

JIMMA UNIVERSITY, INSTITUTE OF HEALTH, DEPARTMENT OF HEALTH
ECONOMICS, MANAGEMENT AND POLICY.



MAGNITUDE AND ASSOCIATED FACTORS OF NEEDLE STICK AND SHARP
INJURIES AMONG HEALTH CARE WORKERS IN THREE HOSPITALS OF
NORTH SHOWA ZONE OROMIA REGIONAL STATE, ETHIOPIA.

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A THESIS SUBMITTED TO JIMMA UNIVERSITY, INSTITUTE OF HEALTH,
DEPARTMENT OF HEALTH ECONOMICS, MANAGEMENT AND POLICY AS A
PARTIAL FULFILMENT FOR THE REQUIREMENT OF MASTER OF HEALTH
CARE AND HOSPITAL ADMINISTRATION.

June, 2017

Jimma, Ethiopia

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ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
BBP	Blood Borne Pathogens
CDC	The Centres for Disease Control
DGH	Dara Gundo Meskel Hospital
ETB	Ethiopian Birr
FH	Fieche Hospital
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HCW	Health Care Workers
HIV	Human Immunodeficiency Virus
HO	Health Officer
IP	Infection Prevention
KH	Kuyu Hospital
MD	Medical Doctor
MW	Midwifery
NSIs	Needle Stick Injuries
NSSIIs	Needle Sticks and Sharp Injuries
PPE	Personal Protective Equipment's
RN	Registered Nurse
SPSS	Statistical Package for Social Science
WHO	World Health Organization

Contents

List of tables	vi
ABSTRACT	viii
ACKNOWLEDGEMENT	ix
Chapter One: Introduction.....	1
1.1 Background.....	1
1.2 Statement of the Problem	3
1.3 Significance of the Study.....	5
Chapter Two: Literature Review	6
2.1. Magnitudes of NSSI	6
2.2. Factors affecting NSSI	7
2.2.1 Socio- demographic Characters.....	8
2.2.2. Behavioural Factor	9
2.2.3. Working Environment.....	10
2.3. Conceptual Framework	12
Chapter Three: Objectives	13
3.1. General Objective	13
3.2. Specific Objectives	13
Chapter Four: Material and Methods.....	14
4.1. Study Area and Period.....	14
4.2. Study Design	14
4.3. Population.....	14
4.3.1. Source population and study population	14
4.4. Sample Size Determination and Sampling Technique	14
4.4.1. Data collection instruments	14
4.4.2. Data collection process.....	15
4.5. Study Variables	15
4.5.1. Dependant variable.....	15

4.5.2. Independent variables.....	15
4.6. Operational Definitions	16
4.7. Data quality control	16
4. 8. Data processing and analysis.....	17
4.9. Ethical Clearance.....	17
4.10. Dissemination Plan of the Study Findings	17
Chapter 5: Results	18
5.1. Socio demographic characteristics of Health Care Workers	18
5.2. Behavior of health care workers.....	18
5.3. Work environment of Respondents	18
5.4. Perception and incidence of NSSIs	23
5.5 Needle stick and sharp injury and Associated Factors	23
Chapter 6: Discussion.....	30
Chapter 7: Conclusion and Recommendation	32
7.1. Conclusion.....	32
7.2. Recommendation	33
ANNEXES	37
1. QUESTIONNAIRE	37
1.1. <i>ENGLISH VERSION</i>	37
Gaaffilee Afaan Oromiiffaa	43

List of tables

Table 1. Socio demographic characteristics of HCWs in hospitals of north showa zone, Oromia regional state, Ethiopia, March, 2017	19
Table 2. Behaviour characteristics of health care workers in hospitals of North Shoa zone, Oromia regional state, Ethiopia, March,2017	21
Table 3. Working environment of HCWs in hospitals of North Showa zone, Oromia regional state, Ethiopia, March, 2017	22
Table 4. Perception and incidence of NSSIs of health care workers in hospital of north showa zone, Oromia regional state, Ethiopia, March, 2017.....	24
Table 5. Factors associated with occurrence of NSSIs among HCWs in hospital of north showa zone, Oromia regional state, Ethiopia, March, 2017.....	26
Table 6. Multivariable logistic regression analyses of factors associated with NSSIs in hospital of north showa zone, Oromia regional state, Ethiopia, March, 2017.....	29

List of figures

Figure 1 .Conceptual framework developed for the study of magnitude and association factors of NSSIs among HCWs in hospitals of North Showa, Ethiopia, 2017..... 12

ABSTRACT

Background: Needle stick and sharps injuries have been recognized as one of the most common occupational hazards among health care workers. But there are low rate of reports of occupational hazards among health care workers in health facilities. Every day they are exposed to deadly pathogens through contaminated needle and other sharps injuries like human immunodeficiency virus, Hepatitis B and Hepatitis C virus. As a result this study is designed to investigate the magnitude and associated factors of Needle stick and sharp injuries among health care workers in three hospitals of north showa zone. The result of the research is very important for policy makers, program implementers and health care workers to reduce the problem.

Objective: To assess the magnitude and associated factors of needle stick and sharp injuries among hospitals health care workers in North Showa Zone Oromia Regional state, Ethiopia, 2017.

Methods: A cross sectional study was conducted in March 1-30/ 2017 among health care workers in three hospitals of North Showa zone, Oromia Regional state, Ethiopia. A total of 302 healthcare workers were taken from each department in the hospitals. Data were collected using pretested and self-administered questionnaire. The collected data were entered into Epi-data version 3.1 and analysed using SPSS version 20.0. Bivariate analysis was carried out to identify the predictors of needle stick and sharp injuries in the entire work life of the health care workers. Multivariable logistic regression analysis was used to identify the independent effect of each independent variable on the outcome variable. Written informed consent was obtained from the participants.

Results: A total of 290 HCWs were enrolled in the study and made the response rate 96%, of whom 157 (54.1%) were males. The overall magnitude of entire work life of needle stick and sharp injury was 47.9% of which 21% were exposed during the last 12 months. Age category between 30-35yrs [AOR (95%CI: 0.182(0.040, 0.839)] and not reporting due to fear of stigma [AOR (95%CI) 10.297(2.467, 42.971)] and thinking that needle stick and sharp injury was not avoidable [AOR (95%CI) 1.849(1.026, 3.330)] had significant association with the occurrence of needle stick and sharp injuries in the study area.

Conclusion and recommendation: The finding indicated high prevalence of needle stick and sharps injuries among HCWs. Using regular safety devices and regular provision of information about needle stick and sharp injury to health facility is recommended for control and prevention measure of NSSIs.

Key terms: Needle stick/sharp injuries, health care worker, health facility

ACKNOWLEDGEMENT

First I forward my special thanks to my advisors Prof. Mirkuzie Woldie and Mr. Melaku Hayile for their assistance, constructive comments and suggestion throughout the topic modification and thesis preparation.

I would like to extend my acknowledgement to Jimma University for giving me this golden opportunity.

My acknowledgement is extended to North Showa zone health office, all Hospital managers and health care workers for their patience during data collection.

Last but not list I would like to thank my family and friend for their tolerance and remarkable help in all ways which will never be forgotten.

Chapter One: Introduction

1.1 Background

Needle stick and sharp injuries (NSSIs) are accidental skin penetrating wounds caused by sharp instruments in a health care setting. It occurs when health professionals perform their day to day clinical activities in the health institutions such as hospitals, health centers and clinics(1)

Additionally NSSIs are wounds caused by sharps such as medical needles, blood collection needles, intravenous cannulas (iv) or needles used to connect parts of iv delivery systems (2).

Sharp injury occurs when sharp instruments such as needle penetrates the skin. If the sharp instrument is contaminated with blood and body fluids, there is potential for transmission of infection (4). As various article indicates NSSIs are common health hazards that occurred in the working environment when HCWs accomplished their daily working activity (5). The reason for NSSIs may include factors like type and design of needle, recapping activity(one hand or two hand recapping), handling/transferring specimens, collision between HCWs or sharps, during clean-up, operating needles in patient line related work, passing/handling devices or failure to dispose of the needle in puncture proof containers (2).

Needle stick injuries (NSIs) cause a big problem among HCWs in health facilities. Any healthcare worker handling sharp devices or equipment is at risk of occupational exposure to blood borne pathogen like, human immunodeficiency virus (HIVs), hepatitis B virus (HBVs) and hepatitis C virus (HCVs). Certain groups of individuals are at greater risk than others because of the nature of their work. Such is the case with doctors, nurses and medical students where their responsibilities necessarily involve the risk of exposure to patient's blood (6).) In developing countries, the risk of injuries at work place is higher than that of developed countries (3).

A comprehensive review of relevant studies has demonstrated that the NSSIs were associated with three major factors: engineering factors including the form of sharp devices and barrier devices, organizational factors including the existence of supplies and policies for reporting and behavioural factors like recapping and disposal-related issues (7) .

Currently Ethiopian government is expanding health institutions and a number of health professionals are employed in these institutions to provide health care services. Their working environment must be safe and free from occupational hazards especially from NSSIs (16).

Different strategies are available to prevent infections due to NSSIs including education of HCWs on the risks and precautions, reduction of invasive procedures, use of safer devices and procedures and management of exposures.

Preventing NSSI is an essential part of any blood borne pathogen prevention programme in the work place. Every healthcare facility should have an infection control programme in place through a working hospital infection control committee.

1.2 Statement of the Problem

Globally, more than 35 million HCWs are suffering from occupational NSSI every year. The incidence of percutaneous injury with a sharp object among the HCWs is estimated to be 3 million every year where a chance of four injuries per HCW could occur annually (4,21). Of the 35 million health-care workers, 3 million experience percutaneous exposure to blood pathogens each year: 2 million are exposed to hepatitis B virus (HBV); 0.9 million to hepatitis C virus (HCV) and 170,000 to HIV. As a result of these injuries, 150,000 health-care workers contracted HCV, 70,000 HBV and 500 HIV (10). Needle stick injuries are a big problem. In the United States, CDC estimates indicate that 600,000 to 1 million such injuries occur annually. About half of these injuries go unreported (22).

In the industrialized world, occupational surveillance assesses and monitors the health hazards related to BBPs and prevention measures reduce the risk of transmission. In contrast, in developing countries, exposure and health impacts are rarely monitored and much remains to be done to protect HCWs from such risks that cause infections, illness, disability and death that may in turn impact on the quality of health care (5).

Blood borne pathogens (BBPs) can be transmitted by these accidental injuries. Doctors, nurses, and medical and nursing students are among the health care workers (HCW) who are occupationally exposed to blood and other body fluids (e.g. saliva, vomit, mucus, etc.) which might increase their risk of acquiring blood-borne pathogens especially human immunodeficiency virus (HIV), hepatitis C (HCV), hepatitis B (HBV), and psychological stresses(11).

Even though up to 90% of these injuries occur in developing nations, the number of studies reporting this serious issue is less compared to developed nations because the risk of occupational transmission due to BBPs is increased due to excessive handling of contaminated needles that result from some common unsafe practices. These include administration of unnecessary injections on demand, reuse of non-sterile needles when supplies are low and inappropriate disposal of hazardous waste (6).

Needle stick injuries (NSIs) are considered as common occupational hazards for Health Care Workers (HCWs). However, available statistics underestimate the severity of the problem because many HCWs do not report their injuries. Therefore, it is not known how serious the problem is or how well

prevention programme will work (8). Accordingly there was no quantification of NSI burden in Africa which made the serious consequences of NSSIs injury to go unnoticed (7).

But as far my knowledge is concerned there is no scientific study which indicates the magnitude of the problem and its associated factors in North Showa zone. As a result this study is designed to investigate the magnitude and associated factors of Needle stick and sharp injuries among health care workers in three hospitals of north showa zone.

1.3 Significance of the Study

In Ethiopia, very limited study is available on needle stick and sharp injuries exposure status among health professionals. A few studies reported high prevalence of NSSI in central and northern part of the country. However, contributing factors for the occurrences of occupational NSSI among HCWs was not yet well addressed. Surprisingly no studies have been conducted on the magnitude and associated factors of NSSIs among health care personnel in North Showa Zone. As a result there would be information gap on this area.

Thus this zonal based study is planned to be under taken to assess the magnitude of NSSIs and associated factors among exposed study groups and fulfill the information gaps in the area. By doing so we hope the result of this study will help:-

- Policy makers to develop a safety guidelines & standard precaution so as to minimize the burden of the problem.
- Health care managers to arrange trainings on safety practice, provide personal protective equipment and vaccinations for HCWs.
- HCWs will get benefits from policies & guidelines developed by policy makers & health care managers thus minimizing the magnitude of the injury.

Finally, as no scientific study which indicates the magnitude and its associated factors in North Showa Zone of Oromia Regional State was done, this study were designed to investigate the magnitude and associated factors of NSSIs among HCWs in the three hospitals of north showa zone.

Chapter Two: Literature Review

Needle-stick and sharp injuries (NSSI) is a major occupational health and safety issue faced by HCWs in health institutions. Because of the environment in which they work, many HCWs from physicians, surgeons, and nurses to housekeeping personnel, laboratory technicians and waste handlers are at an increased risk of accidental NSSIs (2). Life threatening blood borne pathogens such as, HIV, HBV and HCV can be transmitted by this accidental exposure in which certain groups of individuals Such as doctors, nurses and medical students are at greater risk than others because of the nature of their work (8).

2.1. Magnitudes of NSSI

Magnitudes and associated factors of NSSI is variable worldwide. The highest report is found among HCWs in a tertiary care hospital of India, in which case 80.1% gave a history of NSSI in the preceding one year. Nurses had the highest percentage 49(100%) (2). Other report from Korea revealed that (70.4%) of the hospital nurses had experienced NSSIs in the previous year (12). On the other hands 23.5% overall magnitude of NSSIs was reported from Malaysian (13). Additionally the study conducted in Kenya revealed that 25% of HCWs were exposed to blood and body fluids in the preceding 12 months (14) .

In Ethiopia number of studies were conducted on prevalence of NSSI and associated factors. The Study done in Harari and DireDawa regions, Eastern Ethiopia , the self-reported life time risk of NSI and sharp injury among HCWs was 30.5% and 25.7% respectively. The self-reported one year prevalence of NSI and sharp injury was 17.5% and 13.5% respectively. Working in hospitals was associated with risk of NSSI and had a higher frequency of needle re-use and recapping compared to their peers in health centers (15).

Other study at Felege Hiwot Referral Hospital, Bahir Dar, Amhara regional state, Ethiopia (6) revealed that Nearly 1/3rd of participants had NSSIs at least once in the previous year, and nearly half, 46.1% of the participants who sustained the injury didn't report the injury to the concerned body and those who previously notify their injury were 77% less likely to encounter the injury. Of the total of the respondents 18.7%, 31.0%, and 59.0% had experienced NSSIs at least once in the last 2 weeks, 12 months, and in their entire job career respectively and 53.1% were exposed more than once (6).

The other two studies in Amhara regional state are the one conducted at Debre Markos that reveal in one year, 22.2% HCWs had experienced at least one NSSIs and from these 38.2 injuries were not reported totally to the concerned body (16) and that done at Debre Berhan , where 31.5% of HCWs has sustained NSSIs that exposed them to human immunodeficiency virus infection during 1 year period (17).

Likewise the study conducted in Somali region of Ethiopia, 30.1% of HCWs experienced NSIs. The study revealed that 30.1% of health care workers experienced needle-stick injury within the last one year, out of which 67(70.52%), 25(26.32%), 2(2.1%) and 1(1.05%) suffered one, two, three and greater than five injuries respectively. Most injuries involved the injection needle (62.11%) followed by suture needle (30.52%) and Stylet needle (4.21%) (7).

According to the study done in Arba Minch General Hospital, Gamo Gofa Zone, Southern nation & nationalities region of Ethiopia, the magnitude of NSSIs at least once in the 12 months is 42.1%. Of those who ever sustained the injury, 53.1% were exposed more than once (18).

Similarly there was a report from the study conducted in Bale Zone, Oromia regional state southeast Ethiopia; that revealed the overall prevalence of NSSI was 37.1%. From the total of respondents who had ever experienced occupational injury, (43.7%) were exposed more than once. Majorities of injury are caused syringe needles (69.8%), followed by suture needle (15.9%). Most of injuries were occurred during needle recapping (46%) followed by opening needle cap (21.4%), disposal and cleaning the work area (16.7%) and during washing instrument (14.3%). In this study, staff nurses had higher prevalence of NSSI as compared to other HCWs (5).

2.2. Factors affecting NSSI

Working Unit/department/, training on IP and patient safety and presence of contaminated needle and sharps materials in the working area had significant association with the occurrence of sharp and needle stick injury in nurses. Among the worker behaviour related factors, job satisfaction, level of job stress on nurse respondents, use of personal protective and gloves during the practice work by needles/ sharps and recapping of needles after use showed a significant association with the occurrence of needle stick and sharp injuries ($p < 0.05$)(1).

2.2.1 Socio- demographic Characters

In Korean study NSSIs were significantly associated with years worked as an RN, emotional exhaustion related to the job (12). Similarly report from Malaysian Hospital showed statistically significant association between NSSIs and age of respondent, working experience and job categories revealing that the magnitude of NSSIs was significantly higher among those aged 35 years and above (32.6%) as compared to those below 35 years of age (19.5%). The staff nurses had the highest prevalence (27.9%) followed by medical laboratory technician (27.8%), assistant medical officer (18.4%) and community nurse (11.4%) (13).

One systematic review revealed that age and being senior or nursing officer, work experience have close association with NSSIs among HCWs. There was association with age, level of education, immunization status, number of shifts per month, and history of related training NSSIs are more likely to happen in understaffed departments than adequately staffed departments, and to nurses who work mixed shifts than those who didn't (9). Another work was reported from Debre Markos, which revealed that workers age, religion, educational status, marital status and work experience did not show any kind of association with NSSIs among HCWs.(16). Health professionals who had positive attitude in employing needle recapping have been exposed for needle injection 5 times more likely than their counterparts, similarly risk of exposure for needle injection was slightly higher in males (52.3%) than females (47.7%) but statistical difference not noted. Out of the considered health professionals, 51.6% of NSIs and 57.02% of sharp injuries were reported by nurse professionals followed by Physician which was 26.4% and 25.2%, respectively (8).

Additionally, female healthcare workers were less likely to be exposed than males (17). In contrast (15) reported that Needle stick injury was significantly associated with females (AOR 1.75; 95% CI 1.04– 2.92). On the other hands Age and sex were not the predictors of percutaneous injury (3). Monthly income, job satisfaction, and working in waste handling unit were another predictors for needle stick and sharp injury (18).

There was a country wide report that revealed Age, work experience and working time is a risk factor for exposure of NSSIs. Healthcare workers who had extended working hours (>40 hrs./week) and work experience (≥ 50 years) were 1.2 and 1.4 times higher to be exposed to needle stick injury, contact with blood and other body fluids, and glove breakage, respectively. Another contributing factors for NSSIs was salary and sex. Males and workers who earn monthly salary below 1528 ETB have a

probability of more than two times and about three times in experiencing NSSI than their counter parts respectively (17).

Among victim of NSIs nurses had the highest number (62.1%) followed by midwives (14.74%), medical laboratory technicians (12.63%), health officer (5.26%), and general practitioner (3.16%), surgeon and others (1.05%) (19).

2.2.2. Behavioural Factor

Workers behavioural related factors on nurse respondents Use of personal protective and gloves during the practice work by needles/sharps and recapping of needles after use had showed a significant association at $p < 0.0$ (1)

Habit of Reporting, recapping and knowledge of universal guidelines were the most cause of NSSIs. According to a research conducted in India on Hepatitis B in Health Care Workers: Indian Scenario Varsha Of the respondents those who had NSIs, only 69.47% had reported the incident and 30.53% did not (19).

According to Malaysia report the causes of NSSI in 58% of cases were hypodermic needle and 27.2% cases were recapping. Majority also stated that they were aware about universal precaution guideline (96.5%) and NSSIs needs to be reported (99.1%). However, out of those HCWs (23.5%) who had NSSI, only 30.9% had reported the incident of NSSIs indicating that there were gaps between knowledge and practice among the HCWs(13).

Recapping was also highest among physicians (73.3%), health assistants (65.0%) and laboratory technicians (57.4%) (15). Health Care Workers might practice recapping and/or might dispose of needles inappropriately. Three fourths of the respondents (74.7%) reported that they were recapping the needles immediately after use, and from them one third (34.7%) were recapping using two hand technique. Considering the non-reporting practice of health care workers to the concerned body, 53.9% didn't report their injury to higher officials (6). Recapping needle after use 24.16%, suturing/injection 24.83% and blood withdrawal 14.09% were the major clinical activities that lead to NSSIs in this study(1).

Additionally research conducted in tertiary care hospital of India, the commonest clinical activity to cause the NSI was recapping needles (39%), blood withdrawal (55%), and followed by suturing (20.3%) and vaccination (11.7%). About 13 % of the HCWs received the NSSIs due to patient aggressiveness Job wise nurses had the highest percentage (100%), followed by junior residents

(87.5%), nursing students (85.3%), and laboratory technicians (84.3%), interns (82.7%), senior residents (80%) and undergraduate students (53.3%) (2). The highest NSSIs occurrence was related to instrument preparation, followed by injection and recapping of used needles (9).

2.2.3. Working Environment

In cross sectional study conducted among nurses who were worked in Jimma University Specialized Hospital, Working environment related variable working Unit/department/, training on IP and patent safety and presence of contaminated needle and sharps materials in the working area revealed a significant associations with NSSIs among health care workers (1). Regular supervision of health care workers working site reduces the occurrence of sharp and needle stick injury among health care workers by 1.75 times (COR 1.75, 95% CI:1.09,2.93) (16)

Health care workers who had got information on infection prevention and safety had a probability of more than 2 times in experiencing injury compared with their counterparts. Similarly health care workers who had no trainings on infection prevention and safety are more than two times probability of having needle stick and sharp injuries. Workers who had got information on infection prevention are more than two times probability of reducing sharp and needle stick injury (AOR 2.31, 95% CI:1.37, 3.95) (16).

However, job stress and job satisfaction of worker had showed a significant association(17). Workers who had got information on infection prevention are more than two times probability of reducing NSSI. Workers who have been stressed due to their work have 2.33 times probability of experiencing NSSI and similarly those who have not been satisfied by their job have a 68% probability of experiencing injury (20).

Workers who are not satisfied by their job are 62% more likely to exercise sharp and needle stick injury compared with their counter parts. Also who are stressed due to their job are more than two times to experience sharp and needle stick injury compared with workers who do not stressed due to their job (16).

Studies done in different countries indicated that the magnitude of NSSIs among HCWs was high (2, 3, 5, 6, 10, and 18).As studied in different study nurses had the highest percentage (experience NSSIs), India 49%,korea 74%,Jijjiga 62.1%,Jimma 61.76%,Kenya 80% ,Malasian hospital 27.9% (2,12,7,1,14,13,).

Many studies indicated that injection by syringe needle is the most predominant injury (5, 6, 7, 14). Various literatures from different country indicates association of different factors like age (9,13,14),

job category (3,13,18), work experience(7,12,10,16 ,18),job satisfaction (16,6),job stress (16),working department (3,6,7,12,14),not reporting (2,6,13) and other factors show association with NSSIs some others didn't show association. Even in a single study there are different findings on variables which show significant association. Even though, different literature are available in the country among NSSIs some of them study only on single health facility such as Felege Hiwot Bahir Dar ,North West Ethiopia,ArbaMinch (6,18) other focused on potential high risk professional , Addis Ababa Ethiopia (8),on the other hand some study only focused on single profession (nurses), Jimma south west Ethiopia (1).

2.3. Conceptual Framework

The study seeks focused on magnitude and associated factors for occurrence to NSSIs and Socio-demographic, working environmental factors and behavioural factors that influence the magnitude of NSSIs among health workers in the three hospitals. Developed after reviewed different literatures (1, 3, 5, 6, 8, 16, 17, 18).

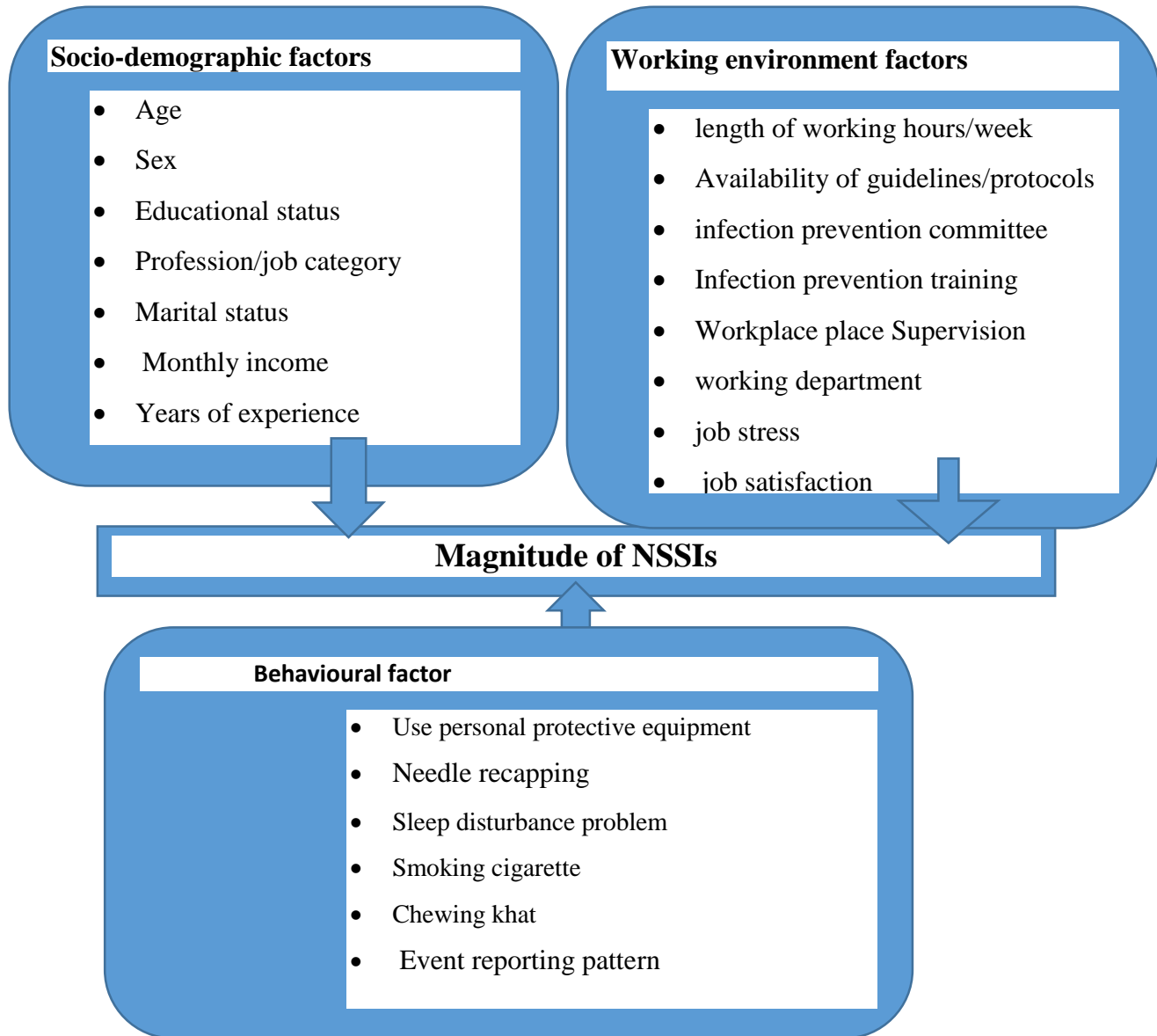


Figure 1 .Conceptual framework developed for the study of magnitude and association factors of NSSIs among HCWs in three hospitals of North Showa zone, Ethiopia, 2017.

Chapter Three: Objectives

3.1. General Objective

To assess the magnitude and associated factors of NSSIs among hospital HCWs in North Showa Zone Oromia Regional State, Ethiopia, 2017.

3.2. Specific Objectives

- To determine the magnitude of NSSIs among hospital HCWs in North Showa Zone.
- To identify the associated factors of NSSIs among hospital HCWs in North Showa Zone.

Chapter Four: Material and Methods

4.1. Study Area and Period

The study was conducted from March 1 –30/ 2017 among HCWs in the hospitals of North Showa Zone. The capital city of North Showa Zone is Fitcha which is found at 112km away from Addis Ababa, a capital city of Ethiopia. North Showa is one of the 20 zones in Oromia Regional State. According to North Showa zone health office report, North Showa has a population of 1,551,117 (50.1% male). Concerning health facility, North Showa Zone has 3 hospitals, 63 health centers and 267 health posts with a total of 2,779 as HCWs in health institutions.

4.2. Study Design

A cross-sectional study design was employed.

4.3. Population

4.3.1. Source population and study population

Since the source populations and study population were the same. It included all health care professionals and cleaners who were employed in the hospitals of North Showa Zone.

4.4. Sample Size Determination and Sampling Technique

First, the sample size was determined using single population proportion formula and considering 37.1% of entire work life prevalence of needle stick and sharp injury from bale zone (5). The calculated sample size was 183, but the total health care professional and cleaners in the three hospital was 302, which is 122 from Fitcha hospital, 100 from Kuyu hospital and 80 from Dara Gundo Meskel hospital. Since the number of health care professionals and cleaners of the three hospitals were manageable all health care professional and cleaner was taken (census) applied. First the list of the workers was obtained and categorized into their specific working department.

4.4.1. Data collection instruments

Structured and pretested questionnaire with section four was prepared after extensive review of literature (1, 3, 5, 6, 8, 16, 17, 18, and 23) and used as data collecting instruments. Data was collected on socio demographic characteristics (participants back ground information), behavioural factors,

working environment factor and Perception and incidence of NSSIs of the respondents was assessed using self-administration questionnaire.

4.4.2. Data collection process

Data collection process was done by two supervisor and five data collectors. Self-administered questionnaire was distributed by counting number of HCWs per department and orientation was given how to fill the questionnaire including consent signature for participants. Completed questionnaire were collected from each hospital by checking completeness.

4.5. Study Variables

4.5.1. Dependant variable

- ✓ Occurrence of NSSIs in the entire work life of HCWs (Yes/No)

4.5.2. Independent variables

- ✓ Socio-demographic characteristics (sex, age, job category, marital status, work experience, educational status, monthly income.)
- ✓ Behavioural factors (needle recapping, use of personal protective equipment, sleep disturbance problem, smoking cigarette ,chewing khat and event reporting pattern)
- ✓ Working environment (working department, infection prevention training, length of working hours/week, safety guidelines, protocol and availability of disposal containers, infection prevention committee, job satisfaction, job stress, work place supervision,).

4.6. Operational Definitions

- ✓ **Needle sticks and sharps injury:** Accidental skin penetrating injury which occurred on the health care worker in relation to his/her job in the health institution in the entire work life of the worker and within last 12 month.
- ✓ **Job Satisfaction:** Measured by 13 item likert scale questions which had from strongly disagree (1) to strongly agree (5) and the mean score =36.2. A worker who have scored above or equal to the mean score was considered to have job satisfaction and below the mean score was considered to be dissatisfied by his/her job. At the end recoded into satisfied and not satisfied.
- ✓ **Sleeping disturbance:** sleeping during or at the time of health care provision (fall asleep)
- ✓ **Job Stress:** Measured by 10 item likert scale questions which had from strongly disagree (1) to strongly agree (5) and the mean score =30.95.=31 A worker who have scored above or equal to the mean score was considered to have job stress and below the mean score was considered to be no job stress by his/her job. At the end recoded to yes or no.
- ✓ **Event reporting pattern:** Written report between HCWs and organization by using report format when accidental injury occurred.
- ✓ **Work place supervision:** regular supervisions done weekly, monthly, quarterly and yearly by health and safety responsible bodies in the department and working room.
- ✓ **Using personal protective equipment:** Using personal protective equipment when doing any activities that belongs to injury.
- ✓ **Khat chewing:** workers who chew khat at least daily once irrespective of the quantity.
- ✓ **Cigarette smoking:** worker who smoke cigarette at least once irrespective of the quantity.
- ✓ **Magnitude of NSSI:** Occurrence/incidence/prevalence of NSSI on the health care worker in relation to his/her job in the health institution in the entire work life of the worker and within last 12 month.
- ✓ **Monthly income:** Monthly income of participant collected by open questions and recoded by quartile at end.

4.7. Data quality control

First, questionnaire was prepared in English and then translated into Afan Oromo (local languages) by experts and then retranslated back to English for validation. Afan Oromo version were for cleaner

while English version for HCWs. Questionnaire was pretested on 5% of the same source population other than the sampled population in Chanco hospital which is found in Oromia liyu zone 40 km from Addis Ababa. Based on the pre-test; logical sequence, clarity of some response part of questionnaire and misleading was revised and re-edited. The modified questionnaire was then used to collect the data. One day training was given to the data collector and supervisors. Moreover the collected data was checked for completeness daily by supervisor. The questioner was checked for completeness and consistency by principal investigator before data entry on EPI-DATA software.

4. 8. Data processing and analysis

The data was coded by number and entered into EPI-DATA version 3.1 statistical packages, and then exported to SPSS version 20 for analysis. Data was cleaned for missing values by running frequencies and outliers by computing standard scores. Bivariate analysis was carried out to identify the predictors of NSSI during the entire work life of the HCWs. Independent variables that had a p-value less than or equal to 0.25 at 95%CI were entered in to multivariable logistic regression model to control confounders. The strength of association of predictor variables was assessed using odds ratio and P-value ≤ 0.05 at 95% CI was considered statistically significant. The findings of the study was presented in text and tables.

4.9. Ethical Clearance

Ethical clearance was obtained from the Institutional Review Board of Jimma University Institute of Health and Official letter was submitted to the responsible authorities of North Showa zone health office and hospital to have permission for data collection. All the information collected was used for the research purpose only. Verbal consent was obtained from each respondent before data collection and a subject was informed in written consent for the confidentiality of the information that they gave. Ethical way of approach was followed by the data collector in a manner of respect of the culture, religion, language and other dignity of the participants, their right to refuse.

4.10. Dissemination Plan of the Study Findings

The final results of this study will be submitted to the Jima University, department of Health Economics, management and policy. Thereafter it will be disseminated to Oromia health bureau and non-governmental stakeholders for those working around the study subjects. Further effort will be made to publish on reputable local and international scientific journals.

Chapter 5: Results

5.1. Socio demographic characteristics of Health Care Workers

The questionnaire was distributed for 302 HCWs serving the three hospitals and only 290 of them has responded making the response rate of 96%. Among a total of 290 HCWs enrolled in the study, 157 (54.1%) were males. Participants by working place are 96(33.1%) from Kuyu hospital, 79(27.2%) from Dara hospital and 115(39.7%) from Fitcha hospital. Three fourth of respondents were aged between 18-29yrs 231(79.6). Majorities of participants are Orthodox by religion (66.2%) and Oromo by ethnicity (72.1%) (Table 1).

From the total HCWs included in the study 101(43.8%) are Nurses by profession. In relation to qualification nearly 90% of respondents had diploma and above (college and above). Income wise 75(25.9%) of the participants earn < 2514 ETB per (1 US Dollar =23.45 Ethiopian birr) monthly while 72(24.8) person earns more than 4741 ETB. Regarding marital status 161(55.5%) are single. Three fourth of HCWs (74.1%) has a work experience of less or equal to 5 years (Table 1).

5.2. Behavior of health care workers

From the total of 290 respondents, majority 249 (85.9%) of them use PPE, 124(42.8%) has bad habit of recapping of needles after use. Only 52.4% of the participants had reported about NSSIs to concerned body. The three major reasons for not reporting were: believing that reporting is not important 81(58.6%), fear of stigma 34(24.6%), and the thought that patient has low risk of diseases (10.8%). One third (31.4%) of those recapping needle use two hands for recapping. From the total respondents, 14 (4.8%) have a problem of sleeping disturbance (fall asleep) during work time, habit of chewing khat (16.2%) and smoking cigarettes (4.8%). (Table 2)

5.3. Work environment of Respondents

From the total of 290 respondents, nearly half of them are not satisfied with their job (51%) or had job stress (54.5 %). Distribution of study participants at delivery unit, wards, laboratory unit & OPD are nearly comparable (about 15%). Only 31% of respondents has got training on infection prevention (IP) and 61% has got regular supervision by IP committee. Safety box is available at their working areas in 95% of cases. But as high as 38.3% of the safety boxes are changed when over full or filled more than

three fourth. One hundred nineteen (41%) had reporting protocol in their working room .More than half (66.2%) of the participants works more than 40 hours per week. (Table 3)

Table 1. Socio demographic characteristics of HCWs in hospitals of north showa zone, Oromia regional state, Ethiopia, March, 2017(N=290)

Variables /Response	Frequency (n)	Percent (%)	Variables /Response	Frequency (n)	Percent (%)
HCWs by working place			Work experience		
Fitche hospital	115	39.7	≤ 5	215	74.1
Kuyu hospital	96	33.1	6=10	65	22.4
Dara Gundo Meskel hospital	79	27.2	>10	10	3.4
Sex of participant			Educational status		
Male	157	54.1	College and above	260	89.7
Female	133	45.9	Preparatory & Below	30	10.3
Age of participant			Monthly income		
18-24	102	35.2	< 2514	75	25.9
25-29	129	44.5	2514-3239	70	24.1
30-35	43	14.5	3240-4740	73	25.2
>35	16	5.5	>4741	72	24.8
Religion			Workers profession		
Orthodox	192	66.2	Nurse	101	43.8
Protestant	50	17.2	Cleaners	48	16.6
Wakefata	29	10	Midwives	35	12.1
Muslim	19	6.6	Pharmacy/druggist	30	10.3
			Medical doctors	27	9.3
			Laboratory	24	8.3

Table 1 cont...

Variables/response	frequency	percent	Variables/response	frequency	Percent
Marital status			Anesthesia	15	5.1
Single	161	55.5	Others ¹	10	3.4
Married	121	41.7	Participant ethnicity		
Divorce	5	1.7	Oromo	209	72.1
Widow	3	1.0	Amhara	57	19.7
			Tigre	17	5.9
			Others ²	7	2.4

¹ Environmental health professional, surgeon, gynaecologist, IESO

² Gurage, Kambata, Sidama, Wolaita, Hadiya

Table 2. Behaviour characteristics of health care workers in hospitals of North Shoa zone, Oromia regional state, Ethiopia, March,2017 (N=290)

Variable	Response	No (%)	Variable	Response	No (%)
Report injury to concerned body	Yes	152(52.4)	Recap needle after use	Yes	124(42.8)
	No	138(47.6)		No	166 (57.2)
Reason for not reporting	Don't think reporting is important	81 (58.6)	How do you recap needle after use it	With one hand	85 (68.55)
	Fear of stigma	34(24.6)		With two hand	39 (31.45)
	Patient has low risk of diseases	15(10.8)	Khat chewing habit	Yes	47 (16.2)
	Other	8(5.7)		No	243 (83.8)
Using of PPE	Yes	249(85.9)	frequency of chewing khat	Daily	13 (4.5)
	No	41(14.1)		Weekly	16 (5.5)
Frequency of smoking cigarette	Daily	9 (3.1)		Occasional	18 (6.2)
	Weekly	1(0.3)	Difficulty of performing task w/o chewing khat	Yes	14 (4.8)
	Occasionally	4 (1.4)		No	276 (95.2)
Sleep disturbance problem	Yes	14 (4.8)	Habit of Cigarette smoking	Yes	14 (4.8)
	No	276(95.2)		No	276 (95.2)

Table 3. Working environment of HCWs in hospitals of North Showa zone, Oromia regional state, Ethiopia, March, 2017 (N=290)

Variable	Response	N₀ (%)	Variable	Response	N₀ (%)
Participant's Current working unit	Emergency unit	27(9.3)	Training on infection prevention	Yes	90(31.0)
	Delivery room	38(13.1)		No	200(69.0)
	Wards	46(15.9)	Presence of regular supervision by IP committee	Not at all	113(39)
	Laboratory	43(14.8)		Yes	177(61)
	OPD ³	42(14.5)		Satisfied	142(49)
	Operation theatre	34(11.7)	Job satisfaction	Not satisfied	148(51)
	Waste handling unit	49(16.89)		Job stress	Yes
Availability of safety box at working dep't	Other ⁴	11(3.79)	No	132(45.5)	
	Always available	220(75.9)	Timing of changing safety boxes	Overfilled or full more than 3/4 th	111(38.3)
	Some times	56(19.3)		When full by 3/4 th	170(58.6)
Not available at all	14(4.8)	When full<50%		9(3.1)	
Presence of Safety G/L at working site	Yes	133(45.9)	How long do you work a week	Up to 40hrs	98(33.8)
	No	157(54.1)		> 40 hrs.	192(66.2)
Availability of reporting protocol for NSSI in the department	Yes	119(41)			
	No	171(59)			

³ MCH unit, ART clinic, VCT clinic, cold OPDs, ophthalmology clinic, dental OPD

⁴ pharmacy unit, store, liaison unit, radiology unit, triage unit

5.4. Perception and incidence of NSSIs

Majority of the respondents 250(86.2%) were concerned about the risk of NSSIs and 81.7% rated as high risks but only 77.2% of the participants think that NSSIs is avoidable problem. Over all prevalence of NSSIs in three hospitals is 47.9%, although the individual prevalence is 49.4% for Dera G/M hospital, 49% for Kuyu hospital & 46% for Fitch hospital. Among who experienced injury, majority (58.3%) sustained only once and about 44% sustained during last one year. The most three reason for sustaining NSSIs are improper waste segregation & cleaning (37.4%), during needle recapping (16.5) & while giving medications (15.8%).The most predominant 113(81.3%) material for the exposure was needle (syringe & stitch) and majority of NSSI were sustained during night shift (47.5%).Surprisingly only 56.8% of the exposed participants has received medical care. (Table 4).

5.5 Needle stick and sharp injury and Associated Factors

On bivariate logistic regression analysis sex, Profession, Work experience, marital status, job stress, job satisfaction, working department, needle recapping after use, work place supervision, IP training, availability of IP committee, availability of protocol and guideline, working shift, use of PPE, smoking cigarette and chewing khat of worker did not show any kind of association with the occurrence of NSSIs among HCWs in study area. However, educational status [COR(95%CI) 2.333(1.030,5.286)], not reporting due to fear of stigma [COR(95%CI) 6.333(1.814,22.107)] and thinking that NSSI was not avoidable [COR(95%CI), 1.846(1.049,3.251)], age category between 25-29 and 30-34 yrs.COR95%CI: 0.567(0.334,0.962), [COR(95%CI) 0.318(0.151,0.670)] was found to be statistically significantly associated with NSSI exposure in the study area.(Table 5)

On multivariable logistic regression analysis the variables remained in the model to predict needle stick injury were age category between 30-35yrs [AOR (95%CI): 0.182(0.040, 0.839)] and not reporting due to fear of stigma [AOR (95%CI) 10.297(2.467, 42.971)] and thinking that NSSI was not avoidable [AOR (95%CI) 1.849(1.026, 3.330)]. Health care workers whose age between 30-35 were 82% less likely to be exposed to needle stick and sharp injury than those health care workers whose age were between 18-24.Age associated negatively with NSSIs. Participants who don't thinking NSSIs was avoidable were two times more likely to encounter needle stick and sharp injury than those who thinking that NSSIs was avoidable. Those who consider fear of stigma as a reason for not reporting were ten times more likely to sustain needle stick and sharp injury than those who consider other reasons like absence of assigned person to whom to report and no designed format to report. Thinking

that NSSIs was not avoidable and not reporting due to fear of stigma had positively associated with NSSIs (Table 6).

Table 4. Perception and incidence of NSSIs of health care workers in hospital of north showa zone, Oromia regional state, Ethiopia, March, 2017

Variable	Response	Number	Percent
Do you concerned about the risk of NSSIs (N=290)	Yes	250	86.2
	No	40	13.8
How do you rate the risk of NSSI (N=290)	Not risk	9	3.1
	Low risk	20	6.9
	Moderate risk	24	8.3
	High risk	257	81.7
Do you think NSSI is avoidable (N=290)	Yes	224	77.2
	No	66	22.8
Do you think diseases is transmitted by NSSI (N=290)	Yes	277	95.5
	No	13	4.5
Have you ever experienced NSSI in your entire work life (N=290)	Yes	139	47.9
	No	151	52.1
Hospital of injured HCWs (N=139)	Dara G/M hospital	39	28.1
	Kuyu hospital	47	33.8
	Fitche hospital	53	38.1
Incidence of NSSIs at each hospital	Dara G/M hospital (N=79)	39	49.4
	Kuyu hospital (N=96)	47	49.
	Fitche hospital (N=115)	53	46.1
How often experienced NSSI in your entire work life (N=139)	Once	81	58.3
	More than once	58	41.7
Experience of NSSI in last 12 month (N=139)	Yes	61	43.9
	No	78	56.1

Table 4 cont.....

Variable	Response	Number	Percent
How often experienced NSSIs in last 12 month(N=61)	Once	45	73.8
	More than once	16	26.2
Reason to the occurrence of NSSI (N=139)	During needle recap	23	16.5
	During opening needle cap	15	10.8
	Improper waste segregation and cleaning	52	37.4
	Washing instrument	6	4.3
	When giving medication	22	15.8
	Sudden movement of patient	15	10.8
	During blood collection	6	4.3
	Sharp material you were injured with (N=139)	Needle(syringe & stitch)	113
	Blade/lancet	6	4.3
	Glass/other material	20	14.4
Working shift when injury is sustained	Night	66	47.5
	Day	41	29.5
	In both shift	32	23
Any received medical care after injury	Yes	79	56.8
	No	60	43.2

Table 5. Factors associated with occurrence of NSSIs among HCWs in hospital of north showa zone, Oromia regional state, Ethiopia, March, 2017.

Variable	Response	Frequency of injury (case)		COR(95%CI)	P-value
		Yes	No		
		No (%)	No (%)		
Work place of participant	Kuyu	47(49)	49(51)	0.891(0.518,1.534)	0.677
	Hospital				
	Dara	39(49.4)	40(50.6)	0.877(0.494,1.556)	0.653
	Hospital				
	Fitche	53(46.1)	62(53.9)	1	
	Hospital				
Age of worker	18- 24	38 (37.3)	64 (62.7)	1	
	25-29	66 (51.2)	63 (48.8)	0.567(0.334,0.962)*	0.036
	30-35	28 (65.1)	15 (34.9)	0.318(0.151,0.671)*	0.003
	>35	7 (43.8)	9 (56.2)	0.763(0.263,2.217)	0.620
Marital status	Single	75 (46.6)	86 (53.4)	1	
	Married	61 (50.1)	60 (49.9)	0.858(0.535,1.375)	0.524
	Divorced	1 (20.0)	4 (80.0)	3.488(0.382,31.897)	0.268
	Widow	2(66.7)	1(33.3)	0.436(0.39,4.905)	0.502
Professional/job category	Professional	118(48.8)	124(51.2)	0.817(0.438,1.525)	0.526
	Non professional	21(43.8)	27(56.2)	1	
Sex	Male	74(47.1)	83(52.9)	1	
	Female	65(48.9)	68(51.1)	0.933(0.587,1.481)	0.768
Availability of safety box at working department	Always available	106 (48.2)	114(51.8)	1	
	Some times	28 (50.0)	28 (50.0)	0.930(0.517,1.672)	0.808
	Not available	5 (35.7)	9 (64.3)	1.674(0.544,5.154)	0.369

Table 5 cont...

Variable	Response	Frequency of injury (case)		COR(95%CI)	P-Value
		Yes No (%)	No No (%)		
Safety guidelines at working place	Yes	63 (47.4)	70 (52.6)	1.043(0.657,1.655)	0.860
	No	76 (48.4)	81 (51.6)	1	
Do you have reporting protocol	Yes	59 (49.6)	60 (50.4)	1.108(0.699,1.758)	0.662
	No	80 (46.8)	91 (53.2)	1	
Reporting to concerned body	Yes	71 (46.7)	81 (53.3)		0.662
	No	68 (49.3)	70 (50.7)	1.108(0.699,1.758)	
Reason for not reporting	Don't think reporting is important	40(49.4)	4(50.6)	2.733(0.971,7.690)	0.057
	Fear of stigma	8(29.6)	19(70.4)	6.333(1.814,22.107)*	0.004
	Patient has low risk of diseases	4(50)	(50)	2.667(0.500,14.217)	0.251
	Other	16(72.7)	6(27.3)	1	
How long do you work in a week	Up to 40hrs	45 (45.9)	53 (54.1)	1	0.624
	> 40hrs	94 (49.0)	98 (51.0)	0.885(0.544,1.442)	
Training on IP	Yes	44(48.9)	46(51.1)	1.057(0.643,1.739)	0.827
	No	95(47.5)	105(52,5)	1	

Table 5 cont...

Variables	Response	Frequency of injury		COR(95%CI)	P-Value
		(case)			
		Yes	No		
		No (%)	No (%)		
Regular supervision	Yes	92(52.0)	85(48)	0.655(0.409,1.059)	0.085
	No	47(41.6)	66(58.4)	1	
Think NSSI is avoidable	Yes	115(51.3)	109(48,7)	1	
	No	24(36.4)	42(63.6)	1.846(1.049,3.251)*	0.034
Monthly income	<2514	33(44)	42(56)	1	
	2514-3239	37(52.9)	33(47.1)	0.70(0.364,1.348)	0.287
	3240-4740	39(53.4)	34(46.6)	0.685(0.358,1.309)	0.252
	>4741	30(41.7)	42(58.3)	1.100(0.571,2.115)	0.775
Educational status	Preparatory &below	9(30)	21(70)	2.333(1.030,5.286)*	0.042
	College &above	130(50.0)	130(50.0)	1	
Job satisfaction	Satisfied	67(47.2)	75(52.8)	1.066(0.669,1.681)	0.803
	Dissatisfied	72(48.6)	76(51.4)	Ref.	
Job stress	Yes	82(51.9)	76(48.1)	0.764(0.443,1.121)	0.139
	No	57(43.2)	75(56.8)	1	
Chewing khat	Yes	21(44.7)	26(55.5)	1.169(0.624,2.189)	0.626
	No	118(48.6)	125(51.4)	1	
Smoking cigarette	Yes	8(57.1)	6(42.9)	0.678(0.229,2.004)	0.482
	No	131(47.5)	145(52.5)	1	
Recap needle	Yes	65(52.4)	59(47.6)	0.730(0.458,1.164)	0.187
	No	74(44.6)	92(55.4)	1	
Use of PPE	Yes	118(47.4)	13(52.6)	1.66(0.602,2.258)	0.649
	No	21(51.2)	20(48.8)	1	

* -significant at COR

Table 6. Multivariable logistic regression analyses of factors associated with NSSIs in hospital of north showa None, Oromia regional state, Ethiopia, March, 2017

Variable	Response	NSSI		COR(95%CI)	AOR(95%CI)	P-Value
		Yes	No			
Age (in years)	18-24	38	64	1	1	
	25-29	66	63	0.567(0.334,0.962)*	1.277(0.539,3.026)	0.578
	30-35	24	12	0.297(0.133,0.661)*	0.182(0.040,0.839)	0.029**
	>35	11	12	0.648(0.260,1.611)	0.555(0.134,2.201)	0.417
Educational status	Preparatory and below	9	21	2.333(1.030,5.286)*	0.849(0.184,3.918)	0.833
	College and above	130	130	1	1	
Reason for not reporting	Don't think reporting is important	40	41	2.733(0.971,7.690)	3.615(1.195,10.937)	0.023
	Fear of stigma	13	21	6.333(1.81,22.107)*	10.297(2.467,42.971)	0.001**
	Patient has low risk of diseases	9	6	2.667(0.500,14.217)	2.377(0.433,13.059)	0.319
	Others	6	2	1	1	
Think NSSI is avoidable	Yes	115	109	1	1	
	No	24	42	1.846(1.049,3.251)*	1.849(1.026, 3.330)	0.041 **

* -significant at COR, **-significant at AOR

Chapter 6: Discussion

In this study over all prevalence of NSSIs in three hospitals is 47.9%, although the individual prevalence is 49.4% for Dera G/M hospital, 49% for Kuyu hospital & 46% for Fitch hospital. This implies that, needle stick and sharp injuries are common occupational health hazards to HCWs in the study area. The finding is lower than the finding from Bahirdar F/H hospital (59.1), India (80%) and Korea (70.4%) [6, 2, 12]. While the finding is comparable with the findings from two Ethiopian hospitals in Hawassa (46%) and Arba Minch (53.1%) [3,18], it is higher than the majorities of Ethiopian studies like study from Bale Zone (37.1%), Jigiga zone(30.1%) , Hawasa city (35.8%), and Debre Birhan (31.5%) [5, 7, 10, 17], and Malaysian hospital as well (23.5%) (13). This difference might be due to the difference in the study health facility set ups, year of the study and the work load of HCWs in the different institutions. This high prevalence in the study area can also be explained by the fact that low training on IP, absence of safety guidelines with majorities of respondent, and lack of regular supervision by IP committee as it has been found in this study.

Of total respondents, 21% sustained NSSI during the past 12 months. This prevalence is comparable with the findings from Malaysian hospital (23.5%) , Kenyan (25%), East Gojjam Zone(22.2%)[13,14,16], but much lower than finding from Bahirdar & Arbaminch, 31% and 42.1% respectively [6,18].

The most predominant material (81.3%) contributing for the exposure was needle (either syringe or stitch) as it is true for other studies as well [5, 6, 7, and 14]. From this study, NSSI has occurred most commonly among nurses (40.3%) followed by cleaners (15.1%). This highest prevalence among nurse professionals is similarly found in other studies [7, 9, 13, 14, 18]. This is probably due to the job description of nurses that put them under increased risk of injury such as medication administration, other invasive procedures which requires the use of needles and other sharp materials, work overload, having extra works.

About 47.6 % of the injuries are left unreported. This finding is similar to the one found at Bahirdar Felege Hiwot Hospital (46.1%) but higher than those reported from Jigiga zone (30.5%) & Malaysian hospital (30.9%) [6, 7]. Almost half of those respondent who has no habit of reporting the occurrence

of injury to concerned body has sustained the injury. This may be explained by the fact that lack of reporting policy and lack of awareness on reporting the incidence in the study area.

On bivariate logistic regression analysis educational status, not reporting due to fear of stigma, thinking that NSSI was not avoidable and age category between 25-29, 30-35 yrs. was found to be statistically significantly associated with NSSI exposure in the study area. The statistical significance of educational status on bivariate analysis was also seen in study from Hawassa, Arbaminch & other systematic review [3, 9, 18] while that of age was also seen in one systematic review, and study from Malasian hospital & Kenya [9, 13, 14]. Reason for not reporting [6, 18] and thinking that NSSI was not avoidable [16] was statistically significant in other studies of the same setting as well.

On multivariable logistic regression analysis the variables those showed statistical significance with needle stick injury were age category between 30-35yrs, not reporting the incident of NSSI due to fear of stigma and thinking that NSSI was not avoidable. Among all these variables only age has been shown to have statistical significance in other studies in my reference list [13, 14]. Health care workers whose age between 30-35 were 82% less likely to be exposed to needle stick and sharp injury than those health care workers whose age were between 18-24yrs. Age was negatively associated with NSSI in this studies. The reduced of needle stick and sharp injury among those aged b/n 30-35yrs as compared by those aged b/n 18-24yrs can be explained by the fact that these groups are experienced & mature to protect themselves as they might have taken as many training as possible with their long years of stay in the profession. But it was higher among younger ones, possibly due to limited professional experience and the fact that young HCWs tend to be enthusiastic and aggressive in their work that risk them for injury.

Participants who don't thinking NSSIs was avoidable were two times more likely to encounter needle stick and sharp injury than those who thinking that NSSIs was avoidable, that positively associated with NSSIs. That might be explained by their low level of knowledge about & on how to prevent the NSSI.

Those who consider fear of stigma as a reason for not reporting were ten times more likely to sustain needle stick and sharp injury than those who consider other reasons like absence of assigned person to whom to report and no designed format to report. Whenever one fail to report the incident to concerned

body for fear of stigma it is likely to repeatedly get injured since no intervention method were not employed with absence of report.

However, variables like sex, marital status, monthly income, profession, Work experience, ethnicity, job stress & satisfaction, presence of regular supervision by IP committee, availability of safety guideline, working shift & department, behaviors like chewing khat, smoking cigarette, use of PPE, recapping of needle after use, event reporting pattern didn't show any statistical significance association with the occurrence of NSSIs among HCWs in health institutions at any level. The consistency of this finding is variable with different studies and difficult to compare.

Limitation and strength of the study

Strength of the study:-

The strengths of the current study was its high sample size (It included all health care professional and cleaners without using sampling methods).

Limitation of the study:-

Since participants have been asked a one year and entire work life exposure experience, there might be recall bias.

Chapter 7: Conclusion and Recommendation

7.1. Conclusion

In this study the magnitude of sharp and needle stick injury in the entire work life was high and had showed increase in magnitude from the previous study results. Which implies needle stick and sharp injury were common occupational hazard in the study area. Nurses were more affected than other healthcare workers. Age between 30-35, reason for not report due to fear of stigma and thinking that needle stick and sharp injury was not avoidable/preventable had showed a significant association with the occurrence of needle stick and sharp injury while, regular supervision, recap needle after use, job stress, job satisfaction and educational status did not showed a significant association.

7.2. Recommendation

Based on the findings reported in this study we recommend the following action to be taken by responsibly bodies:-

Hospital management and IP committee:-

- Infection control programs through provision of adequate safety boxes, training on IP issues & adherence to standard precautions are critically required among HCWs in health facility.
- Safety devices must be used regularly by HCWs, and educational programs with close monitoring for practices to reduce the NSSIs must be developed and administered.
- Regular provision of information and supervision on infection prevention and safety should be strengthened at all levels.

Health care workers:-

- Health care workers should also be encouraged to report any hazards from NSSIs they observe in their work environment.

Reference

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ANNEXES

1. QUESTIONNAIRE

1.1. *ENGLISH VERSION*

Jimma University, Institute of Health Sciences, Department of Health Economics, Management and Policy; questionnaire for a study on magnitude and associated factors of needle sticks and sharp injuries among health care workers in hospitals of North Showa Zone, Oromiya Regional State, Ethiopia.

Greetings,

This study is being conducted by Amelework Shiferaw, a graduate student in Jimma University, to assess the magnitude and associated factors of needle stick and sharp injuries among health care workers in hospitals of North Showa Zone. I would like to inform you that the responses that you provide are very essential for the success and accomplishment of the study and produce relevant evidence on the magnitude and associated factors of needle stick and sharp injuries among health care workers in the study area.

Confidentiality and consent

We would like you to answer some personal questions. Your answers are completely confidential and participation is voluntary. No one will be told what you said in connection to your name. You don't have to answer any question if you do not want to and you can stop filling the questionnaire at any time.

We would greatly appreciate your help in participating in this study, would you be willing to participate?

Yes, proceed

No, good bye. Thank you for your cooperation!!!

(Signature of the respondent certifying that respondent has given informed written consent).

QUESTIONNAIRE FOR A RESEARCH ON MAGNITUDE AND ASSOCIATED FACTORS OF NEEDLE STICKS AND SHARP INJURIES AMONG HEALTH CARE WORKERS IN HOSPITALS OF NORTH SHOWA ZONE, OROMIYA REGIONAL STATE, ETHIOPIA, 2017

Questionnaire _____ No _____
 Supervisor's Name _____
 Date: dd _____ mm _____ yyyy _____

PART I: SOCIO-DEMOGRAPHIC CHARACTERISTICS			
Respondent's workplace: <input type="checkbox"/> Kuyu Hospital <input type="checkbox"/> Dara Gundo Maskal <input type="checkbox"/> Fitcha Hospital			
Code	Question	Participant Response	Skip
100	What is your gender?	1. Male <input type="checkbox"/> 2. Female <input type="checkbox"/>	
101	How old are you?	(Age in years) _____	
102	What is your religion?	1. Orthodox <input type="checkbox"/> 2. Muslim <input type="checkbox"/> 3. Protestant <input type="checkbox"/> 4. Wakefata <input type="checkbox"/> 5. Others (specify) _____	
103	What is your marital status?	1. Single <input type="checkbox"/> 2. Married <input type="checkbox"/> 3. Divorced <input type="checkbox"/> 4. Widow <input type="checkbox"/>	
104	What is your work experience in years?	_____	
105	What is your educational status?	1. <10 th complete <input type="checkbox"/> 2. 10-12 complete <input type="checkbox"/> 3. Diploma <input type="checkbox"/> 4. Degree and above <input type="checkbox"/>	
106	What is your monthly income in Eth. Birr	_____	

107	What is your profession/job category	1. Medical doctor <input type="checkbox"/> 2. Nurse <input type="checkbox"/> 2. Health Officer <input type="checkbox"/> 3. Midwife <input type="checkbox"/> 4. Anesthesia <input type="checkbox"/> 5. Pharmacy <input type="checkbox"/> 6. Laboratory <input type="checkbox"/>	6. Environmental health <input type="checkbox"/> 7. X-ray tech <input type="checkbox"/> 9. Surgeon <input type="checkbox"/> 10. Cleaner <input type="checkbox"/> 11. Other (specify) _____	
108	Ethnicity of the respondent	1. Oromo <input type="checkbox"/> 2. Amhara <input type="checkbox"/> 3. Tigray <input type="checkbox"/> 4. Other (specify)_ <input type="checkbox"/> _____		

PART II: QUESTIONS TO ASSESS BEHAVIORAL CHARACTERISTICS

2.1. Use of personal protective equipment

201	Do you use personal protective equipment?	1. Yes <input type="checkbox"/>	2. No <input type="checkbox"/>	
202	Do you recap needle after use it?	1. Never <input type="checkbox"/> 2. Some times <input type="checkbox"/>	3. Mostly <input type="checkbox"/> 4. All the time <input type="checkbox"/>	
203	How do you recap the needle after you use it?	1. with one hand <input type="checkbox"/>	2. with two hand <input type="checkbox"/>	

2.2. Khat chewing, smoking and sleeping problems

204	Have you ever chewed khat?	1. Yes <input type="checkbox"/>	2. No <input type="checkbox"/>	if 'no' skip to Q261
205	If yes for Q251 how frequent do you chew khat?	1. Daily <input type="checkbox"/>	2. weekly <input type="checkbox"/>	3. Occasionally
206	Have you difficulty of performing your task without chewing?	1. Yes <input type="checkbox"/>	2. No <input type="checkbox"/>	
207	Have you ever smoked cigarettes?	1. Yes <input type="checkbox"/>	2. No <input type="checkbox"/>	if 'no' skip to Q271
208	If yes to Q261 how frequent do you smoke cigarette?	1. Daily <input type="checkbox"/>	2. weekly <input type="checkbox"/>	3. Occasionally
209	Do you have sleeping disturbance when you are on work problem?	1. Yes <input type="checkbox"/>	2. No <input type="checkbox"/>	

PART III: QUESTIONS ON WORKING ENVIRONMENT

300	Currently, what department you are working in.	1. Emergence Unit <input type="checkbox"/> 2. Ward (pediatric, surgical, medical, gyn obs) <input type="checkbox"/> 3. Delivery Room. <input type="checkbox"/> 4. Laboratory Department <input type="checkbox"/> 5. OR <input type="checkbox"/> 6. Radiology Department <input type="checkbox"/> 7. Waste handling unit <input type="checkbox"/> 8. OPD <input type="checkbox"/> 9. Dispensary/store <input type="checkbox"/> 10. MCH <input type="checkbox"/> 11. ART Department <input type="checkbox"/>	
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		12. Other (specify) _____	
301	Have you ever got a training on infection prevention?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>	
	Do you have infection prevention committee in your facility?	1. Yes <input type="checkbox"/> 2.no <input type="checkbox"/>	
302	How frequently does infection prevention committee of your facility supervise your department?	1. Not at all <input type="checkbox"/> 2. Weekly <input type="checkbox"/> 3. Monthly <input type="checkbox"/> 4. Year quarterly <input type="checkbox"/> 5. Yearly <input type="checkbox"/>	
303	Are safety boxes available in your workplace?	1. Always available <input type="checkbox"/> 2. Sometimes <input type="checkbox"/> 3. Not available at all <input type="checkbox"/>	
304	When do safety boxes turn out?	1. Overfilled or more than 3/4 th <input type="checkbox"/> 2. Turn out when 3/4 th <input type="checkbox"/> 3. When .empty <input type="checkbox"/>	
305	Are safety guidelines available in your working environment?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>	
306	Do you have protocol to report the injury in your department?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>	
307	Do you report injuries to concerned body	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>	
308	If no to Q307 what is the reason?	1. I don't think reporting is important <input type="checkbox"/> 2. Fear of stigma <input type="checkbox"/> 3. I think patient has low risk of diseases <input type="checkbox"/> 4. Other. _____	
309	How long do you work a week	1. Up to 40 hrs. <input type="checkbox"/> 2. More than 40 hours <input type="checkbox"/>	

3.1. Job Satisfaction (check a category, from the scale below, which best describes you)

Code	Job satisfaction questions	Participant's responses				
		Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
311	My job has more advantages than disadvantages.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
312	My income is a reflection of the work I do	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
313	I am happy with my profession.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

314	In general I am satisfied with my work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
315	My salary is fair in relation to my qualification.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
316	The additional payment, for example overtime payment (duty), is reasonable fair.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
317	Salary increases are decided on a fair manner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
318	Overall benefits package is satisfactory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
319	I am given enough recognition by management for work that's well done	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
320	If I work hard and perform well, I will be rewarded	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
321	I have adequate supplies and knowledge to protect myself against Professional Hazards.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
322	Everyone has an equal chance to be promoted and Staff are promoted in a fair and honest way	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
323	There is an atmosphere of co-operation between staff and management of the facility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.2. Questions to assess job stress (check a category, from the scale below, which best describes you)

Code

Code	Question	Strongly disagree (1)				
324	I cannot honestly say what I really think or get things off my chest at work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
325	My job has a lot of responsibilities, but I don't have very much authority	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
326	I could usually do a much better job if I were given more time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
327	I seldom receive adequate acknowledgement or appreciation when my work is really good.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
328	In general, I am not particularly proud or satisfied with my job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
329	I have the impression that I am repeatedly picked on or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	discriminated against at work.					
330	My workplace environment is not very pleasant or safe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
331	My job often interferes with my family and social obligations, or personal needs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
332	I tend to have frequent arguments with superiors, coworkers or customers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
333	Most of the time I feel I have very little control over my life at work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
334	Most of the time I feel I have very little control over my life at work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IV. PERCEPTION AND INCIDENCE OF NEEDLE STICKS AND SHARPS INJURY

400	Are you concerned about the risk of needle stick and sharp injury?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>		
401	How do you rate the risk of needle stick and sharp injury?	1. Not risk <input type="checkbox"/> 2. Low risk <input type="checkbox"/> 3. Moderate risk <input type="checkbox"/> 4. High risk <input type="checkbox"/>		
402	Do you think needle stick and sharp injury is avoidable?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>		
403	Do you think diseases is transmitted by needle and sharp injury?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>		
405	Have you ever experienced needle and sharp injury in your entire job?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>		If 'no', stop here
406	If yes for Q405 how often have you have you experience it?	1. Once <input type="checkbox"/> 2. More than once <input type="checkbox"/>		
407	Have you ever experienced needle and sharp injury within last 12 months?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>		
408	If yes for Q407 how often have you experience it?	1. Once <input type="checkbox"/> 2. More than once <input type="checkbox"/>		

409	What was the reason to the occurrence of needle stick and sharp injury?	1. During needle recapping <input type="checkbox"/> 2. During opening the needle cap <input type="checkbox"/> 3. During disposal and cleaning the working area. <input type="checkbox"/> 4. when washing instrument <input type="checkbox"/> 5. Improperly disposed needle and sharp <input type="checkbox"/> 6. When giving medication to patient <input type="checkbox"/> 7. Sudden movement of patient <input type="checkbox"/> 8. During blood collection from patient <input type="checkbox"/> 9. Lack of concentration <input type="checkbox"/> 10. when collection cloth for laundry <input type="checkbox"/> 11. Other (specify) _____	^
410	By what materials did you get the injury?	1. Needle <input type="checkbox"/> 2. Blade/lancet <input type="checkbox"/> 3. Glass/other materials <input type="checkbox"/>	
411	What was your working shift when you experienced the injury?	1. Night <input type="checkbox"/> 2. Day <input type="checkbox"/> 3. In both shifts <input type="checkbox"/>	
412	Did you receive medical care after injury?	1 Yes <input type="checkbox"/> 2 No <input type="checkbox"/>	

Gaaffilee Afaan Oromiiffaa

Yuuniversity Jimmaa institiyuutii saayinsii fayyaa

Akkam oolte/bulte:

Maqaan Koo Amalawarqi Shifarraa jedhama! Yuuniversity Jimmaatti Ani waa'ee lilmoo fi meeshalee qara qaban iddoo tajaajilli fayyaa itti kennamu kanattii hojjetoota manichaa keessaatti quunnamuu danda'an ulfina isaa fi waantoota midhaa sanaaf hojjetoota kana saaxilan irratti qorannoo gaggeessuufin dhufe.

Akka hirmaattaan isin affeeraa iftoominaan deebin isin kennitan rakkoo miidhaa kanaan dhufu addaa bahee akka irratti hojjetamuu fi qoranichi oddeeffannoo gahaa ta'e argamsiisuudhaan gahee guddaa akka qabu nan ibsa.

Yaadni isin kennitan qorannoodhaaf qofa akka oolu nan yaadachiisa.

Yaada keessan kennuuf qophaa'oodhaa? Eeyyee Miti

Koodii cheekliistichaa _____

Maqaa too'ataa _____ mallattoo _____ guyyaa _____

Maqaa qorattuu _____ mallaattoo _____ guyyaa _____

Maqaa mana yaalaa amma keessatti hojjechaa jirtan _____

NAANNOO OROMIYAA HOSPITAALOTA GODIINA SHAWAA KAABAATTI GAAFILEE QORANNOO WAA'EE ULFAATINAFI WANTOOTTA LILLMOOFI MEESHALEE QARA QABANIIF OGGEESSOTA FAYYAA HOSPITAALAA SAAXILUU DANDA'AN. BARA, 2009

Lakkoofsa gaaffilee _____
maqaa suupervaayizeraa _____
guyyaa : ji'a bara _____

Boqqoonnaa **I. Gaaffilee haala hawaas-diinagdee hirmaattotaa.** **Akkaataa**
gaaffilee dhihaateen kan isin ilaalatu/isin ibsu irraatti mallattoo 'X' kaa'a. Iddoo hojii
hirmaattoota Hospitaala Kuyyuu Hospitaala Daragundo Masqaal Hospitaal Fichee

Lakk.	Gaaffiilee	Deebii Hirmaattotaa	Irra darbi
-------	------------	---------------------	------------

100	Saali kee maalii?	1:Dhiira <input type="checkbox"/> 2:Durba <input type="checkbox"/>	
101	Umurii kee meeqa?	(Umurii waggaadhan)_____	
102	Amantaan kee maalii?	1:Ortoodooksii <input type="checkbox"/> 2:Musilimaa <input type="checkbox"/> 3:Proteestaantii <input type="checkbox"/> 4:Waqeefataa <input type="checkbox"/> 5:Kan biro yoo jiraate -----	
103	Haalli ga'eellaa kee hoo?	1: Hin fune/herumne <input type="checkbox"/> 2:Kan fudhee/herumtee <input type="checkbox"/> 3:Kan hikee/hiiktee <input type="checkbox"/> 4:Kophaa kan jiratu/jirattuu <input type="checkbox"/>	
104	Muxxaannoo hojjii kee meeqa?	(Waggaadhan) _____	
105	Sadarkaan barnoota kee?	1: kutaa 10 ^{ffaa} gadi <input type="checkbox"/> 2: 10-12 ^{ffaa} kan xumuree <input type="checkbox"/> 3:Diploomaa <input type="checkbox"/> 4:Digrii fi isa ol <input type="checkbox"/>	
106	Galiin ati ji'aan argaatuu qarshii Itoophiyaan meeqa?	_____	
107	Gostti ogummaa kee maali?	1. Hakiimaa waligaala <input type="checkbox"/> 2. Qondallaa fayyaa <input type="checkbox"/> 3. Narsii Deesistuu <input type="checkbox"/> 4. Narsii <input type="checkbox"/> 5. Laboratoorii <input type="checkbox"/> 6. Aniisteezyiaa <input type="checkbox"/> 7. Ogesa rajjii <input type="checkbox"/> 8. Farmaasii <input type="checkbox"/> 9. Fayyaa Naannoo <input type="checkbox"/>	

		10. Surjiinni/Ispeeshaalistii <input type="checkbox"/>	
		11. Qulqulleesaa/tuu <input type="checkbox"/>	
108	Lammumaan kee maali?	1. Oromo <input type="checkbox"/> 2. Amara <input type="checkbox"/> 3. Tigree <input type="checkbox"/> 4. Kan biroo yoo ta'e yaa ibsamu.____	
Boqqonnaa II. Gaaffilee sakkatta'iinsa haalaa fi amala hirmaattotaa..			
a. Itti fayyadamaa meeshaalee bal'aa qamaa namaa irraa ittisaan ilaalchisee.			
201	Meeshaalee qamaa kee balaa irra ittisuu ni fayyadamtaa?	1 :Eyyee <input type="checkbox"/> 2:Lakkii <input type="checkbox"/>	
202	Ergaa lilmoo fayyadamtee ni qadadaa?	1:Gonkumaa <input type="checkbox"/> 3:yeroo baay'ee <input type="checkbox"/> 2: yeroo tokko tokko <input type="checkbox"/> 4: yeroo hunda <input type="checkbox"/>	
203	Ergaa lilmoo fayyaadamtee akkamitti qadaddaa?	1.Harkaa tokkoon <input type="checkbox"/> 2.Harkaa lamaan <input type="checkbox"/>	
b. caatii qamaa'uu.siggaarraa xuxuu fi rakkoo /jeequmsa hiribaa ilaalchisee			
204	Caatii ni qamaataa?	1. Eyyee <input type="checkbox"/> 2. Lakkii <input type="checkbox"/>	Yoo 'lakkii' ta'ee gaffii 261 tti darbii.
205	Yoo gaaffiin 251 eyyee ta'ee yeroo hagaamni qamaataa?	1. Guyyaadhan <input type="checkbox"/> 2. Torbeedhaan <input type="checkbox"/> 3. Darbee darbeetti <input type="checkbox"/>	
206	Yoo hin qaamaa'iin hojii hojjechuun sitti ulfaata?	1 .Eyyee <input type="checkbox"/> 2. Lakkii <input type="checkbox"/>	
207	Siggarra ni xuxxaa?	1:Eyyee <input type="checkbox"/> 2:Lakkii <input type="checkbox"/>	Yoo 'lakkii' ta'ee gaffii 271 tti

			darbii.
208	Yoo gaaffii 261 eyyee ta'ee yeroo hagaamiin xuxxaa?	1. Guyyaadhan <input type="checkbox"/> 2. Torbeedhaan <input type="checkbox"/> 3. Darbee darbeetti <input type="checkbox"/>	
209	Jeequmsaa hiribaa ni qabda?	1. Eyyee <input type="checkbox"/> 2. Lakkii <input type="checkbox"/>	
Boqonnaa III: Dhimmoota mana hojiitiin walqabataniif fi dhiibbaa fiduu danda'an			
300	Amma iddoo/garee kam keessaa hojeechaa jirta?	1. Kutaa ariifachisaa <input type="checkbox"/> 2. Wardii (daa'iimaanii,medicaala,surgicaala ,hadhoolee) <input type="checkbox"/> 3. Kutaa da'umsaa <input type="checkbox"/> 4. Kutaa laboratoorrii <input type="checkbox"/> 5. Kutaa rajjii <input type="checkbox"/> 6. Baqaqsanii yaluu <input type="checkbox"/> 7. Garee qulqullinaa <input type="checkbox"/> 8. Garee yalaa deeddebii <input type="checkbox"/> 9. Rabsaa qorichaa/kusaa Qorichaa <input type="checkbox"/> 10. Fayyaa Matii <input type="checkbox"/> 11. Garee ART. <input type="checkbox"/> 12. kan biro (yaa ibsamuu) _____	
301	Carraa leenjii ittisa fi falamaa irratti argatee jirta?	1. Eyyee <input type="checkbox"/> 2. Lakkii <input type="checkbox"/>	
	Koreen ittisaa fi falamaa jira?	1. Eyyee 2. Lakkii	
302	koreen ittisaa fi falamaa hospitaala keessaani hagam hagaamiin garee hojii keef hordoffii godha?	1. Gonkumma hin godhu <input type="checkbox"/> 2. Torbeedhan <input type="checkbox"/> 3. Ji'aan <input type="checkbox"/> 4. kurmaana waggaadhan <input type="checkbox"/> 5. Waggaadhan <input type="checkbox"/>	

303	Sanduqni balfaa qara qabu baatu iddoo hojii kee keessaa jira (safety box)?	1.Yeroo hunda jira <input type="checkbox"/> 2. Yeroo tokko tokko jira <input type="checkbox"/> 3. Gonkummaa hin jiru <input type="checkbox"/>	
304	Sanduqni balfaa qaraa qabu batuu yeroo kam dhabamsiifama?	1. Humna ol yeroo guutu (3/4 ffa ol) <input type="checkbox"/> 2. Yeroo ¾ ffaa ta'u. <input type="checkbox"/> 3. Yeroo duwwaa ta.uu. <input type="checkbox"/>	
305	Qajeelfamni ittisaa fi falamaa naannoo hojii kee keessaa jira?	1. Eyyee <input type="checkbox"/> 2. Lakkii <input type="checkbox"/>	
306	Yeroo balaan lilmoo fi meeshaalee qara qabani mudaatu sirni ittiin gabaafamuu garee hojii kee keessaa jira?	1. Eyyee <input type="checkbox"/> 2. Lakkii <input type="checkbox"/>	
307	Yeroo rakkoon lilmoo fi meeshaa qaraan waranamuu mudaatu qamaa dhimmii ilaaluuf ni gabaastaa?	1. Eyyee <input type="checkbox"/> 2. Lakkii <input type="checkbox"/>	
308	Yoo gaaffii 307 mitii ta'ee sababni isaa maalii?	1.Gabaasuun bu'aa hin qabu jechuun <input type="checkbox"/> 2. Sodachuu <input type="checkbox"/> 3. Dhukubsaatan dhibeen qabamuun isaa xiqqaadha jechuun. <input type="checkbox"/>	
309	Torbeetti sa'aa hagaammi hojjetaa?	1 .Hangaa sa'aa 40 2. Sa'aa 40 ol	
3.2 Gaffiilee gamaachuu hojiirratti qabu/qabdun walqabaatu sakaataa'uuf qophaa'e (safartuulee gadii keessa qodiinsaa jiru ilaaluun yadaa irra caalaa sii ibsu dandaa'uuirratti mallattoo (X) kaa'i.			
Lakk	Gaffii gamaachuu hojiirrattii	Yaadichaaf deebii	

		Baay'ee itti walii hingaluu (1)	Itti wali hingaluu (2)	Homaa/nahi nilaalatuu (3)	Itti wali galaa (4)	Baay'ee itti wali galaa (5)
311	Bu'aa hojiin koo qabu miidha inni qabu ni calaa.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
312	Galiin anii argaadhuu hojii koo ni ibsaa.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
313	Ogummaa kootii nan gammada.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
314	Akka waligaalatti nan gammada.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
315	Ogummaa koo faana yoon ilaaluu miindaan koo gahaadha.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
316	Kafaltiiwwan dabalaata fkn. hojii idileen ala (duyitiin) madalaawaadha.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
317	Miindaan dabalaata murtaa'uu bifa madalaawaa taa'eenii.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
318	Akka waligaalattii fayidaaleen jiran gahaadha.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
319	Hojii gaariin hojjeedheef, manajjimeentiin beekamtii gahaa naaf laateera.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
320	Otoon cimee hojii gaarii hojjeedhee, beekamtii argachuun dandaa'a.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
321	Ofii koo miidhaa hojiirratti naqunnamurraa of ittisuuf dhiyeessii fi beekumsaa gahaan qaba.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

322	Namni kamiyyuu carraa walqixaa jajjabeefamuu qaba, hojjeetaa karaa madalaawaafi biliisaa ta'een jajjaabeefamaa jira.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
323	Manajjimeentii mana hojii fi hojjeetaa gidduu hariiroon walii galuu jira.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.2. Gaaffilee dhiphinaa hojiirra sakaataa'uuf qophaa'e (safartuulee gadii keessa qodiinsaa jiru ilaaluun yadaa irra caalaa sii ibsuu dandaa'uu guutii.

Koodii	Gaafiilee	Baay'ee ittiwalihin galuu (1)	Itti walii hin galuu (2)	Homaa/nahin ilaalaatuu (3)	Itti waliigala (4)	Baay'ee ittiwaligalaa (5)
324	Ani waan keessaa kootii yaadee iddoo hojiitti biliissaa ta'ee hin dubbadhu. ykn waan laphee kootii yaadee hin argadhu.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
325	Hojiin koo ittigafatamummaa baay'ee qaba,garuu ani angoo guddaa hin qabu.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
326	Ani yeroo baay'ee hojii boonsaan rawwadhaa, otoo yeroo dheeraan naaf laatamee.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
327	Ani yeroo tokko tokko galaata ykn dinqisiifanaa nan fudha,yeroo hojiin koo dhugaatti gaarii ta'u.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
328	Akka waligaalatti ani hojii kootti hin boonuu/hin gammaaduu.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

329	Akka yaada kootii, hojiirratti ani irradeeddeebii'ee fillaamuu ykn fo'aamuutu/qoodiinsii jira.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
330	Naannoon iddoo hojii koo baay'ee hawwaataa /gammaachisaa /biliisaa miti.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
331	Hojiin koo yeroo baay'ee matii ,dirqamaa hawaasaa fi feedhii dhunfaa koo waliin walitti bu'a.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
332	Keessumeessuu keessaatti mormiin ittifufiinsaa qabu hoggaana, hiriyoota fi abbaa dhimmmaa waliin ni jira.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
333	Akka yaada kootii jireenyaa koo keessatti gaheen ani hordoffii hojiirratti qabu baay'ee xiqqeessetan ilaalaa.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Boqonnaa IV. Gaafillee lilmoo fi meeshaalee qara qabaniinin waranamuu ilaalchisee

400	Waa'ee miidha lilmoo fi meeshaalee qaraa qabaanii waranamuu yaadee beektaa?	1. Eyyee <input type="checkbox"/>	2. Lakkii <input type="checkbox"/>	
401	Miidha lilmoo fi meeshaalee qara qabaniin waranamuu akkamitti sadarkeessitaa?	1. Miidhaa hin qabu <input type="checkbox"/>	2. Miidhaa xiqqaa qaba <input type="checkbox"/>	3. Miidhaa gidduugaleessaa qaba <input type="checkbox"/>
402	Miidhaan lilmoo fi meeshaalee qaraan waranamuun dhufu ni ittisamaa jettee yadaa?	1. Eyyee <input type="checkbox"/>	2. Lakkii <input type="checkbox"/>	
403	Lilmoo fi meeshaalee qaran waranamuun dhibee ni daddabarsaa jettee yaada?	1. Eyyee <input type="checkbox"/>	2. Lakkii <input type="checkbox"/>	

404	Yeroo hojii hojjeetu keessaatti lilmoon fi meeshaalee qaraan waranamtee beektaa?	1 Eyyee <input type="checkbox"/> 2.Lakkii <input type="checkbox"/>	Yoo lakkii ta'ee asummarraa tti dhabii.
405	Yoo gaaffiin 404 eyyee ta'ee yeroo meeqa sii qunnaamee?	1. Si'aa tokko <input type="checkbox"/> 2. Si'aa tokkoo oli <input type="checkbox"/>	
406	Ji'ootaan 12'n darbaan keessaatti lilmoon fi meeshaalee qaraa qabaaniin waranamtee beektaa?	1. Eyyee <input type="checkbox"/> 2. Lakkii <input type="checkbox"/>	
407	Yoo gaaffiin 406 eyyee ta'ee yeroo meeqa sii qunnamee?	1. Si'a tokkoo <input type="checkbox"/> 2. Si'a tokko oli <input type="checkbox"/>	
408	Sababiin waranamuu kee maal turee?	1. Yeroon lilmoo qadadduu. <input type="checkbox"/> 2. Yeroon qadadaa lilmoo banuu <input type="checkbox"/> 3. Yeroon balfaa gaatuu fi iddoo hojii qulqulleessuu <input type="checkbox"/> 4. Yeroo meeshaalee qulqulleessuu <input type="checkbox"/> 5. Lilmo fi meeshaa qara iddoo malleetti gatameen <input type="checkbox"/> 6. Yeroon qorichaa dhukkubsataaf ladhuu. <input type="checkbox"/> 7. Yeroo dhukkubsataan tasaa sochaa'uu <input type="checkbox"/> 8. Yeroon dhiigaa dhukkubsataa waraabuu <input type="checkbox"/> 9. Xiyyeeffannoo dhabuun <input type="checkbox"/> 10. Yeroon huccuu laawundaariif sassabuu 11. Kan biro (yaa ibsamuu)_____	
409	Maaliin waranamtee?	1. Lilmoodhaan <input type="checkbox"/> 2. Miilaaciin/Lanseetiin <input type="checkbox"/> 3. Birciqqoo cabaa/kan biron. <input type="checkbox"/>	
410	Yeroo waranamtuu dabareen kee maal turee?	1. Galgaala <input type="checkbox"/> 2. Guyyaa <input type="checkbox"/>	

		3. Dabaree lamaanuu <input type="checkbox"/>	
411	Ergaa waranamtee booda tajaajila yaala fudhaatee?	1. Eyyee <input type="checkbox"/> 2. Lakkii <input type="checkbox"/>	

