverse effect of PEP which is 7 (87.5%).The results was agreement with study conducted in Mekele town that 6 (19.4%) discontinued PEP and 5 (83.3%) of those who discontinued were due to adverse effect of the drugs (36), Gaborone 21(26.6%) did not completed PEP, with 15(71.4%) quitting because of adverse drug effects (42)and Hiwot fana Hospital 12 (31.6) not complete PEP, reason for discontinuation of PEP was fear of adverse effects 7 (58.3) (41). However, as symptoms of adverse effects often exacerbated by anxiety, counseling and supporting for side effects is very important to enhance adherence of PEP (24).

This study finding shows that females (COR= 0.585, 95% CI= (0.376-0.911) were less likely exposed to occupational exposure to HIV than males. This finding in line with study done in Jima zone, in which males [AOR: 2.20, 95%CI= 1.09-4.4] were more exposed to occupational injuries (11). Study result indicated that age 31-40 years and work experience ≥ 5 years were protective factors from occupational exposure to HIV (CI= 0.667, CI= 0.483-0.919) and (COR= 0.683, 95% CI= 0.486-0.959) respectively. The results has agreements with study done in Nigeria age ≥30 years (odds ratio [OR] =0.28, confidence interval [CI] = 0.11–0.70), work duration of ≥ 3 (OR = 0.29, CI = 0.11–0.75) (28)

Present study showed that nurses not trained on infection prevention were two times more exposed (COR= 2.423, 95%CI= 1.534-3.826) to occupational exposure to HIV. The finding is in line with WHO report of 21 African countries that health-care workers without training was 2 times more exposed than trained staff (RR: 1.791, 95% CI: 1.234–2.071) (33), study conducted in Kenya training in infection prevention was protective (OR= 0.52; 95% CI = 0.03-0.90) (10) and Jima nurses having no training on infection prevention were six times exposed (AOR: 5.99, 95% CI: 3.14, 11.41) (11) to occupational exposure to HIV. Therefore, training on infection prevention crucial in preventing occupational exposure to HIV.

Study participants who worked more than 40 hours per week were two times more exposed (COR= 2.556, 95% CI =1.482-4.407) than those working less than 40 hours per week. The finding is comparable with WHO report of 21 African countries that health care workers worked ≥ 40 hours per week were more likely to be exposed (RR: 2.221; 95% CI: 1.001–4.926) (33).

Study subjects that got training on infection prevention and had awareness on HIV PEP were 2 times used [COR= 2.423, 95% CI= 1.534-3.826), COR= 2.687, 95%CI= 1.791-4.033)] than that had not got training and unaware about HIV-PEP. This finding is in line with study conducted in Northern Ethiopia that Training of health professionals on PEP had statistically significant association with PEP utilization (AOR=2. 864, 95% CI=1. 152-7.122 (36).

7. Strength and Limitation of the Study

Strength of the Study

- High response rate and inclusive in nature (all nurses regardless of their title in hospital participated in this study.
- Reasonable sample size and pretested questionnaires were used in this study.
- Give information about level of occupational exposure to HIV and utilization of HIV PEP.
- Found base line information for future plan.

Limitation of the Study

- The study design was cross-sectional, questionnaire based study that evaluates previous exposure status. Thus, there may be a possibility of recall bias.
- Again in this study causal relationship between dependant and independent variable not assumed
- In this study data was collected using English version self administrated questionnaire, there may be probability of miss understanding of the question.

8. Conclusion

From the findings of the study, the following conclusions were summarized.

- Occupational exposure to HIV is common among nurses in Tikur Anbessa Specialized Hospital with the prevalence rate of 61.5%.
- About 40.6% experienced blood splash exposure and 39.1% nurses, had exposure to needle stick injury. Giving injection 36 (28.1) and uncooperativeness of patients 26 (20.3%) were among the common activities that put nurses to HIV exposure at TASH.
- More than 1/3 (30.5%) of nurses have not taken training on infection prevention. Nearly 50% of the exposed nurses didn't report the incident to the concerned people. 28.9% source of exposures were not screened and among screened source of exposure 40.7% were HIV positive.
- Not getting training on infection prevention and working in night were among the factors significantly associated with occupational exposure to HIV.
- Mean working hours per week of study participants 49.2 $\pm$ 11.15 SD
- From exposed only 32(15.4%) nurses used HIV-PEP in TASH. From those started HIV-PEP 8 (25%) did not complete PEP medication and the main reason for discontinuation of the PEP was fear drug adverse effect.
- The mean time to initiate the first PEP drug after exposure was 8.88 $\pm$ 7.97SD
- Educational level, Types of exposure, exposed activity, training on infection prevention and had awareness on HIV- PEP were among factors significantly associated with utilization of HIV post exposure prophylaxis

9. Recommendation

Based on the findings summarized under the conclusion, the following recommendations were forwarded.

To all Nurses working at TASH

- Nurses should use always PPE when dealing with blood and other body fluids.
- They should handle and dispose sharp instrument careful.
- Should emphasize on safe injection practices.
- Should inform patients about procedure performed to them before starting the procedures.
- They should always consider about PEP after exposure.
- Over all, routinely implementation of universal precautions package, performing procedures following procedural protocol and safe sharp handling is imperative to ensure optimal safety for nurses.

To all unit heads;

- Able to identify skill gap of coworkers and communicate with matron nurse to arrange training to fill that gap.
- Invite skillful coworker to teach one another.
- Providing counseling and psychological support for those who start PEP.
- Encourage coworkers to report the accident and immediate initiation of PEP.

To TASH Clinical Director

- Establishing team that provides training on infection prevention regularly to create awareness among nurses.
- Facilitating seminar regarding work place exposure and post exposure prophylaxis.
- Personal protective equipment should be available at all times in the hospital.

- HIV screening test kit should be available in the hospital at all time to screen all source of exposures.
- Work hour regulation must be in place.

To Ministery of Health and Health Care Partners;

- ❖ Facilitating on job training on infection prevention including HIV post exposure prophylaxis.

To other researchers;

- ➢ Further study with other study designs rather than cross-sectional study design is recommended.

REFERENCES

1. Dictionary D. Occupational exposure | definition of occupational exposure by Medical dictionary Thank you for using The Free Dictionary ! oc · cu · pa · tion · al ex · po · sure. 2012;11–2.

2. International Labor Organization. International Labour Standards on Occupational safety and health. 2013;20.

3. Maier A. Occupational Health. Inf Resour Toxicol. 2009;335–43.

4. The National Institute for Occupational Safety and Health. Bloodborne Infectious Diseases: HIV/AIDS, Hepatitis B, Hepatitis C. Centers Dis Control [Internet]. 2014;1–2. Available from: http://www.cdc.gov/niosh/topics/bbp/emergnedl.html

5. Masoudi Alavi N. Occupational Hazards in Nursing. Nurs Midwifery Stud [Internet]. 2014;3(3):21–3. Available from: http://www.nmsjournal.com/?page=article&article_id=22357

6. Marceline J OA and AA. Post exposure prophylaxis following occupational exposure to HIV,Survey of health care workers in Myeba, Tannzania,. 2015.

7. Masoumi-Asl H, Rahbar M, Soltani A, Pezeshki Z, Khanaliha K, Kolifarhood G. Epidemiology of needlestick injuries among healthcare workers in Tehran, Iran: A cross-sectional study. Arch Clin Infect Dis. 2017;12(2):1–14.

8. Markovic-Denic L, Maksimovic N, Marusic V, Vucicevic J, Ostric I, Djuric D. Occupational exposure to blood and body fluids among health-care workers in Serbia. Med Princ Pract. 2015;

9. Kimaro L, Adinan J, Damian DJ, Njau B. Prevalence of occupational injuries and knowledge of availability and utilization of post exposure prophylaxis among health care workers in Singida District Council, Singida Region, Tanzania. PLoS One. 2018;

10. Mbaisi EM uhonj, Ng'ang'a Z, Wanzala P, Omolo J. Prevalence and factors associated with percutaneous injuries and splash exposures among health-care workers in a

provincial hospital, Kenya, 2010. Pan Afr Med J. 2013;

11. Belachew YB, Lema TB, Germossa GN, Adinew YM. Blood/Body Fluid Exposure and Needle Stick/Sharp Injury among Nurses Working in Public Hospitals, 2017

12. WHO R office for A. Analytical summary - HIV / AIDS. 2018;1–2. Available from: http://www.aho.afro.who.int/profiles_information/index.php/Ethiopia:Analytical_summary_-_HIV/AIDS

13. Ethiopian Demographic and Health Survey, 2016.

14. WHO. HIV/AIDS Post-exposure prophylaxis to prevent HIV infection. 2018;(4):6–9.

15. Irvine C, Egan KJ, Shubber Z, Van Rompay KKA, Beanland RL, Ford N. Efficacy of HIV postexposure prophylaxis: Systematic review and meta-analysis of nonhuman primate studies. Clin Infect Dis. 2015;60:S165–9.

16. Federal Minstry of, Health. National Guidelunes for comprehensive HIV Prevention, Care and Treatment. 2017;1.226.

17. L.N. A, N.F. T, A. D, N.M. B, G. A, D. T, et al. Occupational post-exposure prophylaxis (PEP) against human immunodeficiency virus (HIV) infection in a health district in Cameroon: Assessment of the knowledge and practices of nurses. PLoS ONE. 2015.

18. WHO. World Health Organization. Global Health Observatory (GHO) data. HIV/AIDS. http://www.who.int/gho/hiv/en/. 2015.

19. Eugene-ezebilo DN, Ezebilo EE. HIV/AIDS in sub-Saharan Africa: Current status, challenges and prospects. Asian Pacific J Trop Dis [Internet]. 2015;5(7):532–8. Available from: http://dx.doi.org/10.1016/S2222-1808(15)60831-3

20. Bogale S. ANALYSIS: HIV/AIDS IS SURGING IN ETHIOPIA, AGAIN. 2018;1–8. Available from: http://addisstandard.com/analysis-hivaids-is-surging-in-ethiopia-again/

21. Joyce MP, Kuhar D, Books JT. Occupationally Acquired HIV Infection Among Health Care Workers — United States, 1985–2013. Morbity Mortal Wkly Rep. 2015;63(53):1245–6.

22. Aynalem Tesfay F, Dejenie Habtewold T. Assessment of prevalence and determinants of occupational exposure to HIV infection among healthcare workers in selected health institutions in debre berhan town, north shoa zone, amhara region, ethiopia, 2014. AIDS Res Treat. 2014;

23. WHO. Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection Recommendations for a public health approach. 2016;480.

24. Kuhar DT, Henderson DK, Struble KA, Heneine W, Thomas V, Cheever LW, et al. Updated US Public Health Service Guidelines for the Management of Occupational Exposures to Human Immunodeficiency Virus and Recommendations for Postexposure Prophylaxis. Infect Control Hosp Epidemiol. 2013;

25. Landovitz RJ, Currier JS. Clinical practice. Postexposure prophylaxis for HIV infection. N Engl J Med. 2009;

26. Aminde LN, Takah NF, Noubiap JJN, Tindong M, Ngwasiri C, Jingi AM, et al. Awareness and low uptake of post exposure prophylaxis for HIV among clinical medical students in a high endemicity setting. BMC Public Health. 2015;

27. Gupta A, Anand S, Sastry J, Krisagar A, Basavaraj A, Bhat SM, et al. High risk for occupational exposure to HIV and utilization of post-exposure prophylaxis in a teaching hospital in Pune, India. BMC Infect Dis. 2008;

28. Isara A, Oguzie K, Okpogoro O. Prevalence of needlestick injuries among healthcare workers in the Accident and Emergency Department of a Teaching Hospital in Nigeria. Ann Med Health Sci Res. 2015;

29. Chalya PL, Seni J, Mushi MF, Mirambo MM, Jaka H, Rambau PF, et al. Needle-stick injuries and splash exposures among health-care workers at a tertiary care hospital in north-western Tanzania. Tanzan J Health Res. 2015;

30. View T, Gihembo A, Show BM. Factors affecting utilization of HOV post exposure prophylaxis among nurses and mid wives in mulago. 2015;55:1–2.

31. Joyce MP, Kuhar D, Books JT. Occupationally Acquired HIV Infection Among Health

Care Workers — United States, 1985–2013. Morbity and mortality weekly report. 2015.

32. Tabatabaei SM, Pour FB, Avval JO, Osmani S, Mokhtari S, Bekheyr MA. Occupational Exposure to Blood and Other Body Fluids Among Healthcare Workers in Three Teaching Hospitals , Southeast Iran. 2016;3(3):1–5.

33. Auta A, Adewuyi EO, Tor-Anyiin A, Aziz D, Ogbole E, Ogbonna BO, et al. Health-care workers' occupational exposures to body fluids in 21 countries in Africa: systematic review and meta-analysis. Bull World Health Organ. 2017;

34. Ogoina D, Pondei K, Adetunji B, Chima G, Isichei C, Gidado S. Prevalence and determinants of occupational exposures to blood and body fluids among health workers in two tertiary hospitals in Nigeria. African J Infect Dis. 2014;

35. Mathewos B, Birhan W, Kinfe S, Boru M, Tiruneh G, Addis Z, et al. Assessment of knowledge, attitude and practice towards post exposure prophylaxis for HIV among health care workers in Gondar, North West Ethiopia. BMC Public Health. 2013;

36. Gebreslase T, Abera GB. HIV post-exposure prophylaxis use and associated factors among health professionals of governmental health institutions in Mekelle town, Tigray Ethiopia, cross-sectional study. J AIDS Clin Res. 2014;

37. COLLEGE OF HEALTH SCIENCE AND & TIKUR ANBESSA ESPECIALIZED HOSPITAL EMPLOYEE DATA pdf. 2018;15.

38 Gudeta Kaweti and Teferi Abegaz. Prevalence of percutaneous injuries and associated factors among health care workers in Hawassa referral and adare District hospitals, Hawassa, Ethiopia, Januar, 2015.

39 Archana Lakshmi P et al. A study on personal protective equipment use among health care providers, Tamil Nadu, 2015.

40 Rajesh Kumar Singh et al. Awareness and practice of post-exposure prophylaxis (PEP) of HIV among health-care workers in tertiary care hospital of Haldwani, India. 2015

41 Endalkachew Mekonnen Eticha et al. Knowledge, Attitude, and Practice of Postexposure

Prophylaxis against HIV Infection among Healthcare Workers in Hiwot Fana Specialized University Hospital, Eastern Ethiopia. 2019

42 Peter Bareki andTenego, Assessment of knowledge, attitudes and practices of HIV post exposure prophylaxis among the doctors and nurses in Princess Marina Hospital, Gaborone: a cross-sectional study.2018

ANNEXIS

Annex I: Information Sheet

This information sheet is prepared for nurses working at TASH who participate in research project entitled "a cross-sectional study assessing prevalence of occupational exposure to HIV infection and Utilization of HIV post exposure prophylaxis among Nurses at Black Lion Specialized Hospital Addis Ababa Ethiopia, 2019"

Name of Principal investigator: ----------

Name of the organization: Addis Ababa University, College of Health Sciences, Department of Nursing and Midwifery.

Name of the Sponsor: Addis Ababa University

Please be patient while you fill the Questionnaire and read the following statement and ask any unclear question before you agree to participate.

Title. Prevalence of occupational exposure to HIV infection and Utilization of HIV post exposure prophylaxis among Nurses at Black Lion Specialized Hospital Addis Ababa Ethiopia, 2019

Objective: To assess prevalence of occupational exposure to HIV infection and Utilization of HIV post exposure prophylaxis among Nurses at Black Lion Specialized Hospital Addis Ababa Ethiopia, 2019

Participation Procedures and Guidelines

The information you provide will be keep completely anonymous, that is, your name will not be on any of the form.

Your information will be kept confidentially and it is only used for study purpose.

The Questionnaire will take about 60 minutes to complete; however, if you don't want to participate in the study you have full right to withdraw at any time.

Participation Benefits and Risks.

Your participation in this study does not involve any risks.

Benefit from participating in this study. The finding from the study will help nursing program planner to identify area need training and nurses by themselves to take corrective action for the problem. No incentive will be given for participants in the study

Rights to Refuse or Withdraw

Participation is **voluntary**. This means you are free to stop filling of the questionnaire.

Persons to contact: If you have any question to ask, please contact

Name: ----------

Tel: 0916172944

Email: shiferawgelchu2009@gmail.com

Annex II: English Version Consent and Questionnaire

Consent (Verbal Consent) Form

I have been informed about the purpose of this particular research project and I am going to respond to this question by answering what I know concerning the issue. I have been informed that the information I give will be used only for the purpose of this study and my identity as well as the information I give will be treated confidentially. I have also been informed that I can refuse to participate in the study or not to respond to questions if I am not interested. Furthermore I have been informed that I can stop responding to the questions at any time in the process. Based on the above information I agree to participate in this research voluntarily. If there are things that require clarification don't hesitate to ask the data collector or the principal investigator for clarification.

Instruction for Questionnaire

This questionnaire is designed for the study on the Prevalence of occupational exposure to HIV infection and Utilization of HIV post exposure prophylaxis among Nurses at Tiqur Anbessa Specialized Hospital. The questionnaire is divided into three parts. Part one sociodemographic characters, part two prevalence of occupational exposures and part three utilization of HIV post exposure prophylaxisis. Please fill all questions clearly and completely. Please follow instruction on each part of the questionnaire. Your best effort is highly appreciated and will have good impact on questionnaire validity and reliability.

Part One: SOCIAL DEMOGRAPHIC INFORMATION			
Code No	**Questions**	**Response**	**Remark**
Q101	Sex	1.Female	
		2.Male	
Q102	What is your age? (in years)	Number…….	
Q103	Position/title in the hospital	1.Staff nurse	
		2.Head nurse	
		3.Other specify	
Q104	What is your marital status?	1.Single	
		2.Married	
		3.Divorced	
		4.Widowed	
Q105	What is your education level?	1. Diploma	
		2. Bsc Degree	
		3.Master Degree	
		4.Other specify	
Q106	Which department are you working?	1. Pediatric ward	
		2. Medical ward	
		3. Surgical Ward	
		4. Obstetrics / Gynecology ward	
		5. Orthopedic ward	
		6. Oncology ward	
		7. Operating Theatre	
		8. Outpatient department	
		9. Emergency ward	
		10. Intensive care unit (ICU)	
		11. Other specify	
Q107	What is your working experience? (in years)	----------	

Part Two: PREVALENCE OF OCCUPATIONAL EXPOSURE			
Q201	Have you ever been exposed to a needle prick or body splash or in contact with blood or body fluids?	1. Yes	
		2. No	If NO, end of the study. **Thank you**
Q202	Which type of accident/exposure did you experience?	1. Needle stick injury	
		2. Blood splash	
		3. Mucous splash	
		4. Other body fluids (specify):	
Q203	Exposed activities? (multiple answers accepted)	1.Giving injections	
		2. Recapping needles	
		3. During surgery	
		4. Uncooperativeness (Sudden movement of the patient)	
		5. Collection of wastes	
		6.Others (specify)	
Q204	How many exposures have you had in the last 12 months?	1.One time	
		2.Two-Three times	
		3. Greater than Four times	
Q205	When was your last needle prick or body splash or in contact with blood or body fluids?	1. Within 3 months	
		2. Within 6 months	
		3. In the past 12 month	
Q206	Did you use personal protective equipment at time of exposure? (If your answer is yes please go to question 208).	1. Yes	
		2. No	
		3. I don't remember	
Q207	If your answer for question 206 is No what was/were the reason/s for not using Personal	1. Equipment not available	
		2. Negligence	

	Protective Equipment	3. Other (specify)	
Q208	Ever had training on infection prevention?	1. Yes	
		2. No	
Q209	Working shift at exposure time?	1. Day	
		2. Evening	
		3. Night	
Q2010	Total working hour/week? (in hours)	----------	
Q2011	Did you report the accident?	1. Yes	
		2. No	
Q2012	Post exposure screening of the source of exposure?	1.Yes	
		2.No	
Q2013	What was the HIV status of the source of exposure? (If your answer is positive please go to question301)	1.Positive	
		2.negetive	
Part Three: UTILIZATION OF HIV-PEP MEDICATIONS			
Q301	Have you ever heard about HIV-PEP?	1.Yes	
		2.No	
Q302	Ever had Training on HIV- PEP?	1.Yes	
		2.No	
Q303	Are HIV-PEP medications available in this facility?	1. Yes	
		2. No	
		3. I don't know	
Q304	Is there someone to administer HIV-PEP medications 24 hours a day in this facility?	1. Yes	
		2.No	
		3. I don't know	
Q305	Have you ever used HIV PEP?	1.Yes	
		2.No	
Q306	Did you start HIV-PEP medications immediately post exposure?	1.Yes	
		2.No	

Q307	What was the time lapse from exposure to which PEP was received after exposure? (in hours)	----------	
Q308	Did you complete your HIV-PEP medications?	1. Yes	
		2. No	
Q09	If NO to Q307, Reason for discontinuation of the drug	1. Fear of adverse effects	
		2.Fear of stigma/discrimination	
		3. Assuming that the drug was not effective	
		4. Assuming that it was enough	
		1. Other specify	
END OF THE QUESTIONNAIRE-THANK YOU FOR YOUR COOPERATION			

Annex III: Data Collectors and Supervisors Training Guide Manual

Topic: Prevalence of Occupational exposure to HIV and Utilization of HIV Post Exposure Prophylaxis among Nurses at Tikur Anbessa Specialized Hospital Addis Ababa Ethiopia, 2019

Introductions: this training manual helps the research team to be familiar with words and sentences used in the questionnaires and data collection techniques. It also helps on how to perform supervision and how to control data quality.

Objectives of the research; to assess Prevalence of Occupational exposure to HIV and Utilization of HIV Post Exposure Prophylaxis among Nurses at Tikur Anbessa Specialized Hospital Addis Ababa Ethiopia, 2019

Purpose of the training:

- To familiarize the data collectors & supervisors with unfamiliar words and sentences used in the questionnaires.
- To familiarize data collectors & supervisors with techniques to be followed in data collection and supervision procedures
- To enable data collectors& supervisors in resolving problems which faced during data collection.

Methods of training: Discussion of data collection tool, Filed practice/pre-testing

Responsibility of research team members:

Principal investigators – control the overall activities of the study.

Supervisors – monitor for the correctness of data collations at the spot in the field.

- Monitor for constancy and completeness of collection data.
- Monitor for availability of necessary supplies for the Data collection
- Ensure quality collection data.

Data collectors:

- Perform the Data collection and manage any inconveniences properly.
- Communicate with supervisors and principal investigator for solving problems which are beyond their capacity, and for information which needs more clarifications
- Check for completeness of **questionnaires**.

How to fill the questionnaires: each data collector should be distribute questionnaires and tell to the study participants to returned filled questionnaires within two days.

Schedule for Training Data Collectors and Supervisors.

DAY1	ACTIVITIES
Time breakdown (all in local time)	
2:30–4:00 AM	Welcome, survey objectives and training overview
4:00-4:15 AM	**TEA BREAK**
4:15-6:00AM	Overview of survey methodology • Key aspects of survey design • Roles and responsibilities of personnel
6:00–7:00 PM	**LUNCH**
7:00–8:30 PM	Data collection procedures • Preparation for data collection • Procedures before, during and after data collection
8:30-8:45 PM	**TEA BREAK**
8:45-11:00 PM	Logistics for data collection. Final comments, evaluation of training. Closing of the training program.

Annex IV: Problem Prioritizing Table

Scales for Rating Research Topic

Proposed Topic	R	A	U	P	F	Appl	E	Total
Prevalence of Occupational exposure to HIV and Utilization of HIV PEP among nurses at TASH, 2019	3	3	3	3	3	3	3	21
Burn out syndrome and its predictors among nurses at TASH, 2019	3	1	2	3	3	3	3	18
Hand washing practice and related Factors among nurses at TASH, 2019	3	1	1	3	3	3	3	17
Rating scale: 1= Low 2= Medium 3= High								

Key:

R- Relevance,

A- Avoidance of duplication

U- Urgency

P- Political acceptability

F- Feasibility

Appl- Applicability

E- Ethical acceptability

Annex V: Curriculum Vite (CV)

1. **PERSONAL INFORMATION OF INVESTIGATOR**
   - Full name: **Shiferaw Gelchu Adola**
   - Date of birth: 01/02/1991 GC
   - Age: 28
   - Place of birth: Uraga, East Guji, Oromia regional state
   - Sex: Male
   - Marital status: Married
   - Health status: Normal
   - Religion: Protestant
   - Nationality: Ethiopian
   - Address: Phone No: 251916172944; Email: shiferawgelchu2009@gmail.com
2. **LANGUAGE SKILL**

Skills	English	Amharic
Speaking	Excellent	Excellent
Reading	Excellent	Very good
Writing	Excellent	Very good
Listening	Excellent	Excellent

3. **QUALIFICATION**
   - Bachelor of Science degree in Nursing from Mada Walabu University on June 2014 G.C with 3.81 GPA and
   - Master of Science in Adult health nursing from Addis Ababa University on July 2019 with CGPA of 3.85.
4. **WORK EXPERIENCE**
   - Working at Bule Hora Hospital for two years
   - Teaching at Bule Hora University from 1/14/2009 E.C to 20/01/2010 E.C
   - Research advisor and clinical attachment

5. **HOBBIES AND INTEREST**

- ✓ Hardworking, honest, and role model for my society as a whole
- ✓ To participate in community development and research conduction
- ✓ Reading (news, novels and other education related materials)

6. RESEARCH EXPERIENCE

- Prevalence of Premarital sexual practice and its associated factors among Robe high school adolescent Ethiopia and got excellent grade
- Know I am conducting my research thesis on " Prevalence Of Occupational Exposure To HIV And Utilization Of HIV Post Exposure Prophylaxis Among Nurses At Tikur Anbessa Specialized Hospital Addis Ababa Ethiopia, 2019.

7. REFERENCE

- Yimar.hotessa2012@gmail.com phone: 0920268106 Dean College of health science.
- Bule Hora university: P.O. Box-144, Tel: +251468430049/468430050

Annex VI Approval Sheet

Addis Ababa University Advisors and Examiner Approval Sheet

This proposal entitled "Prevalence of Occupational exposure and Utilization of HIV Post Exposure Prophylaxis among Nurses at Tiqur Anbessa Special Hospital Addis Ababa Ethiopia, 2019" has been carried out by Shiferaw Gelchu, is accepted in its present form by the board of examiners as satisfying the requirement for the degree of masters of Science in Adult health nursing.

By: Shiferaw Gelchu _____ _____

Name of Student Signature Date

Approved by:

1. Dr. Amsale Cherie (PhD Associate. Professor) _____ _____
   Name of first Advisor Signature Date

2. Sr. Nete Tofic (BSc, MSc.) _____ _____
   Name of second Advisor Signature Date

3. Mr. Niguse Tadele (Asst. Professor) _____ _____
   Name of examiner: Signature Date