ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

ASSESSMENT OF OCCUPATIONAL INJURIES AND ITS ASSOCIATED FACTORS AMONG WASTE CLEANERS IN GOVERNMENTAL HOSPITALS OF ADDIS ABABA ETHIOPIA

BY

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This thesis is prepared by Ayzohbel Abeje is accepted in its present form by a board of examiners as satisfying thesis requirement for the degree of master in public health.

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Acronyms and Abbreviations

ILO	International Labor Organization
AOR	Adjusted Odds' Ratio
COR	Crude Odds Ratio
CI	Confidence Interval
P	Power
PPE	Personal Protective Equipment
PPS	Proportional sampling allocation
SPSS	Statistical Package for Social Sciences
REC	Research Ethical Committee

Contents

List of tables

List of figures

Abstract

Background: The job of waste cleaners are characterized by lifting, pulling, carrying and pushing health care wastes containers that potentially expose them to different ergonomics problems and physical injuries. There are also hazardous and nonhazardous wastes that requires due attention. There exist a concern that hazardous and nonhazardous waste may lead to the occurrence of high degree of sharp related injuries.

Objectives: This study was conducted to determine the prevalence of occupational injury and to identify the occupational associated factors that lead to the development of occupational injury among waste cleaners in governmental hospitals of Addis Ababa city.

Methods: This study was conducted on governmental hospitals found in Addis Ababa city, Ethiopia using cross-sectional study design among 403 cleaners. Data was collected using structured questionnaire, observational checklist and then verified. Odds ratio with 95% confidence was calculated to check whether there is association between selected independent variables and occupational injury or not. Multivariate logistic regression was also used to see the relative effect of one independent variable on occupational injury by controlling the other independent variables.

Results: Among 398 study participants, 390(98%) of them were female and male accounts 8(2%). The mean age of the respondents were 28.6 with a minimum of 14 and a maximum of 70. Most of the respondents (100%) used personal protective equipment while they are on duty. Out of 398 governmental hospital cleaners, 47 (11.8 %) with 95% CI (8.8, 15.3) of them were reporting physical injury in the past one year due to their occupation. Family size, working hours per day and sleeping disorder are associated with the independent variable. As compared with who had five and more family, the odds of occupational injury who had two and less (AOR = 0.42, 95% CI: 0.191-0.936) and three to four family (AOR = 0.43, 95% CI: 0.193-0.959) were reduced by almost half. And Occupational injury of respondents who works for above 8 hours (AOR = 2.17, 95% CI: 1.08-4.37) were 2.17 more likely exposed than those who works 8 and below. In addition, the occupational injury of those who had not sleeping disturbance (AOR = 0.16, 95% CI: 0.08-3.33) were also reduced by 84% as compared with who faced sleeping disorder.

Conclusion: Occupational injury among waste cleaners in Addis Ababa governmental hospitals needs a public health intervention. Hence, job rotation, improvement of employs' income and provision of sufficient PPE are highly recommended. Periodic health surveillance of cleaners is also advisable to early identify and detect work related compliant.

Keywords: Occupational injuries, hospital waste cleaners

1. Introduction

1.1. Background

Wastes collected in health facilities consists of hazardous wastes and nonhazardous wastes like used needles and syringes, soiled dressing, body parts, diagnostic samples, blood, chemicals, pharmaceuticals, food and garden waste, paper and cardboard, glass, metals, plastics and textiles (1-3). Even though there are hazardous and nonhazardous wastes in health facility that requires strong attention, poor waste management system contributes for the occurrence of high degree sharp object injury (2, 4, 5). These hazardous wastes are usually collected and transported by highly lifting, pulling, carrying and pushing that potentially exposed waste cleaners to different ergonomics problems and physical injury due to failing to use personal protective equipment and lack of knowledge(2, 3, 6).

Occupational injury is physical injury that poses public health problems as well as nonfatal suffer in connection with their work (1, 7). Findings showed that 2.9 billion waste cleaners are prone to hazardous risks in the globe (8). And according to international labor organization recent reports, 2.74 million people are died each year related to occupational accidents (7).

Findings related to magnitude and impact of occupational related needle stick and sharp injuries and associated factors among health care workers in Dire Dawa, eastern Ethiopia showed that the prevalence of needle stick and sharp injuries for both the life time and the last 12 months were 53.8% and 26.6% respectively (9). Studies conducted at in Arba Minch General Hospital, Gamo Gofa Zone, Southern Ethiopia, 2015 G. C showed that the prevalence of occupational injury Needle Stick and Sharp injuries among health professionals and cleaners is 42.1% (10). Furthermore, two studies conducted at Addis Ababa and Northwest Ethiopia in Amhara region has also showed that the prevalence of injury among solid waste collectors was 43.7% and 34.3 % respectively (1, 3) and the finding has revealed that the prevalence of occupational injury among municipal solid waste management workers in Gondar town and Bahir Dar City is also 63.9% (11).

Therefore, this study is also conducted to assess the magnitude of occupational injury and associated factors among waste cleaners who are involved in governmental hospitals found in Addis Ababa city. And based on the findings of this study, we recommend the hospitals and assist them to take an intervention.

1.2. Statement of the problem

In low and middle income countries, there is low occupational hazards awareness and insufficient personal protective equipment availability. And there is also limited knowledge about its utilization. In addition, no monitoring practice about the proper utilization of personal protective equipment. The waste segregation of most governmental hospitals is not promising since waste collection sacks are not placed at its proper place by its risk level. And the status of waste collection sacks are also deteriorated (3).

Mostly persons who are in low economic income and low level education involved in cleaning working area. Injury of waste cleaners is resulted from manual tasks. They are working in awkward position and many of their tasks are involving heavy manual work within a tight time frame. Adequate training related to their occupation is not provided to this staffs as well. These all gaps contribute for the occupational injury to happen. Unable to reach this area will create a gap in developing preventive strategies and policy which promote safer work practices in this area. Hence, this study plays its own role to assess and set solutions related to the factors of occupational injury (3, 12).

Literatures demonstrates that occupational injury has been affected by different associated factors like Socio-demographic characteristics (marital status, age, sex, educational level, work load, employment pattern, family size, work experience, working hours, monthly salary) and Work related and Behavioral characteristics (drinking alcohol, chewing chat, smoking cigarette, PPE use, safety training, job stress, job satisfaction and sleeping disorder). Hence, this study will have aimed to determine the prevalence of occupational injury and its associated factors among cleaners of governmental hospitals in Addis Ababa city, Ethiopia.

1.3. Rationale of the Study

Since there is no finding related to this occupational injury in Addis Ababa governmental hospitals and even at country level, this study would be employed as a baseline data to plan and minimize occupational related injury that could be occurred whenever waste cleaners collect, transport, store, treat and dispose wastes. It could be used as a source of mother document to prepare training manuals and play a significant role by increasing awareness related to safety material usage. In addition, it is used to provide recommendations and could be also employed by police makers.

1.4. Significance of the study

This study has its own roles for planning purpose of the health facilities. It also assists to give recommendation to the respective offices and reach an agreement with the corresponding bodies to make an intervention.

2. Literature review

2.1. Magnitude of occupational injury

Recent ILO findings indicated that 2.74 million people are died each year related to occupational accidents and of which 2.4 million are due to disease caused by their task. These account for 5 to 7 percent of the total death globally. And the burden of occupational morbidity and mortality has no equal distribution across the globe. Sixty percent of global work-related mortality is estimated to occur in Asia, followed by Africa (11.8 %), Europe (11.7 %), America (10.9 %) and Oceania (0.6 %).Fatal occupational accidents per 100000 workers within Africa and Asia are 4 to 5 more times than in Europe. This is due to multinational, social, political, economic, demographic and occupational differences between countries and regions. And different countries have different level of managing health and safety issues (7).

The investigation conducted on Epidemiology of occupational injury among cleaners in the healthcare sector in Canada found that the prevalence of injury was 32.1% (13).In addition, studies showed that the prevalence of occupational injury among municipality solid waste collectors in Addis Ababa city and four zones of Amhara region, Northwest Ethiopia is 43.7% and 34.3 % respectively (1, 3). And another study conducted on occupational injury among solid waste collectors in Bahir Dar and Gondar is also 63.9%(11). Findings about magnitude and impact of occupational needle stick and sharp injuries and associated factors among health Care workers in Dire Dawa, Eastern Ethiopia depicted that the prevalence of needle stick and sharp Injuries for both the life time and the last 12 months were 53.8% and 26.6% respectively (9). In addition, studies which were conducted on the prevalence of occupational exposure to needle stick and sharp injuries and its associated factors among health care workers in Addis Ababa hospital, Awi zone Amhara region, central zone of Tigray, Bahir dar capital city of Amhara region were 66.6%, 18.7%, 25.9% and 31% respectively (14-17).

The prevalence of musculoskeletal disorder complaints because of their occupation among solid waste collectors in Iran, Mumbai Egypt and were 92.5%, 79% and 60.8% respectively (18-20). Findings showed that musculoskeletal disorders among municipal solid waste collectors in Egypt were :(neck=9%, shoulder=19%, low back pain=22.5%, upper back pain=3.3%, elbow=7%, wrist/hand=2%, hips/thighs=7%, knee=8% and ankles/feet=4%)(18). An investigation which was conducted in Mumbai related to assessing the impact of waste picking on musculoskeletal disorders among waste pickers revealed that the injured body parts account: (neck=8.5%, hand=16.0%, shoulder=32.0%, upper back=40.0%, lower back=54.0%, thigh=8.5%, knee=47.5% and ankle=18.5%) (19).And study Conducted in University Medical Center Hamburg related to health status and health related to quality of life has also showed that the back pain injury is 67.2%(6). The other study which was conducted in Addis Ababa city, Ethiopia among Addis Ababa city municipal solid waste collectors using cross-sectional study design depicted that the prevalence of occupational injury were :(hand=60.75%, finger=23.32%, leg=20.63%, back=11.49%, knee=10.18%, toe=3.92%,eye=2.35%,tooth=2.09%and head=2.09%) (4).In addition, study conducted in four zones of Amhara region, Northwest Ethiopia related to prevalence and associated factors of occupational injuries among municipal solid waste collectors has indicated that the injured body parts account: (hand=34.6%, leg=20.0%, above neck=16.2% and more than one body parts=29.2%) (1).

According to a study conducted in Addis Ababa, Ethiopia, in 2014, among municipal solid waste collectors, cut is the common injury type that accounts for 57.7% and puncture (38.12%), fall (19.84%), abrasion (11.75%) and fracture (4.7%) are placed in the second, third, fourth and fifth orders respectively (3). A study conducted in four zones of Amhara region, Northwest Ethiopia, among municipal solid waste collectors has also revealed that cut/puncture (52.30%) is located in the first place and then abrasion (15.40%), dislocation (9.23%),fracture (8.46%)and ear injury (7.69%) follow in the second, third, fourth and fifth orders correspondingly(1).

The prevalence of occupational injury among construction employ in Addis Ababa city was 38.3 %, Whereas in Gondar, the prevalence of occupational injury among construction workers was found to be 39% (21, 22).

Another study which was done on factors associated with work related injuries among workers of an industry in Malaysia indicated that the overall prevalence of occupational injury was 73.5% (23). And a study which was conducted in Bahir Dar Town, North West Ethiopia among small and medium scale industry workers has found that 34.2% of workers had experienced work related injury (24). Moreover, there was also a study related to magnitude and factors of occupational injury among workers in large scale metal manufacturing industries in Ethiopia which revealed that the prevalence of occupational injury was 489 per 1000 exposed workers per year 25 (25). According to a study conducted using Cross Sectional Study in Arba Minch textile factory, Southern Ethiopia had experienced an occupational injury with the prevalence of 31.4% (26).

2.2. Severity of occupational injury

The other Study which was conducted in Bahir Dar and Gondar assessed the severity of injury among solid waste collectors by day lost due to injury. According to this study, 35.7% of workers had non-serious accidents which require 1-3 days lost from work and 25% of workers had serious accidents which requires more than 3 days lost from work(11). Studies done in four zones of Amhara region among solid waste collectors showed that the severity of injury among them expressed by days lost due to injury was 26.2% of workers had non-serious accidents which requires less than 10 days lost from work and 73.8% of workers had serious accidents which requires more than 10 days lost from work(1).

2.3. Associated factors of the problem

Socio-demographic characteristics (marital status, age, sex, educational level, work load, employment pattern, family size, work experience, working hours, monthly salary) and work related and behavioral characteristics (drinking alcohol, chewing chat, smoking cigarette, PPE use, safety training, job stress,

job satisfaction and sleeping disorder) are factors that are associated with occupational injury (1, 3, 20, 27).

2.2.1. Socio-demographic characteristics

A study related to prevalence and associated factors of occupational injuries among municipal solid waste collectors in four zones of Amhara region, Northwest Ethiopia found that occupational injury was significantly associated with work experience (AOR = 1.92 95% CI:1.11, 3.31) and monthly salary(AOR = 3.0 95%CI:1.64, 5.48) (1). Another study which was conducted on assessment of occupational injuries among Addis Ababa city municipal solid waste collectors using cross-sectional study design showed that occupational injury was significantly associated with family size (AOR=0.21 95% CI: 0.10–0.44 (3). A study on the assessment of occupational injury and its associated factors among municipal solid waste management workers in Gondar town and Bahir Dar City, Northwest Ethiopia, 2012 showed that age in years (AOR = 1.834 95% CI:1.003, 3.355) was associated with occupational injury (11).

2.2.2. Work related and Behavioral characteristics

A study conducted in four zones of Amhara region, Northwest Ethiopia among municipal solid waste collectors showed that job related stress (AOR = 1.94 95% CI: 1.11, 3.40) and job related sleeping disturbance (AOR = 2.57 95 CI: 1.48, 4.47)were associated with occupational injury (1). According to a study conducted among Addis Ababa city municipal solid waste collectors using cross-sectional study design, use of PPE all the time (AOR=2.62 95% CI: 1.48–4.63) while on duty was also significantly associated variable in this study (3). The other study on the assessment of occupational injury and its associated factors among municipal solid waste management workers in Gondar town and Bahir Dar City, northwest Ethiopia, in 2012 found that job category (AOR=3.538 95% CI: 1.861, 6.725), health and safety training (AOR=2.569 95% CI: 1.284, 5.137), utilization of PPEs (AOR=0.164 95% CI:

0.082, 0.326) and alcohol consumption (AOR= 3.632 95% CI:1.162, 11.356) were associated with occupational injury(11).

Summary

During literature review, pub med central were used to access different journals and key word were also employed. Full text literatures related to the title were selected and taken as a reference. In addition, recent literatures less than 10 yrs. were employed mostly.

Most literatures showed that injuries due to occupation has negative impacts on physical and health aspects. But injury of hospital cleaners due to their occupation is not assessed so that this finding will fill the gap and enable to propose the interventions to the health facilities.

3. Conceptual frame work

Conceptual frame work is the explanation of any given system that clarifies the relationships between the outcome variable and its associated factors. It also defines the relevant variable and showed the interrelationships among distal, intermediate and proximal factors. The purpose of this conceptual framework is to understand a network of ideas. This conceptual framework depicted that what factors affected the outcome variable distally, intermediately and proximally as shown below.

Based on the literatures reviewed, the conceptual frame work of factors that can associate with occupational injury looks like this: (1, 3, 20, 27).

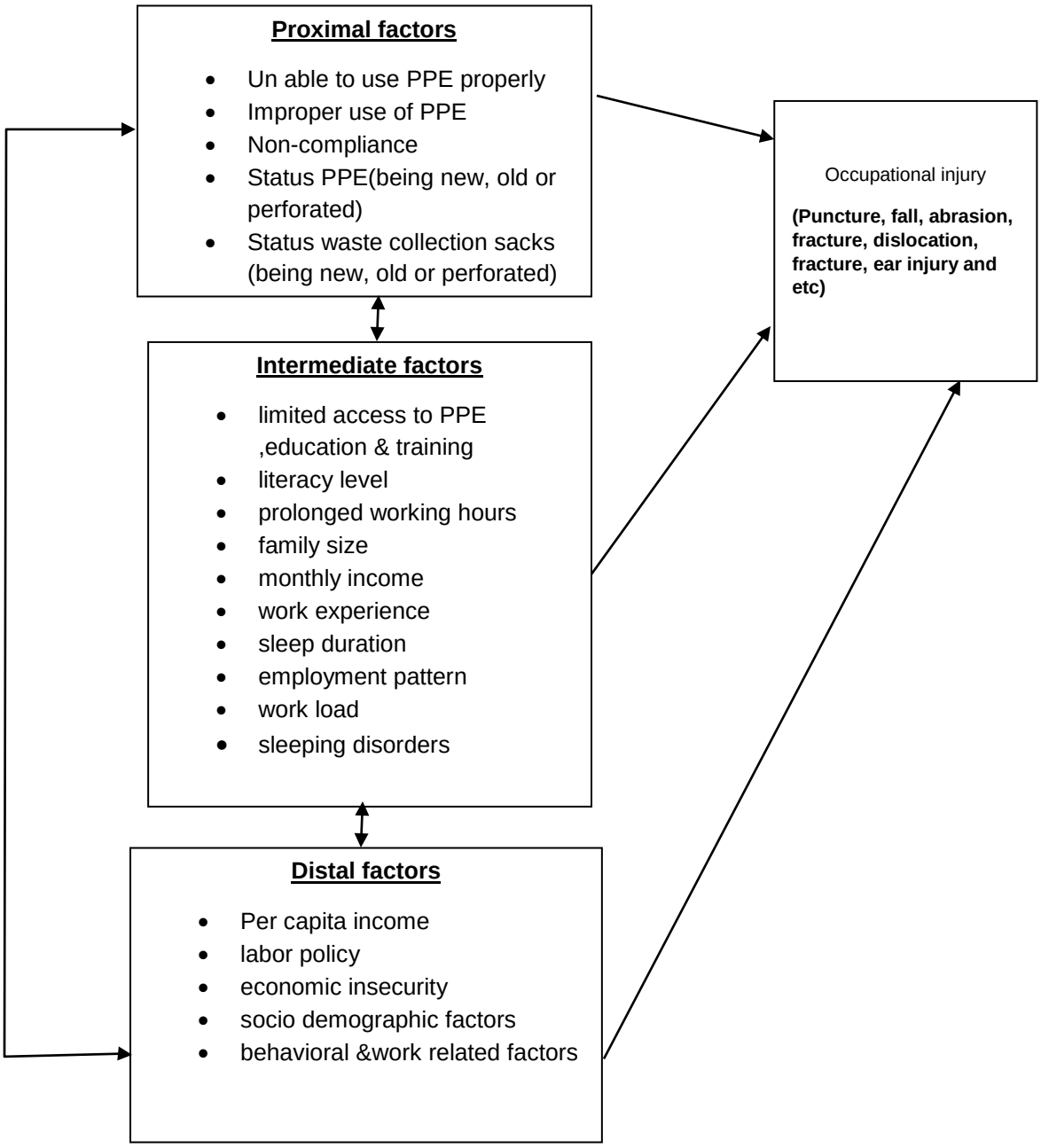

Figure 1 conceptual frame work of factors that can associate with occupational injury

4. Objectives

4.1. General objectives

This study was conducted to assess the prevalence of occupational injury and to describe its associated factors among waste cleaners in governmental hospitals of Addis Ababa, Ethiopia in 2021 G.C.

4.2. Specific objectives

1. To assess the prevalence of occupational injury among waste cleaners.
2. To describe associated factors of occupational injuries among waste cleaners.

5. Methods

5.1. Study design

A cross-sectional study design was conducted to assess the prevalence of occupational injury and to identify associated factors among governmental hospital cleaners in Addis Ababa, Ethiopia from June, 2020 to January, 2021.

5.2. Study area

The study was conducted in Addis Ababa, capital city of Ethiopia. According to Ethiopia central statistics agency 2019 G.C population projection, Addis Ababa has a population size of 3,604,000 (28).Female has 53% share from the total population and the remaining 47% is male population which is 1,900,000 and 1,703,000 respectively (28). It is geographically located at 9° 1' N latitude and 38° 44' E longitudes and has an elevation of 2355 meter above sea level and area of 527km2.There is 10 sub city and 117 woreda. It has also 14 governmental health centers and hospitals respectively. There are 3707 labor forces or cleaners in these governmental hospitals.

5.3. Source and Study Population

The source population was all waste cleaners who are working in government hospitals at the time of data collection. Waste cleaners in selected hospitals were study population.

5.4. Inclusion criteria

Waste cleaners who had at least one year work experience and more; who were selected by simple random sampling technique were included in this study.

5.5. Exclusion criteria

Participants who were seriously ill were not included in the study during data collection.

5.6. Sample Size Determination

5.6.1. Sample size of objective one

Single population proportion formula was used to determine the sample size to study prevalence of occupational injury among governmental hospital waste cleaners. Sample size of objective one was calculated using the P value of 50%. Because articles related to this objective were not found in PubMed searching. Especially, whenever I was searching articles associated with this objective using PubMed, they were not related by its objective, set up, study design and even they were outdated. During sample size determination 95% confidence interval and 5% margin of error was assumed. And 5% non-response rate was taken during sample size estimation.

$$n = \frac{(Z\alpha/2)^2\, P(1-p)}{d^2}$$

n’ = (10% of n) + n

n= sample size

n’= actual sample size after using 5% of non-response rate

Z α/2 = level of significance of α=0.05.

P = prevalence of occupational injury =50%

d = margin of error to be tolerated = 5%

Z = value of a standard normal distribution score= 1.96

- Sample size of the study conducted will be(n’=403)

5.6.2. Sample size of objective two

These sample sizes were determined by EPI info software version:7.2.1.0 using significant associated factors from different articles(1, 3). Significant variable were selected. Moreover, power of the software, confidence interval ratio and odds ratio outcome non-exposed and exposed were adjusted to calculate sample size of each selected variables. Then the highest sample size from the two objectives was selected. Therefore, **403** was the sample size of this study.

Table 1 sample size determination of associated factors using EPI data version: 7.2.1.0

S.N	Variable name	Power(P)	CI	Ratio	OR	Exposed	Non-exposed	Sample size	When 5% non-response added	Reference
1	Work experience	80%	95%	1:1	2	46.7%	30.3%	306	321	(1)
2	Job related stress	80%	95%	1:1	2	56%	23.6%	340	357	(1)
3	Age	80%	95%	1:1	1.9	74.4%	52.6%	348	365	(11)

5.7. Sampling procedures

First, data of governmental hospitals and total cleaners (i.e. 3707 cleaners) within all these governmental hospitals has been taken from Addis Ababa health bureau and ministry of health human resource departments. And then randomly 50% hospitals (7/14) was selected and then allocating the sample of its share using proportional allocation sampling (PPS). Finally, simple random sampling was used to select the study subjects from each selected facilities using their attendances based on its share calculated by PPS since waste cleaners of governmental hospitals have the same job burden and are homogeneous population. And those who had at least one year work experience and are not ill during data collection were included in the study.

A chart of sampling procedures

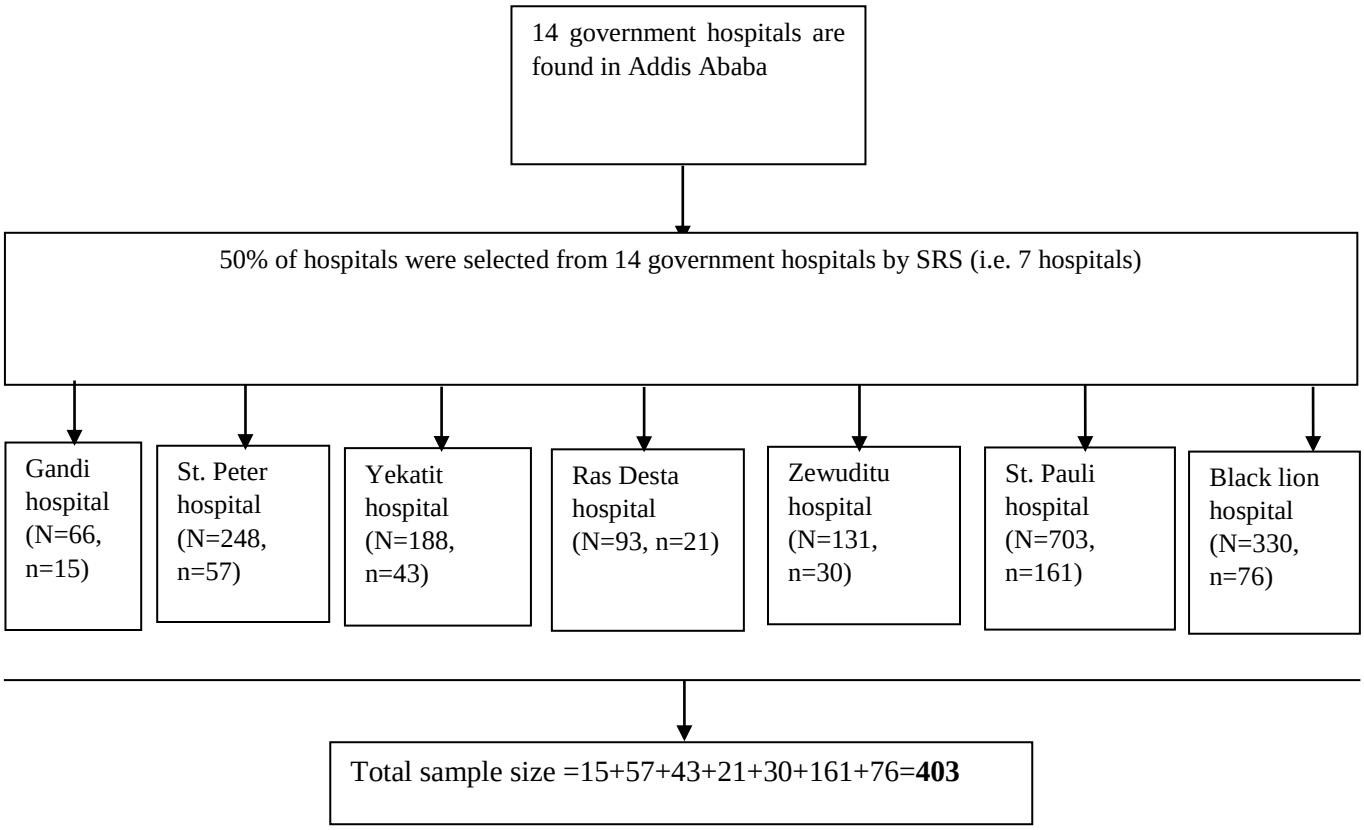

Chart 2 Graphs of sampling procedures

5.8. Data collection method

5.8.1. Structured questionnaire

Data were collected using structured questionnaires. The questionnaire was focused on socio demographic characteristics(marital status, age, sex, educational level, work load, employment pattern, family size, work experience, working hours, monthly salary), work related and behavioral characteristics (alcoholic drink, chat chewing, sleep disorder, job satisfaction,), injury type, by number of occurrence, injured body parts, Cause or mechanism of injury and environmental factors (health and safety training, work hours, workplace supervision) that can determine an occupational injury in waste cleaning processes. Questionnaire was prepared in English and translated into Amharic. The type of Questionnaire was closed–ended, multiple choices, dichotomous (yes/no), which was adopted from different literatures (1, 3, 15). After development, a pilot pretest was done on 5 percent the total sample size and the questionnaire was improved based on the inputs of the test.

Data was collected by 2 nurses, who are urban health extension workers, one supervisor, who has degree in Environmental health profession and the principal investigator monitored the overall data collection. Upon arriving at the data collection site, medical directors and other administrative bodies was contacted first before the actual data collection begins. The purpose of the study and the population of interest were explained to these administrative bodies.

The respondents gave consent and data collectors explained about the objective and purpose of the study and assured their full right to withdraw or refuse the study, maintenance of confidentiality and other ethical issues. Then data collection process was proceeding if and only if when permission was granted. Face to face interview was used. During data collection study subjects was not able to remember some kind of events occurred to them. So to avoid recall bias, the research question will be articulated carefully. And training of interviewers, allowance of sufficient time for waste cleaners to recall some events like age and verification of information provided were considered to assure the data quality. We

have used their shifting time to collect data. And a supervisor insured data completeness by taking 5% of the total data collected daily.

5.8.2. Observational checklist

Observational checklists were used to capture data which are out of the scope of structured questionnaires like data collected on Personal Protective equipment availability and utilization; Types, size, nature, smoothness and status of cart and sacks

5.8.3. Study variables

5.8.3.1 Dependent variable

- Occupational injury **(Puncture, fall, abrasion, fracture, dislocation, fracture, ear injury and etc.)** of hospital waste cleaners

5.8.3.2 Independent variable

- Socio-demographic characteristics (marital status, age, sex, educational level, work load, employment pattern, family size, work experience, working hours, monthly salary)
- Work related (job stress, job satisfaction and sleeping disorder)
- Behavioral characteristics (drinking alcohol, chewing chat, smoking cigarette, PPE use, safety training)

5.8.4. Operational definitions

Occupational injury

Permanent or temporary waste cleaners who were employed for one year or more that reports any physical damage to the body tissue related to their occupation caused by accident or exposure of environmental stressors and received health care at health facility in the last 12 months (1, 3).

Personal protective devices (1)

Waste collectors who are using all personal protective devices (PPD) include (eye goggles, boot, gloves, face shield) during working hour.

Current substance use (1, 21)

Workers who report about use of specified substance during the last one year

Smoking (21)

Workers who smoke every day, 1-3 days or weeks and occasionally during the last one year (21).

Presence of job satisfaction (21)

A subjective feeling of study participants whether their job is pleasant or not (21).

Presence of job related stress

The subjective response of the study participants whether there is feeling of stress or not due to their job (21).

Alcohol use (21)

Male and female participants who drink five and six glasses or bottles or cans of any alcohol beverage like beer, wine and local beverages (teal) respectively on regular work time considered as a drunker (21).

5.9. Data management

Collected data were verified and correction was taken if there is any mistake. In addition, its completeness was also assured. Coded data were organized and entered in to EPI data software version: 3.1 and were exported to SPSS software version: 24. Data cleaning was also carried out to void outliers, missing and other data discrepancies.

5.10. Data Analysis

5.10.1. Objective1

Descriptive statistics of the collected data were done for most variables in the study using statistical parameters: Frequencies, percentages and mean of variables and standard deviation were estimated to describe data.

5.10.2. Objective 2

Binary logistic regression was used to assess the association between outcome variables and independent variables. Crude Odds ratio with 95% CI was calculated to see the association between independent variables and occupational injury of waste cleaners. Variables that meet $P \leq 0.20$ in the binary analysis were accepted in multivariate analysis to avoid unpleasant estimates. Finally, multivariate logistic regression was also used to see the effect of one independent variable on the dependent variable by controlling the effect of the other independent variable to avoid confounding factors.

5.11. Data quality during data management and analysis

To maintain data quality, structured and pretested questionnaire as well as observational checklists was employed. And trainings were provided to 2 data collectors and one supervisor for one day before data collection. In addition, collected data were selected randomly and reviewed daily by a supervisor as well as primary investigators to assure its quality. Data entry was carried out using EPI-data software version 3.1 to minimize errors made during data encoding. Data cleaning was undertaken also to identify duplicate and missing values by doing frequency to every variables. Corrections were also made on mislabeled variables whenever I clean data.

5.12. Ethical consideration

Ethical approval was taken from research and ethics committee of SPH. Letters obtained from SPH were distributed to the selected hospitals and all these hospitals offered ethical clearances after reviewed the

document. During data collection time, Informed consent was taken from each respondents after the respondents are informed about the objective and voluntary basis of the study, privacy, benefit, disadvantages; the right to withdraw and refuse the response at any stage and confidentiality assurance issues. They were also informed about the project which did not create any invasive procedures and couldn't affect their health. In addition, Identifiers like names and codes were not taken in the questionnaire.

5.13. Dissemination of results

At the end of the research, results will be presented to the School of Public Health and College of Health Science and copy of the findings were disseminated to the stake holders and hospitals. Furthermore Recommendations were also provided to the health facilities to make an intervention based on the findings.

6. Results

6.1 Socio-demographic

As shown table 2, Four hundred three hospital cleaners participated in the study which was yielding 98.8 response rates. Three hundred of the respondents were female (98%) and eight of them were male (2%). The mean age the respondents were 28.6 with a minimum of 14 and a maximum of 70 with ± 9.33 standard deviation. And the employment pattern of cleaners was permanently employed which accounts 195(49%) and 203(51%) them are temporarily employed. The educational level of the respondents was categorized as illiterate (42), can read and write (9), primary school (239), secondary school (89) and certificate and above (19). 311(78%) of the respondents were working for 8 hours and below. The working experience of the respondents who have 1-2 years 335(86%) and for those who have a working experience of ≥3 years were 63 (16%).

Table 2 socio-demographic characteristics hospital cleaners at Addis Ababa city administration, Ethiopia

Variables	Frequency(=398)	Percent
Sex		
Male	8	2
Female	390	98
Age		
14-23	156	39.2
24-33	133	33.4
34-43	75	18.8
44-53	29	7.3
Educational level		
Illiterate	42	10.6
Can read and write	9	2.3
Primary school(1-8)	239	60.1
Secondary school (9-12)	89	22.4
Certificate and above	19	4.8
Marital status		
Single	188	47.2
Married	210	52.8
Employment pattern		
Permanent	195	49.0
Temporary	203	51.0
Additional/extra jobs		
Yes	14	3.5
No	384	96.5
Family size		
≤2 family	163	41.0
3-4 family	142	35.7
≥5 family	93	23.4
Work experience		
1-2 years	335	84
≥3 years	63	16
Working hours per day		
≤8 hours	311	78.1
>8 hours	87	21.9
Monthly salary		
600-1000 Eth. Birr	54	14
≥1001 Eth. Birr	344	86

6.2 Work related and behavioral characteristics

Three hundred sixty seven (92.2%) respondents were satisfied with their jobs and thirty one (7.8%) respondents were not satisfied with their jobs. Fifty one respondents (12.8%) faced sleeping disorders

but three hundred forty seven (87.2%) of them didn't encounter. Fifty four (13.6%) of the respondents were distressed with their jobs and three hundred forty four (86.4%) respondents were not distressed. Most of the respondents (100%) used personal protective equipment while they are on duty. Out of 398 respondents, two hundred eighty respondents (70.4%) were taking safety training. Of which, on job training accounted sixty four (16.1%) and basic training was two hundred twenty two (55.8%).

Table 3 work related and behavioral characteristics hospital cleaners at Addis Ababa city administration, Ethiopia.

Variables	Frequency(=398)	Percent
Sleeping disorder		
Yes	51	12.8
No	347	87.2
Job related stress		
Yes	367	92.2
No	31	7.8
PPE use		
Yes	398	100.0
Glove users		
Yes	398	100.0
Goggles users		
Yes	57	14.3
No	341	85.7
Face mask users		
Yes	398	100.0
Boot users		
Yes	74	18.6
No	324	81.4
Short shoe		
Yes	306	76.9
No	92	23.1
New cloth users		
Yes	367	92.2
No	31	7.8
Any safety training		
Yes	280	70.4
No	118	29.6
On job training		
Yes	64	16.1
No	216	54.3
Basic training		
Yes	222	55.8
No	58	14.6

6.3 Prevalence of occupational injury

Out of 398 governmental hospital cleaners, 47 (11.8 %) with 95% CI (8.8, 15.3) of them were reporting physical injury in the past one year due to their occupation. Hand (5%) was the most injured part of the body and puncture (5.5%) was the common injury type.

Table 4 injured body parts and injury types during the last 12 months in governmental hospitals of Addis Ababa city administration.

Variables	Frequency(=398)	Percent
Occupational injuries in the past 12 months		
Yes	47	11.8
No	351	88.2
Working days lost(n=22)		
1 to 3 days	15	68.18
For more than 3days	7	31.82
Number of occurrence(n=47)		
Once	43	91.5
Twice	2	4.2
More than two times	2	4.3
Injured body parts(n=47)		
Eye injury	3	6
Tooth injury	2	4
Hand injury	20	43
Knee injury	1	2
Toe injury	1	2
Finger injury	3	6
Head injury	1	2
Leg injury	6	13
Back injury	10	21
Chest injury	1	6
Other injury	1	4
Types of injury(n=47)		
Cut injury	1	2
Puncture	22	47
Fall injury	14	30
Abrasion injury	1	2
Fracture injury	4	9
Strain injury	1	2
Dislocation injury	1	2
Suffocation injury	1	2
Other injury type	4	9

6.4 Observational findings

Out of 398 respondents, three hundred ninety five of them (99.2%) were using new, water proof and well-dressed personal protective equipment's. And three of them (0.8%) from 398 observed gloves were old/perforated, none water proof; not well dressed gloves. And out of 398 observed cloths 367(92.2%),

73(18.3%), 368(92.5%) were new, water proof and well-dressed cloths correspondingly. And from 398 observed cloths 31(7.8%), 325(81.7%) & 30(7.5%) were old/perforated, none water proof and not well dressed cloths respectively. Out of 398 observed facemasks 397(99.7%), 397(99.7%) & 397(99.7%) were new, water proof and well-dressed respectively. And from 398 observed facemasks 1(0.3%), 1(0.3%) & 1(0.3%) were old/perforated, none water proof and not well dressed facemasks correspondingly. From 398 observed shoes 391(98.2%), 376(94.5%) & 376(94.5%) were new, water proof and well-dressed correspondingly. Out of 398 observed shoes 7(1.8%), 22(5.5%) & 22(5.5%) were old/perforated, none water proof and not well dressed shoes respectively.

6.5. Bivariate analysis

Responds who had not Sleeping disorder (COR = 0.15, 95% CI: 0.07-0.29) was significantly associated with the outcome variable. Job satisfaction (COR = 0.42, 95% CI: 0.17-1.04) and job related stress (COR = 2.19, 95% CI: 1.04-4.62) were also significantly associated with the outcome variable. Similarly, permanently employed (COR = 0.55, 95% CI: 0.29-1.04) was significant factor. Respondents who have family size of two and less (COR = 0.39, 95% CI: 0.19-0.83); three to four (COR = 0.49, 95% CI: 0.23-1.03) were also associated with occupational injury. In addition, using new cloth (COR = 0.42, 95% CI: 0.17-1.04), perforated/old cloth (COR = 2.38, 95% CI: 0.97-5.89) and using short shoe (COR = 2.22, 95% CI: 0.91-5.4) were the other associated factors in the bivariate analysis.

Table 5 Factors associated with occupational injuries among governmental hospital cleaners on bivariate analysis at Addis Ababa city administration, 26021

Variables	Occupational injury in the past 12 months		COR (95% CI)
	Yes	No	
Employment pattern			
Permanent	17	178	0.55 (0.29, 1.04)
Temporary	30	173	1
Family size			
Two and less family	14	149	0.39(0.19, 0.83) *
Three to four family	15	127	0.49(0.23, 1.03) *
Five and above family	18	75	1
Working hours per day			
Above 8 hours	18	69	2.54(1.33, 4.83) **
8 and below hours	29	282	1
Sleeping disorder			
Yes	19	32	1
No	28	319	0.15(0.07, 0.29) **
Job satisfaction			
Yes	40	327	0.42(0.17, 1.04)
No	7	24	1
Job related stress			
Yes	11	43	2.19(1.04, 4.62) *
No	36	308	1
Using New cloth			
Yes	40	327	0.42(0.17, 1.04)
No	7	24	1
Using Perforated/old cloth			
Yes	7	24	2.38(0.97, 5.89)
No	40	327	1
Using Short shoe			
Yes	41	265	2.22 (0.91, 5.4)
No	6	86	1

Note: 1= Reference **=p≤0.01; *=P ≤ 0.05

6.7. Multivariate analysis

Each Socio-demographic characteristics, work related and behavioral factors and other observed characteristics are analyzed in bivariate and those factors P<0.2 were kept in the next model. From all variables entered in the multivariate analysis, only sleeping disorder, family size and working hours per

day were significant variable after adjusting Socio-demographic characteristics, work related and behavioral factors and other observed characteristics.

Table 6 factors associated with occupational injuries among governmental hospital cleaners on multivariate analysis at Addis Ababa city administration, 2021

Variables	Occupational injury in the past 12 months		COR (95% CI)	AOR(95%CI)
	Yes	No		
Family size				
Two and less family	14	149	0.39(0.19, 0.83)*	0.42(0.191, 0.936)*****
Three to four family	15	127	0.49(0.23, 1.03)*	0.43(0.193, 0.959)*****
Five and above family	18	75	1	1
Working hours per day				
8 and below hours	29	282	1	1
Above 8 hours	18	69	2.54(1.33, 4.83)**	2.17(1.08, 4.37)*****
Sleeping disorder				
Yes	19	32	1	1
No	28	319	0.15(0.07, 0.29)******	0.16(0.08, 3.33)******

Note: 1= Reference **=p≤0.01; *=P ≤ 0.05

7. Discussion

The overall prevalence of occupational injury in the past 12 month was 11.8 % with 95% CI (8.8, 15.3) which was less than studies conducted on municipalities' waste collectors in Addis Ababa city 43.7%, four zones of Amhara region, Northwest Ethiopia 34.3 % and Bahir Dar and Gondar 63.9% (1, 3). This variation could be originated due to the fact that personal protective utilization, regulations and waste segregation culture are not encouraging in municipality set up. This study was also further compared with Occupational Exposure to Needle Stick and Sharp Injuries and Associated Factors among Health Care Workers. It was more or less similar to the finding of Occupational Exposure to Needle Stick and Sharp Injuries and Associated Factors among Health Care Workers in Awi Zone, Amhara Regional State, Northwest Ethiopia, 2016 i.e. 18.7%. This could be due to similar work set up, strong PPE utilization practice and waste segregation culture (15). During this study, waste collection was the largest incident resulting in injury which was 32(68.1 %) and then followed by lifting waste 6(12.8%). These incidents were also the highest contributors for occupational injury which was done in Addis Ababa city among municipality waste collectors (3). The main occupational injury types were puncture 22(47%) and fall injury 14(30%). That was lower than studies done on Addis Ababa and four zones of Amhara region, Northwest Ethiopia among municipality waste collectors (1, 3). This difference could be resulted due to the variation of work setup. The highest injured body parts in this study were hand 20(43%), back 10(21%) and leg injury 6(13%). That was lower than study conducted on Addis Ababa municipality among waste collectors i.e. hand injury (60.75%) and leg injury (20.63%) but back injury was higher compared with study done on Addis Ababa municipality among waste collectors i.e. back injury (11.49%) due to different work set up, long journey to collect wastes and waste collection was also undertaken using their bare hand and leg particularly in municipality waste collectors (3).

Sleeping disorder, prolonged working time per day and family size of the respondents were the major contributing factors for the occurrence of injury. The risk of occupational injury for those who had two and less family size (AOR = 0.42, 95% CI: 0.191-0.936) was reduced by 58% as compared with those

who had five and above family size. And the occupational injury for those who had three to four family size (AOR = 0.43, 95% CI: 0.193-0.959) was also reduced by 57% as compared with who had five and above family size. It could be due to respondents who had more family might be preoccupied by extra thinking and this might lead to increase the risk of occupational injury. Those who had more family size couldn't buy personal protective equipment might be another rational. In addition, Occupational injury of respondents who works for above 8 hours (AOR = 2.17, 95% CI: 1.08-4.37) were 2.17 more likely exposed than those who works 8 and below. The occupational injury of those who had not sleeping disturbance (AOR = 0.16, 95% CI: 0.08-3.33) were also reduced by 84% as compared with who faced sleeping disorder. It could be due to the fact that respondents who had sleeping disturbance might be preoccupied by extra thinking. This finding is similar to other studies conducted on municipality waste collectors in four zones of Amhara region, Northwest Ethiopia (1).

8. Conclusion and recommendation

Occupational injury among waste cleaners in Addis Ababa governmental hospitals needs a public health intervention. Family size of the respondents, sleeping disorder; working time per day were significantly associated factors with occupational injury based on the finding of this and other studies. Hence, job rotation, improvement of employs' income and provision of sufficient PPE are highly recommended. Periodic health surveillance of cleaners is also advisable to early identify and detect work related compliant.

9. Strength

- Using Face to face interview and observational method was used to minimize biases
- The proposal of this research was reviewed by the selected hospitals

10. Limitation

- Recall bias
- The interviewee couldn't show any medical evidences.
- Injury is not categorized as various degree like: minor, severe, moderate, fatal
- Type of conceptual framework used
- Stress was not measured based on standards rather it was measured by personal responses/feelings
- Multi-stage sampling method was not considered during sample size determination

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12. Annex

Annex-I: Declaration

I. **Ayzohbel Abeje**, the undersigned declare that this is my original work and has not been presented in this or any other University for a similar or any other degree award, and any partial or full sources of materials used should be fully acknowledged.

Name: Ayzohbel Abeje(BSc)

Signature: _____

Date: _____

This thesis has been submitted to:

Advisor: Abera Kumie (PhD)

Signature: _____

Date: _____

This thesis has been submitted for certification to School of Allied Health Sciences

Department of public health head

Department Head: Sale Abera (PHD)

Signature: _____

Date: _____

Place: Addis Ababa University. College of Health Sciences,

School of Allied Health Sciences

Department of public health, Post Graduate program

Annex-II: Respondents Information Sheet English Version

Addis Ababa University school of Public Health

Here, I the undersigned, at Addis Ababa University, School of public health, and currently undertaking research on a topic entitled assessment of occupational injuries and its associated factors among waste cleaners in governmental hospitals found in Addis Ababa, Ethiopia. For this study, you will be selected as a participant. And before getting permission of your participation, you need to know all necessary information related to the study. Thus, this information will be detailed as:

Purpose of the study:-The purpose of the study is to assess the prevalence of occupational injury and to describe its associated factors among governmental hospitals' cleaners in Addis Ababa city, Ethiopia.

Participants to be included: - Waste cleaners who had at least one year work experience and who will be selected by systematic random sampling technique will be included in this study.

Risks of the study: The study will be done out simply by asking you the already prepared and structured questions. The procedure doesn't have any physical or psychological trauma on you.Furthermore, you will not be forced to respond information that you do not know.

Benefits of the study: For your participation in the study, you will be granted any special advantage to you. But, participating in the study and giving your guanine information will have great input for planning purpose and to develop strategies and policies.

Confidentiality: All information you give will be kept confidential and won't be accessible to any third party. Your name won't be registered on the original question sheet so that you will not be identified.

NB: If you have any question regarding the study, contact with Principal Investigator.

Name of the primary Advisor: - Abera Kume (MD,MPH, PHD)

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Annex-III: በጥናቱ ተሳታፊዎች የመረጃ ቅጽ (ከእንግልዝኛዉ የተተረጎመ)

በአዲስአበባዩ ኒቨርሲቲ ህክምና ፋኩልቲ የህብረተሰብ ጤናሳይንስ ትምህርት ክፍል

ከዚህ በታች እንደተመለከተዉ በአዲስአበባ ዩኒቨርሲቲ ህክምና ፋኩልቲ የህብረተሰብ ጤና ሳይንስ ትምህርት ክፍል፡ በአሁኑ ወቅት በመንግሰት ሆሰታሎች ውስጥ የሚሰሩ የፅዳት ሰራተኞች ከስራቸው ጋር በተገናኘ የሚደርስባቸውን አካላዊ ጉዳት እንዲሁም ተያያዥ ጉዳዮች በሚመለከት አነስተኛ ጥናት በአደዲሰአበባ ከተማ እያካሄድኩ ነዉ።የዚህ ጥናት ተሳታፊ ለመሆን እርስዎ ተጋብዘዋል።በጥናቱ ላይ ለመሳተፍ ፍቃደኝነትዎ ከመጠየቁ በፊት ጥናቱን በተመለከተ አስፈላጊ የሆኑ መረጃዎችን ማግኘት ያስፈልግዎታል።ስለሆነም በጥናቱ ላይ ለመሳተፍም ሆነ ላለመሳተፍ መጀመሪያ ማወቅ የምገባዎትን መረጃ እንደምከተለዉ እናቀርብልዎታለን።

1. የጥናቱ አላማ፡ የዚህ ጥናት ዋና አላማ በመንግሰት ሆሰታሎች ውስጥ የሚሰሩ የፅዳት ሰራተኞች ከስራቸው ጋር በተገናኘ የሚደርስባቸውን አካላዊ ጉዳት እንዲሁም ተያያዥ ጉዳዮች ያላቸውን ተፅኖ ለመዳሰስ።

2. በጥናቱ የሚካተቱ ተሳታፊዎች፡ ማንኛዉም አንድ አመት እና ከዚያ በላይ የስራ ልምድ ያላቸው የፅዳት ሰራተኞች እና ለመረጃው ፍቃደኛ የሆነ/የሆነች

3. ከጥናቱ ጋር የተያያዘ ጉዳት፡ ጥናቱ የሚካሄደዉ ለዚህ ጥናት የተዘጋጀዉን ጥያቄ በመጠየቅ ነዉ።ሆኖም በጥናቱ ተሳታፊዎች አካል ላይም ሆነ አእምሮ ላይ ፈፅሞ ጉዳት የለዉም። ያልገባዎትን መረጃ ለመመለስ አይገደዱም።

4. ጥቅም፡ በጥናቱ በመሳተፍዎ የምከፈልዎት ክፍያ ወይም የተለየ ጥቅም የለዉም።በሌላ በኩል በጥናቱ መሳተፍዎ እና ለምጠይቀዎ ጥያቄዎች ተገቢዉን መረጃ መስጠትዎ ለእቅድ እና ለፖሊሲ አዉጪዎች ጠቃሚነው።

5. ምስጥር የመጠበቅ ሁኔታ፡ እርስዎ የሚሰጡት መረጃ ሚስጥር የተጠበቀ ነዉ።ለሶስተኛ ሰዉ ተላልፎ አይሰጥም ወይም አይጋለጥም።ማንነትዎ እንዳይታወቅ ስምዎ በዋናዉ ኮፒ አይመዘገብም።

አጥኚዉን መጠየቅ/ ማግኘት ከፈለጉ፤

የዋና አማካረ ስም፡- አበራ ቁሜ (MD, MPH, PHD)

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አጥኚዉ: ስም፡- አይዞህበል አበጀ

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ኢሜይል፡ayzaaabeaa@gmail.com

Annex -IV: Participants Consent form English Version

Good morning /afternoon?

My name is _____. I come from Addis Ababa University School of public health. I am here to collect information on the assessment the prevalence of occupational injury and its associated factors in this health facility. The purpose of the study is to assess the prevalence of occupational injury and to describe its associated factors among governmental hospitals' cleaners in this health institution.

Your participation in the study will be totally based on your willingness. You have the right not to participate from the beginning, or stop any time after starting participation. You will not be forced to respond to the information you do not know. Your name will not be included in the information, I promise to keep the confidentiality of your response.

Your genuine response will play great role as input for planning purpose and to develop strategies and policies.

So, I kindly request you to ask some questions. Would mind if I take some minutes with you? Itmay take about 30 minutes. Thus, I kindly request you to participate in genuinely answering theinterview.

Thank you!

I agree to participate ☐ ☐ I don't agree to participate

Sign: _____ Date: _____

Annex -V: የፍቃደኝነት ማረጋገጫ

እንደምን አደሩ/አንደምን ዋሉ? (እንደ አሰፈላጊነቱ)

እኔ ስሜ ---------- እበላለሁ:: የመጠሁት ከአዲስአበባ ዩኒቨርሲቲ ህክምና ፋኩልቲ የህብረተሰብ ጤና ሳይንስ ትምህርት ክፍል ነዉ። በመንግሰት ሆሰታሎች ውስጥ የሚሰሩ የፅዳት ሰራተኞች ከስራቸው ጋር በተገናኘ የሚደርስባቸውን አካላዊ ጉዳት እንዲሁም ተያያዥ ጉዳዮችን በሚመለከት አነስተኛ ጥናት ለማድርግ መረጃ እየሰበሰብኩ ነዉ። በጥናቱ ላይ መሳተፍዎ ሙሉ በሙሉ የሚመሰረተዉ በራስዎ ፍላጎት እና ፍቃደኝነት ላይ ነዉ።ከመጀመሪያዉ በጥናቱ ላይ መሳተፍም ሆነ አለመሳተፍ ይችላሉ።ካልተስማማዎት በመሀል የማቋረጥ መብትዎ ሙሉ በሙሉ የተጠበቀ ነዉ። ያልገባዎትን መረጃ ለመመለስ አይገደዱም። ስምዎትከመረጃዉጋርአይካታትም፡የሰጡኝንመረጃሁሉበሚስጥርእነደምጠብቅልዎቃልእገባለሁ።

ጥያቄዉ የሚወስደዉ ጊዜ በአማካይ 30 ደቂቃ ብቻ ነዉ። ይህ ጊዜዎትን የሚሻማ ቢሆንም በመንግሰት ሆሰፒታሎች ውስጥ የሚሰሩ የፅዳት ሰራተኞች ከስራቸው ጋር በተገናኘ የሚደርስባቸውን አካላዊ ጉዳት እንዲሁም ተያያዥ ጉዳዮችን በሚመለከት የሚደረገው ጥናት ከፍተኛ ሚና ያለዉ በመሆኑ እንድትተባበሩኝ እጠይቅዎተለሁ። በመጨረሻም ስላዳመጡኝ ከልብ አመሰግናለሁ።የተወሰኑ ደቂቃዎች ባነጋግርዎት ፈቃደኛ ነዎት፤

ፈቃደኛ ነኝ ☐ ፈቃደኛ አይደለሁ ☐

ፊርማ ---------- ቀን፡ ----------

Annex -VI: Dummy Tables

Table 1: the socio-demographic characteristics of cleaners in governmental health facilities in Addis Ababa city Ethiopia

The socio-demographic profile of respondents		Total number	Percent (%)
Sex	Male		
	Female		
Educational status	Illiterate		
	Can read and write		
	Primary school (1-8)		
	4. Secondary school (9-12)		
	5. Certificate and above		
Age of cleaners in yrs.	< 30 years		
	≥ 30 years		
Marital status	Single		
	Married		
	Divorced		
	Widowed		
	Separated		
Employment pattern	Permanent		
	Contract		
Having other jobs	Yes		
	No		
Family size	Two and less family		
	Three to four		
	Five and above		
Work experience as cleaner	<=5 yrs. >=6 yrs.		
Working hours per day	<=8 hrs. >8 hrs.		
Daily or monthly salary in birr	<600 Eth. Birr		
	>=600 Eth. Birr		

Table 2: Work related injury characteristics of cleaners in governmental health facilities in Addis Ababa city, Ethiopia

Work related injury characteristics of respondents		Total number	Percent (%)
Occupational injury in the past 12 months	Yes		
	No		
Medical certification and lost from work	Yes		
	No		
Duration of Hospitalization and lost from work	1 to 3 days.		
	For more than 3 days.		
Frequency of occurrence of occupational injury	Once		
	Twice		
	More than two times		
Part of the body injured	Eye		
	Tooth		
	Hand		
	Ear		
	Knee		
	Toe		
	Finger		
	Head		
	Arm		
	Leg		
	Back		
	Chest		
	Multi-location		
	Others		
By type of injury	Cut		
	Puncture		
	Fall		
	Abrasion		
	Fracture		
	Strain		
	Dislocation		
	Burn		
	Suffocation		

	other		
Activities at the time of injury	Collecting Waste		
	Loading container		
	Lifting waste		
	Unloading waste		
	Loading trolley		
	Pushing trolley		
	Other		

Table 3: work related and behavioral characteristics of cleaners in governmental health facilities in Addis Ababa city, Ethiopia

Work related and behavioral characteristics of respondents		Total number	Percent (%)
Drinking Alcohol	Yes		
	No		
Frequency of drinking alcohol	Every day		
	1-3 days/wks.		
	Occasionally		
Amount of drinking alcohol per day	One to two glass/bottles/ cans any alcohol beverage		
	Three to four glass/bottles/ cans of any alcohol beverage		
	Five to six glass/bottles/ cans any alcohol beverage		
Chewing chat	Yes		
	No		
Frequency of chewing chat	Every day		
	1-3 days/wks.		
	Occasionally		
Smoking cigarettes	Yes		
	No		
Frequency of smoking	Every day		
	1-3 days/wks.		
	Occasionally		
sleeping disorder	Yes		
	No		
Job satisfaction	Yes		
	No		
Job stress	Yes		
	No		
Utilization of PPE	Yes		
	No		
	Gloves		
	Goggles		
	Face mask		

PPE type	Boots		
	Overalls		
	Others		
Safety training	Yes		
	No		
Type of training	On job training		
	Basic training		
	Other		
Reasons for not using PPE	Lack of protective equipment.		
	Lack of safety and health education.		
	Not comfortable to use		
	Decrease work performance		
	Create safety and health hazards		
	Other		

Table 4: observational checklist of over conditions of waste cleaners in governmental health facilities in Addis Ababa city Ethiopia

Observed conditions of waste cleaners		Total number	Percent (%)
Observed gloves of cleaners	New		
	Perforated		
	Water proof		
	Not water proof		
	Well dressed		
	Not well dressed		
	Other		
Observed clothing of cleaners	New		
	Perforated		
	Water proof		
	Not water proof		
	Well dressed		
	Not well dressed		
	Other		
Observed face mask of cleaners	New		
	Perforated		
	Water proof		
	Not water proof		
	Well dressed		
	Not well dressed		
	Other		
Observed status of shoe used by cleaners	New		
	Perforated		

	Water proof		
	Not water proof		
	Well dressed		
	Not well dressed		
	Other		
Nature of sacks and carts	Wood		
	Metal		
	Other		
Size or the types cart	movable		
	non-movable		
	Other		
Smoothness of the cart	Smooth		
	Rough		
Nature of sacks and carts	perforated		
	Old		
	overfilled		
	other specify		

Table 5: Factors associated with over all occupational injury among waste cleaners in governmental health facilities in Addis Ababa city, Ethiopia.

Associated Factors	Occupational injury			
	COR	(95% CI)	Adjusted OR	(95% CI)
Age				
Sex				
Educational status				
Marital status				
Employment pattern				
Having other jobs				
Family size				
Work experience				
Working hours per day				
Daily or monthly salary in birr				
Drinking Alcohol				
Smoking cigarettes				
Chewing chat				
sleeping disorder				
Job satisfaction				
Job stress				
Utilization of PPE				
PPE type				
Safety training				
Type of training				

9. Annex -VII: Questionnaires

Section one: Socio demographic characteristics

NO.	Questions	Possible responses	Skipping	Code
101	Sex	1. Male 2. Female		
102	Age (If the participant does not know his/her birth day ask the event and calculate the participant's age)	_____Years		
103	Educational level	1. Illiterate 2. Can read and write 3. Primary school (1-8) 4. Secondary school (9-12) 5. Certificate and above		
104	Marital status	1. Single 2. Married 3. Divorced 4. Widowed 5. Separated		
105	Employment pattern	1. Permanent 2. Temporary		
106	Do you have other jobs	1. Yes 2. No		
107	Family size	_____family		
108	Work experience as cleaner	_____ years		
109	Working hours per day	_____ hours		
110	Daily or monthly salary in birr	_____ birr		

Section Two: Work related injury characteristics

No	Questions	Possible responses	Skipping	Code
201	Have you encountered an incident at the job site that resulted in an injury to you in the past one year?	0. No 1. Yes	If the answer is No, Skip to Q 301	
202	Have you had a medical certificate and lost from work as result of injury in the last 12 month?	1. yes 2. No		
203	For how long, you are lost from work as result of injury in the last 12 month?	1.1 to 3 days. 2. For more than 3 days.		
204	How many times?	1. Once 2. Twice 3. More than two times		
205	Part of the body affected?	1. Eye 2. Tooth 3. Hand 4. Ear 5. Knee 6. Toe 7. Finger 8. Head 9. Arm 10. Leg 11. Back 12. Chest 13. Multi-location (if 2 and more parts of the body parts) 14. other specify _____		
206	Type of injury?	1. Cut 2. Puncture 3. Fall		

		4. Abrasion 5. Fracture 6. Strain 7. Dislocation 8. Burn 9. Suffocation 10. other specify _____		
207	What were you doing at the time of injury	1. Collecting Waste 2. Loading container 3. Lifting waste 4. Unloading waste 5. Loading trolley 6. Pushing trolley 7. Other specify _____		

Section three: work related and behavior characteristics

NO.	Questions	Possible responses	Skipping	Code
301	Do you drink Alcohol?	1. Yes 2. No	If Q301 is No skip to Q304	
302	If yes to 301, how often?	1. Every day 2. 1-3 days/wks. 3. Occasionally		
303	How much amount per day?	1. One to two glass/bottles/ cans any alcohol beverage 2. Three to four glass/bottles/ cans of any alcohol beverage 3. Five to six glass/bottles/ cans any alcohol beverage		
304	Do you chew chat?	1. Yes 2. No	If Q304 is No skip to Q306	
305	If yes to 304, how often?	1. Every day 2. 1-3 days/wks. 3. Occasionally		
306	Do you smoke cigarette?	1. Yes 2. No	If Q306 is No skip to Q308	
307	If yes to 306, how often?	1. Every day 2. 1-3 days/wks. 3. Occasionally		
308	Do you have any sleeping disorders?	1. Yes 2. No		
309	Are you satisfied with the job or task required to do?	1. Yes 2. No		
310	Do you think your job is stressful?	1. Yes 2. No		
311	Do you use any personal protective equipment?	1. Yes 2. No	If Q311 is No skip to Q313	
312	If yes to Q311, what type?	1. Gloves 2. Goggles 3. Face mask 4. Boots		

		5. Overalls 6. Others, specify_____		
313	What are your reasons for not using personal protective equipment?	1. Lack of protective equipment. 2. Lack of safety and health education. 3. Not comfortable to use 4. Decrease work performance 5. Create safety and health hazards 6. Other specify_____		
314	Have you had any safety training in connection with new employment, new equipment or other Changes?	1. Yes 2. No		
315	Type of training related to PPE utilization?	1. On job training 2. Basic training 3. Other specify_____		

Observational checklists

No.	Factors	Possible responses	Remark
(Status of personal protective equipment)			
1	Observed gloves of cleaners during duty	1. New 2. Perforated/old 3. Water proof 4. Not water proof 5. Well dressed 6. Not well dressed 7. Other specify _____	
2	Observed clothing of cleaners during duty	1. New 2. Perforated/old 3. Water proof 4. Not water proof 5. Well dressed 6. Not well dressed 7. Other specify _____	
3	Observed face mask of cleaners during duty	1. New 2. Perforated/old 3. Water proof 4. Not water proof 5. Well dressed 6. Not well dressed 7. Other specify _____	
4	Type of shoe used by cleaners	1. Boots 2. Short shoe 3. Sleeper 4. Bare footed while on duty 5. Other specify _____	
5	Observed shoe status of cleaners	1. New 2. Perforated/old 3. Water proof 4. Not water proof 5. Well dressed 6. Not well dressed	

		7. Other specify _____5	
Types and status of cart and sacks			
1	Nature of sacks and carts	1. Wood 2. Metal 3. Other specify _____	
2	The types cart	1. movable 2. non-movable 3. other	
3	Smoothness of the cart	1. smooth 2. rough or sharp edge	
4	Status of waste collection sacks	1. perforated 2. old 3. overfilled 4. other specify _____	

ክፍል አንድ፡ የስነ ህዝብ እና ማህበራዊ ሁኔታ

ተ.ቁ	መጠይቆች	መልስ	እለፍ	ኮድ
101	ፆታ	1. ወንድ 2. ሴት		
102	ዕድሜ (የጥናቱ ተሳታፊ ዕድሜውን ካላወቀው በተወለደበት ወቅት የተፈጠሩ ክስተቶችን በመጠየቅ የሚሰላ ይሆናል)	_____ዕድሜ በዓመት		
103	የትምህርት ደረጃ	1. ያልተማረ/ች 2. ማንበብ እና መፃፍ የሚችል/የምትችል 3. የመጀመሪያ ደረጃ ትምህርት ያጠናቀቀ/ች (1-8) 4. የሁለተኛ ደረጃ ትምህርት ያጠናቀቀ/ች (9-12) 5. ሰርትፍኬት እና ከዚያ በላይ		
104	የጋብቻ ሁኔታ	1. ያላገባ/ባች 2. ያገባ/ባች 3. የተፋታ/ች 4. ባል/ሚስት የሞተበት 5. የተለያዩ		
105	የቅጥር ሁኔታ	1. በቋሚነት 2. ጊዚያዊ		
106	ሌላ ስራ አለህ/ሽ?	1. አዎ 2. የለም		
107	የቤተሰብ ብዛት	_____ቤተሰብ		

108	የፅዳት ሰራተኛ በመሆን ስንት	_____ በዓመት		

	አመት አገለገሉ?			
109	በቀን ስንት ስዓት ይሰራሉ	_____ በስዓት		
110	የወር ወይም የቀን ገቢ በብር ስንት ነው	_____ በብር		

ክፍልሁለት: ከስራ በተገናኘ የደረሰ አካለዊ ጉዳት

ተ.ቁ	መ ጠይቅ	መልስ	እለፍ	ኮድ
201	በለፈው አመት ከስራዎት ጋር በተገነኘ አካላዊ ጉዳት አጋጥመዎት ያዎቃል?	0. የለም 1. አዎ	መልሱ የለም ከሆነወደ ጥያቄ ቁ 301ይለፉ	
202	መልስዎ አዎ ከሆነ ጉዳት ባጋጠመዎ ወቅት የጤና ተቋም የህክምና ማስረጃ እና ከስራ ቀርተው ነበር?	1. አዎ 2. የለም		
203	ለምን ያህል ጊዜ ከስራ ቀርተው ያውቃሉ	1. ከ1 እስከ 3 ቀን. 2. 3 ቀን በላይ.		
204	ጉዳት ያጋጠመዎ በድግግሞሽ ለስንት ጊዜ ነው?	1. አንድ ጊዜ 2. ሁለት ጊዜ 3. ሁለት ጊዜበላይ		
205	ጉዳት የጋጠመዎ የካል ክፍል	1. አይን 2. ጥርስ 3. እጅ 4. ጀሮ 5. ጉልበት 6. የእግር እጣት 7. የእጅ እጣት 8. እራሰ ቅል 9. ክርን አካባቢ 10. እግር 11. ጀርባ ወይም ወገብ 12. ደረት 13. ብዛት ያለው የአከል ክፍልን ያካተተ ጉዳት(ሁለት እና ከዚያ በላይ የአካል ክፍል) 14. ሌላ ካለ ቢገለፅ _____		

206	የጉዳት አይነት	1. መቆረጥ 2. በስለት መወጋት 3. መውደቅ 4. መለላጥ 5. መሰበር 6. የጡንቻ መሰሳብ 7. ውልቃት 8. መቃጠል 9. መታፈን 10. ሌላ ካለ ቢገለጽ _____		
207	ምን ሲሰሩ ነው ጉዳት የደረሰብዎ	1. ቆሻሻ መሰብሰብ 2. ማጠራቀሚያ ላይ ሲጭኑ 3. ቆሻሻ ሲያነሱ 4. ቆሻሻ ሲያወርዱ 5. የቆሻሻ ማጎጓዣ ላይ ሲጭኑ 6. የቆሻሻ ማጎጓዣ ሲገፉ 7. ሌላ ካለ ቢገለጽ _____		

ክፍል ሶስት: ከስራ ጋር ግንኙነት ያላቸው ጉዳዮችን እና የግለሰቡን ሰነምግባር በተመለከተ

ተ.ቁ	መጠይቅ	መልስ	እለፍ	ኮድ
301	አልኮል ትጠጣለህ/ጫለሽ	1. አዎ 2. የለም	የጥያቄ ቁ. 301 is የለም ከሆነወደ ጥያቄ ቁ. 304	
302	የጥያቄ ቁ301 መልስ አዎ ከሆነ ለምን ያህል ጊዜ?	1. በየቀኑ 2. በቀን ወይም በሳምንት ከ1 እስከ 3 ጊዜ. 3. አልፎ አልፎ		
303	በቀን ምን ያህል ሞጠን ይወስዳሉ?	1. ከ1 እስከ 2 ብርጭቆ/ጠርሙስ/ጣሳ 2. ከ3 እሰከ 4 ብርጭቆ/ጠርሙስ/ጣሳ 3. ከ 5 እስከ 6 ብርጭቆ/ጠርሙስ/ጣሳ		
304	ጫት ይቅማሉ?	1. አዎ 2. የለም	የጥያቄ ቁ. 304 is የለም ከሆነ ወደ ጥያቄ ቁ. 306	
305	የጥያቄቁ 304 መልስ አዎ ከሆነ ለምን ያህል ጊዜ?	1. በየቀኑ 2. በቀን ወይም በሳምንት ከ1 እስከ 3 ጊዜ. 3. አልፎ አልፎ		
306	ሲጋራ ያጨሳሉ?	1. አዎ 2. የለም	የጥያቄ ቁ. 306 is የለም ከሆነ ወደ ጥያቄ ቁ. 308	
307	የጥያቄ ቁ 306 መልስ አዎ ከሆነ ለምን ያህል ጊዜ?	1. በየቀኑ 2. በቀን ወይም በሳምንት ከ1 እስከ 3 ጊዜ.		

		3. አልፎ አልፎ		
308	የእንቅልፍ መዛባት አጋጥምዎት ያውቃል ?	1. አዎ 2. የለም		
309	በሚሰሩት ስራ ደስተኛ ነዎት?	1. አዎ 2. የለም		
310	ሰራዎት ያጨናንቃል ብለው ያስባሉ?	1. አዎ 2. የለም		
311	ጉዳት እንዳይደርስብዎ የስራ ደህንነት መከላከያ መሳሪዎችን ይጠቀማሉ ?	1. አዎ 2. የለም	የጥያቄ ቁ. 311 የለም ከሆነ ወደ ጥያቄ ቁ. 313	
312	የጥያቄ ቁ 311 ምን አይነት?	1. ጓንት 2. መነፀር 3. የፊት መከላከያ/መሸፈኛ 4. ቦቲ 5. ሁሉንም እጠቀማለሁ 6. ሌላ ካለ ቢገለፅ_____		
313	የስራ ደህንነት መከላከያ መሳሪዎችን መጠቀም ማይችሉበት ምክንያት ምንድነው ብለው ያስባሉ	1. የስራ ደህንነት መከላከያ መሳሪዎች እጥረት 2. ከስራ ደህንነት እና ጤንነት ጋር በተገናኘ የሚሰጡ ስልጠናዎች እጥረት 3. . የስራ ደህንነት መከላከያ መሳሪዎች የምቾት ችግር 4. ስራ አፈፃፀም ላይ ዕክል ሰለሚፈጠር 5. Decrease work performance 6. የጤና እና ደህንነት አዳጋ ስላለው 7. ሌላ ካለ ቢገለፅ_____		
314	ከአዲሱ ስራ ወይም ከ አዲስ የስራ መሳሪያዎች ጋር በተገናኘ የስራ ደህንነት ሥልጠና አግንኝተው	1. አዎ 2. የለም		

	ያውቃሉ?			
315	የስራ ደህንነት መከላከያ መሳሪዎችን ጋር በተገናኘ ያገኙት የስልጠና አይነት	1. የስራ ላይ ሥልጠና 2. መሰረታዊ ስልጠና 3. ሌላ ካለ ቢገለፅ_____		

ክፍል አራት፡ የምልከታ ቼክሊስት

No.	በምልከታ የሚታዩ ጉዳዮች	መልስ	ምርመራ
(የስራ ደህንነት መጠበቂያ ቁሳቁስ ወይም መሳሪያ)			
1	የእጅ ጓንት ሁኔታ	1. አዲስ 2. የተቀደደ 3. ውሃ የማያሰርግ 4. ውሃ የሚያሰርግ 5. የእጅ ጓንት በትክክል የለበሱ 6. የእጅ ጓንት በትክክል የለበሱ 7. ሌላ ካለ ቢገለፅ _____	
2	የፅዳቶች የስራ ደህንነት ልብስ ሁኔታ	1. አዲስ 2. የተቀደደ 3. ውሃ የማያሰርግ 4. ውሃ የሚያሰርግ 5. የእጅ ጓንት በትክክል የለበሱ 6. የእጅ ጓንት በትክክል የለበሱ 7. ሌላ ካለ ቢገለፅ_____	
3	የፅዳቶች የፊት ጭምብል ሁኔታ	1. አዲስ 2. የተቀደደ 3. ውሃ የማያሰርግ 4. ውሃ የሚያሰርግ 5. የእጅ ጓንት በትክክል የለበሱ 6. የእጅ ጓንት በትክክል የለበሱ 7. ሌላ ካለ ቢገለፅ_____	
4	ጽዳቶች የሚጠቀሙት የጫማ አይነት	1. ቦቲ 2. አጫጭር የጫማ አይነቶች 3. ስሊፐር 4. በባዶ እግረ 5. ሌላ ካለ ቢገለፅ_____	
5	ጽዳቶች የሚጠቀሙት የጫማ ሁኔታ	1. አዲስ 2. የተቀደደ 3. ውሃ የማያሰርግ 4. ውሃ የሚያሰርግ 5. የእጅ ጓንት በትክክል የለበሱ	

		6. የእጅ ጓንት በትክክል የለበሱ 7. ሌላ ካለ ቢገለፅ_____	
የቆሻሻ ማጠራቀሚያ እቃ ሁኔታ			
1	የቆሻሻ ማጠራቀሚያ ተፈጥሯ ሁኔታ	1. ከእንጨት የተሰራ 2. ከብረት የተሰራ 3. ሌላ ካለ ቢገለፅ _____	
2	የቆሻሻ ማጠራቀሚያ አይነት	1. ተንቀሳቃሽ 2. የማየንቀሳቀስ 3. ሌላ ካለ ቢገለፅ 4. _____	
3	የቆሻሻ ማጠራቀሚያው ልስላሴ ሁኔታ	1. ለስላሳ 2. ሸካራ ወይም ስለታማ	
4	የቆሻሻ ማጠራቀሚያ ተፈጥሯ ሁኔታ	1. የተቀደደ 2. ያረጀ 3. በጣም የሞላ 4. ሌላ ካለ ቢገለፅ _____	

13. Curriculum vitae (brief account)

AYZOHBEL ABEJEFENTIE

1. PERSONAL DATA

Born 01 September, 1990

Sex Male

Marital status married

Citizenship Ethiopian

Language Amharic – Mother tongue

English – read, write, listen and speak

Address Mobile – 0912932357

Email: ayzaaabeaa@gmail.com

Current work place: Arada sub city health office

2. Education

BCS Environment health training completed in Hawassa University, July, 1993

3. Current work

Primary health care and health extension program officer in Arada sub city health office

4. Regular job: (Previous and Current)

I. Preparing supportive structured checklists

II. Preparing monthly, quarterly and annual plan and reports

III. Preparing different budget proposals

IV. Supporting health extension workers and health extension program supervisors

V. Providing feedbacks to health extension workers and health extension program supervisors

VI. Preparing review meeting to discuss on the gaps and establishing solution

VII. Providing trainings to the health extension workers, health extension program supervisors and health center health professionals