ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

Assessment of prevalence and determinants of needle stick injuries among health professionals in Addis Ababa Public Hospital.

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Abbreviations

AA	Addis Ababa
AARHB	Addis Ababa Regional Health Bureau
AIDS	Acquired Immuno Deficiency Syndrome
BBF	Blood and Body Fluids
CDC	Center for Disease Control and prevention
CI	Confidence Interval
GC	Gregorian Callender
HBV	Hepatitis B Virus
HCP	Health Care Professional
HCV	Hepatitis C Virus
HCW	Health Care Workers
HIV	Human Immuno Virus
IP	Infection Prevention
MOH	Ministry Of Health
NGO	Non Government Organization
NSI	Needle Stick Injury
OR	Operation Room
PEP	Post Exposure Prophylaxis
SD	Standard Deviation
SPSS	Soft Ware Program for Social Science
WHO	World Health Organization

Abstract

Back ground

Needle Stick Injuries resulted from accidental piercing of the skin and/ or muco-cutaneous membranes of health profession. It also caused from suturing needles and other sharps used during clinical care. It is an occupational hazard in health care sector. Needle stick injuries expose health care workers to blood and body fluids which may be infected and can be transmited to them. Unsafe injections and procedures, injection over usage, difficult working condition harming and inviting risks to the health care workers. Adequate knowledge and adherence to safety of practices could prevent the occurrence of NSI and related consequences.

Objective

To assess the prevalence and determinants of needle stick injuries among health professionals in Addis Ababa in selected Public Hospitals.

Method

A cross-sectional quantitative survey was used. The actual sample size for the study was determined using the formula for single population proportion. A self administered questioner was distributed among health workers in selected hospitals. Data was collected from April to March 2015. The data collected in questionnaire was physically checked and entered in Epi Info version 3.5.3 and transferred to SPSS version 21. The data were analyzed by summarizing, tabulating and presenting in various formats.

Result

A total of 257 questionnaires were returned giving a response rate of 86.5%. The majority of health professionals by age were between 25 – 30yrs; 138 (53.7%), nurses 150 (58.4%) followed by laboratory staffs 23 %,(59); the distribution was predominantly females (176) 58%. Most of them (105) 40.9 %,() have 1 to 5 service years. Ninety six 96 (37.4%), had sustained needle stick injury during the one year prior the survey, of which 31(12.1%) admitted experiencing at least one needle stick injury in previous one month. This means that ONE THIRD of health professionals working in public Hospital in Addis Ababa had get injury to NSI in one year duration. 72.4% of the health professionals did recapping, furthermore 38.6% made recapping by two

hands. Only 29.2% (75) had training on safety injection 90.6% of needle stick cases were got accident secondary to unsafe clinical practices. Independent risk factors for experiencing needle stick injuries including age, sex and departments. Female sex were two times more likely to be injured by NSI than male sex AOR; **2.2 (95% CI, 1.0, 4.1).** Health care professional less than 25 yrs of age four times more likely to get injury by NSI than those of age above 40yrs; AOR = 4.0 (95% CI; 1.7, 5.2). Staffs working in maternity unit were 99.1% less probably of having needle stick injury than those working in laboratory unit. AOR =0.09 (955 CI, 0.04, 0.23)

KEY WORDS: Needle Sticks Injury, Safe Practice, Unsafe Practice

Conclusion and recommendation

The survey determined the very important significant association factors to needle stick injury depended on age, working departments, extended working hours and low experiences which directly related skill development. And also over use of injection, unsafe practices and unfavorable environment are factors associated to needle stick injury. Training concentrating on injection safety, guide line on universal precaution and monitoring such implementation is much needed.

1. Introduction

1.1 Background

Needle stick injury can be defined as the introduction of blood or other potentially infectious material by sharp instrument to health care workers, patients and community secondary to unsafe injection. The risk associated with unsafe injection can result in needle stick injury (NSI) which exposes to blood and body fluids. Occupational exposure to blood and body fluids is a serious concern for health care workers, and causes a major risk for the transmission of infections such as Human Immuno-deficiency Virus (HIV), hepatitis viruses and other viral diseases. The exposures are caused by a per-coetaneous injury, contact of mucus membrane or skin with blood and other body fluids to which universal precaution apply. The major documented determinants factors are giving injection, suturing, recapping needles, bend, cut, or break needles, removing needles from syringes after injection, disposing sharps in poor a puncture resistant sharp container, work load and unsustainable supply of protective materials**.**

The World Health Organization (WHO) estimates that about 3 million HCWs face occupational exposure to blood borne viruses each year (2 million to HBV, 900,000 to HCV, and 300,000 to HIV), 90% of the infections that result from these exposures are in low income countries. This accounted 2.5% of HIV, 40% HBV, & HCV and 5% of bacterial infections worldwide and for 28 million preventable disability adjusted life years″ due to unsafe injection practices**.** Developing countries, especially those in sub-Saharan Africa, that account for the highest prevalence of HIV-infected patients in the world also report the highest incidences of occupational exposures.(1)

In Ethiopia, there are only a few studies that describe occupational exposures and compliance to Safe Practices among HCWs. In 2006, the Ethiopian Public Health Association indentified standard precautions as an area of research gap and public health importance in the country citing lack of investigations in this area. Since then, the governmental and non-governmental organizations (NGOs) have given attention to standard precautions by initiating post-exposure prophylaxis (PEP) and increased supply of materials such as safety boxes. However, the evidence base surrounding Safe Practices in this resource poor setting remains limited.

This study aims to investigate the prevalence and determinants of needle stick injuries among health professionals in Addis Ababa five Hospitals.

1.2 Statements of the problem

Infectious diseases are constantly in transition. New diseases develop (e.g. Ebola), Known diseases become wide spread or reemerge and a significant cause of illness and death (2-5). The spread of blood borne viral diseases through sexual and vertical means is decreasing, while their transmission by needle stick injuries are assumed to be increasing.(6) They are day to day medical hazards in health institution among physicians, nurses, mid wives, medical students, laboratory technicians, cleaners and the community(7). The burden of the problem is not only on individual health but also human resources, economical and social destruction.(8-11).

Blood borne pathogens are generally considered endemic in sub-Saharan Africa (1).National data are unavailable for these blood borne infections in Ethiopia. However, surveys in different parts of the country indicate the prevalence of HCV to be 0.9–5.8% and estimates for HBV range from 4.7% to 14.4%.(12) According to projections for 2010, the prevalence of HIV/AIDS for Ethiopia is estimated at 2.8%.The prophylaxis which is taken after exposure to infected blood and body fluids are the other problem occurs due to this sharp injury. A small-scale survey conducted in 2007 by Ethiopian nurse association in few hospitals showed that the prevalence of injuries from needles and other sharp medical devices is 35%. In Ethiopia particularly in Addis Ababa the incidence of needle stick injuries are alarmingly increasing; the diseases like hemorrhagic fever, Ebola, Cellulites, Malaria and Tetanus are common neglected area in relation with needle stick injuries (NSI). Ethiopia recapped needles, a third of HCWs from a study in Nigeria reported to always recap, while 40% from a study in India recapped at least some times and only 32% use one hand application when indicated.(12)

This study assesses the extents of injury by sharps including needle and those determines the potential risk factors.

1.3. Significance of the study

The persistence of preventable, life threatening occupational hazard particularly needle stick injury at work place is a failure to given attention. This research is intended to generate base line information on the possible determinants of needle stick injuries and its prevalence. There is a paucity of information in Ethiopia particularly in Addis Ababa describing occupational injuries by needle sticks and consequently exposures to Blood and Body Fluids and associated factors. Credible evidence is paramount in designing strategies and in taking action-based interventions. Such information would also be useful in identifying any gaps that might need further attention in the implementation of infection-control practices for different organizations and in providing feedback to these groups about improving safe practices.

2. Literature Review

2.1. Characteristics and magnitude of needle stick injury

2.1.1 Characteristics of needle stick injury

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.(13)

In developing and transitional countries alone, some 16 billion injections are administered each year. Most injection, more than 90% are given for therapeutic purpose while 5 to 10% are given for preventable services, including immunization and family planning. The majority of therapeutic injections in developing and transitional countries are irrational or unnecessary.(14) In developing countries, the use of injections for management of serious and even minor medical problem is common and often unnecessary and they are used unsafely. Studies have shown that the degree of unsafe use of injections was highest (75%) in the South East Asia Region including Nepal.(15)

A study done by World Health Organization reviewed annual number of injection per person and its proportion with needle stick injury, ranged from 1.7% to 11.3%. Of these, the proportion of administered with unsafe injection equipments are from 1.2% to 75%. These magnitude was highest in seven the western countries, mostly located in south Asia, nine country mostly located Mediterranean regions, and middle east crescent and the pacific region. (Use of injection in health care setting worldwide, 2000: Literature Review and regional estimator.) In other study done revealed that, transitional and developing countries where unnecessary injection is common, the average number of health care injection per person is averagely estimated to be 3.7/year. This includes all health care injection, includes those given to diabetic patients for administering insulin. Many injections as well as being unnecessary are also in effective or inappropriate and unsafe. Generally in developing countries exposure and health impact of NSI are rarely monitored and poorly managed.

2.1.2: Magnitude of Needle sticks injuries

Globally, two millions health care workers suffer from accidental needle stick injury each year(16) In UK, a study showed that 37% needle stick injuries reported at some stage during their career; In Malaysia as high as 21% highest incedence was in maternity service delivery area. Where as in united stated 384,325 HCW sustained injury by sharp medicals including needle stick injury in four years duration.(11) In Nepal a survey reported that needle stick injury among Health Care Workers was 46.9% and among them 44.7% had sustained more than one episode. (17) Needle Stick Injury and occupational exposure to BBFs among HCPs in high income countries has been well documented, which is essential for designing a range of preventive interventions. However, exposure in low income countries is less well documented.(18) 30% of injection providers reported a needle stick injuries in the past 12 months.

2.2: Associated Factors of Needle Stick Injuries.

2.2.1. Socio demographic Factors

The socio-demographic characteristics include factors like age, sex, duration of exposure, service year or experience and etc. A study done in South Africa reported that less than 23 years age of respondent are more likely to be injured than higher age, and more female than male also with needle stick injuries. The lower the service year (less than 5Yrs), is the higher likely to be injured (64%) by NSI. (5) In other study in Pakistan reported that those health professionals less than five years are more likely to be injured than those experienced health care workers. Professionally, more nurses are likely to be injured than others health professions. (6)

2.2.2. Work environment related factors

Medical workers directly involved in treating patients face a great risk of needle stick injury which consequently acquiring blood born infections from the work place. One study witnessed that the risk activity in work places are 56% recapping,35.5% transfusion and 74.8% of inadequate waste disposal are directly related to needle stick injury. Health care workers in Hospitals with the most favorable working environment were one third less likely to be injured than those

in the opposite situation.(19) In other study related to work environment factors reasoned injection and sample taking were the most causes of needle stick injury (42%), followed by two handed recapping used after injection.(6) In Ethiopia a national survey done in 2000 by JSI documented that only 48% of them had at least one steam sterilizer. . 38% of Health Facilities sharps were disposed in an open ground or other unprotected field... Majority of health facilities had open waste basket for sharps disposal that were over flowing. 21% of the facilities dump sharps in unsupervised area**.**(20) In 72% of the health facilities, collection of sharps was with either open, non leak or puncture proof containers. In 14 (35%) of the health facilities, dirty syringes and needles were observed disposed in a way that exposed the health workers and the community for injury or other condition.

2.2.3. Behavioral factors

Extended hours of working was associated with the increasing the chance of getting NSI; only 23% of health providers and 4.2% of the waste handlers are trained in injection safety practices and infection prevention. In Middle East 15 to 19%, in West Africa 15% and in Sub-Saharan Africa more than 50% of injections were given without any formal training. , recapping collection cause b/n 5% and 28% of needle stick injuries.(20). The sudden movement of a patient during blood sampling or during the intramuscular or venous injection of drugs (34.4%); during suturing of episiotomy or obstetrics and gynecology (26.2%); during the handling of specimens (21.5%); during recapping of samples (13.6%); during the handling and collection of waste (10.1%); and due to a lack of PPE (15.5%).(21) A study surveyed in Nigeria revealed that 81.3% of the respondent recapped the used syringe.

2.3. Conceptual Frame work

The factors associated to work place injury like needle stick injuries are classified as sociodemographic factors like, sex, age, type of profession, service year or experiences and etc, work environment factors are like; injection practice, disposal of used sharps, department, client situation, favorability of work place and etc and behavioral factors are like; workers' perception risk of NSI, attitudes of workers and etc. The three factors are interrelated to affect one another. The following figure shows the interrelation between occupational NSI (the independent) variables in detail and it is adapted from Ethiopian nurse association.

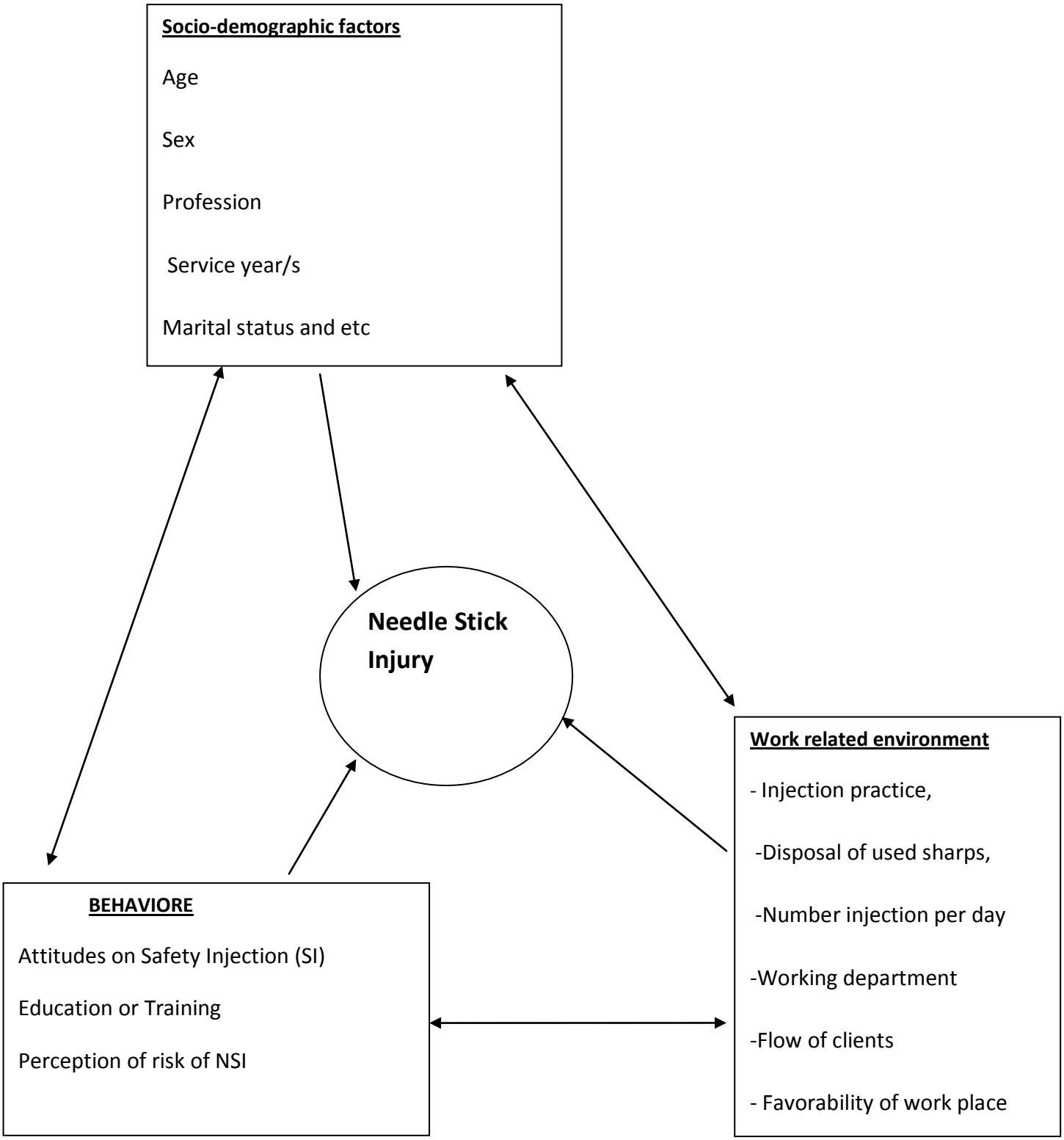

Figure 1: Conceptual frame work of assessing the problem of NSI; Addis Ababa, June, 2015.

3. OBJECTIVE OF THE STUDY

3.1 General objective

To assess the prevalence and determinant factors of needle stick injuries among health professionals in Addis Ababa Selected Public Hospitals from January to June 2015.

3.2 Specific objectives

- To quantify occupational sharp injury among selected five Hospitals.
- To assess factors associated to sharp injuries.

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4. Methods and Materials

4.1. Study design and period

Facility based cross sectional study focusing on assessment of prevalence and determinants of needle stick injuries (NSI) has employed among health professionals in Public Hospitals found in Addis Ababa from January 2014 to June 2015.

4.2. Study area

The study was conducted in Addis Ababa, the Capital City of Ethiopia. Addis Ababa was established in the beginning of 19th century; by Minilik the 2nd Emperor of Ethiopia. In Addis Ababa; there are six hospitals and 84 health centers governed by Addis Ababa city administration, 5 Hospitals governed by federal, 46 private higher clinics, and 38 private Hospitals are found in the study area. Addis Ababa is the city of high population density and a total population approximately 3.3 million. Amharic is the official language of the city. The Addis Ababa City Administration has been divided in to 10 Sub cities and 116 Woredas. Each Woredas has high patient/client flow and comprehensive health care components or services.

Generally in Addis Ababa there are approximately less than 10,000 health professionals. In five Hospitals there are 1200 estimated health professionals are working, averagely 240 health professionals per the Hospital.

4.3. Source population

All Health professional working in Hospitals found in Addis Ababa and have contact with injection services while giving care to their patients or clients.

4.4 Study population

The Study population was all health workers who had been working in the five Hospitals in **(**Tirunash Beiging, Minilik, Zawuditu, Ras Desta and Yekatit Hospitals) in Addis Ababa at least for one year.

4.5 Sample Population

Health professionals who have contact with injection services were the sample populations.

4.6 Sampling proportion of each Hospital

The proportion of sample size for each hospital was Minilik 37 (14.4%), Ras Desta 41 (16%), Tirunash Beiging79 (30.7%), Yekatit 37 (14.4%), and Zawuditu 63(24.4%).

Table 1: Distribution of study subjects among hospitals in Addis Ababa, June, 2015

Hospital	**Frequency**	**%**
Minilik	37	14.4
Ras Desta	41	16.0
Tirunash	79	30.7
Yekatit	37	14.4
Zawuditu	63	24.5
Total	257	100

4.7. Sample size and sampling technique

4.7.1 Sample size determination

The actual sample size for the study was determined using the formula for single population proportion. To determine the initial sample size the following assumption was made: assuming 5% marginal error (*d*), 95% confidence level (alpha = 0.05), and the pilot study done by Ethiopia Nurse Association in four regions shows the prevalence of NSI is 35%. [28]. Taking the mean prevalence of NSI in both cities can be calculated as follows:

$$n_i = \frac{Z^2 P(1-P)}{d^2}$$ **=349,** because of the total population size of the study area are less than 10,000 we should to apply the population correction formula:

$$\frac{N}{1+N/n} = \frac{1200}{1+1200/349}$$ **=270** samples + **10%** non response rate. Totally =**297** Samples.

Where n_i = initial sample size from finite population, Z = the standard score (critical value) corresponding to 95% confidence level, P = the proportion of healthcare workers experiencing occupational exposure which is taken 35%, $1 - p$ = is proportion of negative character which is 65%, and d = marginal error which is taken to be 5%:

4.7.2. Sampling procedures

From total of 11 public Hospitals found in Addis Ababa under the city administration, five referral Hospitals were selected purposely. The purpose of selecting theses Hospitals were because the remaining 5 five were under federal government and the one under the city government was not general Hospital and was not as sufficient as the rest Hospitals to select as study area. To grip the total participants from each selected health institution, simple random sampling technique was utilized.

4.7.3. Professional Distribution of health care Institutions or Hospitals

All health care workers are frequently and equally exposed to needle stick injuries. So this study expected 20% of the staffs from all paramedical excluding physicians, and 20% from each department. According to this logic the number of each professional was nurse 150 (58.4%), mid wives 29 (11.3%), laboratory professionals 64 (24.9%) and others were 14 (5.5%). From the following figure we see that nurses were got the lion share of the study.

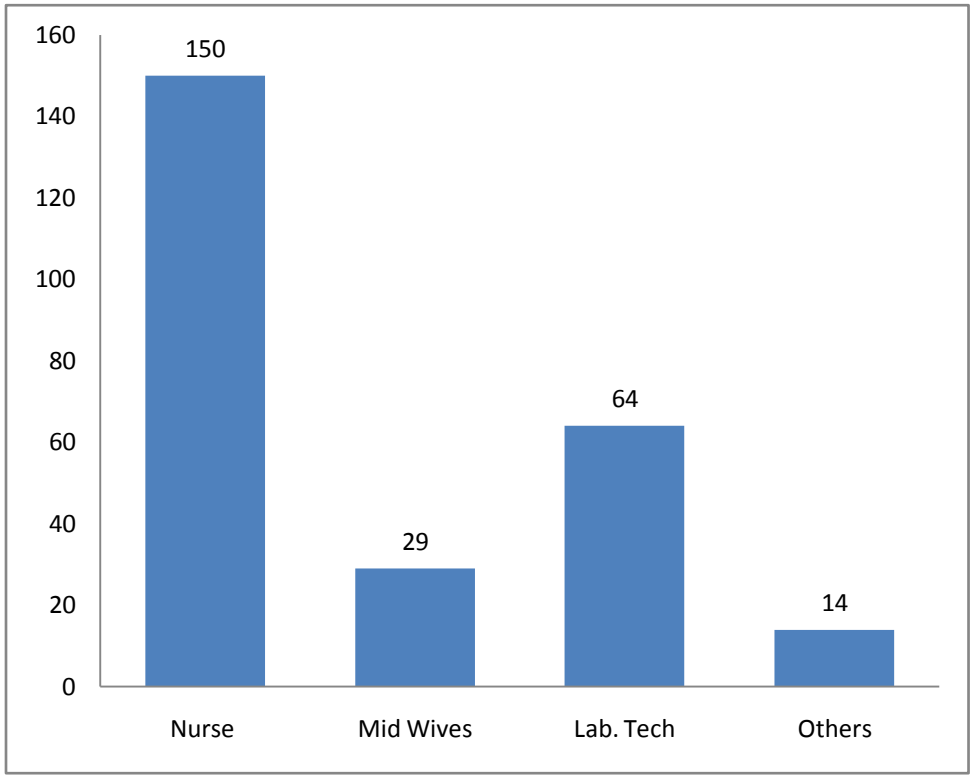

Figure 2: Professional distribution of study subjects among Hospital participants; Addis Ababa, June, 2015

4.8. Data collection tool and Technique

Quantitative data collection tool was a questionnaire informed by literature review and adapted from the WHO / ICN tool kit injection safety and the experience of the research done by Ethiopian Nurse Association**.** The data was collected using a pre tested structured questionnaire. The question was translated in to Amharic before, and back to English after data collected to ensure it's consistent. Data was collected by four Nurses and supervised by one Health Officer.

Training was given by principal investigator for two days for data collectors and supervisors. Data collected approaching each selected hospital by introducing themselves, explaining the aim of the study and by agreed up on consent.

4.9 Data quality management

Data assurance was applied from the very beginning by review prior study and adopted from WHO/ICN, CDC tool kit, giving training for the data collecting group, pretested by taking 10% of the study sample and close monitoring of the activity of data collectors and supervisors by principal supervisor. The collected data was checked for completeness, accuracy and clarity. Codes were given to the questionnaire and participant during data collection so that any identified errors could get traced back using the codes. Each filled questionnaire was checked and reviewed for completeness by supervisor and principal investigator, the necessary feedback was given to the data collectors in the next morning.

4.10 Data processing and Analysis

Data was first checked manually for completeness, coded and entered in to computer using Epi Info 3.5,3 and transferred to SPSS version 21. After completion of data entering, it was cleaned before analysis. SPSS loaded and recoded, at hand data undergone description of frequency, mean, median, proportion and SD. Logistic regression analysis was carried out at two levels. Bivariate and multi- variate analysis was done between independents and dependent variables to identify independent factor/s. During the analysis p-value and/or 95% CI for OR were used in determining the significance of association; p-value less than 0.05 or CI not contain 1 was taken as significance of association. Result was presented in text, table and graphs.

4.11 Variables of study

4.8.1 Dependent variable

Dependent variables is needle stick injury **(NSI),**

4.8.2. Independent variables

The independent variables are unsafe injections (recapping, bending needle, reusing syringes and etc) and unsafe clinical practices (more injection than oral, inconsistence use of protective materials, not using the right equipments, not using the right sharp disposals), and background variables (socio-demographic characteristics of the health care workers.) Others like unsafe handling, using safety box, using incinerate or burring included here.

4.12 Operational Definition of Variables

The definition of these terms is unchanged since 2001(3)

Health Professional :- the term health professional (HP) refers to all staffs of paramedical persons working in Hospitals setting who are potentially have exposure to clinical care with medical sharp equipments including needles. This definition didn't include physicians.

Needle Stick Injury: - is a percutaeous piercing wound typically set by a needle point, but possibly also by other sharp instrument or objects.

Safe injection:-an injection that does not harm the recipient, does not expose the health care worker to any avoidable risk and does not result in waste that is dangerous for the community. [35]

Unsafe practice:-an injection that expose health care worker at risk of HBV,HCV, and HIV infection through percutanous injury or contact of mucus membrane or non intact skin with blood, tissue, or other body fluids that are potential infectious. [16, 17]

Safe: - Clean and no potential contamination of any sharps, syringe and needle with blood or other body fluids.

Risky: - Dirty and potential contamination of any sharps, syringe and needle with blood or other body fluids.

4.13 Ethical Consideration

Ethical approval was applied from Ethical Review Board of Addis Ababa University, collage of health science through school of public health. Approval for the study area was obtained from Addis Ababa city administration regional health bureau. An informed consent was obtained from participants who were signed or gave verbal consent to fill the questionnaires were allowed to do so. Health care workers whom refused to participate in the survey was not forced to participate in the study. Privacy and confidentiality of information were kept by replacing all names with codes, and kept all information in locked bag or cabinet including questionnaires. Each study subject was informed about the objective of the study. A letter of co operation had handed from the bureau of Addis Ababa Regional Health Bureau to all Hospitals participated in the study.

4.14: Dissemination of result

The finding of this study will be disseminated to Addis Ababa University, School of Public Health, Federal Ministry of Health, Addis Ababa City Administration Health Bureau, Tirunash Beiging Hospital, Ras Desta Hospital, Zawuditu Hospital, Yekatit Hospital, Minilik Hospital, for presentation in National / International Science of conference and for public in peer reviewed journal

5. Result

5.1. Demographic, Work environment and Behavioral Characteristics

5.1.1. Socio demographic Characteristics

A self completion 297 questionnaire distributed among health professionals working in five Public Hospitals in Addis Ababa and 257 filled the questionnaire completely, which was 86.5% response rate. The remaining 13.5% were those excluded due to incompleteness, less than one year experience and stopped in between as a result of their work environment characters. The majority of respondents were age group 26 –30yrs: 138 (53.7%), female 176 (68.5%), nurses 150 (58.4%); followed laboratory technicians 64 (24.9%). Unmarried health professionals was 162 (63%), hence, 178(69.3%) had less than 5 yrs clinical experiences, highest numbers of participants were from ward 62 (24.1%), 199 (77.4%) staffs were working their job in regular time (8hrs only) and 108(42%) of study participants were giving injection as much as 10 – 20 injections per health professional per day,

5.1.2. Work environment Characteristics

Regarding the work environment, 137 (53.3%) staffs responded that their working environments were risky for NSI, the average numbers of injection given per department was 10 – 20 per day per person, 168 (65.4%) were seen the presence of needle at some points in the hospital working points in a situation that could be expose them for NSI; most needle stick injuries 61.9% (159) was occurred by co-workers or during the interaction between patients and staffs.

5.1.3. Behavioral Characteristics

160 (62.3%) respondents were reported that used sharps or needles were seen in area they move to work; 56.4% (145) were working their regular work without any on site or off site training on safe practices or infection prevention. 73.2% (188) of the staffs did recapping after injection; of which 55.5% (12) of staffs were recapping by two hands. 76% (73) of injured staffs was get the accident of NSI while the give care to patients. Table below shows the distribution of demographic, work environment and behavioral factors

Table 2: Distribution of Demographic, Work environments and Behavioral characteristics; Addis Ababa, June, 2015

VARIABLES	CHARACTERISTICS	NUMBERS, n= 257	PERCENTAGE (%)
Age in years	<25	55	21.4
	25 – 30	138	53.7
	31 – 40	49	19.1
	>40	15	5.8
Sex	Male	81	31.5
	Female	176	68.5
Profession	Health Officer	14	5.5
	Mid Wives	29	11.3
	Nurse	150	58.4
	Lab. Technicians	64	24.9
Marital status	Married	95	37
	Not Married	162	63
Service in year	≤ 5	105	40.9
	6 to 10	73	28.4
	11 to 16	37	14.4
	≥17	42	16.3
Department	Emergency	56	21.8
	Ward	92	35.8
	Maternity	45	17.5
	Laboratory	64	24.9
No Injection	10 to 20	111	43.2
	21 to 30	75	29.2
	>31	71	27.3
Injection room	Safe	118	45.9
	Risky	137	53.3
Used syringe	Recapping : (two Hands)	188	73.2 (51.8)
	Not recapping	69	26.8
Training	Yes	102	39.7
	No	155	60.3
Open Disposal	Yes	160	62.3
	No	97	37.7

5.2. Hospitals distributions of the most frequent variables

According to the findings of the study, factors like age, sex, professionals, work experiences, marital status, the number of injection given by an individual per day, recapping behavior of the staffs, and their training status have got concerns in this survey. These factors were varied between the study hospitals. For example: In Tirunash Beijing 62 female (mean =35), 44 (nurses = 30), 53 unmarried (mean =32), 34 <5yrs experiences (mean = 21), 45 number of injection per day per individual (mean = 22), 62 made recap (mean = 36), 47 had no training (mean = 30) and 47 open disposed (mean = 30.6). And the highest number of age group was the age ranges between 25 – 30 years old; 138 (53.7%). When we see the distribution of this age group among the Hospitals Menellik: 13 (9.4%), Ras Desta: 20 (14.5%), Tirunash Beijing Hospital: 55 (39.9%), Yekatit Hospital: 14 (10.1%) and Zawuditu M. Hospital: 36 (26.1%). Again this age group was distributed in according to their profession; and the highest number was nurses 84(32.7%), followed by laboratory health workers 29 (11.3%), Mid Wives was 18 (7%); and the least profession with this age group was health officer 3(1.2%). This is showed in the following figure.

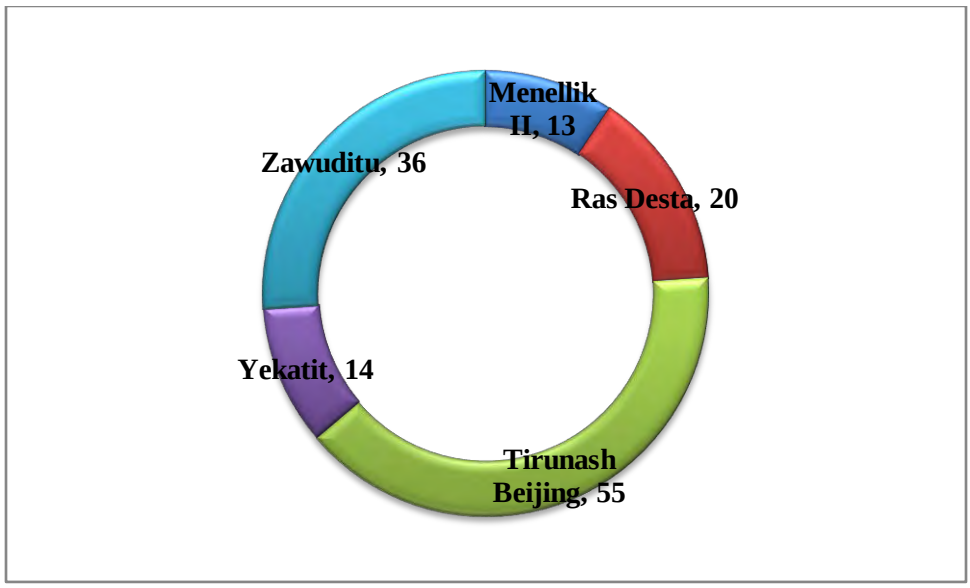

Figure 3: Distribution age group 25 - 30yrs among the Hospitals participants; Addis Ababa, June, 2015

Among the five Hospitals, in all factors, Tirunash Beijing was where the highest numbers found. As shown in the following table each factors compared with the mean number of factors expected for the hospital. The following table showed in details.

Table 3: Distribution of most frequent factors among Hospitals participants; Addis Ababa, June, 2015

Hospitals	Menellik	R/ Desta	Tirunash	Yekatit	Zawuditu	TOTAL		Mean
Factors						**n**	**%**	
Female	15	32	62	24	43	176	68.5	35
Nurses	23	31	44	23	24	150	58.4	30
Unmarried	26	20	53	22	41	162	63.1	32
<5yrs Services	28	10	34	11	22	105	40.9	21
Inj. 10 - 20	10	14	45	22	20	111	43.2	22
Recapping	30	23	62	27	38	180	70	36
No Training	24	19	47	24	38	152	59	30
Open Disposals	19	27	47	24	36	153	59.5	30

5.3. Prevalence of needle sticks injuries among the study Hospitals.

The prevalences of the outcome among hospitals participated in the study were Menellik 18 (29%), Ras Desta 14 (14%), Tirunash Beijing 24(25%), Yekatit 12 (13%) and Zawuditu 18 (19%). The highest prevalence was seen in Menellik hospitals. When we assess the prevalence of NSI to the base of the numbers of the staffs participated from each hospital: Menellik Hospital 78.4%, Yekatit Hospital 35%, Ras Desta Hospital 34.2%, Tirunash Beijing Hospital 31.6% and Zawuditu Hospital is 30.2%. According to these data the same to the general Menellik is the highest and Zawuditu become the least Hospital with the prevalence of needlestick injuries. The following figure shows the percentage of NSI among the Hospitals

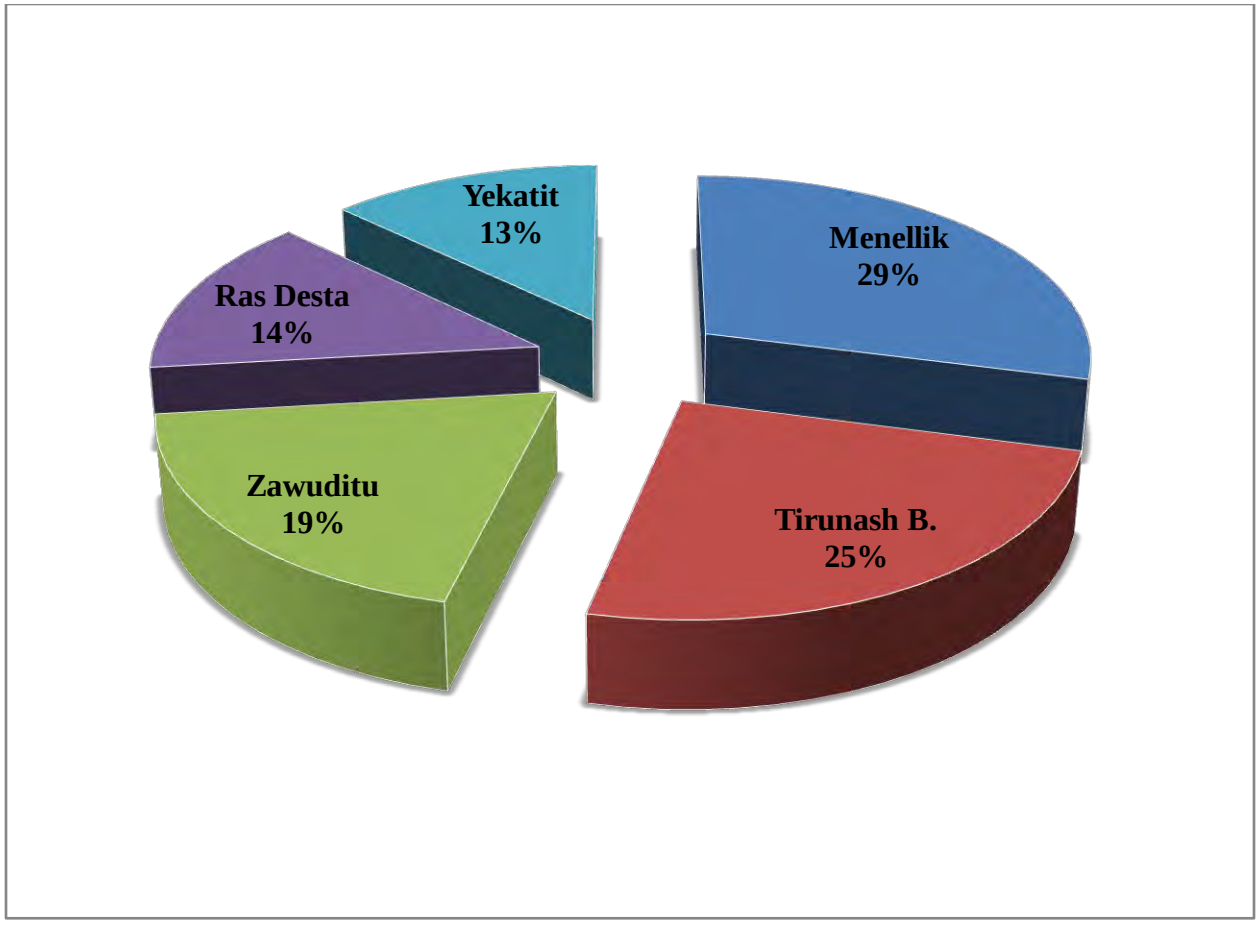

Figure 4: Prevalence of NSI among Hospital, Addis Ababa, June, 2015

5.4. The distribution of potential risk factors in relation to the occurrences of NSI

5.4.1. Age Related to Needle Stick Injuries

According to the study result exposure to needle stick injury was varied among age groups; age group less than 25yrs were 31(32.3%), those of 25 to 30 yrs which was the highest frequency 52 (54.2%), age group 31 to 40yrs 10 (10.4%),and age group above 40yrs was 3(3.1%). This study focused on the risk of NSI among their age group rather than the general samples of participants; according to the finding, age less than 25yrs was 56.4%, age between 25 to 30yrs 37.7%, age group 31 to 40yrs is 20.4% and those of above 40yrs is 20%. From this result we see that as age increases, the level getting injury by needle stick injury dramatically decreases.

5.4.2. Professional distribution related to needle stick injury

The distribution of health care professionals sustained needle stick injuries were health officer 2(2.1%) and 40% among their group, mid wives 16 (16.7%) and 55.2% among their group, nurses were 60(62.5%) and 40% among their group, laboratory technicians 13 (13.5) and 20.3% among their group, and anesthetics 5(5.2%); 55.6% from their group. These groups were seen in their status marriage; married staffs were 26 (28.1%) and unmarried staffs were 70 (72.9%). The distributions of NSIs among these groups have no difference in general sample and in their groups.

5.4.3. Work experience in relation to needle stick injuries.

Under this study service year or experiences has effect on occurrences of needle stick injuries (NSI). The exposure level, among the health professionals, was more than the general prevalence of NSI (37.4%) in those less than 5yrs experiences 46 (47.9%); and less than for age groups: 6 to 10yrs 28 (29.2%) and above; 11 to 16yrs 13(13.5%), above 17yrs: 9(9.4%).This study showed that as working experiences increases, the risk of sustaining by needle stick is decreases.

5.4.4. Departments in relation to needle stick injuries

Departments in which different procedures carried out were one of the potential risk factors to needle stick injuries. Among the hospital departments emergency 10(10.4%), ward 12(12.5%), maternity 20(20.8%), laboratory unit and ICU/OR both are 27(28.1%) each. In analysis among departments themselves the occurrence of needle stick injuries was: emergency 33.3%, ward

19.4%, maternity 44.4%, laboratory 42.2% and ICU/OR 48.2%. According to these results the ICU/OR is the highest risk department to NSI in the hospital.

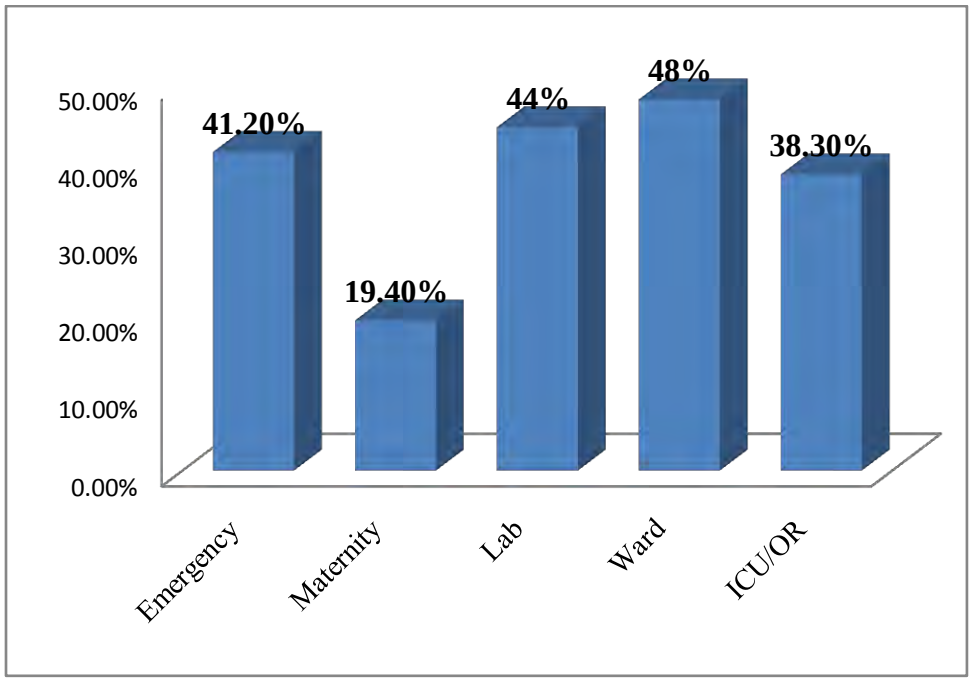

Figure 5: Prevalence of NSI among departments; Addis Ababa, June, 2015

5.4.5. Frequencies of injections in relation to needle stick injuries

Most of the annual occurrences of NSIs were while giving injection to the patients. Results from this study showed that the number of injection given by each health professional was directly related to the increments of the risk of needle stick injuries. Health professionals those giving 10 to 20 injection per day per individual was 41/111(36.9), 21 to 30 injection per day per individual 12/32(37.5%), 40 to 50 injection per day per individual15/36(41.7%) and those give injection more than 50 injection per day per individual was 6/33(18.2%). In this result we see that as the number of injection given by each health care worker increases, the risk of getting injury by needle stick injury also increases. In this result also showed that of these groups 180 staffs did recapping after therapeutic injections and share 38.9% of needle stick injuries.

5.4.6. The effects of training on occurrence of needle stick injuries.

Training health professionals on injection safety can minimizes the risk of getting injury by NSI. Those health professionals previously had training on injection safety has the risk of NSI as less

as 30(28.8%); while those practices without any training have got NSI 66/152 (43.4%), and 153 (59.5%) dispose used syringes in open space which is highly dangerous to the health workers, patients and community, of which 60(39.2%) got injury by needle stick injuries (NSI).

5.4.7. Clinical Procedure related Needle stick Injuries

In the study result those procedures cause needle stick injuries (NSI) were giving therapeutic injection 69 (27.2%), followed by recapping 49 (19.1%), and the rest sample taking 43 (16.7%), during emergency situation 39 (15.2%), suturing 35 (13.6), IV securing 14 (5.5%), and inappropriate use of safety box 7 (2.7%). The following figure shows this distribution among the public hospitals in Addis Ababa.

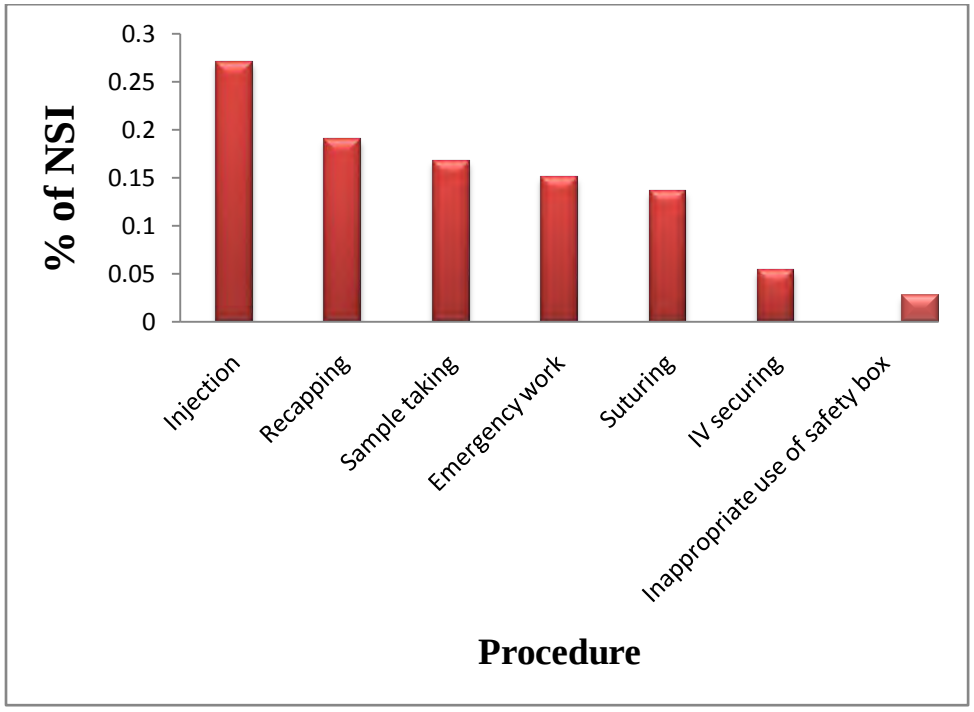

Figure 6: Risk of NSI related to type of sharp used, Addis Ababa, June, 2015.

Table 4: Association between factors and NSI; Addis Ababa, June, 2015

Variables	Category	NSI, n = 96	Percentage %
Age	<25yrs	31	32.3
	25 to 30	52	54.2
	>30	13	13.5
Sex	Male	41	42.7
	Female	55	57.3
Profession	HO & others	7	7.3
	Mid Wives	16	16.7
	Nurse	60	62.5
	Lab.Tech,	13	13.5
Marital status	Married	26	27.1
	Unmarried	70	72.9
Service year/Experience	≤5yrs	46	47.9
	6 to 10	26	27.1
	>11	24	25
Department	Emergency	23	24
	Maternity	12	12.5
	Ward	24	25
	Lab.	23	24
	ICU/ OR	14	14.9
Number of Injection / day	<20	41	42.7
	20 to 30	22	22.9
	31 to 40	12	12.5
	>40	21	21.9
Methods of Recapping	One hand	70	72.9
	Two hands	26	27.1
Training Status	Yes	30	31.3
	No	66	68.7
Open disposal	Yes	60	39.2
	No	36	34.6

5.4.8. Association between medical devices and occurrence of needle stick injuries

Although individual behaviors influence risk of needles stick injuries, medical devices can play important role for occurrences of injury by needle stick. As the result of the survey syringe with needle was the device that caused more injury 29(30.2%), followed by bended suturing needle 27(28.1%), canola 23 (24%), blade 9 (9.4%), insulin needle and butterfly needle caused 6(6.3%) and 2 (2%) respectively. This information put on the following figure.

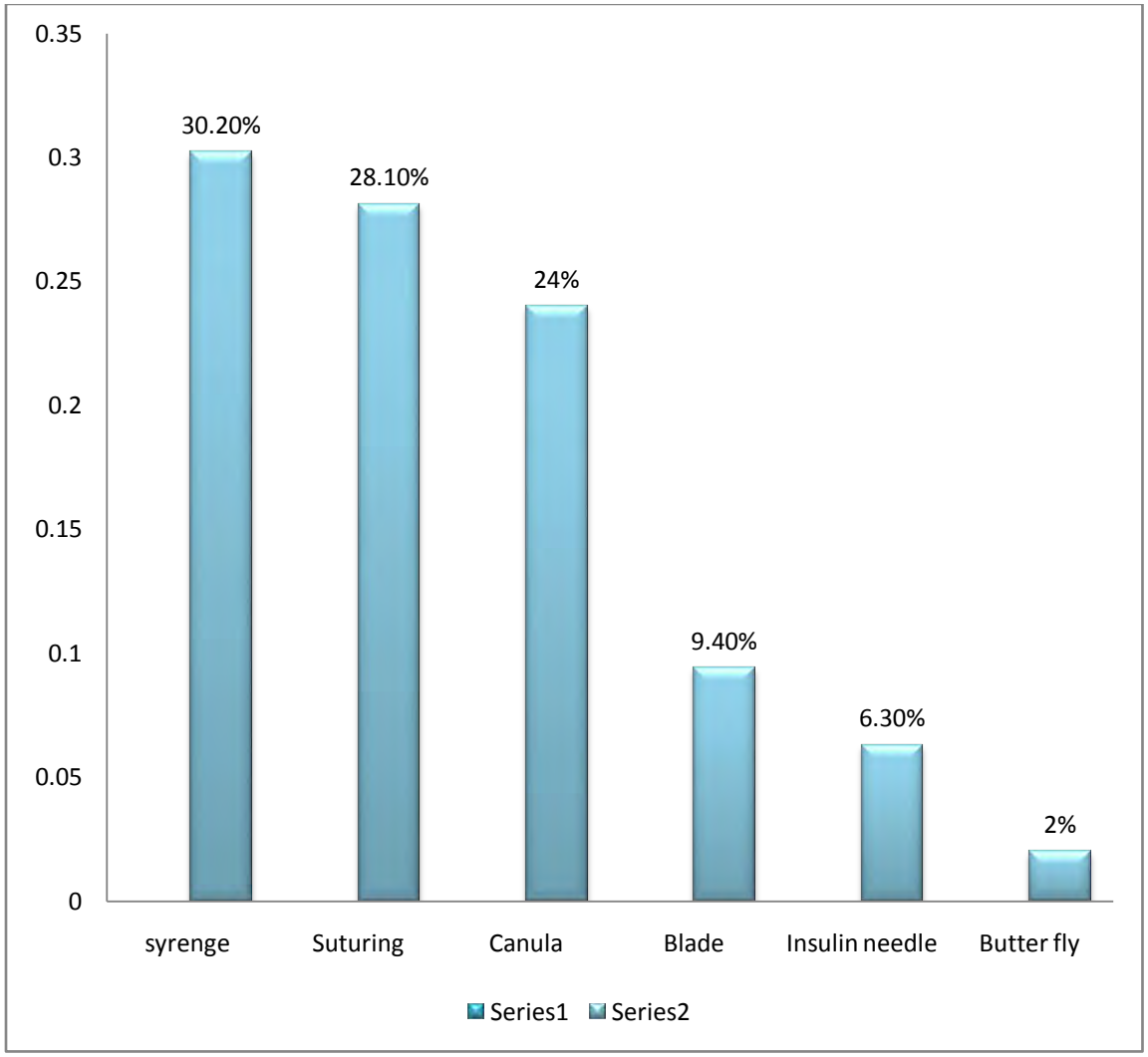

Figure 7: Sharp medical equipments and their level of effect for NSI; Addis Ababa, June, 2015

5.5. Bi-variate and Multi-variate analysis

5.5.1 Bi-variate Analysis

5.5.1.1. Socio demographic, Work environment and Behavioral Characteristics

As described in table below the regration analysis of socio-demographic, work environment and behavioral Characteristics variable on binary logistic regration showed that sex, COR =2.2 (95% CI, 1.314, 3.869), age, COR = 5.167 (1.309, 20.39), profession COR = 0.7 (95% CI, 0.5, 0.9), department, COR = 0.3 (95% CL, 0.1, 0.6) , marital status, COR =2.2 (95% CI, 1.3, 3.9), Experience, 2.859 (95% CI, 1.244, 6.568), number of injection COR = 4.3 (95% CI, 1.5, 12.41) and status of training COR =1.919 (95% CI, 1.129, 3.269) have association with NSI.

5.5.2. Multi-variate analysis

In the logistic multi variate analysis sex and age only are statistically significant with the occurrence of needle stick injury. But profession, marital status, department, service year and status of training had not showed any significant association. In this analysis female health professions were two times more likely to be sustained by NSI than male staffs. AOR = 2.2 (95% CI, 1.01, 4.1). This is may be due to more of females staffs exposed to clinical work than male staffs rather than non clinical activity like team leading and those age group less than 25yrs old four times more probably get injury by NSI than those above 40 years; AOR = 4.0 (95% CI, 1.7, 5.2). This is also may be due to their poor perception to the risk of NSI.

Table 5: Logistic Regration Model Analysis of Factors Associated With NSI; Addis Ababa, June, 2015.

Variables	Category	NSI		COR (95% CI)	AOR (95% CI)
		YES	NO		
Sex	Male	41	40	1	1
	Female	55	121	2.255 (1.314,3.869)*	2.2 (1.01, 4.1)*
Age	<25	31	24	5.167 (1.309, 20.39)	4.0 (0.7, 2.2)
	25 - 30	52	86	2.4 (0.7, 8.9)	0.4 (0.2, 0.8)
	31 - 40	10	39	1.1 (0.2, 4.3)	0.2 (0.06, 0.5)
	> 40	3	12	1	1
Profession	Lab. Tech.	13	51	1	1
	Mid Wives	16	13	1.2 (0.6, 2.6)	0.2(0.3, 1.2)
	Nurse	60	90	0.7 (0.5, 0.9)	1.1(0.2, 6.0)
	Anesthetics	7	7	0.204 (0.048, 0.868)	1.9 (0.2, 2.7)
Marital	Married	26	29	1	1
	Unmarried	70	92	2.2 (1.3, 3.9)	0.8 (0.1, 3.2)
Experience	< 5yrs	46	59	2.859 (1.244, 6.568)	0.947 (0.297, 3.018)
	6 to 10	28	45	2.3 (0.9, 5.5)	0.6 (0.8, 2.1)
	>16	46	49	1	1
Department	Emergency	11	21	0.8(0.3, 1.8)	0.3 (0.07, 1.6)
	Maternity	25	22	0.3(0.1, 0.6)*	0.09 (0.04, 0.23)*
	Ward	32	45	0.9(0.4, 1.9)	0.8 (0.3, 2.0)
	Lab.	13	49	1	1
Inject./day	<20	41	70	2.6 (1.1, 6.9)	0.60 (0.01, 4.922)
	21 to 30	22	23	4.3 (1.5, 12.4)	1.3 (0.5, 3.2)
	31 to 40	12	20	2.7 (0.9, 8.4)	2.3 (0.9, 5.9)
	>40	21	48	1	1
Training	Yes	30	75	1.919 (1.129, 3.263)	0.619 (0.322, 1.102)
	No	66	86	1	1

6. Discussion

Our study found that 96(37.4%) of health professionals sustained at least one NSI in 12 months preceding the survey; of which 32(12.5%) had got injury during one month prior to the data collection. The prevalence of needle stick injury is become more risk to health care workers in Addis Ababa public Hospital. Our findings have similarity to the studies done in Ethiopia; Jima University which showed 39%(22), and a study in Mongolia reported 38.4% NSI (4, 22); But this result is lower with study done in Ethiopia, Bahir Dar, 66.6% (23); the same in Nigeria is 40.2%(24) and higher to the result done in Malaysia 23.5%(25). These are may be due the set up their working environment.

The statistical analysis in this study indicates that female workers are more victims as compared with male workers. This may be due to the fact that males are less exposes themselves to clinical work than females. But, another study done in Ethiopia, East Gojam indicated that males are more victim of this NSI; This is may be due to lower numbers of female distribution in the institution and females are often involved in blood drawing and testing HIV in the same room with other activities than males. Medical ward was the departments where high risk of NSI observed. This is obviously medical ward is where major clinical care carried there. Individual behavior influences risk of sharp stick injuries. Only less than half of the staffs had training on safe clinical care. Young age and low work experiences affect the level of prevention of sharp injury. Environmental factors appeared to provide important context for safety. The frequency of injection reported contracts of high risk of NSI. Exposure and injury rates differ by occupation, professional and working departments depending on the frequency and length of time of handling of sharp equipments.

These results are similar to the finding from Malaysia (36.1%) and with the study of Ethiopian Nurse Association of 2007 (35%). In Vietnam 38% of phyciance and 66% nurses reported sustaining a sharp stick injury in the previous 9 months. In Taiwan also the same report (38%) revealed percutanous injury among health care workers. Needle stick is not single life time event. Usually health care were experience it more than once. In these survey health professionals, female nurses and mid wives and those working in emergency and maternity departments are more experiences NSI than other paramedical, hence, few of them sustained more than one episode (12.5%). In Ethiopia previous study included health facilities under the monitoring of WHO, was

shown that few of unsafe practices are resulted from lack of equipment or supply; but this study couldn't find that there were shortage of supply; and health facility in the country are required by the ministry of health to use only Single use and sterile injection and not practices recapping.

Factors found to be strongly associated with high prevalence of NSIs were female workers twice more likely to be injured by NSI than male; AOR; **2.2 (95% CI, 1.0, 4.1),** AOR; this may be due to more female assigned at clinical setting more, age less than 5 yrs are more likely to be injured by NSI than those above 40yrs.This is may be due to low perception to the occurrence and care of against NST. Age group between 26 – 30yrs were 96% less likely to be injured by needle stick injury than those above 40 yrs; AOR; 0.4(0.3, 0.8). Working as a nurse was 93% less associated to NSI; AOR; 0.7 (95% CI, 0.5, - 0.9). Unmarried staffs were significantly associated to NSI; AOR; 2.2 (95%CI, 1.3, 3.9). Staffs those less 5 years were significantly associated with NSI; AOR; 0.6 (95% CI, 0.3, - 0.9). Maternity ward was 99.1% less probability to be injured by NSI; AOR; 0.09 (95% CI, 0.04 – 0.23). Health professions who had formal training on safety of injection are 95% less likely to be injured by NSI than those working without any on site or off site formal training; AOR; 0.5 (95% CI, 0.3 - 0.9.) This is may be due to, lack of formal educational training (58%), unsafe injection practices, recapping: especially two hands recapping (38%), improper disposal of used sharps, and poor monitoring universal precaution were some factors related to sharp injuries. Furthermore, high numbers of injection, unfavorable working environment, poor practice due to in access of in-service training and inadequacy adherence to the universal precaution measurement likely to increase the risk of NSI. In most these hospitals clinical care unit were have not seen written information materials on their working room's wall or tables. Those staffs stayed only 8 hours in clinical setting have 97% less probability of injury by NSI than those work additional hours. Extended working hours and 24hrs duty time AOR = 0.3 (95% CI 00.09, 0.7) followed by 10hrs continuous working is associated with the risk of NSI, among nurse and mid wife. So these results implicating for policy makers and Hospitals and Health bureau administrator to ensure that working hours especially, long hour continuous working and lack of training on safe practices are associated to increase risk of NSI.

Our study is consistent with study finding from different studies that female health workers particularly nurses and mid wives more likely sustained NSI as compared to other health workers. A study from Malaysia reported no significant different in prevalence of NSI based on duration

of work experiences; however this study finding is contrast with these results. This could be explained by more exposure due to longer duration of service with condition mental and physical extortion that could result in NSI. Hence, low experience or shorter service workers are more likely to be injured by NSI. This could be also being a reflection of poor injection practices and practice without formal training. This work time related risk of NSI, for example the association of NSI injury with the long hour working time, is congruence with finding in other country. This could be a result of mental and physical stress associated with excessive working hours. Results from this study should be interpreted with caution as this study is a cross section survey and considered only five hospitals from Addis Ababa city administration.

In Ethiopia like Kenya, ,Rewanda,Zambia and other African country used designated incinerators but most of the incinerator found in this study was open or lack fences and in most respondents were found outside the facilities and outside the incinerators. The delivery and injection environments were not safe and have the potential for needle stick injury and exposure to potentially infectious blood borne pathogens. This study did not show the practices of reusable syringe and needle; which was common before the era of HIV.

Generally, needle stick or sharp injury has significance different among the sex, age, profession and working departments. For the health care provider, complete surveillance of exposure is necessary for identification of high risk activities and environments in order to define new targets for preventive measure and monitoring of the success and failure of the measure taken

7. Strength and Limitation of the study

7.1 Strength of the study

This study

- Give information about level of occupational injury related to NSI.
- Help principal researcher develop skill in Research work.
- Found base line information for future health plan.
- Resources for next researchers.

7.2. Limitation of the study

Some staffs couldn't remember that they sustained needle stick injuries within the past 12 months, some respondents were not sure their information kept secretes and health workers was recruited during their lunch time and not comfortable to answer freely.

8. Conclusion

This study revealed that more than one third of the study participants had needle stick injury at least once in the previous 12 months. Females were more affected than males, and age less than 25 years also more victims than other age groups. Three fourth of the staffs practiced recapping used syringe and greater than half of the respondents did recapping by two hands. Marital status, professions, experiences, and training were the predictors for needle stick injury.

9. Recommendation

After analyzing the major finding from this cross sectional study the following recommendation forwarded to MOH Ethiopia, Addis Ababa City Administration Health Bureau, Hospital Managers and health care professionals.;

- Formal training and continuous monitoring of the work place safety should be ensured by MOH, AARHB, and Hospital level decision makers. .
- On job training by the health bureau of Addis Ababa and other NGO to the health care worker on safety practices of injection.
- Patient education at facility level on advantage and disadvantage of injection and oral medication
- Similar studies at regional health bureau level by expert officer that involve all health centers and remained Hospitals are much needed.
- Qualitative assessment is needed to determine the reason for these unsafe practices by using standard tool.
- Health Professions should never bend, break, recap needle, remove needle from disposable used syringe, or over fill, reach in to, open, empty, or reuse a sharp container.
- All staffs should be involved in safe segregation and disposal of all sharps items immediately in marked containers. .

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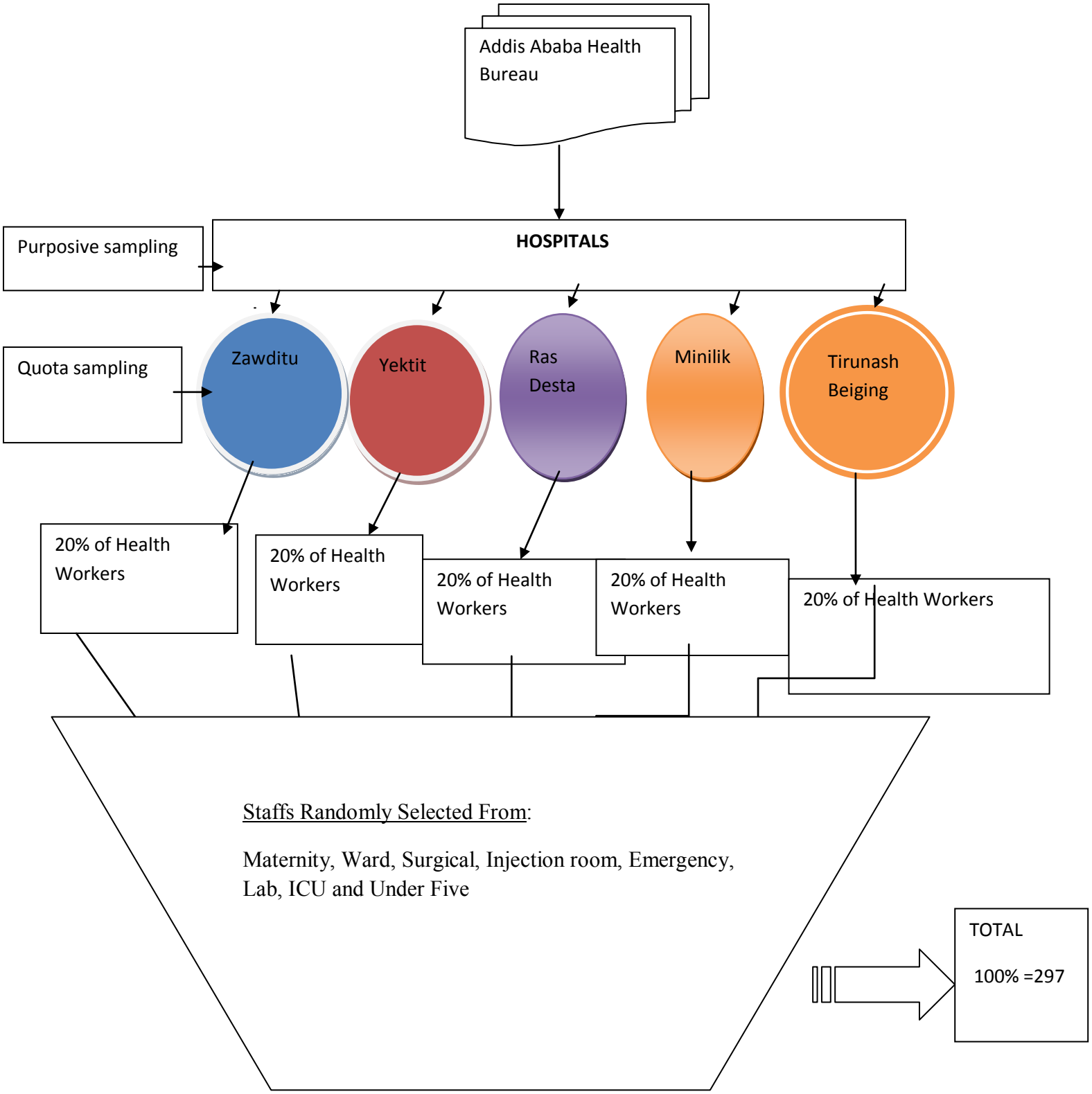

Figure 8: Schematic Representation of Sampling Steps for the Hospitals in Addis Ababa, June 2015

11. ANNEXIS

Annex1: Participants Information and Consent Form

Information sheet

This questionnaire was designed to investigate the prevalence and factors associated of needle stick injury sustained by health care workers in 5 hospitals Addis Ababa. The five all hospitals directed by health bureau selected to take part in this study. The questionnaire will assess the work place safety of the health workers.

It will look in to the following details back ground information, prevalence, determinants, circumstances surrounding needle stick injuries and reporting pattern. The questionnaire will take them approximately 10-15 minutes to complete response. There is no risk to take part in the survey, all information will be confidential. Their name will not keep in the form. Their participation in the survey is voluntary: They are not obliged to participate and may discontinue at any time. Moreover, this research project will be approved by Ethical review board of AAU and the regional health bureau of Addis Ababa.

Consent Form.

A questionnaire Prepared to Collect Data on Needle Stick Injury in Addis Ababa Hospitals

Hello! Good morning/afternoon? My name is Ato /Sr. …….. I am here today to collect data on the Assessment of prevalence and determinants needle stick injuries in Health Facilities. The objective of this questionnaire is to assess the potential risk of transmission of blood and body floods pathogens (HCV, HBV and HIV and others) through needles and sharps in healthcare setting in Addis Ababa, public health institution.

Your correct and genuine response or answer to the questions can make the study achieve its goal. Therefore, you are kindly requested to respond very voluntary with patience put the answer sheet in prepared box on spot. The questionnaire may take 10 to 15 minutes. We assure you that this study is surely confidential, thus writing your name is not needed.

Are you willing to participate in answering the questionnaire?

Yes! Go to the next page.
No! Thank them and interrupt to take response.
Sign of the consenting interview ……
Status of the responded papers
1. Completed ……
2. Partially completed……..
3. Refused…….
4. Others ……..
Supervisor's name ……,
sign ……

11.2. Annex 2. Questionnaire form: English version

Questionnaire Check List

100A Type of Hospital : - ……

100B Date: - ……... 100C Time ……

100D Department/ unit/ ward ……

100E Code Number of the check list ……..

Table 6: Back Ground and Work Related Information; Addis Ababa, June, 2015

No.	Questions	Choice	Skip
101	Name of Hospital		
102	What is your qualification (profession)	1) Health Officer 2) Senior Mid wife 3) Nurse Professional 4) Lab Technologist 5) Diploma Mid wife 6) Anesthetist 7) Other Specify……	
103	How old are you?	1) 18- 24 2) 25 – 30 3) 31 – 35 4) 36 – 40 5) 41 and above	
104	Your sex	1) Male 2) Female	
105	Your service year	1) <3 2) 4 – 10 3) 11 – 15 4) >15	

106	What area / unit are you assigned to work in past 12 months? In day, evening, night and week end or holly day? (YOU SELECT MORE THAN ONE ANSWERS)	1) emergency 2) OPD 3) U5 / Pediatrics 4) Adult in patient care 5) Maternity / Delivery 6) Other, specify……	
107	Is there any infection prevention committee?	1) yes 2) No 3) I don't know	
108	Have you ever been vaccinated for HBV?	1) yes 2) No 3) I don't remember	
II INFORMATION ON NEEDLE STICK INJURY (NSIs)			
201	Type of injection equipment (syringe and needle) used in the facilities	1) Sterilized and reused. 2) Single Use 3) Auto disposable 4) Other (specify) ……	
202	Sources of syringes with needles	1) Patient buy from health facility 2) Patient brings from outside / drug vender 3) Free of charge from facility 4) Other specify ……	
203	Have you had any sharp injury since last year?	1) yes 2) No 3) I don't remember	
204	How much sharp (needle) injury have you sustained since last 12 months?	1) one time 2) two times 3) three times 4) four and above	

205	How much sharp (needle) injury have you sustained since last 1 months?	1) one time 2) two times 3) three times 4) four and above	
206	In your most recent needle stick injury, What type of item caused your injury?	1) Syringe needle 2) suture needle 3) butterfly needle 4) glasses item 5) IV canola 6) Insulin needle 7) Scalpel blade 8) Other Sharp…….	
207	Type of injury you sustained?	1) Deep injury 2) Slight skin penetration 3) superficial 4) others, specify ……	
208	How did you sustain the injury	1) During recapping 2) By Sudden movements of the patients 3) During sharp collection 4) Others specify ……	
209	What parts of the where injured	1) Hand 2) Thigh 3) Finger 4) Palm 5) Arm	
210	How was the injury inflicted	1) Self 2) Another staff 3) Non compliant patient 4) Other, specify……	

211	Is there any active post sharp exposure management system in your facility	1) yes 2) No	
212	Do you know which unit / Department or room you may report if you exposed or sustained sharp or needle injury?	1) yes 2) No	
213	Is there enough privacy during counseling and diagnosis or trust full confidentiality?	1) yes 2) No	
214	Have you had on site or off site training on infection prevention?	1) yes 2) No	
215	Have you observed recapping of needle?	1) yes 2) No	
216	How was the condition of recapping of the needle occurring?	1) Single handed 2) Two handed	
217	Have observed any needle stick injury on the health workers?	1) yes 2) No	
218	How did the needle stick injury occur?	1) Abrupt movements of the patient/s 2) Two handed recapping 3) unsafe sharp collection 4) carelessness/ negligence 5) Other, specify	
220	Have ever observed reuse of needle for more than one person	1) yes 2) No	
221	How is the injection environment?	1) Clean and no potential contamination of syringes and needled with blood or other body fluids	

		2) Dirty and potential contamination of syringes and needles with blood or other body fluids. 3) Comments ……	
222	Are there any needle, syringes, and sharp collection box in the room?	1) yes 2) No	
223	Type of needle, syringes and sharp collection box? **(YOU CAN SLECT MORE THAN ONE)**	1) safety box 2) Liquid proof 3) Open container 4) puncture proof 5) Others (specify) ……	
224	Have you ever seen sharp container (CAN SLECT MORE THAN ONE)	1) Over filled 2) Torn and needle seen through the hole 3) Empty or few dirty syringes and needle inside it 4) Others (specify) ……	
225	Have ever seen any dirty needles and sharps in place where they expose health care workers to needle stick injuries.	1) yes 2) No	
226	How are needles, syringes, and sharps disposed In your facility	1) open incineration 2) protected incineration 3) open dumping 4) Burial in a pit 5) Dumping 6) Other, specify ……	
Table 6 **DETERMINIANTS, CIRCUMSTANCES OR PROCEDURE THAT CONTRIBUTE THE NEEDLE STICK INJURY (NSI)**			

301	Is there a list of recommended practices to prevent NSI in your work place? Ex. Universal Precaution?	1) yes 2) No	
302	In your last NSI, you sustained or observed which of the following factors contributed to NSI?	1) Excess clients, 2) Shortage of gloves 3) Shortage of sharp box 4) Emergency Situation 5) Recapping of used needle 6) Removing of used needle 7) Attempting to bend the needle 8) After drawing the blood 9) Lack of training 10) During injection 11) During suturing 12) During securing IV line	
303	Are there safety box available at your work point as long as your hand stretch	1) yes 2) No	
310	What suggestion do you have for preventing needle stick injury (NSI); Sharp injury		

11.3 Annex 3. የስማፈኛዉ ፍቃድ መጠየቂያ ፎርም

በአዲስ አበባ ከተማ የመንግስት ጤና ተቋማት የስማፈኛዉ መጠዩቅ ፎርም

የተቋሙ ስያሜት:-	ሆስፒታል
ክፍለ ከተማ	
የመረጃ ሰብሳቢዉ ስም	
የመስክ ተቆጣጣሪዉ ስም	

አጠቃላይ መመሪያ :-ይህ መጠይቅ በጤና ተቋማት ዉስጥ በሥራ ላይ እያሉ በጤና ሠራተኞች ላይ ስለት ባስችዉ እንደ መርፌ ባሉ የህክምና መገልገያ ቁሳቁሶች አጠቃላይ የጉዳት ሥርጭት ለማወቅ የሚደረግ ሀሳበ መልስ መቀበያ ነዉ:: በዚህ መጠይቅ ዉስጥ ሃሳቡን የሚሰጥ የጤና ሰራተኛ ስሙን መጥቀስ አይጠበቅበትም ::

ጤና ይስጥልኝ:: ስሜ ----------ይባላል:: የአዲስ አበባ ዩኒቨርሲቲ የማስተርስ ተመራቂ የሆኑት አቶ ዳንኤል ናደዉ ለመመረቂያ የጥናት ምርምር ሥራ የሚሆን በሥራ ላይ እያሉ በጤና ባለሙያዉ ላይ ስለት ባሳችዉ እንደ መርፌ ባሉ የህክምና መገልገያ ቁሳቁሶች አጠቃላይ የጉዳት መጠን ለማወቅ ሃሳብ ለመሰብሰብ የሚደረግ ጥያቄ ነዉ:: ይህ ጤና ተቋም ጥናቱን እንድንሰራ ስለፈቀዱልን አርሰዎን በዚህ ጥናት አካትተናል:: የርስዎ ሙሉ ተሳትፎ ስጥናቱ እጅግ በጣም አስፈላጊ ነዉ:: በቃለመጠይቁ እንዲሳተፉ የርስዎን ሙሉ ፍቃድ እንጠይቃለን:: በዚህ ጥናት ፍቃደኛ ካልሆኑ አይገደዱም:: በዚህ መጠይቅ ላይ የርስዎ ስም አይጻፍም::ማንኛዉም እርስዎ የሰጡን መረጃ ሙሉ በሙሉ በሚስጥር እንደሚጠበቅ ላረጋግጥልዎ እፈልጋለሁ:: በዚህ ጥናት ላይ በመሳተፍዎ በእርስዎ ላይ የሚደርስ ምንም ዓይነት ችግር የለም::በዚህ ጥናት ላይ በመሳተፍዎ የሚያገኙት ቀጥተኛ ጥቅም የለም::ነገር ግን የእርስዎ በዚህ ጥናት ላይ መሳተፍ ወደፊት በተቋሙ ላይ የሰራተኛዉን ጤንነት ዋስትና ባለዉ አደረጃጀት አገልግሎቱን ለማሻሻል ይረዳል::ጥያቄዉን እየሞሉ እያሉ ለማቋረጥ አሰገዳጅ ሁኔታ ካለ እንዲቀጥሉ አይገደዱም::

ለመሳተፍ መልስዎ አዎን ከሆነ መቀጠል እችላለhሁ::

እንባቢዉ እንብበዉ ወይም አዳምጠዉ ከተስማሙ መፈረም ይችላሉ::

ፈርማ----------፣ ቀን (ቀን/ወር/ዓመት)----------

11.4 Annex 4. የስማሪኛ መጠይቅ

የማረጋገጫ መጠይቅ

100A የተቋሙ ስም: - ……

100B ቀን …….. 100C ሰዓት ……

100D ድፓረትመንት/ዩኒት/መኝታ / ……

100E የቼክ ሊስቱ መለያ ቁጥር ……..

I ማንነትና የሥራ ቦታ ሁኔታ

ቁ.	መጠይቅ	መለየት	ይለፍ
101	የሆስፕታሉ ሥም		
102	የሙያ ሁኔታ	1) ጤና መኮንን 2) ከፍተኛ ሚድ ዋያፍ 3) ከፍተኛ ነርስ 4) ላብ ቴክኖሎግስት 5) ድፒሎማ ሚድዋይፍ 6) ስንስቴትስት 7) ሌላ ካለ ይጠቀስ	
103	የሰድሚ ሁኔታ?		
104	ፃታ	1) ወንድ 2) ሴት	
105	የስገልግሎት ዘመን		
106	ባለፉት 12 ወራት ተመድበህ የሰራህባቸዉ የስራ ክፍሎች)	1) ድንገተኛ 2) ተመላላሽ 3) ሰፃናት ክፍል	

		4) የታካሚ መኝታ ክፍል 5) ማዋለጃ 6) ሌላ.....	
107	የተሳሳፌ በሽታዎች መከላከያ ኮሚቴ በተቋሙ አለ	1 አዎን 2 የለም 3 አላዉቅም	
108	ለጉበት (HBV) ክትባት ተከትበህ ነበር	1 አዎን 2 የለም 3 አላስታዉስም	
II የመርፌ አደጋ ሥርጭት			
201	በተቋሙ ዉስጥ በጥቅም ላይ አየዋሉ ያሉ እንደስርንጅና መርፌ ያሉ	1 ስተፈጸል የሆኔ. 2 ለአንድ ግዜ ቢቻ 3 በፊሱ ወደ ዉስጥ የሚመልስ 4 ሌላ ካለ ይጠቀስ.....	
202	የስፈንጅና መርፌ መገኛዉ	1 ታካሚዉ ከተቋሙ ገዝቶ 2 ታካሚዉ ዉጪ ገዝቶ 3 በነፃ ከተቋሙ ቀርቦ 4 ሌላ	
203	በመርፌ ወይም በሹል የህክምና መገልገያ በዚህ ዓመት ተወግተዉ ያዉቃሉ?	1 አዎን 2 የለም	2'ን ከመረጡ ወደ ጥያቄ

		3 ስላስታዉስም	211
204	ስንትጊዜ በመርፌ ወይም በሹል የህክምና መገልገያ በዚህ በ12 ወር ዉስጥ ተወጋህ/ሽ?	1 ስንድ ጊዜ 2 ሁስት ጊዜ 3 ሦስት ጊዜ 4 ስራትና ከዚያም በላይ	
205	ስንት ጊዜ በመርፌ ወይም በሹል የህክምና መገልገያ በዚህ በ1 ወር ዉስጥ ተወጋህ/ሽ?	1 ስንድ ጊዜ 2 ሁስት ጊዜ 3 ሦስት ጊዜ 4 ስራትና ከዚያም በላይ	
206	በገጠመህ የመወጋት አደጋ የትኛዉ የጉዳት አይነት ደረሰብህ/ሽ ?	1) መዉገያ መርፌ 2) ካኑላ/ቪጎ 3) መስፊያ መርፌ 4) Iየሲንሱሰን መርፌ 5) የቢራቢሮ መርፌ 6) የስፒራሲዮን ምላጭ 7) መስታወትነት ያላቸዉ 8) ሌላ……..	
207	የመወጋቱ ጉዳት መጠን ?	1 ጠለቅ ያለ ጉዳት 2 መጠናኛ የቆዳ ላይ ክፍተት 3 ቆዳ ላይ / superficial 4 ሌላ ……	
208	ጉዳቱ የደረሰዉ በእንዴት ሁኔታ ነዉ ?	1 መልሶ በመክደን ጊዜ/ recapping	

		2 በድንገት እንቅስቃሰ ጠቅት 3 ሹል ሰቃዎች ስሰበስሙ 4 ሌላ……	
209	የትኛዉ የስካል ክፍላችን ተጎዳ ?	1 እጅ 2 ታፋ 3 ጣት 4 መዳፍ 5 ጡንቻ 6 ሌላ……	
210	አጠጋጉ እንዴት ነበር?	1 Self በራስ 2 ሌላ የሥራ በልደረባ 3 ታካሚ 4 ሌላ……	
211	የተጠናከረ የድህረ ተጋላጭ የህክምና ስለራር ሂደት ስለ ?	1 ስለ 2 የለም	2ን ከመረጡ ወደ ጥያቄ 214
212	የት ክፍል ህክምናዉን እንደሚከታተሉ ያዉቃሉ?	1 ስለ 2 የለም	
213	በህክምናዉ ጊዜ መታከሚያዉ ስፍራ፣ ባለሙያዉ ሚስጥርን	1 ስለ	

	በመጠበቅ የተመቻቸች ነዉ?	2 የለም	
214	ተሳሳፊ በሽታ በተመለከተ በሥራ ላይ ጓደም ከሥራ ላይ ስልጠና ወስደዉ ነበር	1 አለ 2 የለም	
215	የጠቡተን መርፌ ሌሎች መልሰዉ ሲከድኑ አደተዋል?	1 አዎ 2 የለም	
216	አከዳደኑ እንዴት ነበር?	1 በአንድ እጅ/Single handed 2 በሁለት እጅ/Two handed	
217	ሌሎች በለሙያዎች ስጠጉ አደተዋል?	1 አዎ 2 የለም	
218	አደጋዉ የደረሰዉ እንዴት ነዉ?	1 መልሶ በመክደን ጊዜ/ recapping 2 በድንገት እንቅስቃሰ ጠቀት 3 ሹል ዕቃዎች ስለበሰቡ 4 ሌላ……	
219	አንድን ስፈንጅ ከአንድ ሰዉ በላይ የሚጠቀሙበት ሁኔታ በምትሰፈበት ቦታ ገጥሞት ያዉቃል ?	1 አዎ 2 የለም	
220	አንድን መርፌ ከአንድ ሰዉ በላይ የሚጠቀሙበት ሁኔታ በምትሰፈበት ቦታ ገጥሞት ያዉቃል ?	1 አዎ 2 የለም	
221	የመርፌ መስጫ ቦታ አካባቢ እንዴት ነዉ?	1) ንፁዕ፣ በደም ጠደም ሌላ ከሰዉነት በሚወጡ ፌሳሽ ያልተበከለ። 2) የቆሸሸ፣ በደም ጠደም ሌላ	

		ከሰጪነት በሚጠቡ ፌሳሽ የተበከለ።.	
222	የስፈንጅ፣የመርፌ እና የሹል የህክምና መገልገያ ቁሳቁሶች መሰብሰቢያ ሳቃ በየክፍሉ ይታያሉ?	1 አዎ 2 የለም……	
223	የስፈንጅ፣የመርፌ እና የሹል የህክምና መገልገያ ቁሳቁሶች መሰብሰቢያ ሳቃ ስደነት?	1 safety box ስፍቲ ሳጥን 2 የማያፈስ 3 ክፍት የሆነ መሰብሰቢያ 4 ሹል ነገር የሚቋቋም 5 ሌላ ……	
224	ባየታቸዉ አጋጣሚዎች የሹል ነገር መሰብሰቢያዉ ሳጥን ሁኔታ እንዴት ነዉ?	1 ከመጠን በላይ ሞልቷል 2 የተቀዳደደ ስለደጋ የሚያጋልጥ 3 በልኩ ወይም 3/4ኝኛዉ የሞላ 4 ሌላ ……	
225	መርፌና ሌሎች ሹል ነገሮች በምትሰራበት አካባቢ ወድቀዉ አገኝተዉ ያዉቃሉ?	1 አዎ 2 የለም……	
226	በተቋማችዉ ዉስጥ መርፌ፣ ስፈንጅ እና ሌሎች ሹል ነገሮች የሚወገዱት እንደት ያለ ሁኔታ ነዉ?	1 ክፍት እንስነፌተር/ incineration 2 የተከለለ እንስነፌተር/incineration 3 ክፍትጉድጓድ/ dumping 4 መቀበር 5 ሌላ ……	

III ስመርፌ አደጋ አጋላጭ ሁኔታዎች			
301	በአፍላችሁ ግድግዳ ላይ በሽታን ስለመከላከል የሚገልፅ ተለጥፎ ይገኛል? Ex. Universal Precaution?	1 አዎ 2 የለም 3 እርግጠኛ አይደለሁም	
302	በመጨረሻዉ ጊዜም በቅርቡ የመወጋት አደጋ ገጥሞህ ጊዜም ባየዉ መሰረት አደጋዉ ሲደርስ የቻለዉ በምን ሁኔታ ነበር?	1. ሥራ ስጀምር ስት 2. በሥራ ላይ እያሉ 3. ስራ ስጨርሱ	
303	የመርፌ ጊዜም ሹል ማጠራቀሚያ ሳጥን በመረፌ መዉጊያ ቅርብ ላይ ነዉ?	1 አዎ 2 የለም	

Annex-5 Assurance of Principal Investigator

ASSURANCE OF PRINCIPAL INVESTIGATOR

The undersigned agrees to accept responsibility for the scientific ethical and technical Conduct of the research project and for provision of required progress reports as Per terms and conditions of the Research Publications Office in effect at the time of Grant is forwarded as the result of this application.

Name of the student: DANIEL NADEW HOLANA (BSc)

Date._____ Signature _____

Approval of the primary Advisor

Name of the primary advisor: AMARECH GUDA (PhD.)

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Date._____ Signature _____