ADDIS ABABA UNIVERSITY

COLLEGEOF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

ASSESSMENT OF SAFETY PRACTICE AND ASSOCIATED FACTORS AMONG WASTE HANDLERS IN SELECTED GOVERNMENT HOSPITALS OF ADDIS ABABA, ETHIOPIA

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A THESIS SUBMITTED TO THE SCHOOL OF GRADUTE STUDIES OF ADDISABABA UNIVERSITY IN PARTIAL FULFILLMENT OF FOR THE DEGREE OF MASTERS OF GENERAL PUBLIC HEALTH

SEPTEMBER, 2019

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BY: TESGERA TEKLE (BSc.) SIGNATURE_____ DATE___

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ACKNOWLEDGMENT

After all I would like to express my heartfelt thanks to my advisors TeferiAbegaz (PhD) and AbigiyaWondimagne (MPH.) for their unreserved advice and continues support starting from initial title selection up to the final study period.

My heart-felt gratitude goes to the Addis Ababa School of Public Health College of Health Science library staff for their support while I referring different thesis kept in the library.

I would like to extend my appreciation also for School of Public Health, Addis Ababa University for offering me such an opportunity to conduct this study.

I would like to thank the selected governmenthospitals administrative workers who were collaborating me to get information about the number of waste handlers that help me to design my study sample size and appropriate procedure.

My special thanks also go to my parents, friends and classmates for their continuous encouragement, moral and material support throughout my academic life.

Last but not least: I would like to thank the data collectors, and all research participants who took part in the study.

TABLE OF CONTENT

LIST OF ACRONYMS

AIDS	Acquire Immune Deficiency Syndrome
FMOH	Federal Ministry of Health
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HIV	Human Immune Deficiency Virus
PPE	Personal Protective Equipment
MWCs	Medical Waste collectors
MWHs	Medical Waste Handlers
PEP	Post Exposure Prophylaxis
WHO	World Health Organization

LIST OF TABLE

LIST OF FIGURES

ABSTRACT

BACKGROUND: Health facilities generate different types of wastes characterized as hazardous wastes and most of them are toxic, harmful, carcinogenic, and infectious materials. Those contaminated wastes may affect health workers, waste handlers and laundry personnel. Medical Waste handlers faced massive exposure to hazardous wastes and occupational accidents as a result of manual handling of waste and working under unfavorable conditions. Waste handlers are often at high risk than health care professionals. In Ethiopia there are very little related studies conducted among medical waste handlers.

OBJECTIVE: The general objective of the study was to assess safety practices and associated factors among selected public hospital waste handler in Addis Ababa, Ethiopia, 2019.

METHOD: An institutional based cross- sectional study was carried out among waste handlers in inselected public hospitals from February up to March 2019. All waste handlers of selected government hospital were included in the study. Data were collected using face to face interview. The collected data had been coded and then entered using Epi-info version 7 software and transferred to SPSS- version22 for analysis. Logstic regression model was carried out for analysis to identify independent predictors at ap-value 0.2.

RESULT: The prevalence of current safety practice among public hospital waste handlers was found to be 44.1% (95% CI; 37.3-51.0). The odds of safety practice among respondents with good knowledge was 4.7 (AOR=4.7; 95% CI: 1.9, 11.5) times higher than those respondents with poor knowledge. The odds of safety practice among participants having good supplies were 6.78(AOR=6.78; 95% CI: 2.2, 20.7) times higher than those respondents with lack supplies.

CONCLUSION: The prevalence of safety practices among hospital waste handlers was higher among those having good knowledge on safety measures and accessed with safety materials.

To sustain good safety practice adequate per-service and in-service traning should be in place to increase their knowledge about safety precautions and availaing safety materials to adherence for safety practice among hospital waste handlers.

Key Words: Safety Practice, Determinant Factors, Waste Handlers, Public hospitals, Addis Ababa, Ethiopia.

1. INTRODUCTION

1.1 Background

About 85% of wastes produced in health facilities are non-hazardous and the remaining 15% of health care waste is characterized as hazardous and can pose a number of health risks. Hazardous wastes which are generated from health facilities are mostly infectious, toxic, harmful and carcinogenic and affect health care workers, waste handlers and laundry personnel(1).

The process of health care waste managements comprises segregation, collection, storage, transportation, treatments and safe disposal which are very much interrelated and in all this stages that waste handlers takes place. It is through handling of those contaminated wastes that waste handlers becomes at high risk of many infections(2).

Medical Waste handlers faced massive exposure to hazardous wastes and occupational accidents as a result of manual handling of waste and working under unfavorable conditions(3). Waste handlers are often at high risk than health care professionals. Because health care profesionals produce the waste and they throw it in the garbage. However waste handlers handle it extensively throughout and mostly very littile attention is given for their safety(1).

The prevalence of needle stick injury, sharp injury and blood and body fluid splash among hospital waste handlers are higher because of not using personal protective equipment while on duty and inappropriate waste segregation practice(3). The occupational safety of health care waste handler cannot be overlooked because health care waste handlers are at constant risk of exposure to blood borne pathogens(4).

Each person who generates health care waste should always immediately dispose of waste segregating in to separate, color-coded containers, according to types of wastes and waste handlers must maintain the segregation of the different types of waste during collection, storage, and disposal, and should never sort through waste after it has been placed in the bins which makes handling of health care waste easier, safer, and cheaper(2).

The production, segregation, transportation, treatment, and disposal of health-care waste involve the handling of potentially hazardous materials. Protection against personal injury is therefore essential for all workers who are at risk(3).

1.2 Statement of the Problem

Generally, medical waste handlers who are working in collection, transportation, cleaning and disposal of medical wastes in health institutions have been consistently shown to have higher prevalence of HBV and HCV infection. Different study shows that the prevalence of HBV was higher(48.6%) among medical waste handlers with the history of blood and body fluid splash and needle stick injuries(5).

In general Wastes categorized as Sharpe waste is collected in containers designed for that purpose. But different study showed that overfilling of sharp waste and mixing infectious waste with non-infectious waste is a common problem(6).

Improperly collected and segregated Sharp materials are considered to be an occupational hazard for medical waste handlers(7).

Health care waste should be collected and transported in a sefey way to avoid unneccessary exposure. But about 58.8% and 41.2% of waste handlers were exposed to blood and body fluids due to carrying over filled waste bags which increase the risk of infection for different pathogens like HBV, HCV and HIV/AIDs and about 47% of medical waste handlers had at least one accidental Sharp injury because of improperly discarded needle and sharp materials(8,9).

Unavailability or shortage of personal protective devices aggravates the risk of acquiring infection while exposed to hazardous wastes. Waste handlers usually do not wear sufficient protective clothing during waste handling which increases the potential risk of accidents(9).

The study done in Eastern Ethiopia also reviled that 30% of waste handlers were exposed to any Sharpe materials due to improper handling, poor waste segregation and poor utilizations of personal protective equipment's(4). However few studies are conducted regarding to the prevalence of safety practice among hospital waste handlers in Ethiopia. There is very few data on the prevalence of safety practice and its associated factors among medical waste handlers in the country. Hence the intended study will determine the prevalence of safety practice and its associated factors among hospital waste handlers, which in turn enables to understand the over all situations of safety practice and minimize those factors that hinder safety practice of hospital waste handlers.

1.3 Significance of The Study

Occupational hazards among medical waste handlers at work place is a problem that need attention. This research is intended to generate base line information on the possible determinants of safe waste handling practice and its prevalence. There is a lack of information in Ethiopia and also in the study area describing prevalence of safe waste handling practice and associated factors. So the information would be useful in identifying any gaps that might need further attention in the implementation of safe waste handling practices and providing feedback for concerned bodies about improving safe practices. The result of the study will have also an input for practitioners and policy makers to take appropriate interventions and planning to improve the safety practice of waste handlers working in public hospitals, of Addis Ababa , Ethiopia.

Finally the study will serve as a source of literature for scholars who wish to do further studies about safety practice of medical waste handlers.

2. LITERATURE REVIEW

Safety offer a constant approach to infection control which have high contribution in the prevention and reduction of risk to potentially hazardous materials. The cornerstones of safety practice that must waste handlers should follow during handling of any health care wastes are appropriate use of personal protective measures, washing their hands at the selected critical time and safe disposal of wastes in a separate colour coded bins(1).

2.1. Magnitude of Safety Practice

A study in Bangladesh capital Dhaka showed that 73% of waste collectors working in health facilities did not regularly wear sufficient Personal Protective Equipment's (PPE) during waste handling(10).

The study done in Shiraz ,Iran hospitals also showed that only 22.8 % of housekeeping workers were not using personal protective equipment while handling hazardous wastes(11). The other study done on knowledge, attitude and practices of tertiary care health facilities at metropolitan city of Pakistan showed that 32% and 15% of medical waste handlers have good practice on the use of proper colour coded bin system and use personal protective equipments respectively(12).

Only 16.7% of medical waste handlers working in teaching hospitals of south east Nigeria were using protective boots while handling medical wastes(13). The other study done among medical waste handlers in Addis Ababa also showed that 41.3% of them were not using personal protective equipment's regularly(5).

The other study done in three government hospitals, of southern Ethiopia also showed that 96.1% of medical waste handlers were reported using heavy-duty glove, 63.2% of them wore gown and 23% of them used mask and apron consistently while handling medical waste. Moreover, only 9% of them used boots and none of them used goggles as protective equipment(7). The other study done in Eastern Ethiopia also showed that only 30.1% of medical waste handler worn gown and 95.7% of them reported using mask(4).

2.2. Factors Affecting Waste Handling Practice

2.2.1. Socio Demographic Factors

Socio demographic factors include age, marital status, religion, educational level and monthly income. The study done on healthcare waste handlers of tertiary care hospital of south India showed that 41.9% of them had accidental exposure to health care waste were >45yrs and illiterate(4).

2.2.2 work related factors

The study done on healthcare waste handlers of tertiary care hospital of south India showed that 41.9% of them had accidental exposure to health care waste were above 5yrs work experience in waste handling(2).

The study done on sharp injuries and exposure to blood and body fluids involving medical waste handlers in Addis Ababa showed that the highest rate of exposure was observed in MWHs working in the in-patient wards (23.3%) followed by operation rooms(16.7%) (14).

2.2.3. Availability of Safety Materials

The study done in primary health care hospital in Bangladesh showed that among 24 hospitals observed none of the waste handlers have had access to heavy protective gloves. And also only 4.2% of the waste handlers from all study sites were fully immunized against HBV (all 3 doses completed)(15).

According to the study done in Addis Ababa among 253 medical waste handlers studied 25(19.8%) of them were trained on how to handle medical waste. And none of them were immunized for HBV. The study done in three government hospitals, of southern Ethiopia also showed that only 7.2% of medical waste handlers were vaccinated for hepatitis virus(7).

The study done in Addis Ababa, Ethiopia showed that 52(41.3%) of them were not using personal protective equipment due to shortage of supply 43(82.7%), 25(48%) were difficulty to work with it and 18(34.6%) due to loss of comfort respectively(8).

The other study done in Addis Ababa also indicated that out of 53 waste handler included in the study only 3 of them received HIV post-exposure prophylaxis and none of them should receive HBV immunoglobulin because of unavailability. This study also showed that carrying over filled waste bags contributed to blood and blood stained body fluid exposure 58.8% and 41.2% by compression of over filled waste bags/sacks(11).

The study done in Addis Ababa showed that Most of the health care waste at hospitals was found to be collected in perforated plastic bins. And waste was transported mostly in open plastic container from the site of generation to the treatment area(14).

2.2.4. Knowledge and Attitude

According to the study done on sharps injuries in health care waste handler of London-showed that hand washing did not routinely follow glove removal(18).

As the study done on health care waste handlers of south India showed 27.9% of the study participants had good knowledge about health care waste management practice. Almost all of them stressed up on the use of glove, face mask and hand washing practice in their work setting. Although none of them felt the importance of eye protection and use of long boots during waste handling. This study also indicated that about 41.8% of waste handlers had reflect negative attitude towards personal protective measures(2).

The study done on knowledge, attitude and practice of tertiary care health facilities at metropolitan city of Pakistan showed that knowledge of hospital waste handlers on segregation of infectious waste was only 34% and this study also showed that 34% of them had good attitude of using appropriate colour coded waste bins(12).

The other study done in Hawasa city also showed that majority of waste handlers did not have knowledge of the potential health hazards of health care waste(19)

2.2.5. Organizational Factors

Organizational factors affecting safety practice of hospital waste handlers are training of waste handlers on waste handling, commitments of management body to safety and presence of policy.According to study done in primary health care hospitals in Bangladesh only 50% of the waste handlers were trained in health care waste management(15).

The study done on medical waste handlers of Addis Ababa city showed that only 19.8% of them were trained on how to handle medical waste(5). Similarly the study done in Hawasa also showed that around 56% of waste handlers involved in waste collections did not received any kind of training on how to handle waste(19). The other study done in three government hospitals, of southern Ethiopia showed that 55.9% of medical waste handlers did not received any kind of training on proper medical waste handling and infection prevention(7).

As different study shows the prevalence of infectious pathogens among hospital waste handlers were high and different studies done were mainly focusing in identifying blood borne pathogens. And less attentions were given to see the prevalence of safety practiceand factors

exposing waste handlers for possible injuries and accidents. So the intended study should identify the prevalence of safety practice and factors associated with.

2.1 Conceptual Frame Work

The factors associated with safety practice of health care waste handlers were classified as socio-demographic factors like; Age, marital status, religion, educational level, work related factors like; service year, working hours per day and working departments, waste handlers risk perception like ; attitudes, behaviors and carelessness , Organizational factors like; Training , Commitment of management body to safety , strategy and budget , availability of safety materials and Knowledge about safety practice. The three factors were interrelated to affect one another.

Conceptual frame work for assessment of safety practice and associated factors among selected public hospital waste handler

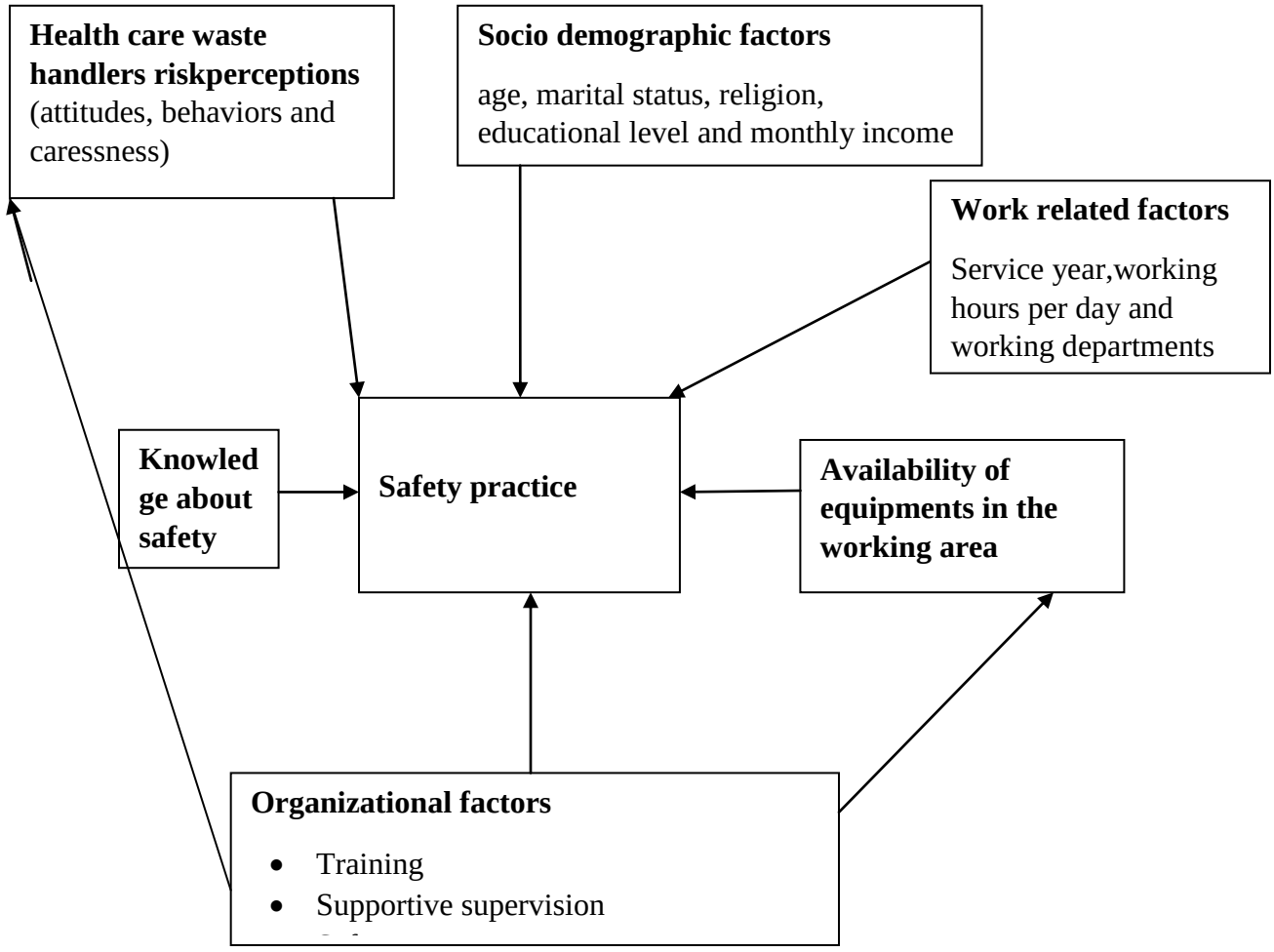

Figure 1: Conceptual framework adopted from litratures(21).

3. OBJECTIVES

3.1. General Objective

- The general objective of the study was to assess safety practice among waste handler and associated factors in selected public hospital of Addis Ababa, Ethiopia.

3.2. Specific Objectives

- To determine the prevalence of safety practice among waste handler in selected public hospital in Addis Ababa, Ethiopia.
- To identify factors associated with safety practice of waste handlers among selected public hospitals in Addis Ababa city Ethiopia.

4. METHODS AND MATERIALS

4.1. Study Area and Period

The study was conducted in Addis Ababa, the capital city of Ethiopia. In Addis Ababa there were 6 hospitals namely Yekatit12,Zewiditu,Minilik,Ras-Desta,Tirunesh-Bejing and Gandi governed by Addis Ababa city administration. The major common services given by those general hospitals are maternal and child health services, prevention and control of major communicable disease, non communicable disease prevention and control, emergency services, laboratory services, OR services, etc. Acording to EDHS 2016 the city had high population density with a total of approximately 3,515,678. The city had been divided in to 10 sub-cities and 117 woredas.

Generally in Addis Ababa there were approximately 1,500waste handlers working in government hospitals. In selected hospitals there were around 572wastes handlers.

4.2. Study Design

Facility based cross-sectional study focusing on assessments of safe waste handling practice and an associated factor was done among hospital waste handler in Addis Ababa, Ethiopia.

4.3. Source population: Source populations were all waste handlers working in Addis Ababa city administrative public hospitals.

4.4. Study population: All waste handlers working in the selected public hospitals.

4.5 Inclusion criteria

All Waste handlers enrolled in the selected government hospitals, present on duty during data collection period.

4.6 Exclusion criteria

Waste handlers who were seriously ill during the time of data collection and those with hearing impairments.

4.5. Sample size Determination

4.5.1. Sample size calculation for the 1st objective

The sample size for the 1st objective had been determined using the formula for single population proportion. Assuming 5% marginal error (d), 95% confidence level (alpha = 0.05), and using prevalence of 50% since I couldn't get any related litrature and can be calculated as follows:

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

=384 because of the total population size of the study area were less than 10,000 we should to apply the population correction formula:

$\boldsymbol{N/1+N/n}$i

=572/1+572/384

=230 and by adding 10% non-response rate 253was the sample size for the 1st objective.

4.5.2. Sample size calculation for the 2nd objective

Sample size for specific objective 2 was calculated using the statcalc for sample size and power for cohort or cross-sectional studies of Epi info version 7, considering the following assumptions by summarizing

Table 1: Sample size determination for specific objective two

Factors	CI	Power (1-β)	Ratio	Proportion of outcome among exposed	Proportion of outcome among unexposed	OR	Sample size(n)
Knowledge(20)	95%	80%	1	53%	24%	3.57	100
Training(21)	95%	80%	1	73%	53%	2.39	202
Availability of colour coded bin(22)	95%	80%	1	52%	24%	3.43	106

Therefore, from the calculated sample sizes for both objectives, the maximum sample size from the 1st objective, **253** was taken as the study sample since it covers the two objectives.

4.6. Sampling procedures

From total of 11 government hospitals found in Addis Ababa under the city administration, five general Hospitals were selected purposely. The purpose of selecting these hospitals were because the remaining five were under federal government which have different capacity and work load as compared with general hospitals. And one under the city government was not general hospital and not as sufficient as the rest hospitals to be selected as study area. The calculated sample size was proportionally allocated to each selected hospitals based on the number of total waste handlers they had. To grip the total participants from each selected health institution, simple random sampling technique was used

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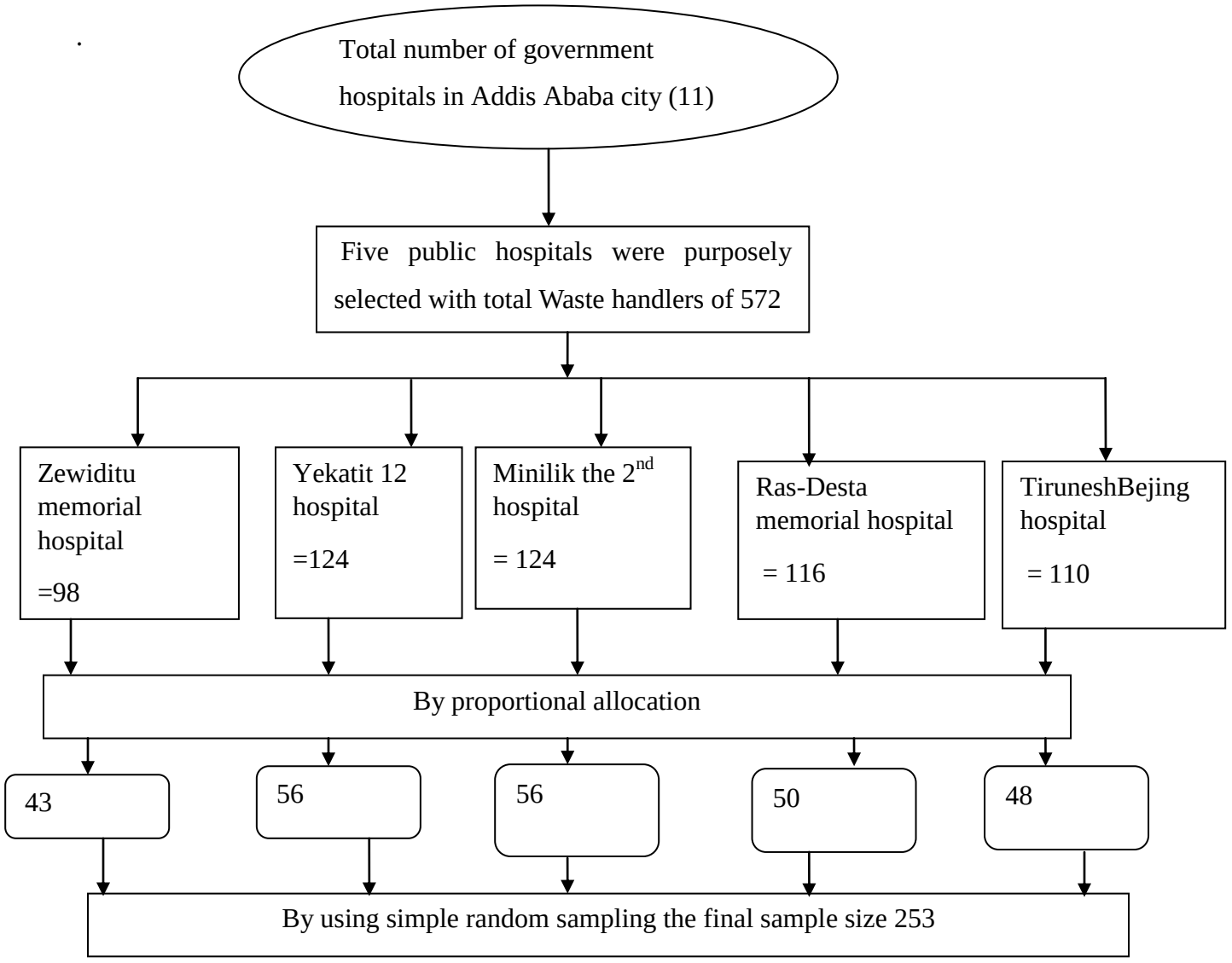

Figure 2: schematic presentation of sampling procedure of waste handlers in selected government hospitals of Addis Ababa Ethiopia.

4.7. Variables

4.7.1. Dependent Variables

- Safety practice

4.7.2. Independent Variables

- Educational Status
- Training
- Knowledge
- Attitude
- Work experience
- Availability of equipments
- Age
- Working hours per day
- Working departments /units
- Organizational factors

4.8. Operational definition

Safety practice : is the practice of using personal protective equipment's such as (heavy duty glove, gown, boots and masks), hand hygiene, vaccination for HBV and appropriate waste segregation with separated bins to prevent oneself from disease causing microorganisms.

Safepractice: Respondents who score more than mean of correct answer for seven practice questions with yes or no answer were classified as safe practiced(23).

Good knowledge: Waste handlers who scored above the mean of the correct answers for questions prepared to assess knowledge of respondent on safety practice.The mean score is determined after computing knowledge assessing questions.

Good Attitude: Waste handlers who scored above the mean score of the correct answers from attitude assessing questions of safety practice.

Good suplies availability: The presence of supplies like personal protective equipments (heavy duty glove, gown, masks and boots), three colour coded bins and hand washing facilities like soap and anti septic hand rub.

Tranined: Waste handlers who got any types of traning concerning safe waste handling.

4.9. Data collection tool and procedure

The questionnaire was developed by principal investigator after reviewing WHO,FMOH infection prevention guide line and different literatures with modification based on research objectives. Prior to the actual data collection the questionnaire was adjusted and corrected based on the pre-test result and the final questionnaire was translated to Amharic and then back to English to insure its consistency. Finally two environmental health science professionals conducted face to face interview to collect the data using amaharic version questionnaire.

4.10. Data Quality Assurance

To maintain the quality of the data adequate traning was given to data collectors and supervisors for one day, on the techniques of data collection. The questionnaire was pre-tested by taking 5% of the study sample at out of the selected hospitals. The collected data were checked for completeness and consistency. Each questionnaire was coded and cleaned. Then the coded and cleaned data were entered in to Epi-info version 7.

4.11. Data processing and analysis

Completeness of the data had been checked manually and,coded accordingly. The coded and cleaned data had been entered in to computer using Epi info version 7 and transferred to SPSS version 22. After completion of data entering, it had been cleaned before analysis. Description of frequency, mean, median, proportion and SD was done for the 1stobjective. Logistic regression analysis had been carried out for the 2nd objective and multi- variables analysis was done between independents and out come variable to identify association of independent factors. P-value less than or equal to 0.2 in bivariable analysis had entered in to multivariable logistic regression to control confounders. Finding was presented using odds ratio with their 95% CI and p-value less than 0.05 for determining the significance of association. Result of the study was presented in text, table and graphs.

4.12. Ethical consideration

Ethical clearance letter was obtained from Institutional Review Board of Health Science,Addis Ababa University. Moreover, a letter of permission and cooperation was secured from Addis Ababa regional health bureau. The letter was then submitted and presented to each hospitals administration for notification and cooperation. Then after data collectors elucidated the objective and purpose of the study to the participants. Confidentiality of the information and

Privacy of the study participants had been kept. The participation was voluntary, and they had the right to withdraw from the interview if it was not comfortable for them.

4.13. Dissemination and utilization of finding

The finding wasdisseminated to Addis Ababa University, College of Health Science, School of Public Health, Department of Preventive Medicine, Addis Ababa health bureau and to those selected hospitals through presentation and publication of the finding.

5. RESULT

5.1 Socio–demographic characteristics and work related factors of respondents

A total of 253 waste handlers were selected from five government hospital included in the study. A total of 242 participated with response rate of 95.6%. All respondents were female 242 (100%) and 70(28.9%) of them were age group 31 –35yrs. Married hospital waste handlers were 141(58.7%), hence, 142(58.7%) had completed secondary and above educational level. Majority of them 211(87.2%) had less than 5years working experience and 209(86.4%) of them had income level ≤1500 birr per month. One hundred twinty (49.6%) waste handler were working their job in regular time (8hrs only). As compaired with the other departments highest numbers of participants 48 (19.8%),and 35(14.5%) were from emergency and medical respectively.

Table*1*: Socio demographic characteristics and work related factors of medical waste handlers in selected public hospitals of Addis Ababa Ethiopia May, 2019(N=242)

Variable		frequency	percentage
Age	≤25yrs	39	16.1
	26-30yrs	66	27.3
	31-35yrs	70	28.9
	>35yrs	67	27.7
Marital status	Married	141	58.7
	single	91	37.6
	Widowed	3	1.2
	Divorced	6	2.5
Religion	Orthodox	176	72.7
	Muslim	14	5.8
	Protestant	52	21.5
Educational level	Primary	100	41.3
	Secondary and Above	142	58.7
Service Year	≤5yrs	211	87.2
	>5yrs	31	12.8
Monthly Income	≤1500	209	86.4
	>1500	33	13.6
Working hours per day	≤8hrs	120	49.6
	>8hrs	122	50.4
Working departments	Out patient	34	14
	Emergency	48	19.8
	Laboratory	30	12.4
	Surgery	25	10.3
	Medical ward	35	14.5
	Pediatric	26	10.7
	Gynand Obs.	33	13.6
	Others	11	4.5

5.2 Knowledge of Hospital Waste Handlers about Safety Practice.

Out of 242 respondents asked six knowledge questions with yes or no answer to assess their knowledge about safety practice 176(72.7%) of them knew as they are at risk of hospital associated infections. Nearly 70% of them knew that washing hand with plain soap and water inhibit resident flora and 69% of them knew that glove should be used not only during anticipation of blood or body fluid exposure. Majority of the respondents167 (69%) knew vaccinated for HBV vaccine was a means of prevention from infection. Nearly 60% of them hand knowledge of post-exposure prophylaxis. A total of 142(58.6%) of the study participants had good knowledge of safety practice.

Table 2: Knowledge about safety practice of public hospital waste handlers of Addis Ababa, Ethiopia 2019.

Knowledge	**correct**	**percent**
Are hospital waste handlers are at risk of infections	176	72.7
Washing hand with plain soap and water inhibit resident flora	169	69.8
Gloves should be worn if blood or body fluid exposure is anticipated	167	69
Washing your hands with soap and alcohol decrease transmission of infectious disease	174	71.9
immunized for HBV is a means of prevention from infections	167	69
getting PEP with in 72hr of exposure is a means of treatment	146	60.3
Good knowledge about safety practice	142	58.6
Poor knowledge about safety practice	100	41.4

5.3 Attitude of Hospital Waste Handlers about Safety Practice

From total of 242 respondents asked five attitude questionswith Likert-type scale options ranging from ‘‘strongly disagree’’ to ‘‘strongly agree’’ answer to assess their attitude about safety practice majority of them 141(58.3%) had agreed on that washing hands with soap or alcohol based antiseptic decrease the risk of transmission of hospital acquired infections. Nearly 40% of them disagreed on that glove provides complete protection against acquiring /transmitting hospital acquired infections and 89(36.8%) disagreed on that hand washing is unnecessary when gloves are worn. About(33.5%)of the study participants disagreed on that frequent hand washing damages skin and causes cracking, dryness, irritation and dermatitis. A total of 114(47%)of the study participants had disagreed on that hospital waste handler have a very low risk of acquiring infection from improperly disposed hospital wastes. More than 50%(125) of the study participants had good attitude towards safety practice.

Table *3*: Attitude about safety practice of public hospital waste handlers of Addis Ababa, Ethiopia 2019.

Attitude	**answer**			
	Strongly disagree	disagree	agree	Strongly agree
Washing hands with soap or alcohol based antiseptic decrease the risk of transmission of hospital acquired infections.	11	21	141	69
Glove provides complete protection against acquiring /transmitting infections.	25	96	92	29
Hand washing is unnecessary when gloves are worn	62	89	71	20
Frequent hand washing damages skin and causes cracking, dryness, irritation and dermatitis.	52	81	79	30
You have a very low risk of acquiring infection from improperly disposed hospital wastes.	89	114	30	9
Good attitude	125			51.6%

4. Organizational Factors Affecting Safety Practice of Hospital Waste Handler

Out of 242 waste handlers interviewed 105(43.4%) of them had gained any types of training about safety practice, 101(41.7%) of them supervised regularly by the organization and 36(14.9%) of them have got both traning and regular supportive supervision.

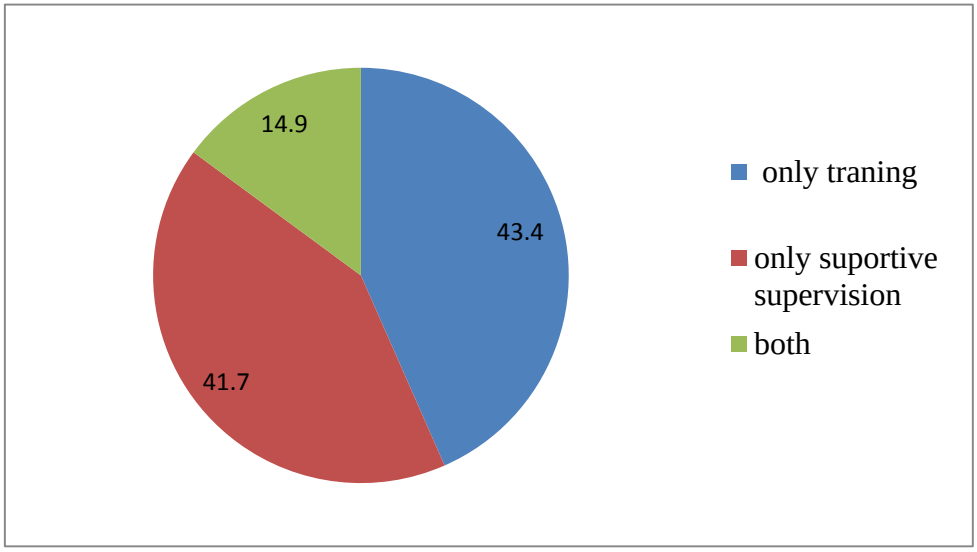

Figure 3:Organizational factors affecting safety practice of hospital waste handlers in Addis Ababa, Ethiopia, 2019

5.5 Availability of Personal Protective Equipment's among Waste Handler

A total of 242 respondents were interviewed to check availability of personal protective equipment's in there facility. From thus interviewed almost all 233(96.3%) of them respond that glove were available, hence 229(94.6%) of them respond that as gown were available. Almost above 60 % of them also respond mask were available. Nearly 10% of them answered that caps were available and 14(5.8%) of them respond that goggle were available at the facilities. All respondents 242(100%) respond that as boots were unavailable at the hospitals during data collection period.

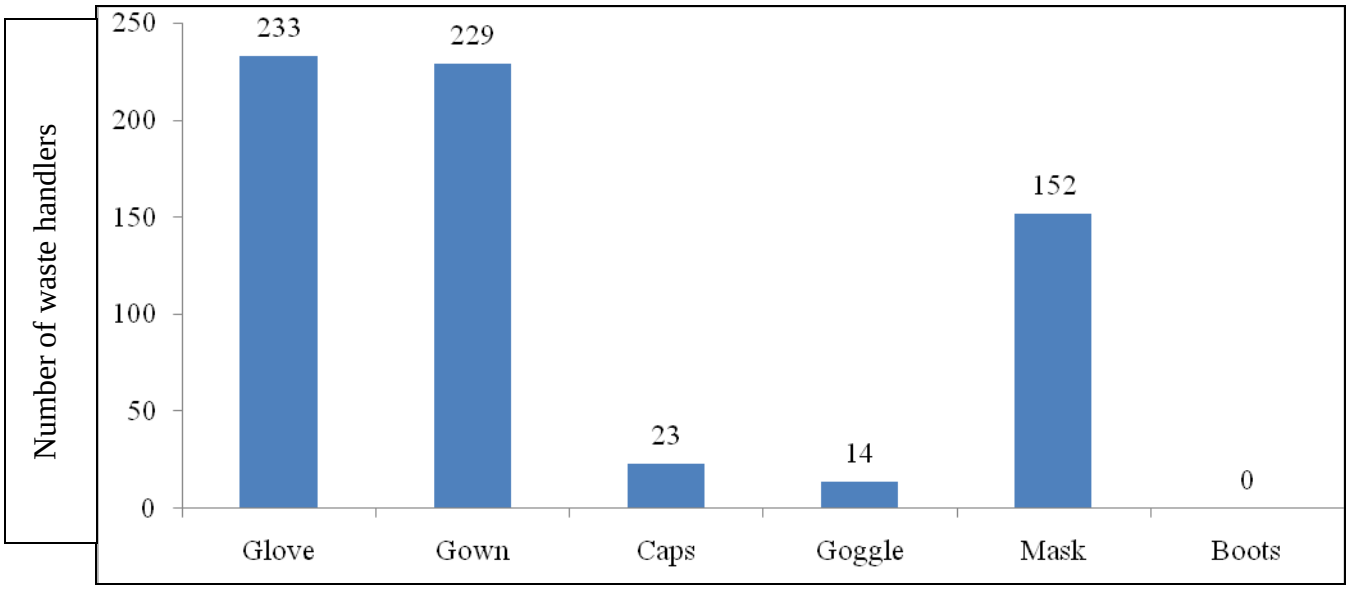

Figure 4: Availability of personal protective equipment's among waste handler in Addis Ababa, Ethiopia, 2019

5.6 Safety Practice of Hospital Waste Handler

From 242 respondents asked seven practice questions to assess their safety practice 19(7.9%) of them washed their hands at all the selected critical time of hand washing. About 61(25.2%) of them wore at least four and above four types of personal protective equipment's during handling of health care waste. One hundred fifty(62%) of the respondents were immunized for HBV. Nearly 60% of them separated hazardous and non-hazardous waste during collection and transportation of hospital waste to disposal site. Two hundred fifteen(88.8%) of them used separated colour coded bine system during collection. But 166(68.6%) were mixing waste stored at separated bine during transportation of hospital waste to disposal site. Only 61(25.2%) of them asked decontamination of hazardous waste before disposal.

Finally among all waste handlers asked 107(44.2%) of them were practicing safely and the rest 135(55.8%) were with unsafe practice.

Table *4*: The prevalence of safety practice among waste handlers in selected public hospital of Addis Ababa, Ethiopia 2019.

safety practice	frequency	percent
hand washing at five critical time	19	7.9
wore at least four and above four types of personal protective equipment's	61	25.2
immunized for HBV	150	62
separate hazardous and non-hazardous waste	139	57.4
use colour coded bine system	215	88.8
mix waste stored in a separate bins during transportation	166	68.6
ask dicontamination of waste befor disposal	61	25.2
safe practice	107	44.1
unsafe practice	135	55.9

5.8. Bivarate and Multivariable logistic Regression Analysis of safety practice among hospital waste handlers of Addis Ababa, Ethiopia, 2019

Binary Logistic regression was performed to assess the association of each independent variable with safety practice. The factors that showed a p-value of 0.2 and less were added to multivariable regression model. The result revealed that on the bivariable analysis, age of the respondent, working hours per day, working departments, knowledge, attitude, availability of supplies and training were significantly associated with safety practice.

In multivariable logistic regression to control confounding effect of one variable over the other variable were adjusted. Based on this knowledge of the respondents and availability of safety supplies were significantly associated with safety practice at P-value of <0.05 (Table4).

The odds of waste handlers with good knowledge were 4.7 times safe practiced than those who had poor knowledge (AOR=4.7, 95% CI 1.9, 11.5); P=0.001). The odds of respondents who had availabel safety materials were 6.78 times safe practiced than those who had shortage of safety materials (AOR=6.78, 95% CI 2.2, 20.7); p=0.001).(Table4).

Table *4*:Logistic regression analysis result on safety practice among hospital waste handlers of Addis Ababa, Ethiopia, 2019

Variables		**Safety practice**		**COR (95%CI)**	**AOR(95%CI)**
		yes	no		
Age					
	≤25yrs	8	21	0.38 (0.14-0.99)	0.2(0.06-0.66)
	26-30yrs	22	34	0.64(0.31-1.35)	0.44(0.18-1.07)
	≥36yrs	30	30	1	1
Working hours per day					
	≤8hrs	42	62	1	1
	>8hrs	48	52	1.36(0.78-2.37)	1.37(0.68-2.72)
working departments					
	out patient	10	22	1	1
	surgery	10	10	2.2(0.82-5.87)	1.43(00.37-5.48)
	medical ward	16	14	2.5(0.89-7.08)	1.85(0.55-6.24)
Knowledge					
	Good knowledge	80	62	6.7(3.15-14.25)*	**4.7(1.9-11.5)****
	Poor knowledge	10	52	1	1
Attitude					
	positive attitude	55	52	1.87(1.06-3.28)	0.94(0.46-1.94)
	Negative attitude	35	62	1	1
Availability of safety materials					
	good	26	5	8.85(3.24-24.2)	**6.7(2.2-20.7)****
	poor	64	109	1	1
Training					
	trained	30	21	2.21(1.16-4.22)	1.74(0.78-3.88)
	not trained	60	93	1	1

6. DISCUSSION

In general the finding of this study shows that 58.6% of the study participants had good knowledge on safe medical waste handling practice. The prevalence of personal protective equipments utlizations among the study participants was 25.2 and 62% of them disposed hazardous and non-hazardous wastes separately. About 88.8% of them used appropriate colour coded bin system for segregation of medical wastes. Sixty two percent of them were immunized for HBV. Only 7.9% of them practice hand washing at the selected five critical time. The overall current prevalence of safety practice among hospital waste handlers in this study was 44.1%.

Adequate knowledge is a key factor for effective safe handling of medical wates(20); However in this study only 58.6% of the study participants have good knowledge of safe medical waste handling practice. The result was higher than the finding from Indian and metropolitan city of Pakistan in which only 27.9% and 34% of the study participant had good knowledge of safe waste handling practice respectively(2, 13). This might be due to the difference in the study time, the setting in which the study was conducted was at general hospitals and might be due to the implementation of different initatives and inservice traning was conducted by infection prevention and patient safety focal person in this study.

In principle all medical waste handlers should properly utilize personal protective equipments during handling of medical wastes(4); However in this study 25.2% of medical waste handlers were properly utilize personal protective equipments. The result was better than the study done in tertiary care health facilities at metropolitan city of Pakistan and Shiraz ,Iran hospitals in which 15%, 22.8% of waste handlers were utilized personal protective equipments properly(13, 11). This difference might be due to the implementation of different initatives by the ministry of health like CASH and infection prevention and patient safety and increase in knowledge of hospital acquired infections among medical waste handlers.

In general all medical wastes should be segregated properly based on their types in a colour coded bin assigned for them and transported to disposal site separately(3); In this study about 88.8% of the study participants used colour coded bin for proper waste segregation and transportation of waste to disposal site. The result was lower than the study done at Debre-Markos in which 90.9% of medical waste handlers practice proper segregation and transportation of medical wastes(24). This difference might be due to the difference in shortage of supplies and low attention given.

In addition Immunaization for HBV for medical waste handlers were also a major safety practice to prevent them from infection. However in this study 62% of the study participants were vaccinated. This finding was higher than the study done at Turkey in which only 27.5% of the study participants were immunized for HBV(25). This difference might be due to that only waste handlers with the history of sharpe injury and with blood and body fluid contact were immunized for HBV. But in our case all waste handlers working in hospitals with or with out any history of contact have the chance of getting immunized for HBV. This finding was also hgher than the study done at Debre Markos in which only 20% of the study participants were vaccinated for HBV(24). This difference might be due to the setting in which the study was conducted and difference in availability of immunization vaccine.

The prevalence of safety practice among hospital waste handlers in this study was 44.1%. This finding was comparable with research done in Gonder town waste collectors which was 253(45%). This similarity might be due to the study design they used which was crossectional type. The finding was higher as compaired with the study done in Shiraz,Iran((11). This difference might be due to the difference in the study design, setting and time of the study and also the implementation of diferent reforms by federal ministry of health at hospital like infection prevention and patient safety which were promoting safety practice of hospital waste handlers. The number of participants with good safety practice reported in the finding was lower than the study done at KwaZulu-Natal(50%)(27). This difference may be due to the study setting and time. Also the finding was lower than the findings from Cameroon in which 100% of the medical waste handlers used all the appropriate protective gears(28). This differencemight be due to the study setting, difference in knowledge of hospital waste handlers and attention given to safety by governing body. The finding was also lower than the finding from DebreMarkos(80%)(24). This difference may be due to the difference in the lower sample size they used.

Multivariable logistic regression revealed that knowledge of respondents and availability of supplies had significant association with safety practice. The odds of safety practice among waste handlers with good knowledge had 4.7 times higher than those who had poor knowledge; AOR;7(1.9-11.5)**.** This was similar with the study done in DebreMarkos(24)which showed that waste handlers with good knowledge had more practicing safety as compared to those with poor knowledge. The finding of this study was inconsistent with study done in South india(2). The difference could be due to the difference in study settings which was undertaken at tertiary care

hospital and the sampling techniquies they used which was purposive sampling which may introduce selection bias and that the knowledge acquired may not be neccessarly translated in to practice. The odds of safety practice among waste handlers with adequate supplies were 6.7 times higher than those with lack of supplies; AOR; 6.7(2.2-20.7). This finding was in line with studies conducted in DebreMarkos(26) in which those respondents with adequate supplies had good safety practice. This similarity might be due to attention given by mimistry of health and hospital administration in full fillments of the required supplies and inputs.

7. CONCLUSION

It is clear from this study that the level of safety practice was low among hospital waste handlers in relation to waste handling and safety which may increase the chance of getting infected with hospital acquired infections and occupational accidents. So minimizing those problems through giving pre-service and in-service traning to increase their knowledge about safety precautions and availing safety supplies should be implemented to adherence for safety practice among hospital waste handlers.

8. STRENGTH AND LIMITATION

Strength

- To assure the quality of the data traning was given for data collectors.
- The data was primary data by direct face to face interviewing

Limitation

- The study was conducted only in the government hospitals adiminsterd by the city only , which does not represent those adiminstred under federal ministry of health and private hospitals.
- Observation was not conducted using checklist

9. RECOMMENDATIONS

For Addis Ababa regional health bureau:

- It should empower the hospital by giving training to increase their knowledge
- Supplying equipments and required inputs.
- Further study should be conducted on a large scale by including different levels of health facilities and regions of the country.

Hospital Administration:

- Full fill adequate supplies for waste handlers
- Contionous awernes criation and skill traning should be give to hospital waste handlers on safety practice.

For reserchers

- Further study should be conducted on a large scale by including qualitative study to identifay important determinants.

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11. ANNEXES

Annex 1: Participant's Information Sheet

Title of the research project: Assessment of safety practice and associated factors among waste handlers in selected government hospitals, of Addis Ababa, Ethiopia 2018.

Name of Principal investigator: TesgeraTekle

Name of the organization: Addis Ababa University college of Health sciences school of public health

Introduction: safety is the practice of putting in place barriers like personal protective equipment's such as (overalls, aprons, heavy duty glove) , hand washing immediately after glove removal , vaccination for HBV and appropriate waste segregation with separated bins to prevent oneself from disease causing microorganisms. Studies in developing countries including Ethiopia indicate that there is limitation on safe waste handling practice among health care waste handlers due to different factors. This information sheet and consent form will prepare for the selected public hospitals Administration. The aim of the form is to make the above concerned body clear about the purpose of the research work, data collection procedures and get permission to undertake the research.

Aim of the study: The aim of this study is to assess the prevalence of safet practice and associated factors among waste handlers of selected government hospitals, in Addis Ababa Ethiopia, Investigating the source of not complying safety practice and associated factors would help both the employer and employees to know about the risky conditions. The employer has to provide important PPE and the worker has to be motivated to utilize it properly. So this study will be conducted to fill the gap in relation to safety practice and associated factors in selected government hospitals found in Addis Ababa town.

Procedure: In order to come up with the above mentioned findings, data will be collected using pretested and structured Amharic version questionnaire via face to face interview of the study participants. The questionnaire focused on socio demographic, behavioral, and organizational factors that can determine safety practice of waste handlers. And also, we will use observational cheek list for cross check mechanism. Data will be collected by three BSc environmental health professionals and one supervisor who have BSc in Environmental health (MPH) after two days of training. Additionally add one principal investigator to check the completeness of questionnaires during data collection.

Risk and/or Discomfort: even though we do not anticipate any harm resulting from the study there will be a time the respondents has to spend in order to answer questions.

Benefits: The research have no direct benefit for one who participated in this study. But the indirect benefit of the research for the participant and all other clients in the service is clear. This is because if program planners are preparing predicted plan there is a benefit for client in the program of getting appropriate care and service.

Study Period: February 26--March 3, 2019.

Confidentiality: To keep the confidentiality of the clients, the information collected from this study will be kept confidential and information reviewed about the clients by this study is stored in a file, without name i.e. Investigator use number codes to the record during the review. The information gathered is not accessible to anyone except the principal investigator and will be locked with appropriate locks/password.

Person to contact: This research project proposal will be reviewed and approved by the institutional review board of school of public health and college of health sciences, Addis Ababa University. If in case you want to know more information about the research and its undertakings, you can contact through the address below.

Investigator's name and address:

TesgeraTekle(BSc)

Mobile: +251 920020583 Addis Ababa city administration yeka sub-city health office.

Email address: ttekle2010@gmail.com

Advisor's name and Address:

1. TeferiAbegaz (MPH.PhD), Addis Ababa University, School of Public Health, Addis Ababa Mobile:- +25911361607
   Email address: teferiabegaz@gmail.com
2. AbigiyaWondimagne (MPH.), Addis Ababa University, School of Public Health, Addis Ababa Mobile:-
   Email address: abitowon@gmail.com

Permission: Lastly but not least, you are kindly requested to permit and forward your permission to concerned body in your organization so that the researcher can get cooperation from the selected government hospitals Administration and Addis Ababa health bureau.

Annex 2: Consent form

3. Consent form (English and Local language**)**

Addis Ababa University, School of Public Health, a Study on assessment of safety practice and associated factors among waste handlers in selected government hospitals, of Addis Ababa, Ethiopia 2018.

Good morning/Good afternoon, my name is _____. I am working with MrTesgeraTekle who is doing a research as partial fulfillment for the requirement of MPH at Addis Ababa University College of health science school of public health.

We are conducting a study about assessment of safety practice and associated factors of waste handlers in selected government hospitals of a Addis Ababa Ethiopia. The study is aimed to fulfill the information gap and provide evidence for program planners, implementers and decision makers at different levels by enabling them to access a baseline prevalence of safety practice and factors related with it. There are no risks or direct benefits to you from participating in the study but your participation will contribute to improving safety practice and associated factors in selected government hospitals. Please be assured that the information will be confidential and you may choose to stop your participation at any time or refrain from answering any questions. This will not have any impact on the service you are getting now and the future. Your name will not be used or made public. And this question will take about 10-15 minutes.

Do I have your agreement to participate? 1. Yes 2.No. Stop 35.

For any information you can contact:

1. TeferiAbegaz (MPH.PhD), Addis Ababa University, School of Public Health, Addis Ababa Mobile:-+25911361607
   Email address: teferiabegaz@gmail.com
2. AbigiyaWondemagne (MPH.), Addis Ababa University, School of Public Health, Addis Ababa Mobile:-
   Email address: abitowon@gmail.com
3. TesgeraTekle (BSc) Addis Ababa city Administration, yeka sub-city health office.

   Mobile: +251 920020583Email address: ttekle2010@gmail.com

I have read/listen the information sheet above and clearly understood the purpose and anticipated benefit of the research. I hereby need to assure with my signature below that without any coercion or forceful act by the research team, have decided to voluntarily participate in the study to contribute my part in the effort being made.

Participant unique ID No_____ Signature _____ Date_____

Interviewer's name_____ Signature_____ Date_____

Date of interview_____ Time started_____ Time finished_____

Supervisor's Name_____ Signature_____ Date_____

For any information you can contact:

MrTesgeraTekle E-mail:ttekle2010@gmail.com Tel: +251 920020583

I thank you for your cooperation!

Annex3: English version questionnaire

Socio-Demographic questionnaires of waste handlers

All questionnaires are completed anonymously. We would appreciate if you answer all the questions and answer as honestly as possible. Please circle on the number you select that best answers the question. Kindly make only one Selection unless otherwise instructed

Self-administered questionnaire on Assessment of safety practice and associated factors among among selected government hospital waste handler in Addis Ababa, Ethiopia.

Read the questions carefully and **circle** the number among the choices and **write an answer** to open questions in the space provided. Please circle on the number you select that best answers the question. Kindly make only one Selection unless otherwise instructed.

Questionnaire ID: ---------- Name of facility/hospital----------date: / /

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Part I: Socio-demographic characteristics of waste handlers of selected government hospital, Addis Ababa, Ethiopia, 2019

Code	Socio-demographic Questions	Response	Remark
101	What is your sex?	1. Male 2. Female	
102	How old are you?	_____ (Age in completed years)	
103	What is your marital status?	1. Married 2. Single 3. Widowed 4. Divorced 5. Separated	
104	What is your religion?	1. Orthodox 2. Muslim 3. Protestant 4. Other(Specify) _____	
105	Educational level?	1. primary (1-8) 2. secondary(9-12) 4. Diploma and above	

106	Service year	----------	
107	What is your monthly income/salary/ in ETB?	----------(ETB)	
108	Working hours in a day	---------- (in hours)	
109	Working unit/department	1. Out patient 2. Emergency 3. Laboratory 4. Surgery ward 5. Medical ward 6. Pediatric ward 7. Gyn and obs ward 8. Other (specify) ____	

PartII: Knowledge about safety practice of government hospital waste handlers of Addis Ababa, Ethiopia 2019.

Code	Questions	Response	Remark
201	Have you ever heard about safety practice	1. Yes 2. No	
202	Have you heard about hospital associated infections	1. Yes 2. No	
203	Are hospital waste handlers are at risk of infections	1. Yes 2. No	
204	Washing hand with plain soap and water inhibit or kill transient resident flora.	1. Yes 2. No	
205	Gloves should be worn if blood or body fluid exposure is anticipated.	1. Yes 2. No	
206	Washing your hands with soap or an alcohol based antiseptic decrease the risk of transmission of hospital acquired infections.	1. Yes 2. No	
207	Getting immunized for HBV is a means of prevention from hospital acquired infections.	1. Yes 2. No	
208	Taking PEP after exposure to HIV/AIDS within 72 hr. of exposure is a means of treatment.	1. Yes 2. No	

Part III: attitude toward safety practice of hospital waste handlers of Addis Ababa, Ethiopia.

301	Washing hands with soap or alcohol based antiseptic decrease the risk of transmission of hospital acquired infections.	5.Strongly agree 4.Agree 3.Neutral 2.Disagree 1.Strongly disagree	
302	Glove provides complete protection against acquiring /transmitting infections.	5.Strongly agree 4.Agree 3.Neutral 2.Disagree 1. Strongly disagree	
303	Hand washing is unnecessary when gloves are worn	5.Strongly agree 4.Agree 3.Neutral 2.Disagree 1. Strongly disagree	
304	Frequent hand washing damages skin and causes cracking, dryness, irritation and dermatitis.	5.Strongly agree 4.Agree 3.Neutral 2.Disagree 1. Strongly disagree	
305	You have a very low risk of acquiring infection from improperly disposed hospital wastes.	5.Strongly agree 4.Agree 3.Neutral 2.Disagree 1. Strongly disagree	

Part-IV: waste handler safety Practice related questionnaires

Code	Question	Choices	Remark
401	Do you wash your hand?	1. Yes 2. No	
402	When do you wash your hands? (**it is possible to circle more than one item)**	1. After finishing the task /jobs 2. If they feel dirty 3. After going to the toilet 4. After contact with blood or bodily fluids 5. After removing gloves	
403	If your answer is no for question 401 why?	1. Heavy patient load 2.Unavailability of hand washing materials 3.negelegency 4.Other specify_____	
404	What do you use to wash your hand? **(it is possible to circle more than one answer**)	1. With water only 2. With plain Soap and water 3. With anti-bacterial Soap and water 4. Other specify_____	
405	Do you use antiseptic hand rub?	1. Yes 2. No	
406	Do you wear personal protective equipment's to prevent infection?	1. Yes 2. No	
407	If your answer is yes for previous question, which type(**it is possible to**	1. Gloves 2. Gown	

	circle more than one item)	3. Caps 4. Goggle 5. Mask 6. Other specify_____	
408	If no, why?	1. Lack of materials 2. Lack of awareness 3.Difficult to work with 4.Not always necessary 5. Carelessness 4. Other (specify)----------	
409	When do you use glove? **(it is possible to circle more than one item**)	1. During transportation of health care waste 2. during handling of healthcare wastes 3. while caring equipment 4. Other specify_____	
410	Have you ever had needle stick injury?	1. Yes 2. No	
411	If your answer is yes for previous question, how many times?	----------	
412	Have you faced a sharp Injury in the last one year?	1. Yes 2. No	
413	Have you ever exposed to blood or other body fluids of patients through contact or unprotected skin?	1. Yes 2. No	

414	Have you ever got post exposure prophylaxis for HIV/ADIS	1. Yes 2. No	
415	If not for question 414 why	1. Unavailability 2. Carelessness 3. Lack of awareness 4. Other specify----------	
416	How do needles and sharps dispose?	1. Burning incineration 2. Open dumping 3. Burial in a pit 4. Other specify_____	
417	Do you move medical waste using trolley?	1. Yes 2. No	
418	Did you separate hazardous and non-hazardous waste?	1. Yes 2. No	
419	Does your health facility have color coded three bin system?	1. Yes 2. No	
420	Did you mix wastes stored in separated bins during disposal?	1. Yes 2. No	
421	Do you decontaminate waste before disposal?	1. Yes 2. No	
422	Do you immunized for HBV	1. Yes 2. No	
	If yes for question 422 how many times	1. One 2. Two 3. three	
423	If your answer is No. for question 422 why?	1. unavailability 2. carelessness 3. lack of awareness 4. other specify---	

Part V:Organizational factors that influence safety practice of waste handlers

Code	Question	Choices	Remark
501	Does your facility have continuous water supply for 24hrs?	1. Yes 2. No	
502	If yes for the previous question, what is the source of water?	1. Pipe line 2. Hand pump 3. River 4. Ground water 5. Other specify_____	
503	Does your facility have infection prevention committee?	1. Yes 2. No	
504	Does your health facility have an infection prevention guideline?	1. Yes 2. No	
505	Have you ever participated in any training about safety practice?	1. Yes 2. No	
506	Does your activities supervised regularly?	1. Yes 2. No	

PartVI Availablity of facilities

Code	Question	Choices		Remark
601	Does your facility have hand washing facilities?	1. Yes 2. No		
602	Dose the facilities have anti sepiti hand rub	1. Yes 2. No		
603	Does your facility have HBVvaccine?	1. Yes 3. No		
504	Dose the facilitis have colour coded bin system?	1. Yes 2. No		
605	Availablities of PPE supply at the facilities?	605a. heavy duty glove	1. Yes 2. No	
		605b. gown	1. Yes 2. No	
		605c. caps	1. Yes 2. No	
		605d. goggle	1. Yes 2. No	
		605e. mask	1. Yes 2. No	
		605f. boots	1. Yes 2. No	
		605g. others	1. Yes 2. No	

THANK YOU!

Name of data collector…… Name of supervisor ……..

Signature of data collector……Signature of supervisor…….

Date of data collection ……..……

Annex 4: Amharic version questionnaire

አባሪ 1፡የአማሪኛትርጉምመጠይቅ

በጥናቱላይለሚሳተፉየሚሰጥመረጃ

ጤናይስጥልኝ፡እኔ

_____እባላለሁ፡፡እዚህየመጣሁትይህንንጥናትለማካሄድየአዲስአበባዩኒቨርሲቲየጥናትቡድንሆ ኜነዉ፡፡ከጥንቃቄጋርበተያያዙጉዳቶችእናተያያዥመንስኤሊሆኑስለሚችሉነገሮችለሰላሳደቂቃብቻየሚፈጅትንሽጥያቄልጠይቅዎ ትእፈልጋለሁ፡፡እርስዎየሚሰጡንትክክለኛመልስለህግአርቃቂዎችበቀላሉበጥንቃቄጉድለትምክንያትበሚደርሱጉዳቶችንበመከላ ከልእናበመቆጣጠርጤናማየሰራተኛሀይልእንዲፈጠርይረዳል፡፡እርስዎየተመረጡትበባለፈዉቅድመጥናትዳሰሳበሰጡትመልስነ ዉ፡፡በዚህጥናትላይየሚሳተፍማንኛዉምሰዉከዚህበታችስለጥናቱየተሰጠዉንመረጃበትክክልተረድቶፍቃደኝነቱንሲያሳይብቻነ ዉ፡፡

የጥናቱርዕስ፡በአዲስአበባከተማበተመረጡትየመንግስትሆስፒታሎችዉስጥየሚሰሩትንየፅዳትሰራተኞችየጥንቃቄሁኔታናተያያ ዥመንስኤዎችንለይቶለማወቅነዉ፡፡

የጥናቱዋናአላማ፡በአዲስአበባከተማበተመረጡትየመንግስትሆስፒታሎችዉስጥየሚሰሩትሰራተኞችየጥንቃቄሁኔታብዛትእናአጋ ላጭመንስኤዎቻቸዉንለይቶማወቅ፡፡

የተጠኝዎችመብት፡በጥናቱላይመሳተፍምይሁንአለመሳተፍይችላሉ፡ተሳታፊዎችጥናቱንበፈለጉትቦታማቋረጥይችላሉ፡መመለስ ያልፈለጉትንምጥያቄመዝለልምይችላሉ፡፡ተሳታፊዎችማንኛዉንምያልገባቸዉንጥያቄመጠየቅይችላሉ፡፡

የጥናቱሚስጢራዊነቱ፡በመላሾችየሚሰጥማንኛዉምአይነትመልስበሚሰጢርይያዛል፡ስማቸዉምአይገለፅም፡፡

የተሳታፊዎችየፈቃደኝነትመጠየቂያቅፅ

ይህመጠይቅበአዲስአበባከተማበተመረጡትሆስፒታሎችዉስጥየሚሰሩትንየፅዳትሰራተኞችየጥንቃቄሁኔታለማጥናትየተዘጋጀነ ዉ፡፡

የመጠይቁመለያቁጥር _____

ከላይያለዉንፎርምብታነቡትወይምቢነበብልዎትእናስለጥናቱፍሬሀሳብቢረዱእርስዎበዚህጥናትላይይሳተፉነበር?

አዎ_____አልሳተፍም_____

የተሳታፊዎችፊርማ_____

100Bየመስሪያቤቱ/ሆስፒታሉስም----------

100Cቀን------/-----/

I: ማንነትናየስራቦታሁኔታ

ቁ.	መጠይቅ	መልስ/መለየት	ምርመራ
101	ፆታ	1. ወንድ 2. ሴት	
102	የዕድሜ?	----------	
103	የትዳርሁኔታ	1. ያገባ/ች 2. ያላገባ/ች 3. የሞተባት/ሞተችበት 4. የፈታ/ች	
104	የኃይማኖትሁኔታ	1. ኦርቶዶክስ 2. እስልምና 3. ፕሮተስታንት 4. ሌላ----------	
105	የትምህርትደረጃ	1. አንደኛደረጃ(1-8) 2. ሁለተኛደረጃ(9-12) 3. ዲፕሎማናከዚያበላይ	
106	የስራልምድ?	----------	
107	የወርደምወዝበኢትዮድያብር	----------	
108	በቀንለምንያህልሰዓትይሰራሉ?		
109	ባለፉት 12 ወራትተመድበህ/ሽየሰራህ/ሽባቸዉየስራክፍሎች	1. ተመላላሽ 2. ድንገተኛ 3. ላብራቶሪክፍል 4. የቀዶህክምናክፍል 5. የማዋለጃክፍል 6. የህጻናትህክምናክፍል 7. የምርመራክፍል 8. ሌላ----------	

II: የሆስፒታሉየጽዳትሰራተኞችንየጥንቃቄተግባርየእውቀትደረጃአስመልክቶ

ተ.ቁ	መጠይቅ	መልስ	ምርመራ
201	ከዚህበፍትስለጥንቃቄተግባርሰምተዉያዉቃሉ?	1. አዎ 2. የለም	
202	ከሆስፒታልስራጋርተያያዥነትስላላቸዉኢንፌክሽኖችሰምተዉያዉቃሉ?	1. አዎ **2.** የለም	
203	የሆስፒታሉየጽዳትሰራተኞችለኢንፌክሽንአደጋላይናቸዉ?	1. አዎ 2. የለም	
204	ጓንትካወለቅንበኋላወዳዉኑእጃችንንበዉሃናበሳሙናመታጠብከተለያዩተላላፊበሽታዎችይከላከላል?	1. አዎ 2. የለም	
205	የእጅጓንትማድረግያለብንለደምናለሰዉነትፈሳሽመጋለጥታሳቢስደረግነዉ?	1. አዎ **2.** የለም	
206	እጃችንንበሳሙናናበአልኮልነክፀረ-ተህዋስመታጠብሆስፒታልወለድየሆኑተህዋስያንንየመተላለፍመጠንይቀንሳል?	1. አዎ 2. የለም	
207	የጉበትበሽታክትባትመዉሰድአንዱየጥንቃቄዘዴነዉ?	1. አዎ 2. የለም	
208	ለኤችአይቪየድህረ-መጋለጥመድኃኒትበ72ሰዓታትዉስጥመዉሰድአንዱየማከምየጥንቃቄዘዴነዉ?	1. አዎ 2. የለም	

III: የጽዳትሰራተኞስለጥንቃቄተግባርያላቸዉአመለካከት

ተ.ቁ	መጠይቅ	መልስ	ምርመራ
301	እጃችንንበሳሙናናበአልኮልነክፀረ-ተህዋስመታጠብሆስፒታልወለድየሆኑተህዋስያንንየመተላለፍመጠንይቀንሳል?	1. በጣምእስማማለሁ 2. እስማማለሁ 3. ገለልተኛ 4. አልስማማም **5.** በጣምአልስማማም	
302	የእጅጓንትሙሉበሙሉከሆስፒታልወለድኢንፌክሽይከላከላል	1. በጣምእስማማለሁ 2. እስማማለሁ 3. ገለልተኛ 4. አልስማማም **5.** በጣምአልስማማም	
303	የእጅጓንትከተጠቀምንእጃችንንመታጠብብዙምአስፈላጊአይደለም	1. በጣምእስማማለሁ 2. እስማማለሁ 3. ገለልተኛ 4. አልስማማም **5.** በጣምአልስማማም	
304	በተከታታይእጃችንንመታጠብቆዳችንንበመጉዳትድርቀት፤መሰነጣጠቅ፤ማቃጠልናየተለያዩየቆዳችግሮችንያመጣል	1. በጣምእስማማለሁ 2. እስማማለሁ 3. ገለልተኛ 4. አልስማማም **5.** በጣምአልስማማም	
305	ያላግባቡከሚወገዱትየሆስፒታልቆሻሻዎችበሆስፒታልወለድኢንፈክሽንየመያዝእድላችንበጣምዝቅተኛነዉ	1. በጣምእስማማለሁ 2. እስማማለሁ 3. ገለልተኛ 4. አልስማማም **5.** በጣምአልስማማም	

IV:የሆስፒታሉየጽዳትሰራተኞችየጥንቃቄተግባራትሁኔታ

ቁ.	መጠይቅ	ምርጫ	ምርመራ
401	በስራቦታእጅዎትንይታጠባሉ	1. አዎን 2. የለም	
402	ከላይመልስዎትአዎንከሆነመቼመቼይታጠባሉ?	1. ስራዎችንካጠናቀኩኝበኃላ 2. የቆሸሹመስለዉከታዩኝ 3. ከሽንትቤትመልስ 4. የተለያዩየደምናየፈሳሽነገሮችንከከበኃላ 5. ግላቭካወለቁበኃላ	
403	ለጥያቄቁጥር 201 መልስዎ ‘‘የለም’’ከሆነ	1. በስራጫናምክንያት 2. በእጅመታጠቢያቁሳቁስእጥረትምክንያት 3. በግድለሽነት 4. ሌላ----------	
404	እጅዎትንለመታጠብምንምንይጠቀማሉ?ከአንድበላይመልስመስጠት ይቻላል	1. በዉሃብቻ 2. በሳሙናናበዉሃ 3. በፀረ-ተህዋስሳሙናናበዉሃ 4. ሌላ----------	
405	የእጅመታጠቢያአልኮልይጠቀማሉ?	1. አዎ 2. የለም	
406	ተላላፊበሽታዎችንለመከላከልየሰዉነትመከላከያመሳሪያዎችንይጠቀማሉ?	1. አዎ 2. የለም	
407	ለጥያቄቁጥር 206 መልስዎትአዎከሆነየትኛዉንአይነትየሰዉነትመከላከያመሳሪያዎችንይጠቀማሉ?	1. ጓንት 2. ጋዉን 3. ቦትጫማ 4. የአይንመነፀር 5. ማስክ 6. የፕላስትክሽርጥ 7. ሌላካለ----------	

408	ለጥያቄቁጥር 206 መልስዎትየለምከሆነምክንያቱምንድነዉ?	1. የአቅርቦትእጥረት 2. ግንዛቤማጣት 3. ለስራምቹካለመሆኑየተነሳ 4. ሁሌአስፈላጊስላልሆነ 5. ግደለሽነት	
409	ጓንትመቼመቼይጠቀማሉ? ከአንድበላይመልስመስጠትይቻላል	1. የተቋሙንቆሻሻበምናጓጉዝ በትወቅት 2. ቆሻሻንበምንነካካበትጊዜ 3. የቆሻሻማስወገጃዕቃዎችንበ ምንነካካበትወቅት 4. ሌላ---------- ----------	
410	ባለፉትአንድአመታትዉስጥበመርፌተወግተዉያዉቃሉ?	1. አዎ 2. የለም	
411	ለጥያቄቁጥር 210 መልስዎትአዎከሆነለምንያህልጊዜ?	----------	
412	ባለፉትአንድአመታትዉስጥበስለታማነገሮችተወግተዉያዉቃሉ?	1. አዎ 2. የለም	
413	ለደምናለሰዉነትፈሳሽበንክክተጋልጠዉያዉቃሉ?	1. አዎ 2. የለም	
414	ለድህረመጋለጥየሚደረግህክምናእናመከላከያ(ፖስትኤክስፖዥርፕሮ ፍላክስስ)አግኝተዉያዉዋሉ?	1. አዎ 2. የለም	
415	ለጥያቄቁጥር 214 መልስዎየለምከሆነለምንአዳልወሰዱቢነግሩን?	1. በእጥረትምክንያት 2. በግድለሽነት 3. የግንዛቤእጥረት 4. ሌላ---------- ----------	
416	የጉበትበሽታክትባትአግኝተዉያዉቃሉ?	1. አዎ 2. የለም	
417	ለጥያቄቁጥር 216 መልስዎትአዎከሆነለስንትጊዜክትባቱንወሰዱት?	1. ለአንድጊዜ 2. ለሁለትጊዜ 3. ለሦስትጊዜ	

418	ለጥያቄቁጥር 216 መልስዎትየለምከሆነምክንያቱንቢነግሩን?	1. በከትባቱእጥረት 2. በግድየለሽነት 3. በግንዛቤእጥረት 4. ሌላ----------	
419	አገልግሎትላይየዋሉመርፌናስለታማነገሮችንእንደትያስወግዳሉ?	1. በእንስርነቴርበማቃጠል 2. ሜዳላይበመጣል 3. ጉድጓድቆፍሮበመቅበር 4. ሌላ----------	
420	ጉዳትየሚያደርሱናየማያደርሱትንቆሻሻዎችንትለያያላችሁ?	1. አዎ 2. የለም	
421	የስራከፍላችሁበቀለምየተለየቆሻሻመጣያአለዉ?	1. አዎ 2. የለም	
422	በተለያየቀለምባላቸዉእቃዎችዉስጥያሉትንቆሻሻዎችበምታስወገዱ በትኂዜአንድላይይቀላቀላሉ?	1. አዎ 2. የለም	
423	ቆሻሻከማስወገዶበፍትስለመታከሙትጠይቃላችሁ?	1. አዎ 2. የለም	

V:ከተቋምጋርተያያዥነትያላቸዉናየጽዳትሰራተኞችየጥንቃቄተግባራትየምጎዱ

ተ.ቁ	መጠይቅ	መልስ	ምርመራ
501	በተቋሙለ24 ሰዓታትያለማቋረጥየዉሃአቅርቦትአለ?	1. አዎ 2. የለም	
502	ለተራቁጥር 301 መልስዎትአዎከሆነየዉሃዉምንጭከየትነዉ?	1. ቧንቧዉሃ 2. ቦኖዉሃ 3. ወራጁዉሃ 4. የጉድጓድዉሃ 5. ሌላ----------	
503	ተቋማችሁየኢንፌክሽንመከላከልናመቆጣጠርኮሚቴአለ?	1. አዎ 2. የለም	
504	ተቋማችሁየኢንፌክሽንመከላከልናመቆጣጠርመመሪያአለዉ?	1. አዎ 2. የለም	
505	ባለፉትአንድአመትዉስጥስልጠናወስደዉያዉቃሉ?	1. አዎ 2. የለም	
506	ተቋሙባለፉትአንድአመትዉስጥድጋፍናክትትልአድርጎሎትያዉቃል?	1. አዎ 2. የለም	

እናመሰግናለን!

የመረጃሰብሳቢዉስም ---------- **የሱፐርቫይዘርስም----------**

ፊርማ---------- **ፊርማ----------**

ቀን ----------/-------/---------- **ቀን----------**

DECLARATION

I hereby declare that the work which is being presented in this thesis entitled ‘‘assessment of safety practice and associated factors among waste handlers in selected public hospitals, of addis ababa, ethiopia” is original work. It has never been presented for a degree in this and to any other university. All the resource and materials used for the thesis have been duly acknowledged.

Name	Signature	Date
Tesgera Tekle	_____	_____

This is to certify that the above declaration made by the candidate is correct to the best of my knowledge

Advisors:	Signature	Date
Dr. Teferi Abegaz (MPH,PHD)	_____	_____
Abigiya Wondimagne (MPH)	_____	_____