COLLEGE OF MEDICENE AND HEALTH SCIENCE

DEPARTMENT OF NURSING

MAGNITUDE OF SHARP AND NEEDLE STICK INJURIES AND THEIR RELATED SAFETY MEASURES AMONG HEALTH CARE WORKERS IN WORABE COMPREHENSIVE SPECILAZED HOSPITAL, SOUTHERN ETHIOPIA, 2021

BY:	ID NUMBER
1. BETELHEM TESFAMICHAL	MHSR 312/10
2. MUHAKEMILE KEDIR	MHSR 338/10
3. ADEMASU AMENO	MHSR 021/09

A RESEARCH PAPER TO BE SUBMITTED TO DEPARTMENT OF NURSING, WOLKITE UNIVERSITY FOR IMPARTIAL FULFILMENT OF THE REQUIREMENTS IN THE BACHELOR OF SCIENCE DEGREE IN NURSING

AUGUST, 2021

WORABE, ETHIOPIA

WOLKITE UNIVERSITY

COLLEGE OF MEDICINE AND HEALTH SCIENCES

DEPARTEMENT OF NURSING

MAGNITUDE OF SHARP AND NEEDLE STICK INJURIES AND THEIR RELATED SAFETY MEASURES AMONG HEALTH CARE WORKERS IN WORABE COMPREHENSIVE SPECILAZED HOSPITAL SOUTHERN ETHIOPIA 2021

BY:

1. BETELHEM TESFAMICHAL

2. MUHAKEMILE KEDIR

3. ADEMASU AMENO

ADVISORS: - MR. SHEGAW T (Lecturer)

MR. BAYE TSEGAYE (Lecturer)

AUGUST, 2021

WORABE, ETHIOPIA

.

ACKNOWLEDGEMENT

First of all, we would like to thank wolkite University College of medicine and health science department of Nursing for providing the opportunity to develop this research paper. Next we would like to express our sincere gratitude to our advisors Mr.Shegaw T and Mr.Baye Tsegaye for the support in the development of this research paper, their guidance has helped us for developing this research paper

Table of Contents

LIST OF TABLES

LIST OF FIGURES

ABBEREVATION /ACRONYMS

AIDS: Acquired Immunodeficiency Syndrome

BBP: Blood Borne Pathogen

ETB: Ethiopian Birr

HBV: Hepatitis B Virus

HCV: Hepatitis C Virus

HCWs: Health Care Workers

HIV: Human Immunodeficiency Virus

NSI: Needle Stick Injury

NSSI: Needle Stick and Sharp Injuries

WCSH Worabe comprehensive specialized hospital

WHO: World Health Organization

CI: Confidence interval

SPSS: Statistical package for social science

ABSTRACT

Back ground: Needle stick and sharps injuries are occupational hazards to healthcare workers that resulted from accidental piercing of the skin of health care worker. Needle stick injuries expose health care workers to blood and body fluids which may be infected and can be transmitted to them every day healthcare workers are exposed to blood borne pathogens through contaminated needles and other sharp objects. About twenty blood borne pathogens can be transmitted through accidental needle stick and sharp injury.

Objective: To assess magnitude of sharp and needle stick injuries and their related safety measure among Health care Workers in worabe comprehensive specialized hospital.

Methods: Hospital based cross-sectional study design to assess magnitude of sharp and needle stick injury and their related safety measures among 578 health care workers of worabe comprehensive hospital was conducted from June 10 to July 6 2021.the study populations were stratified in to different working departments. Simple random sampling technique was used to collect data for study population.

Data was collected using structured questioner. The questionnaire was prepared in English and Amharic language and filled by health care workers working in worabe comprehensive specialized hospital. The collected data were checked for completeness and consistency by the investigator ahead of data entry for analysis. Completed questionnaire was given identification number and entered in to EPI information version 3.5.1. The data was coded and analyzed using SPSS version 25 and was presented with texts, figures and graphs

Result: From selected study participants all 340 responded to the questionnaire. The study revealed that 30.6% of healthcare workers had experience needle-stick and sharp injuries within their work years of experience. Out of the total participants 174 (51.2%) were females, Regarding the age of the participants, 202 (59.4%) lie in the age group between 20-29 years. Majority of the study participants were nurses 41.8%. Regarding working hour 198 (58.2%) of the participant had working hour of >40 hours per week. About 87 (25.6%) of the participants have got injured 2-4 times and injuries occurred in recapping were 29 (8.5%). Twenty-three (6.8%) of the injury occurred in medical ward. The magnitude of needle stick and sharp injury were high among males

55 (52.9%). The majority of injuries 93 (27.4%) occurred during day time Needle hollow-bore causing highest percent of injury 19.1%, out of the study participants 57(16.8%) recapped needle always and 85(2.0%) recapped needle seldom. Majority 177(52.1%) of health care workers did not take full dose of hepatitis vaccine, 110 (32.4) did not had training on safety practice.

Conclusion This study showed a high magnitude of needle stick or sharps among healthcare workers. Therefore, training on work related safety and wellbeing, making safety instructions accessible and avoiding a recap of the needle after use are important to reduce the chance of such injuries among healthcare workers.

Key Words: Sharp injuries, Needle stick injuries, safety measure, health care professionals, Ethiopia.

CHAPTER ONE

INTRODUCTION

1.1Background of the study

Needle stick and sharp injuries are wounds that are caused by Sharps that accidentally puncture the skin with medical equipment's that was used to screen, diagnose, treat or follow a patients disease condition [1]. Needle stick and Sharps include hypodermic needles, blood collection needles, and IV (intravenous) cannulas or needles as well as items such as scalpels, blades, lancets, retractors, scissors, pins, clamps, cutters, Staples and glass items [2].

Healthcare facilities (HCFs) can provide diagnostic, preventive, curative, and prognostic services for the community. However, while they are providing services, healthcare workers (HCWs) are exposed to blood and body fluids through occupational sharps, splashes, and needle stick injuries [3]. Particularly, there is a potential exposure among doctors, nurses, laboratory professionals, and biomedical waste management staff to blood borne pathogens worldwide [4].

Needle stick injuries (NSIs) are the most common workplace-related health hazards responsible for the transmission of blood-borne pathogens among the HCWs [5]. Occupational exposures to percutaneous injuries are substantial source of infections with blood borne pathogens among health care workers and can cause substantial health consequences and psychological stress for Health Care Worker [6].

Needles caused accidental penetration of the skin [7]. Injuries mostly happen during needle recapping, operative procedures, blood sample collection, intravenous line administration, and poor waste disposal practices [8]. Following NSIs, more than 20 blood-borne pathogens can be transmitted through body fluids [9] However; the most common diseases that can be potentially transmitted through body fluids are HIV, HBV, and HCV [10]. The risk of acquiring these diseases after accidental sharps injuries was 30% for hepatitis B (HBV), 3% for hepatitis C (HCV), and 0.3% for human immunodeficiency virus (HIV) [11]. Healthcare workers (HCWs) in developing countries are particularly at increased risk of infections from blood-borne pathogens through

occupational exposure because of the high prevalence of such pathogens in the countries as well as the lack of basic personal protective equipment (PPE), poor adherence to safety practices and less likely to report and use post exposure prophylaxis (PEP) [12,13].

After exposure the health care are affected in various ways including direct costs for laboratory tests, including tests for hepatitis B serology, HIV antibodies, and the test for anti-hepatitis C, also treatment for any condition. There is also the burden associated with post-exposure prophylaxis and their work absences [14].

Generally, NSI cause only minor bleeding or visible trauma. However, even in the Absence of bleeding, the risk of viral infection still remains [15]. It is important to study about NSIs in order to prevent the occurrence and take adequate measurements so as to blood borne pathogens related to needle stick and sharp injuries can no longer pose risk for HCWs.

1.2 Statement of the Problem

Globally, more than 35 million HCWs are suffering from occupational needle stick and sharp injury every year from this about 3 million HCWs are exposed to blood borne viruses each year [16]. About 90% of needles stick and sharp injuries occur in developing countries while in developed countries the attributed fraction was < 10 % [17]. World health organization (WHO) has reported that worldwide 2.5% of HIV and 40% of hepatitis B and C cases among healthcare workers were due to occupational exposures [18]. An estimated 500,000; 100,000 and 600,000-800,000 needle stick and other per cutaneous injuries were reported annually in Germany, UK, and USA HCWs, respectively [19].

According to the WHO report, the number of needle stick and sharp injuries per person among HCWs is 4 per year in Africa, Asia, and Western Mediterranean [20]. In Sub-Saharan Africa, an average of two to four HCWs suffers needle stick injuries per year [21]. The Centers for Disease Control and Prevention (CDC) estimates that about 236,000 to 384,000 hospital workers sustain needle stick and sharp injuries, and nurses share 40% of it [22]. 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 [23].

These preventable injuries expose health care workers to over 20 different blood borne pathogens, which resulted in 1000 infections per year [24]. The risk of acquiring these diseases after accidental sharps injuries was 30% for hepatitis B (HBV), 3% for hepatitis C (HCV), and 0.3% for human immunodeficiency virus (HIV) [11]. Furthermore, the exposure of HCWs to needle stick and sharp injuries (NSSI) causes infections, illness, disability, and death impacting the quality of the healthcare system [25].

The morbidity and mortality associated with occupational hazards are impacting the health and productivity of the health workers [26] through high cost, health consequences, emotional distress and missing working days [27]. One serious blood borne infection can cost significantly high amount for medications, follow up laboratory testing, clinical evaluation, lost wages, and disability payments [28]. Psychologically Employees may experience anger, depression, fear, anxiety, difficulty with sexual relations, trouble sleeping, problems concentrating, and doubts regarding

their career choice such fear may in turn compromise their ability to provide quality care or undermine their commitment to remain in the profession. The emotional effect can be long lasting, even in a low risk exposure that does not result infection [29]. It is probably the most serious and causes the highest level of anxiety amongst the healthcare works in many counties including Ethiopia [30].

The general factor contributing to needle stick and sharp injuries are work experience, educational status, qualification, monthly income, job category and , not complying with standard operating procedures recapping of needle after use, job related stress like long working hours, working in an emergency department another factor is not using universal precautions during procedure, lack of the required skill ,lack of infection prevention training and injection safety training, disassembling of syringe and needle [31,47]. Also Lack of knowledge, access or failure to use appropriate practice in the form of personal protective equipment contributes to increasing incidence of NSI among HCWs also Hospital overcrowding, a lower ratio of HCWs to patients increased risk for NSIs. [32]

Despite the risk of transmission of infectious particles, needle stick, and sharp injuries are neglected and are often not reported. [33]. The Centers for disease control and prevention estimates that though HCWs sustain approximately 385,000 Needle stick and sharp injuries annually, half of these injuries are unreported. [34]

In addition to the risk of acquiring a serious infection, needle stick and sharp injuries can cause bleeding, minor surface scratches, and visible skin injuries [35]. The risk of occupational transmission of blood borne pathogens in the resource-limited setting is high Therefore this study aims to assess the magnitude of needle stick and sharp injuries and their related safety measures among HCWs working in WCSH in south western Ethiopia.

1.3 Significance of the Study

Among occupational injuries needle stick injuries are the largest problem in health care setting; Exposure to NSI which have contact with Blood and Body Fluids (BBFs) during health care procedures introduce them to various blood-borne diseases which, in turn, will have an impact on health, their families and the delivery of health care services in many countries, particularly transitional and developing countries with limited resources.

The information gathered in this study could assist the hospital management in understanding of the magnitude of sharp and needle stick injury among the health workers in the hospital and develop strategies to follow on the safety measure such as increase Post exposure prophylaxis service and vaccine facilities for preventable disease hepatitis B virus. And also 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, generally the study will help as a source of information for further investigation.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Magnitude of Sharp and Needle Stick Injuries

Among occupational injuries needle stick injuries are the largest problem in health Care setting the magnitude of sharp and needle stick injuries are highest in developing countries and lowest in developed countries. Previous studies had been documented that the magnitude of sharp and needle stick injuries worldwide among HCWs during career time and previous one year was 56.2% and 32.4%respectively [36].

A cross-sectional study conducted among health care workers in a provincial teaching hospital in China 27.5% of HCWs had sustained sharp injury in the previous year. Factors such as seniority, job category, title, education, department, and training programs were associated with the occurrence of sharp injuries. Of 130 HCWs who experienced sharp injury were exposed to blood. Only (33.9%) HCWs reported their injuries to the concerned body. The main reasons for not reporting the sharp injuries were perception that the extent of the injury was light (30.2%), having antibodies (27.9%), and unaware of injury (16.3%) [9].

A cross-sectional study conducted in India among nurses shows that (33.3%) had sustained needle stick injury at least once in the past. More than half (58%) of the NSI involved a hollow bore needle, followed by I.V cannula (24%), suture needle (10%) and in regard to the area where NSI occurred, nearly half (48%) of the total incidents have occurred either in patient room (24%) or in emergency department (24%), 16% of the NSI have occurred in intensive/critical care units and only one NSI incident (2%) has occurred in operating room/recovery room [37].

A cross-sectional Study conducted among nurses in Pakistan 67% of nurses got needle stick injury. Almost all 99% nurses said that they didn't report their injury because of no reporting system in their hospital. Injection and needles (72%) are the most injury causing instrument and Two third (81%) of nurses experienced NSI in ward or bedside whereas only few got NSI in Emergency

Room (9%) and Operation Theatre (6%) and Needle is the most injury causing instrument (48%) followed by ampoule (18%) and blade (1%) [38].

A cross-sectional study conducted among nurses in South Africa 18.8% indicated that they had needle stick injuries in the previous 12 months, (78.3%) of needle stick injuries occurred in wards with syringe needles being the most common causative device [39]

A Cross-sectional study conducted among health care workers in central zone of Tigray, northern Ethiopia from a total of 456 selected health care workers, the magnitude of needle sticks and sharp injury in the past 12 months preceding the study and entire job were 25.9% and 38.5% respectively. Nearly one-third (31. %) of the injuries occurred in the emergency unit followed by outpatient (15.2%) and maternity ward (13.5%), Laboratory (9.4%) surgical ward (7%), operation theatre unit (6.4%), medical ward (5.3%), and laundry (5.3%). Majority 122 (71.3%) of the materials that caused the injury were used on patients [40].

A Cross-sectional study conducted among HCWs in Dessie City Hospitals, north east Ethiopia from a total of 438 health care workers, (28.3%) faced needle stick and sharps injuries in the last 12 months. The majority of the injuries (29%) occurred during injection, followed by operation (27.5%) and collecting needle and sharps after use (17.7%) [41]

A Cross-sectional Study conducted among Nurses Working in Tikur Anbessa Specialized Hospital, from total of 268 hospital nurses the prevalence of needle stick and sharp injuries was (36.2%). Nearly one-half (46.2%) injuries occurred in the ICU Other injuries occurred in surgical ward (44.4%), medical ward (39.9%), emergency (36%), OPD (35.6%), and pediatric department (20%). The degree or severity of injury accounted was slight skin penetration 53.6%, followed by superficial and deep injuries which were 33% and 18.6%, respectively [42]

A cross-sectional study conducted among HCWs in Dire Dawa, Eastern Ethiopia from total of 282 HCWs (52.8%) of study participants had one or more lifetime prevalence of NSSI and the one-year prevalence was (26.6%). Among the cases occurred in the last one-year (65.3%) did not report the incident due to absence of reporting protocol, (53.1%) fear of isolation and/or discrimination (20.4%), too busy to report (16.3%) and that it was not important to report the incident (10.2%) [43].

A Cross-sectional study conducted among nurses western Ethiopia, Nekemte Health Center from the total of the study participants, (33.7%) had encountered needle stick and sharp injury in the past 12 months, (12.1%) had moderate needle stick or sharp injury and (5.4%) had deep needle stick or sharp injury. Concerning the equipment that caused the injury, (18.5%) of the respondents were injured by the needle, (4.7%) were injured by surgical equipment, (6.7%) were injured by medication vial or ampoule and (3.7%) were injured by other objects, (11.4%) of the nurses had encountered NSSI while suturing wounds, (11.1%) were injured while giving the injection, (3.4%) were injured while recapping needle, (2%) encountered NSSI while withdrawing blood sample and (5.7%) were encountered the injury while performing other tasks, (12.5%) of the nurses have encountered the injury at the emergency unit, (3.7%) at the outpatient department, (3%) at the medical ward, (3%) at the pediatric ward, (3.4%) at the surgical ward, and (8.1%) were encountered the injury at other departments [44].

In another cross-sectional study conducted among HCWs in Dessie north east Ethiopia the magnitude of needle stick and sharp injury among healthcare workers were 60.2% in life time experience. Among these, 89 (43.8%) sustained injury only once in their lifetime (47).

A Cross-sectional study conducted among health care workers in Awi Zone, Amhara Regional State, Northwest Ethiopia, the magnitude of needle stick and sharp injury among healthcare workers were 18.7% at least once in the previous 1 year(50).

The important factors that influence the overall risk for occupational exposures to blood borne pathogens include working area' the number of infected individuals in the patient population and the type and number of blood contacts.

2.2. Safety Measures for Sharp and Needle Stick Injuries

A cross-sectional study conducted among nurses in India shows that overall more than half (56%) of the NSI incidents occurred while the nurses were recapping the needle, 10% of the incidences occurred while passing needle and 10% while disposing the needle. The most common cause of NSI as perceived by nurses was lack of proper equipment for disposal (50%) followed by increased workload (24%), carelessness (18%) and fatigue (8%) [37]

A cross-sectional Study conducted among Nurses Working in Tikur Anbessa Specialized Hospital, from total of 268 hospital nurses, 44% of the respondents had recapped needles after use at least once during their work time, lack of proper equipment disposal (35.1%) were perceived as causes of NSSI. 64.5% of nurses know in which department or room they report, 71.3% of nurses responded that safety boxes were available at the right working place [42].

A cross-sectional study conducted among HCWs in Dire Dawa, Eastern Ethiopia from a total of 282 HCWs (7.8%) responded that they never use PPE and (52.1%) sometimes use PPE. Considering recapping of needles after use, (10.6%) responded they always recap needle and (29.1%) sometimes recap used needles. Regarding availability of safety facilities, about (9.6%) of HCWs responded PPE is not available in their work place while (62.1%) responded PPE is available but inadequate. Regarding safety box (3.9%) of HCWs responded unavailability of safety box near their work station, (9.6%) responded PEP is not available while (51.8%) reported PEP is available but inadequate. On the other hand, availability of safety guidelines and NSSI reporting protocol was (52.1%) and (45.4%) respectively. (80.1%) of HCWs took Hepatitis B vaccination but only (45.1%) of them took the full dose. Most (62.8%) of HCWs work more than 40 h a week and (44.3%) of HCWs was not satisfied on their working environment [43].

A Cross-sectional study conducted among HCWs in Dessie City Hospitals, north east Ethiopia from a total of 438 health care workers about (71.5%) participants recap needle after use, (11.6%) of the respondents did not use personal protective equipment (PPE) during procedure. The most

commonly mentioned reason for not using PPE was discomfort when used (47.1%), followed by a lack of PPE (27.5% [41].

A cross sectional study among health care workers in central zone of Tigray, northern Ethiopia (37.6%) respondents had recapped the needle at least once in 12 months preceding the study.

The top reasons for the occurrence of NSSI were sudden movement of the patients during procedure 28.1% followed by disposal and cleaning the work area (18.1%), during giving injection (14.6%), needle recapping 12.3% and drawing blood from a patient 11.7% [40].

Safety measures 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 [45]. It is prevented by use of universal precaution, not recapping needles, by providing training and education. 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 [46]

2.3. Conceptual frame work

FIGURE 1: - CONCEPTUAL FRAMEWORK FROM LITERATURE REVIEW

CHAPTER THREE

3. OBJECTIVES OF THE STUDY

3.1 General objectives

- To assess magnitude of sharp and needle stick injuries and their related safety measures among Health care workers in Worabe comprehensive specialized Hospital Silti Zone, South nation nationality and people, South west Ethiopia, 2021

3.2 Specific objectives

- To determine magnitude of sharp and needle stick injury among health care workers.
- To assess related safety measures among Health care workers.

CHAPTER FOUR

4. METHODS AND MATERIALS

4.1. Study area and period

The study was conducted in siltie zone at WCSH which is situated 172 km south west direction from Addis Ababa city and 107km from Hawassa capital city of SNNP Worebe Comprehensive Specialized Hospital which is one of public hospital in SNNPRs. It is established in 2006. It provides diversity of both outpatient and inpatient services for about10 million population from neighboring region of services at general and specialty levels including Neonatal intensive care, Pediatrics intensive care, AICU, Surgery, Gynecology and Obstetrics ENT (Ear, Nose and throat), Neurology, maxillofacial, plastic and orthopedics. The hospital has 7 operation room (two operation rooms for ENT and obstetrics, the remaining 5 operation rooms for general surgery, Gynecology, Neuro-surgery, maxillofacial, plastics, orthopedics and cardio-thoracic surgery and more. 20 BSc anesthetists, three senior anesthetists and one anesthesiologist. The study was conducted from June 10 to July 6 2021

4.2. Study Design

Institutional based cross-sectional study design was conducted**.**

4.3. Population

4.3.1. Source population

All Health care professional working in worabe comprehensive specialized hospital was the source of population.

4.3.2. Study population

Selected health care professionals working at WCSH, who had contact with sharp and needle instruments

4.4. Inclusion and Exclusion Criteria

4.4.1. Inclusion Criteria

All health care personnel in WCSH who had needle stick injury and present at the Time of data collection will be included in the study.

4.4.2. Exclusion Criteria:

Health care workers being critically ill, on annualize leave,

4.5. Sample Size Determination

The required sample size for this study will be calculated using single population proportion formula with the assumption of a 95% 0f confidence interval and a 5% of margin of error and the prevalence used from research done on Magnitude and associated factors of needle stick and sharps injuries among health care workers in Dessie City Hospitals, north east Ethiopia 2020 is 28.3%.

$$n = \frac{(Z\ \alpha/2)^2 pq}{d^2}$$

Where n=Sample size

$(Z\ \alpha/2)^2$ =Value corresponding to a 95% level of significance=1.96

p= prevalence (28.3%) = 0.28

q= (1-p) = (1-0.28) =0.72

d=Margin of error, assumed to be 5%

$$n = \frac{(Z\ \alpha/2)^2 pq}{d^2} = \frac{(1.96)^2\ (0.28)\ (0.72)}{0.05^2} = 309$$

Considering a 10% non-response rate, the final the sample size became 340

4.6. Sampling Technique

First HCW_S strata were identified by using stratified sampling method and then HCW_S from each stratum were selected by using simple random sampling method. HCWs in each stratum were selected by lottery method.

4.7. Sampling Procedure

- The study population were stratified in to different job categories
- Sample was taken from each job category

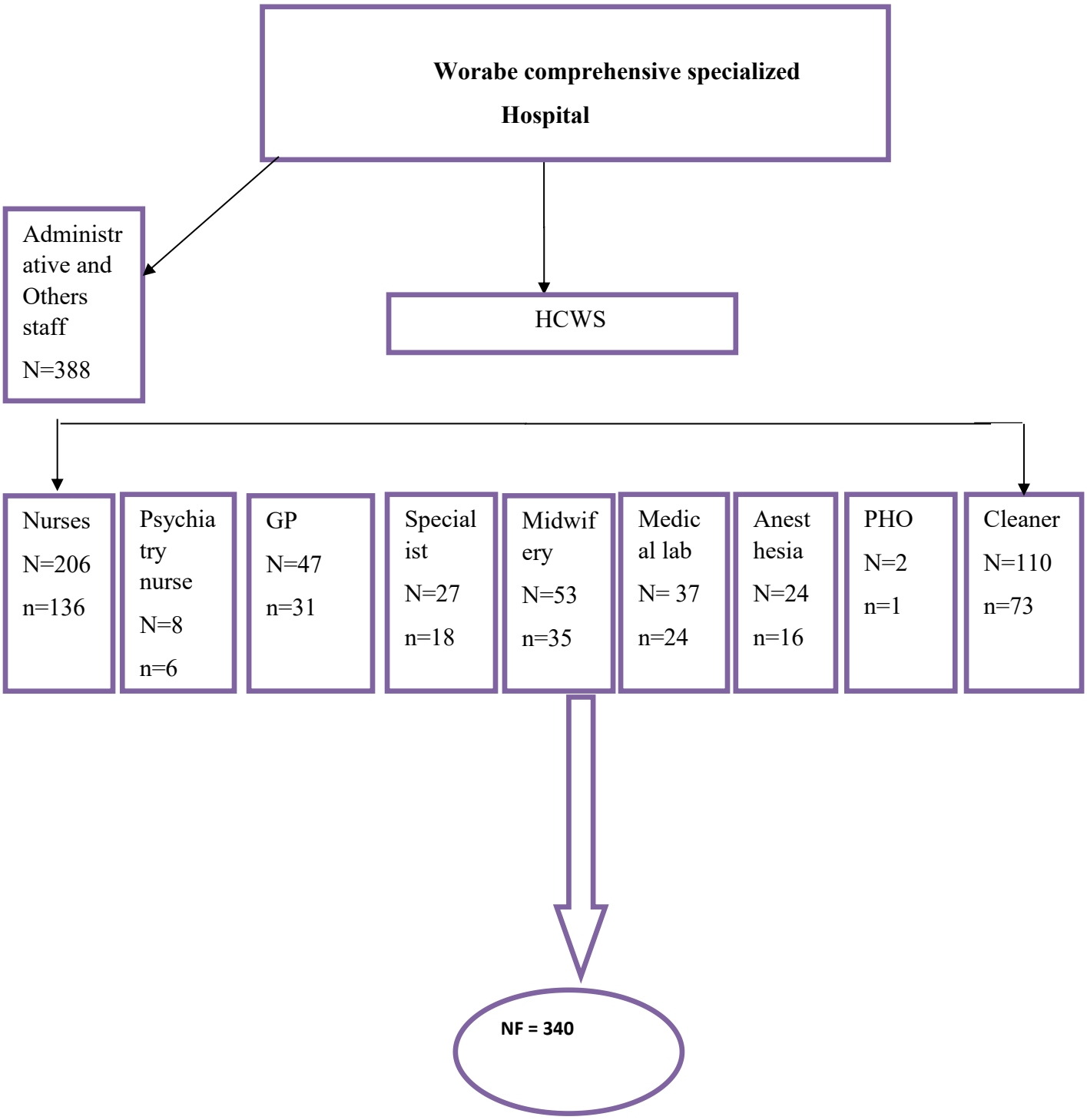
Worabe comprehensive specialized Hospital
Administrative and Others staff N=388
HCWS
Nurses N=206 n=136
Psychiatry nurse N=8 n=6
GP N=47 n=31
Specialist N=27 n=18
Midwifery N=53 n=35
Medical lab N= 37 n=24
Anesthesia N=24 n=16
PHO N=2 n=1
Cleaner N=110 n=73
NF = 340

FIGURE 2SCHEMATIC PRESENTATION OF SAMPLING PROCEDURE ON MAGNITUDE OF SHARP AND NEEDLE STICK INJURY AMONG HEALTH CARE WORKERS IN WCSH

4.8. Study Variables

4.8.1. Dependent Variable:

- Sharp and needle stick injury

4.8.2. Independent Variables

- Socio-demographic characteristics: Age, sex, educational level, job category, work experience
- Organizational related: working hour, working department, training on infection prevention, condition of working environment
- Behavioral factors: needle recapping, usage of personal protective equipment, follow universal safety guidelines

4.9. Operational Definition

- **Needle stick injuries:** are wounds caused by needles that accidentally puncture the skin needle stick and Sharps include hypodermic needles, blood collection needles, and IV (intravenous) cannulas or needles as well as items such as scalpels, blades, lancets, retractors, scissors, pins, clamps, cutters, Staples and glass items

  .

- **Health care workers**; they are working in hospital who do have contact with syringe, needle and other sharp materials due to their job.

- **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.
- **universal precaution** :includes use of personal protective equpiments(glove maskes

- **Severe needle stick injury;** penetrating skin with profuse bleeding.
- **Moderate needle stick injury**; penetrating skin with moderate bleeding.
- **Superficial needle stick injury**; penetrating skin without bleeding

4.10. Data Collection Tools and Procedure

4.10.1. Data Collection Tool

Structured questionnaire was prepared in English language and translated to Amharic. This structured questionnaire was used for quantitative data collection and was taken from previous study done then translated into English to check for consistency. The main points included in the questionnaire are socio-demographic characteristics, needle stick and sharp object injury exposure and knowledge on safety measure.

4.10.2. Data Collection Procedure

Data was collected using structured questionnaire, the data was collected by three second year diploma nursing students and the principal investigators supervised the overall data collection process.

4.11 Data Quality Assurance

Training was given for data collectors prior to data collection; pretest was done on 5% of the calculated sample size. Based on the finding of pretest necessary correction and modification was made on the questionnaire. Every evening the collected data was checked for completeness, consistency and clarity by the principal investigators.

4.12 Data processing and analysis

After data collection each questionnaire were visually checked for completeness and coded at the right margin of the questionnaire then the data entered in to Epi-data version 3.5.1. And exported to SPSS version 25.0 statistical software packages for data cleaning and analysis. Descriptive statistics was computed and presented in the form of texts and tables and charts.

4.13. Ethical Considerations

The letter of permission was taken from Wolkite university department of nursing and given to WCSH administrative office permission was taken from the office. Then the respondents were informed about the objective and purpose of the study and verbal consent was taken from each respondent. Also, they were informed about their right of not participating in the study or withdrawing at any time. Confidentiality of the information was assured and collected anonymously

4.14. Dissemination of Result

The finding of this research will be presented in public during research defense. The hard copies of the finding will be submitted to Wolkite University, college of medicine and health science, Department of nursing. It will also be sent to WCSH.

CHAPTER FIVE

5 RESULTES

5.1Sociodemographic characteristics

Out of a total of 340 HCWs who were enrolled in to the study all of them participated making response rate of 100% from these 340 HCWs who participated in the study,174(51.2%) were females. Regarding the age of the participants, 202 (59.4%) lie in the age group between 20-29 years and median age of 29.0. The majority of the study participants,207 (60.9%) were married, concerning educational status, the majority of them,213(62.6%) were degree holder, and regarding job category the majority of the study participants were nurses (40.0%). And one third of the study participants 198 (58.2%) had > 40 working hour per week. About working experience, most of study participants, 298(87.6%) had work experience of less than five years, 42(12.4%) had work experience of 5-10 years. (Table 1).

TABLE 1SOCIO DEMOGRAPHIC STATUS OF THE HCWS WHO PARTICIPATED ON THE STUDY (N =340) IN WCSH WORABE ETHIOPIA 2021

Variable	Category	Frequency	Percent (%)
Age	20-29 30-39 ≥40	202 119 19	59.4 35.0 5.6
Sex	Male Female	166 174	48.8 51.2
Marital status	Married Single Divorced windowed	207 126 4 3	60.9 37.1 1.2 0.9
educational level	Primary school Secondary school Diploma Degree Masters and above	49 24 34 213 20	14.4 7.1 10.0 62.6 5.9
Job category	Nurse General practitioner	136 31	40.0 9.1

	Anesthesia Midwife Health officer specialist Medical laboratory Cleaner Psychiatry nurse	16 35 1 18 24 73 6	4.7 10.3 0.3 5.3 7.1 21.5 1.8
Working department	Ward Operation room OPD Delivery room Laboratory Emergency Pediatric emergency Other	125 40 35 23 30 27 17 43	36.8 11.8 10.3 6.8 8.8 6.5 5.9 13.2
Working hour per week	≤40 >40	142 198	41.8 58.2
Working experience	<5 5-10	298 42	87.6 12.4

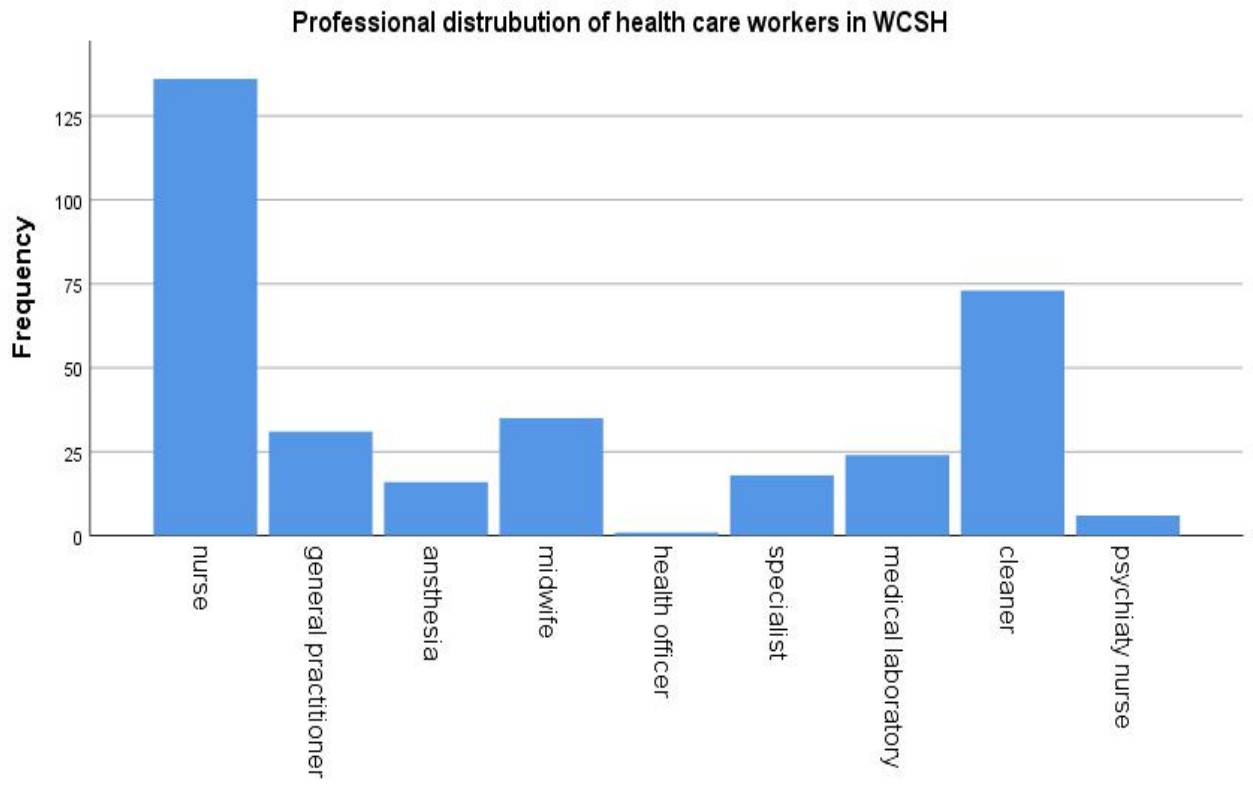

Figure 3 shows professional distribution of HCWs who participated in the study in WCSH worabe Ethiopia 2021.

5.2Magnitude of sharp and needle stick injuries

From a total of 340 HCWs, 104 (30.6%) 95% CI (25.67-35.51) faced needle stick and sharp injuries in their working experience. Around 87 (25.6%) of the health care workers have got injured 2-4 times and followed by 15(4.4%) once. Regarding the type of the injury 61(17.9%) were superficial, 39(11.5%) were moderate. and about the type of device which caused the injury, needle hollow bore were the major cause 65 (19, 1%) and majority of the injury occurred during recapping 29 (8.5%) and 72 (21.2%) of the instruments were used, and 15 (4.4%) of the instruments had blood on it. The majority of the injury occurred during day time 93 (27.4%). Twenty-three (6.8%) of the injury occurred in medical ward followed by emergency department 16(4.7%).and 95(27.9%) of the injured participants washed the injury site with soap and water. Out of 104 (30.6%) HCWs who faced the injury 29(8.5%) reported about their injury. (table2)

TABLE 2 MAGNITUDE OF NEEDLE STICK AND SHARP INJURY EXPOSURE OF THE PARTICIPANTS IN WCSH WORABE ETHIOPIA 2021

Variable	Category	Frequency	Percentage(%)
Have you ever had sharp and needle stick injury?	Yes No Total	104 236 340	30.6 69.4 100.0
How many times did you sustain?	Once 2-4 times ≥5 Don't recall	15 81 6 2	4.4 23.8 1.8 0.6
Types of injury	Sever Moderate Superficial	4 39 61	1.2 11.5 17.9
Was the causative instrument used?	Yes No	72 32	21.2 9.4
If yes was there visible blood on it before the accident?	Yes No	15 57	4.4 16.8
What type of instrument caused the injury?	Needle hollow- bore Suturing needle Surgical device Glass IV Cannula	65 11 7 10 11	19.1 3.2 2.1 2.9 3.2
Which shift did you work at the time of exposure	Day time Night time	93 11	27.4 3.2
Where did the needle stick and sharp injury occur?	**Outpatient department** **Pediatric emergency** **EPI(under five)** **Gynecology ward** **Neonatal intensive care unit (NICU)** **Psychiatry ward** **Emergency** **Labor and delivery** **Laboratory** **Operation theater unit** **Intensive care unit**	**1** **6** **1** **4** **2** **2** **16** **15** **5** **11** **3**	**0.3** **1.8** **0.3** **1.2** **0.6** **0.6** **4.7** **4.4** **1.5** **3.2** **0.9**

	Surgical ward **Medical ward** **Pediatric ward**	**10** **23** **5**	**2.9** **6.8** **1.5**

What type of work where you doing when the accident happens?	**Recapping needle** **Transfer of body fluid from syringe** **During opening of ampule** **During preparation of medication** **During cleaning the room** **During suturing** **Securing IV line** **Other**	**29** **2** **10** **13** **21** **10** **11** **8**	**8.5** **0.6** **2.9** **3.8** **6.2** **2.9** **3.3** **2.4**
What type of measure was taken after the injury?			
Washing the injury site with soap and water	Yes No	95 9	27.9 2.6
Applying antiseptic agent	Yes No	77 27	22.6 7.9
Starting post exposure prophylaxis	Yes No	13 91	3.8 26.8
Condition of the working environment was?	Bright light Dim light Noise Room temperature(uncomfortable)	67 2 2.3 12	19.7 0.6 6.8 3.5
Was the accident reported?	Yes No	29 75	8.5 22.1
If yes to whom?	To the coordinator of working area	29	8.5
If no why not?	Heavy workload at that time Perception of low possibility	17 58	5.0 17.1

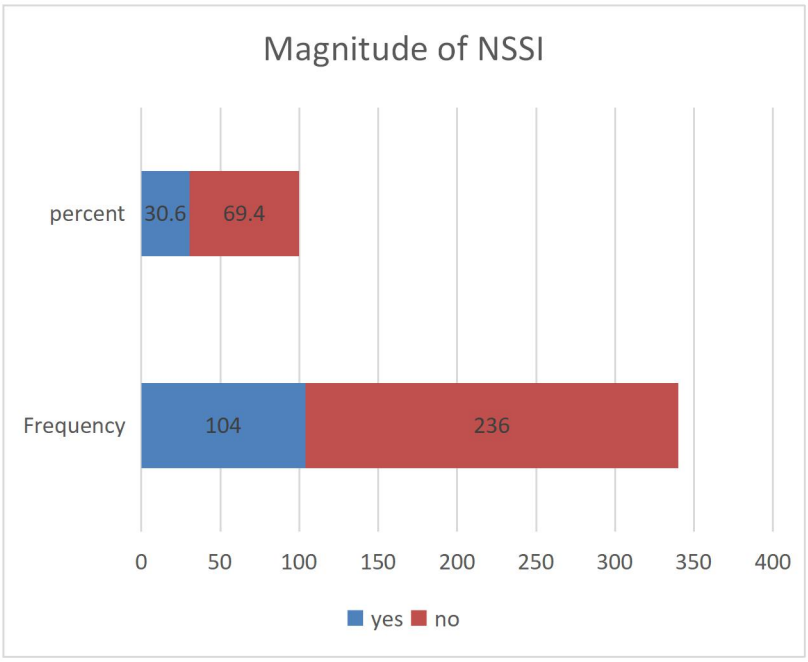

FIGURE 4SHOWS THE MAGNITUDE OF SHARP AND NEEDLE STICK INJURY AMONG HCWS WHO PARTICIPATED IN THE STUDY AT WCSH WORABE ETHIOPIA 2021.FIGURE 5 SHOWING FREQUENCY OF NSSI AMONG HCWS WHO PARTICIPATED IN THE STUDY AT WCSH WORABE ETHIOPIA 2021

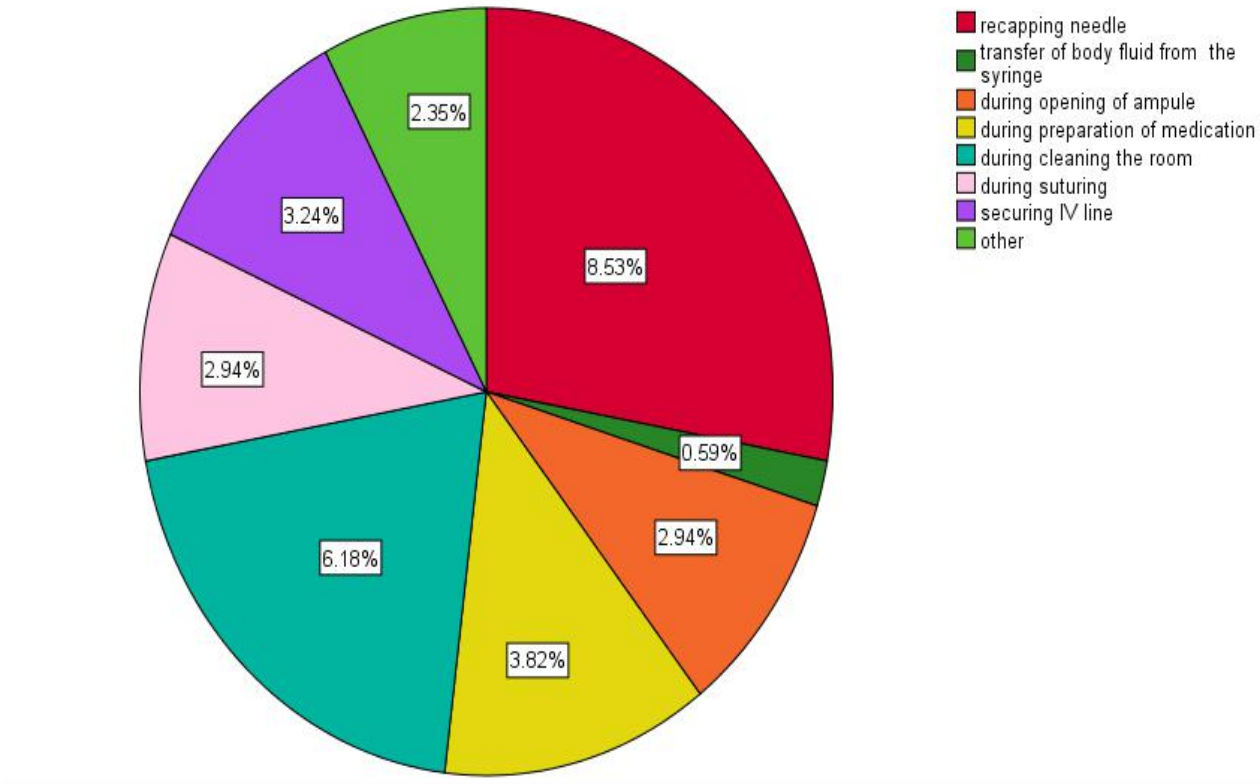

FIGURE 6 TYPES OF WORK THAT LEAD TO NSSI AMONG HCWS WHO PARTICIPATED IN THE STUDY AT WCSH WORABE ETHIOPIA 2021

5.3KNOWLEDGE ON SAFETY MEASURES AMONG STUDY PARTICIPANTS

Out of 340 study participants 41.8% of the study participants recap needle. Fifty-seven (16.8%) recap needle always 85 (25.0%) of the participants recap needle seldom. All 340 (100%) of the participants dispose on marked container. Majority of the study participants 177(52.1%) did not receive hepatitis vaccine full dose and the majority 230 (67.6%) study participants have training on safety practice of needle stick and sharp injury, the others 110(32.4%) did not receive training on safety practice of needle stick and sharp injury. (Table 3)

TABLE 3 SHOWS KNOWLEDGE ON SAFETY MEASURES AMONG HCWS IN WORABE 2021

Variable	category	frequency	Percentage (%)
Do you know about universal precaution?	Yes	340	100
Do you recap needle?	Never Seldom Always	125 85 57	36.8 25.0 16.8
Do you dispose needle in marked container?	Yes	340	340
Do you wear glove during procedure?	Always Most of the time seldom	249 89 2	73.2 26.2 0.6
Receiving hepatitis vaccine full dose?	Yes No	163 177	47.9 52.1
Do you have training on safety practice on needle and sharp injury?	Yes No	230 110	67.6 32.4

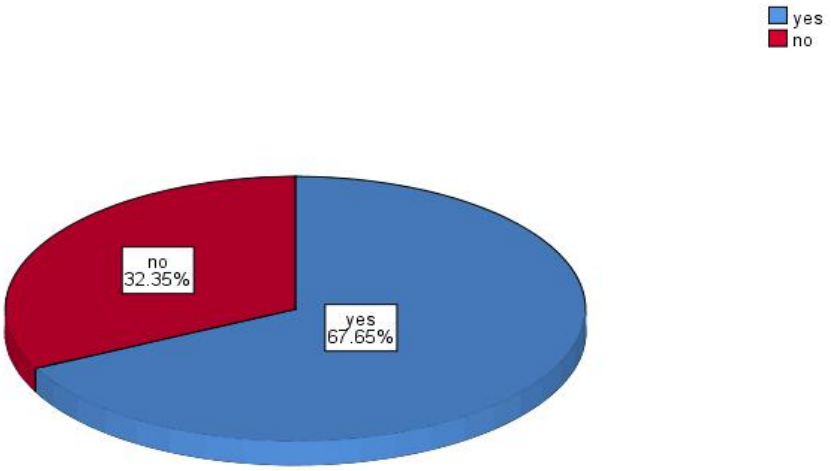

FIGURE 7SHOWS PERCENTAGE OF PARTICIPANTS WHO HAVE TRAINING ON SAFETY PRACTICE OF NEEDLE AND SHARP INJURY AT WCSH WORABE ETHIOPIA 2021.

5.4 Cross tabulation of magnitude of NSSIS among study participant of WCSH

The magnitude of needle stick and sharp injury among the study participants were high among males 55 (52.9%). Health care workers with age group of 20-29 years were the highest exposed groups to needle stick and sharp injuries 61 (58.7%). Nurses had the highest magnitude from other health care professionals 47 (45.2%). Those HCWs who worked >40 hours per week had needle stick and sharp injury exposure of 66 (63.5%).and those with work experience of <5 years had NSSI of 86 (82.7%) and Those who recapped needle always had NSSIS exposure of 37(44.6%) those who did not receive training on safety practice of NSSIS 58(55.8%) got needle stick and sharp injury

TABLE 4 SHOWS CROSS TABULATION OF MAGNITUDE OF SHARP AND NEEDLE STICK INJURY AMONG PARTICIPANTS IN WCSH WORABE ETHIOPIA 2021

Variable	Category	Magnitude of sharp and needle stick injury	
		Have NSSIS	No NSSIS
Age	20-29 30-39 ≥40	61 (58.7%) 34 (32.7%) 9 (8.7%)	141(59.7%) 85(36.0%) 10 (4.2%)
Sex	Male Female	55 (52.9%) 49 (47.1%)	111(47.0%) 125 (53%)
Marital status	married single divorced windowed	53(51.0%) 50(48.1%) 1(1.0%) 00.0%	154(65.3%) 76(32.2%) 3(1.3%) 3(1.3%)
Educational level	Primary school Secondary school Diploma Degree Masters and above	14 (13.5%) 7(6.7%) 10 (9,6%) 69 (66.3%) 4 (3.8%)	35(14.8%) 17(7.2%) 24(10.2%) 144(61.0%) 16(6.8%)

Job category	Nurse	47(45.2%)	89(37%)
	General practitioner	5(4.8%)	26(11.0%)
	Anesthesia	5(4.8%)	11(4.7%)
	Midwife	12(11.5%)	23(9.7%)
	Specialist	3(2.9%)	15(6.4%)
	Medical laboratory	9 (8.7%)	15(6.4%)
	Cleaner	21 (20.2%)	52(22.0)
	Psychiatry nurse	2(1.9%)	4(1.7%)
Working department of the participants	ward	44(42.3%)	81(34.3%)
	operation room	13(12.5%)	27(11.4%)
	OPD	6(5.8%)	29(12.3%)
	delivery room	12(11.5%)	11(4.7%)
	laboratory	9(8.7%)	21(8.9%)
	emergency	10(9.6%)	17(7.2%)
	pediatric emergency	5(4.8%)	12(5.1%)
	other	5(4.8%)	38(16.1%)
Working hour per week	≤40 >40	38(36.5%) 66(63.5%)	104(44.1%) 132(55.9%)
Working experience	<5 5-10	86(82.7%) 18(17.3%)	212(89.8%) 24(10.2%)
Which shift the needle stick occur	Day time Night time	93(89.4%) 11(10.6%)	

Wear glove during procedure	Always Most of the time Seldom	70(67.3%) 34(32.7%) 0(0.0%)	179(75.8%) 55(23%) 2(0.8%)
Recapping needle	Never Seldom Always	14(16.9%) 32(38.6%) 37(44.6%)	111(60.3%) 53(28.8%) 20(10.9%)
Receiving hepatitis vaccine full dose	Yes No	48(46%) 56(53%)	115(48.7%) 121(51.3%)
Training on safety measure of sharp and needle stick injury	Yes No	46(44.2%) 58(55.8%)	184(%) 52(22.0%)

CHAPTER SIX

6. Discussion

Needle stick injuries (NSIs) are the most common workplace-related health hazards responsible for the transmission of blood-borne pathogens among the HCWs [5]. This study aimed to asses magnitude of sharp and needle stick injury and their related safety measures among health care workers working at WCSH Sothern Ethiopia. The study result showed that about 104 (30.6%) 95% CI (25.67-35.51) HCWs had encountered sharp and needle stick injury in their years of experience. The study result was higher than the study done provincial teaching hospital in China, Awi zone, Dessie City Hospitals 27.5 %(9), 18.7% (50), 28.3% (41) Respectively. The difference might be because of their study include a one-year magnitude whereas this study includes HCWs working years of experience. This study was lower than the study done in Dessie, Dire Dawa and Tigray zone, Bale zone, Hawassa city, where the proportion of NSSI in work time experience was 60.2% (47), 52.8(44), 38.5% (40), 37.1(48), 35.8% (49) respectively. The possible difference in the proportion of injury could be due to the scio-demographic characteristic of the study participants for instance their working experience or it might be due to study time now we are in 2021 where advanced facilities are available compared to the past.

This study indicated that HCWs aged between 20-29 years had highest occurrence of NSSIs (58.7%). Also showed that the magnitude of NSSI was high among those with experience less than <5 years (82.7 %) which was comparable to the study conducted in Dessie in which young age was risk factors for occupational injuries (47). This could be due to limited work experience and the fact that young HCWs tend to be harry and aggressive in their work.

This study showed that the most frequent 17.9% cause of NSSIS was syringe needle which is comparable with the finding of study done in nekemet health care center 18.5% (44). This might be due to the fact that needles have been used in every department of the HCWs unlike other sharps which have been used on in few departments. Twenty-nine (8.5%) of the injury occurred during recapping was higher when compared to study done on nekemet health care center 3.4% (44) but lower when compared to the study done in Tigray zone 12.3% (40). over all 41.8% of the study participants recapped needle at least once in their working years of experience which was lower than in study done on dessie city hospital 71.5% but higher than in Tigry zone and dire dawa

37.6%(40), 39.7%(43) respectively. And also, the study showed that medical ward being the most common area for the occurrence of NSSIS 23 (6.8%) which was almost similar when compared to Tigray zone 5.3% (40).This study also showed that 72 (21.2%) instrument that caused the injury was used on patient, was very low when compared to study done in Tigray zone 122(71.3%) (40).

Majority of NSSI occurred during the day shift 89.4%. This may attribute to busy schedule at time and the high work load, high patient flow during day time.

The study also showed that 47.9% of HCWs took Hepatitis B vaccination full dose which was higher than the study done in dire dawa only (45.1%) of them took the full dose(43).The study also showed that , 22.1% of the injured HCWs did not report their injury. The majority (58.2 %) of HCWs work more than 40 hour a week which was lower than Dire dawa 62.8 %(43).

7. Strength of the study

This study gave information about level of occupational injury related to NSSI. High response rate and the inclusive nature of this research incorporate all health professionals who have direct contact with needle stick and sharp injuries, was not specific to one or two professionals' occupational exposures.

Can be base line information for other health plan

Can be resources for next researchers

7.1 Limitation of the study

The study was cross- sectional study design which cannot establish cause and effects relationships and recall bias due to the retrospective nature of questions concerning the risks or accuracy of the past experience of the respondents with regard to the occurrence of the NNSI might have been affected by recall bias.

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

This study showed a high magnitude of needle stick or sharps among healthcare workers, 30.6% of the respondents had needle stick and sharp injury and HCWs aged between 20-29 years had highest occurrence of NSSIs (58.7%). Also showed that the magnitude of NSSI was high among those with experience less than <5 years (82.7 %) and those HCWs who had > 40 working per week 63.5% had needle stick and sharp injury and those who recap needle always 37 (44.6 %) had NSSIS and the majority of the injury occurred during day time 89.4%and those participant who had no training on safety measure got needle stick and sharp injury were 55.8% and 53% of the participants did not receive hepatitis vaccine full dose.

8.2 Recommendation

The study showed a high magnitude of NSSIs among healthcare workers, which might be an indication that the risk of health care workers toward blood borne infections, including HIV/AIDS and different hepatitis is getting increased. Lack of training, and recapping of the needle after use work load are important factors for the occurrence of NSSIS the risk of such injuries among HCWs so Formal training on safety practice of needle and sharps should be given by WCSH policy makers and continuous monitoring of the work place safety should be ensured. Furthermore, reducing the working hour or work over load is also advantageous to reduce occupational exposure of healthcare workers to NSSIS. This can be addressed by increasing the number of staffs at WCSH

REFERENCE

1 Zhang M, Wang H, Miao J, Du X, Li T, Wu Z. Occupational exposure to blood and body fluids among health care workers in a general hospital, China. American journal of industrial medicine. 2009 Feb;52(2):89-98.

2 Ahmed AS. Needle stick and sharp injuries among nurses at Zagazig University Hospitals, Sharkia Governorate, Egypt. Middle East J Appl Sci. 2014;4(4):1205-1.

3 Prüss-Üstün A, Rapiti E, Hutin Y. Estimation of the global burden of disease attributable to contaminated sharps injuries among health-care workers. American journal of industrial medicine. 2005 Dec;48(6):482-90.

4 Leigh JP, Markis CA, Iosif AM, Romano PS. California's nurse-to-patient ratio law and occupational injury. International archives of occupational and environmental health. 2015 May;88(4):477-84.

5. US Public Health Service. Updated US Public Health Service guidelines for the management of occupational exposures to HBV, HCV, and HIV and recommendations for postexposure prophylaxis. MMWR. Recommendations and reports: Morbidity and mortality weekly report. Recommendations and reports. 2001 Jun 29;50(RR-11):1-52.

6 Do AN, Ciesielski CA, Metler RP, Hammett TA, Li J, Fleming PL. Occupationally acquired human immunodeficiency virus (HIV) infection: national case surveillance data during 20 years of the HIV epidemic in the United States. Infection Control & Hospital Epidemiology. 2003 Feb; 24(2):86-96.

7, Prüss-Üstün A, Rapiti E, Hutin Y. Estimation of the global burden of disease attributable to contaminated sharps injuries among health-care workers. American journal of industrial medicine. 2005 Dec; 48(6):482-90.

8. Rodrigues C. Needle stick injuries & the health care worker--the time to act is now. Indian Journal of Medical Research. 2010 Mar 1; 131(3):384-7.

9. Cui Z, Zhu J, Zhang X, Wang B, Li X. Sharp injuries: a cross-sectional study among health care workers in a provincial teaching hospital in China. Environmental health and preventive medicine. 2018 Dec; 23(1):1-7.

10. Baghcheghi N, Koohestani HR, Abedi AR. Prevalence needlestick/sharps injuries among nursing student and related factor. Iran Occupational Health. 2011 Jan 10; 7(4):6-0.

11 Feleke BE. Prevalence and determinant factors for sharp injuries among Addis Ababa hospitals health professionals. Sci J Public Health. 2013;1(5):189-93.

12. Amira CO, Awobusuyi JO. Needle-stick injury among health care workers in hemodialysis units in Nigeria: a multi-center study. The international journal of occupational and environmental medicine. 2014 Jan;5(1):1.

13. Prüss-Üstün A, Rapiti E, Hutin YJ. Sharps injuries: global burden of disease from sharps injuries to health-care workers. Geneva:; 2003.

14. Lee JM, Botteman MF, Xanthakos N, Nicklasson L. Needlestick injuries in the United States: epidemiologic, economic, and quality of life issues. Aaohn Journal. 2005 Mar;53(3):117-33.

15. Combined tool for assessing the safety of injections, suturing, phlebotomy, intravenous access (insertion of IV and piggybacks), and needle stick injury prevention strategy among healthcare workers

(injection providers and healthcare waste handlers) Adapted from “Tool C”: Tool for the Assessment of injection safety (Who7V&B/01.30) under WHO Project to Prevent Needle Stick Injury and HIV Transmission among Health Care Workers. March 2005. Available at: https://www.cdc.gov/nhsn/ PDFs/NaSH/NaSH-Report-6-2011.pdf

16. Shiao J, Guo L, McLaws ML. Estimation of the risk of bloodborne pathogens to health care workers after a needlestick injury in Taiwan. American journal of infection control. 2002 Feb 1;30(1):15-20.

17. Board S. Risks to health care workers in developing countries. N Engl j Med. 2001 Aug 16;345(7).

18. Walle L, Abebe E, Tsegaye M, Franco H, Birhanu D, Azage M. Factors associated with needle stick and sharp injuries among healthcare workers in Felege Hiwot Referral Hospital, Bahir Dar, Northwest Ethiopia: facility based cross-sectional survey. International Journal of Infection Control. 2013 Oct 17;9(4).

19. Rampal L, Zakaria R, Sook LW, Zain AM. Needle stick and sharps injuries and factors associated among health care workers in a Malaysian hospital. European Journal of Social Sciences. 2010 Mar;13(3):354-62.

20. World Health Organization. The world health Report. Geneva, Switzerland: WHO; 2012

21. Nsubuga FM, Jaakkola MS. Needle stick injuries among nurses in sub-Saharan Africa. Tropical medicine & international health. 2005 Aug;10(8):773-81.

22. Liyew B, Sultan M, Michael M, Tilahun AD, Kassew T. Magnitude and Determinants of Needlestick and Sharp Injuries among Nurses Working in Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia. BioMed Research International. 2020 Dec 18;2020.

23. World Health Organization. The world health report 2002: reducing risks, promoting healthy life. World Health Organization; 2002.

24. Singru SA, Banerjee A. Occupational exposure to blood and body fluids among health care workers in a teaching hospital in Mumbai, India. Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine. 2008 Jan;33(1):26.. View at: Publisher Site | Google Scholar

25 Kebede G, Molla M, Sharma HR. Needle stick and sharps injuries among health care workers in Gondar city, Ethiopia. Safety Science. 2012 Apr 1;50(4):1093-7.

26 Adamu G, Abdullahi A. Common occupational health hazards amongst health care workers in a tertiary health institution in Bida, North-central Nigeria. Int J Biomed Res. 2017;8:01-6.

27. Sharma R, Rasania SK, Verma A, Singh S. Study of prevalence and response to needle stick injuries among health care workers in a tertiary care hospital in Delhi, India. Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine. 2010 Jan;35(1):74.

28 Paul Leigh J, Gillen M, Franks P, Sutherland S, Nguyen HH, Steenland K, Xing G. Costs of needlestick injuries and subsequent hepatitis and HIV infection. Current medical research and opinion. 2007 Sep 1;23(9):2093-105.

29. Bartlett D. OSHA: Occupational Exposure to Blood Borne Pathogens. 2013;

30. Macro OR. Central Statistical Agency Addis Ababa, Ethiopia. The DHS Program ICF Rockville, Maryland, USA July 2017

31. Hanafi MI, Mohamed AM, Kassem MS, Shawki M. Needlestick injuries among health care workers of University of Alexandria Hospitals. EMHJ-Eastern Mediterranean Health Journal, 17 (1), 26-35, 2011. 2011.

32. Jovic-Vranes A, Jankovic S, Vranes B. Safety practice and professional exposure to blood and blood-containing materials in Serbian health care workers. Journal of occupational health. 2006;48(5):377-82.

33. Sharma GK, Gilson MM, Nathan H, Makary MA. Needlestick injuries among medical students: incidence and implications. Academic Medicine. 2009 Dec 1;84(12):1815-21.

34. CDC Sharps Injuries Stop Sticks Campaign Centers for Disease Control and Prevention National Institute for Occupational Safety and Health 200

35 Kermode M, Jolley D, Langkham B, Thomas MS, Crofts N. Occupational exposure to blood and risk of bloodborne virus infection among health care workers in rural north Indian health care settings. American journal of infection control. 2005 Feb 1;33(1):34-41.

36. Mengistu DA, Tolera ST, Demmu YM. Worldwide prevalence of occupational exposure to needle stick injury among healthcare workers: A systematic review and meta-analysis. Canadian Journal of Infectious Diseases and Medical Microbiology. 2021 Jan 29;2021.

37. Kaushik A, Sarin J. Prevalence of needlestick injuries and its related factors among nurses. Surgery. 2016;4:10-7.

38. Assen S, Wubshet M, Kifle M, Wubayehu T, Aregawi BG. Magnitude and associated factors of needle stick and sharps injuries among health care workers in Dessie City Hospitals, north east Ethiopia. BMC nursing. 2020 Dec;19(1):1-8.

39. Kruger WH, Joubert G, Jimoh SO. Needlestick injuries among nurses in a regional hospital in South Africa. Occupational Health Southern Africa. 2012 May 1;18(3):4-10.

40 Weldesamuel E, Gebreyesus H, Beyene B, Teweldemedhin M, Welegebriel Z, Tetemke D. Assessment of needle stick and sharp injuries among health care workers in central zone of Tigray, northern Ethiopia. BMC research notes. 2019 Dec;12(1):1-6.

41 Assen S, Wubshet M, Kifle M, Wubayehu T, Aregawi BG. Magnitude and associated factors of needle stick and sharps injuries among health care workers in Dessie City Hospitals, north east Ethiopia. BMC nursing. 2020 Dec;19(1):1-8.

42. Liyew B, Sultan M, Michael M, Tilahun AD, Kassew T. Magnitude and Determinants of Needlestick and Sharp Injuries among Nurses Working in Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia. BioMed Research International. 2020 Dec 18;2020.

43. Mekonnen R, Yosef H, Teklegiorgis K, Tesfaye F, Dagne I. Magnitude and impact of occupational related needle stick and sharp injuries and associated factors among health care workers in Dire Dawa, Eastern Ethiopia. Med Saf Glob Health. 2018;7(1):2574-0407.

44. Abadiga M, Mosisa G, Abate Y. Magnitude of Needlestick and Sharp Injury and Its Associated Factors Among Nurses Working at Health Institutions in Western Ethiopia, 2020. Risk Management and Healthcare Policy. 2020;13:1589.

45. Royal College of Nursing, Universal Precautions

46. Sadoh WE, Fawole AO, Sadoh AE, Oladimeji AO, Sotiloye OS. Practice of universal precautions among healthcare workers. Journal of the National Medical Association. 2006 May;98(5):722.

47 Bazie GW. Factors Associated with Needle Stick and Sharp Injuries Among Healthcare Workers in North East Ethiopia. Risk Management and Healthcare Policy. 2020;13:2449.

48. Bekele T, Gebremariam A, Kaso M, Ahmed K. Factors associated with occupational needle stick and sharps injuries among hospital healthcare workers in Bale Zone, Southeast Ethiopia. PloS one. 2015 Oct 15;10(10):e0140382.

49 Beyene H, Yirsaw BD. Occupational risk factors associated with needle-stick injury among healthcare workers in Hawassa City, Southern Ethiopia. Occup Med Health Aff. 2014;2(156):2.

50 AbebeDilie,1 DesalegnAmare,2 andTenawGualu1 Occupational Exposure to Needle Stick and Sharp Injuries and Associated Factors among Health Care Workers in Awi Zone, Amhara Regional State, Northwest Ethiopia, 2016

ANNEX-I: -QUESTIONNAIRE

Good morning/Good afternoon my name is ---------- we are student of wolikite University, college of medicine and health science, department of nursing. We would like to conduct research paper on Magnitude of sharp and needle stick injury and their related safety measures among health care workers. The Questionnaire will take 5 to 10 minute all of the

answers you give will be confidential and will not be shared with anyone other than members of the group. We hope you will agree to answer the questions since your views are important. 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.

May I begin the interview now?
If' yes' proceed the interview,
Signature of interviewer: _____
Date: _____

If 'NO' thanks her/his and stop the interview.

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

PART I Socio-demographic Data

No	Question	Response
1	Age	_____years
2	Sex	A) Male B) Female
3	Marital statuses	A) Married C) Divorced B) Single D) Windowed
4	Educational level	A) primary school C) diploma B) secondary school D) Degree E) Masters and above
5	Job Category	A) Nurse G) Medical laboratory B) General practitioner H) psychiatry nurse C) Anesthesia I) cleaner D) Midwife

		E) Health officer F) Specialist
6	Working department	A) Ward D) Delivery room B) Operation room E) Laboratory C) OPD F) Adult Emergency G) Pediatric emergency
7	Working hour per week	_____hour
8	Working experience	----------

PART II Needle stick and sharp injury exposure

1	Have you ever had sharp and needle stick injuries?	A) Yes B) No
2	If the above answer is yes, answer the following questions (2-12.2)	How many times did you sustain? A) Once C) ≥ 5 times B) 2-4 times D) Don't recall
3	Types of injury	A)sever B) moderate C) superficial
4	Was the causative instrument used?	A) Yes B) No
5	If yes to the above question, was there visible blood on it before the accident?	A)Yes B) No
6	What type of sharp instrument caused the injury?	A)Needle hollow-bore C) Surgical device B) Suture needle D) Glass E) IV Cannula F) Other(Specify)

7	Which shift did you Work at the time of exposure?	A) Day time B) Night time
8	Where did the needle stick injury occur? (circle one)	A) Outpatient department B) Emergency department C) Labor and delivery ward D) Laboratory unit E) Operation Theater Unit F) Intensive / critical care unit G) Surgical ward H) Medical ward I) Pediatric ward J) Pediatric ward K)EPI(under five) L) Family planning M) Gynecology ward N) Waste handler unit O) NICU P) Psychiatry ward Q) other(specify)
9	What type of work were you doing when the accident happens?	A) recapping needle B) disposing of sharp instrument C) transfer of body fluid from the syringe D) During opening of ampule E) During preparation of medication F) during cleaning the room G) During suturing H) Securing IV line