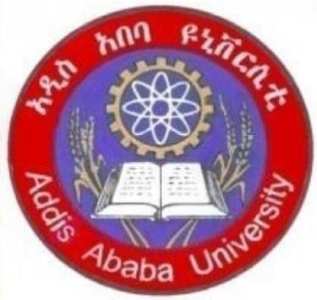

Assessment of occupational injury and associated factors among workers of Ayka Addis Textile factory in Sebeta, Oromia Region, Ethiopia: Institutional-based cross sectional survey.

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Addis Ababa- Ethiopia

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ACRONYMS AND ABBREVIATION

AAU	Addis Ababa University
CSA	Central Statistical Agency
DC	Data Collector
ETB	Ethiopia Birr
GDP	Gross Domestic Product
ILO	International Labor Organization
OSH	Occupational Safety and Health
PI	Principal Investigator
PPE	Personal Protective Equipment
SPSS	Statistical Product and Service Solution
US	United State
WHO	World Health Organization

ABSTRACT

Background: Occupational injury is unintentional physical damage resulting from accident while at work. Studies in developing countries indicated that occupational injury due to unsafe working conditions is increasing. There existed limited data on occupational injury among textile factory workers using improved technology in Ethiopia.

Methods: Institution-based cross-sectional study was conducted among workers of Ayka Addis Textile factory from February 20-30, 2019 in Sebeta town. Stratified sampling followed by simple random sampling technique was used to select 382 participants. Data were collected via face to face interview using structured questionnaire and observational checklist. Epi data version 3.1software was used for data entry and SPSS version 20 software package were used for its analysis. Descriptive statistics mean, frequency and percent bivariate analysis were performed. Variables with 95% confidence intervals and P value at <0.2 during the bivariate analysis were included in the multivariate logistic regression analysis to see the effect of confounding variables.

Results: Overall annual prevalence rate of injury was156 (40.8%) 95%CI (36.4, 45.4) and 408 injuries per 1000 textile workers. Of the total 156 injured respondents 59 (15.4%) were hospitalized, the main cause of injury were falling 49 (31.4%) from slippery or wet floor and exposure to dust/noise 28 (17.9%). Using Personal protective equipment (PPE) on duty and sleeping disorder were statistically significantly associated with occupational injury. The odds Ratio of occupational injuries were 10.704 times higher among non-users PPE when compared with user (AOR [95%CI] = 10.704 [4.087, 28.034]). Sleeping disorder increased the odds Ratio of occupational injuries by about ten folds as compared to those who are not have sleeping disorder (AOR [95%CI] = 10.014 [5.260, 19.063]).

Conclusion and Recommendation: The report of this study indicated relatively higher prevalence of injury among textile employees compared to other studies. So the use of PPE by workers at workplace is essential element to prevent their exposure or risk to work hazard, injuries, illness, and death.

Key words: Occupational injury; Prevalence; Factors; Textile factory workers.

1. INTRODUCTION

1.1 Background

Occupational injuries pose a major public health and development problems in work places. Workplace related injuries are by large preventable with the use of appropriate occupational safety and health services. Occupational injury is unintentional physical damage resulting from work related accident (1, 2).The textile sector contains many hazards and risks to workers, ranging from exposure to noise and dangerous substances, to manual handling and working with dangerous machinery (3).

Textile industry was the second largest sector with a high percentage of work-related injuries, accounting for 28.7%, following the metal industry and machinery in Turkey (4). Sub-Saharan Africa appears to have the greatest rate per worker of occupational injuries followed by Asia (excluding China and India) (5). According to the Central Statistical Agency (CSA) reports in Ethiopia, the textile industry accounts for 1.7%-2.13% of the major industries and 8%-12.1% of the persons engaged in work (6, 7). There are particularly serious data limitations in the area of work-related diseases and occupational accidents, especially in developing countries. This is due to factors including long latency of many diseases before the symptoms are detected and the weakness in the national capacity for identification, diagnosis and compensation of occupational diseases (8). The textiles sector poses many hazards that can cause injury to workers, from transport in the workplace, exposure to excessive noise and harmful substances, dangerous large work equipment and plant, risk of slips from a wet working environment, manual handling and working with unsafe machinery to risks of fire and explosions (9). A higher prevalence (36.7%) of occupational injury was observed among textile factory workers in Northern Ethiopia (3).

In developing countries, occupational injury is one of an epidemic problem in the field of public health as defined by the World Health Organization (2). It is the risk of having work-related injury is 10 to 20 times higher than that of developed countries (10, 11).

In developing countries like Ethiopia the death rates among workers are higher than that of developed countries, and occupational injuries and disease are largely un documented, and also the occupational health and safety measures implemented in the will of politically (12).

The majority of developing country like Ethiopia, occupational health and safety aspect has been given less attention and workers who have been done in textile industry are work related injury occur very high. This is due to illiteracy, poverty, lack of health, and safety training and information on health hazards and risks at the workplace (13). Additionally, there is no systematic recording system for occupational injury among the workers in production area. However, occupational injuries among these workers were high due to different factors and there was no any measure taken before to prevent and control occupational injury in production workers due to lack of scientific information (14).

Ethiopia has over 115 garment factories. Approximately half of these firms are small and medium sized enterprises (SMEs) that employ between 500-1000 workers; the other half are foreign owned and are largely controlled by Chinese, Indian and Turkish Investors. One of the large firms that run substantial Ethiopian operations is Ayka Addis, the Ethiopian subsidiary of the Turkish textile giant Textiles, Ayka Addis made an investment of US$140 million in Ethiopia. Ethiopian factory in 2014 and is expected to create jobs for more than 10,000 people (15) where its current workforce reaches 4736.

1.2 Statement of the problem

Globally, about millions of working age group peoples are working under poor and risky working conditions; due to these occupational injuries and diseases continue to be the leading cause of work-related deaths (16).

Recently WHO/ILO report shows that every 15 seconds, a worker dies from occupational accident or disease (17). Every 15 second, 153 workers have, every day, 6,300 people die as a result of occupational accidents or work-related (16).

Textile industries are technologically complex industries which predispose workers to occupational hazards from processing unit to the manufacturing, finishing, dyeing and packaging where workers are exposed to cotton dust, noise, accidents, and injuries (18).As a result of exposure to chemical, biological, dust, fibers, and physical agents, as well as accidents in the workplace there will be direct and indirect costs. The direct cost include compensation and treatment costs for injured workers and the indirect costs was

related to loss of time spent by injured and family members to take care the ill or injured worker and additional cost for training for the new workers (19).

Employers are responsible to provide and orient/aware the workers in utilization of PPE for their workers to protect from occupational injury and to prevent unnecessary costs the workers has to accept the orientation given by employers to make safe and healthy working atmosphere but most of the time workplace hazards not followed properly in developing countries (20).

Although some studies are done on the factors like socio-demographic, work environment and behavioral, affecting occupational injuries among textile workers in few factories in Ethiopia (3, 21), information on occupational health and safety in textile industry is still minimal and other studies done in Ethiopia showed there is a great difference in utilizing of PPE the gap in using available PPE, lack of information given shortage of clear guideline regarding employer in providing PPE makes the workers not using PPE hence exposed to different hazards (20). Furthermore, there are limited studies that specifically determine the magnitude and associated factors of the problem in textile workers.

1.3 Rationale of the study

Studies conducted in Ethiopia about occupational injury in textile factories are very few. On the other hand progress of industrialization makes the problem more complex to prevent occupational hazards preparing a clear guideline, and further investigation to know the prevalence of occupational injury and factors that aggravate injury in textile industry (22).So this study will be conducted to fill the gap in relation to occupational injury and associated factors in Ayka Addis textile factory found in Sebeta town.

1.4 Significance of the study

Investigating the source of occupational injury and associated factors in industries 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. The findings of the study are hoped to contribute to the planning and implementation of interventions to prevent the occupational injury among workers of textile factory, particularly Ayka Addis Textile factory in Sebeta-Oromia Region, Ethiopia.

2. LITERATURE REVIEW

2.1 Over view of occupational injury in textile industry

Occupational safety and health broadly defined as the science of the anticipation, recognition, evaluation and control of hazards arising in or from the place of work that could damage the health and welfare of workers, taking into account the possible impact on the surrounding communities and the general environment (1). Globally, hundreds of millions of people are working in unsafe conditions. Poor perception regarding to working conditions and safety environment had a significant influence on injury occurrence. Most researchers emphasize that work place injuries are caused by poor person environment, which leads to increased job stress and therefore, increases occupational injury risk (23). These studies done in Ethiopia indicated different causes of occupational injury. According to a study done in eleven urban industries in Addis Ababa, it was indicated that being hit by or against objects and falling were the commonest causes of work-related injuries (24).

A Recent simulation of the ILO shows that in Ethiopia the economy lost over US 234 million (7%) annually from 1992-2002 because of labor loss. As a result of many predisposing factors, the situation of OSH in Ethiopia remains to be at its premature stage. Presently, there is no much strength in the OSH system in relation to policy, implementation of legislation, infrastructure, skills, and capacity etc. all in all the weakness predominates (14).

2.2Prevalence of occupational injury in textile industry

The prevalence of work-related injury in the workplace among workers were in USA 39.9% (25),Japan 35.6% (26) and India 22.9% in one year period.

Study conducted in Ethiopia prevalence occupational injury among textile workers show that, Kombolcha textile factory workers 36.7% (3)and Arba Minch textile factory workers 31.4% (27)and also, similar study conducted in Ethiopia among small and medium scale industry and Tendaho Agricultural development Social company workers annually prevalence of occupational injury rate 335/1000 and 783/1000 respectively was recorded per a single year (28, 29).

2.3 Common occupational injuries, causes, and parts of the body affected

The majority research finding shows that the main risk factors for workers in the workplace related to occupational injury are severity, types of injury, and occurrence. Whereas the issue of PPE even if it is taken care by the bargaining, is not well backed by the necessary studies and evaluation of workplace hazards and their impact on health and safety (14).

Most study show that Musculoskeletal disorders like carpal tunnel syndrome, forearm tendinitis, bicipital tendinitis, lower back pain, epicondylitis, neck pain, shoulder pain, and osteoarthritis of the knees are some of the occupational diseases that have been observed among the workers on account of poor ergonomic conditions.

Hand was the most affected body part 54 (39.7%) with laceration 75 (55.1%) and machinery 76 (56%) the major type and cause of injury respectively, in this study. This was consistent with studies conducted in Egypt, Tendaho, Addis Ababa, Kombolcha, and other areas (30-34). His finding may be attributed to the low availability and utilization of Personal Protective Equipment, absence of regular training regarding safety and machine safeguards. Besides, great concern may not be given by both the workers and the managers, assuming lacerations are minor injuries. Regarding to the reasons of injury, absence of Personal Protective Equipment (PPE) 84 (61.8%) was the commonest reason given followed by improper hand working instruments 19 (14%), absence of safety education 14 (10.3%), disorder of normal operation 11 (8.1%), and misuse of PPE 8 (5.9%) respectively (3).

2.4 Factors associated with occupational injury in textile industry

2.4.1 Socio- demographic factors of occupational injury

Most studies show that the socio-demographic variables are significant contributing factor for the occurrence of occupational injury in workplace (21, 28, 35-37).

Association between socio-demographic variables and occupational injury in different investigators result show that significantly association. such as gender significance association with work-related injury both developed and developing countries like Canada (38), Japan (26), Germany (35), China, India, and Ethiopia, male workers were about 2.5 times more likely to report occupational injury than female workers. In another word, the prevalence of occupational injury male had higher risk than female

(21, 28, 32). In contrarily , another study conducted in Ethiopia, Gondar, Afar region, and Addis Ababa shows that female workers had higher occupational injury than a male (29, 39). Occupational injury has on significance statistical association with a gender of the worker (28, 40).

Investigators at different places indicated that younger or < 30 years workers suffer occupational injury at a higher rate than older workers (21, 41-43). The study conducted in India a matched case-control study of occupational injury in underground coal mine workers in India result so that age 45 and above had greater risk for work related injury, however the type of injury had most time occur in under 45 age group (36). In addition, another Case -Control study conducted in Textile Factory Workers in Amhara Regional State Ethiopia, show that there is significance association between ages with occupational injury in the workplace (21, 29) However, the prevalence of occupational injury is no significance association with age (32).

The study was done in India, the socio-demographic factor like education level, age, and marital status had a significant contribution to occupational injury (26, 42, 44). And also recent Cross-sectional study done in Ethiopia, Amhara region among municipal solid waste collectors show that education level, monthly salary, and work experience are significance associated with severe occupational injury (29, 45). On the other hand, educational status of the worker has not significantly associated with magnitude of injury (28, 40).

Institutional based cross-sectional comparative study done in Ethiopia, Gondar among the workers of small and medium scale industry show that, worker experience had highly or significantly association with occupational injury (28, 35, 43). Less experienced in their current job or less familiar with equipment and machinery has the ability to increase the risks of work place accidents (41). Institutional based cross-sectional study done in Arba Minch Textile Factory, Southern Ethiopia: showed the one year prevalence of occupational injury was (31.4%). Lower monthly salary was associated with higher odds of injury among the socio-demographic (27).

2.4.2 Working environment factors of occupational injury

The study conducted in Ethiopia and India regarding the work environment factors, shows that hours worked per week was significantly associated with occupational injury (3, 4, 6). The other study which was done in Adowa Ethiopia Textile industry

showed the associated factors for knowledge level and safe practice of workers are gender, work experience, safety training, work regulation and list of workers' right and obligation towards respondent's knowledge. The study showed the respondents knowledge on safety information was (69%) out of this (54%) of the participants were using PPE safety training and regular supervision were the main factors (46).

2.4.3 Behavioral factors of occupational injury in textile industry

Both developed and developing countries the major determinant or risk factors of occupational injury in workplace are workplace stress, tobacco, and drug and alcohol consumption in the workplace (30, 47). Different investigators emphasize that factors work-related injuries are the use of personal protective equipment, work experience, and chat chewing were greatly associated (1, 21, 30, 39, 48).

Cross- sectional study conducted among municipal solid waste collector in Ethiopia show that Utilization of personal protective equipment (PPE) in the household was statistically associated with injury. As compared to workers who used personal protective equipment while being on duty, odds of injury among workers not used personal protective equipment was 2.62 higher (49). A similar study also conducted in Ethiopia odds of occupational injury among non-users was 1.5 times higher than personal protective equipment(PPE)users (28). Another study done in Ethiopia among municipal solid waste collector workers, work experience, monthly salary, job category, sleeping disturbance, and job related stress was significantly associated with occupational injury (45).

A case-control study done in India showed that illiteracy, alcohol consumption, big family, and disease and risk-taking behavior was associated with injury(13, 50). Study done in Adwa Ethiopia showed use of PPE was (54%) among this, (84%) of the respondents were using PPE always, the rest (16%) used some times (46).

Finally, the prevalence and factors that contribute the occurrences of injury in workplace in Ethiopia not well studied. And also, the difference between occupational injury PPE user and non-PPE user among textile worker are not studied. So, this study will provide baseline information for policy makers to design strategy, to give priority to prevention and control of occupational injuries to have healthy workforce and sound economic development. The result of this research is expected to be important for

practitioners and researchers on how to deal with, incorporate and identify problems related to ergonomic aspects to assess work-related injuries in the textile industry.

Conceptual frame work

Methodological approaches towards scientific inquiry characterize a particular discipline. It is also important to articulate the pathways by which an intervention is expected to cause the desired outcomes and provides evaluator with specific elements to assess the relationship between occupational injury and factors that affect the presence or absence of occupational injury. It was developed by referring different literatures to fill the gap in present investigation. The main components of this conceptual framework are:-

- Working environment factors
- Socio-demographic factors
- Behavioral related factors

By observing this core components we can conceptualize how occupational injury is determined by these core factors.

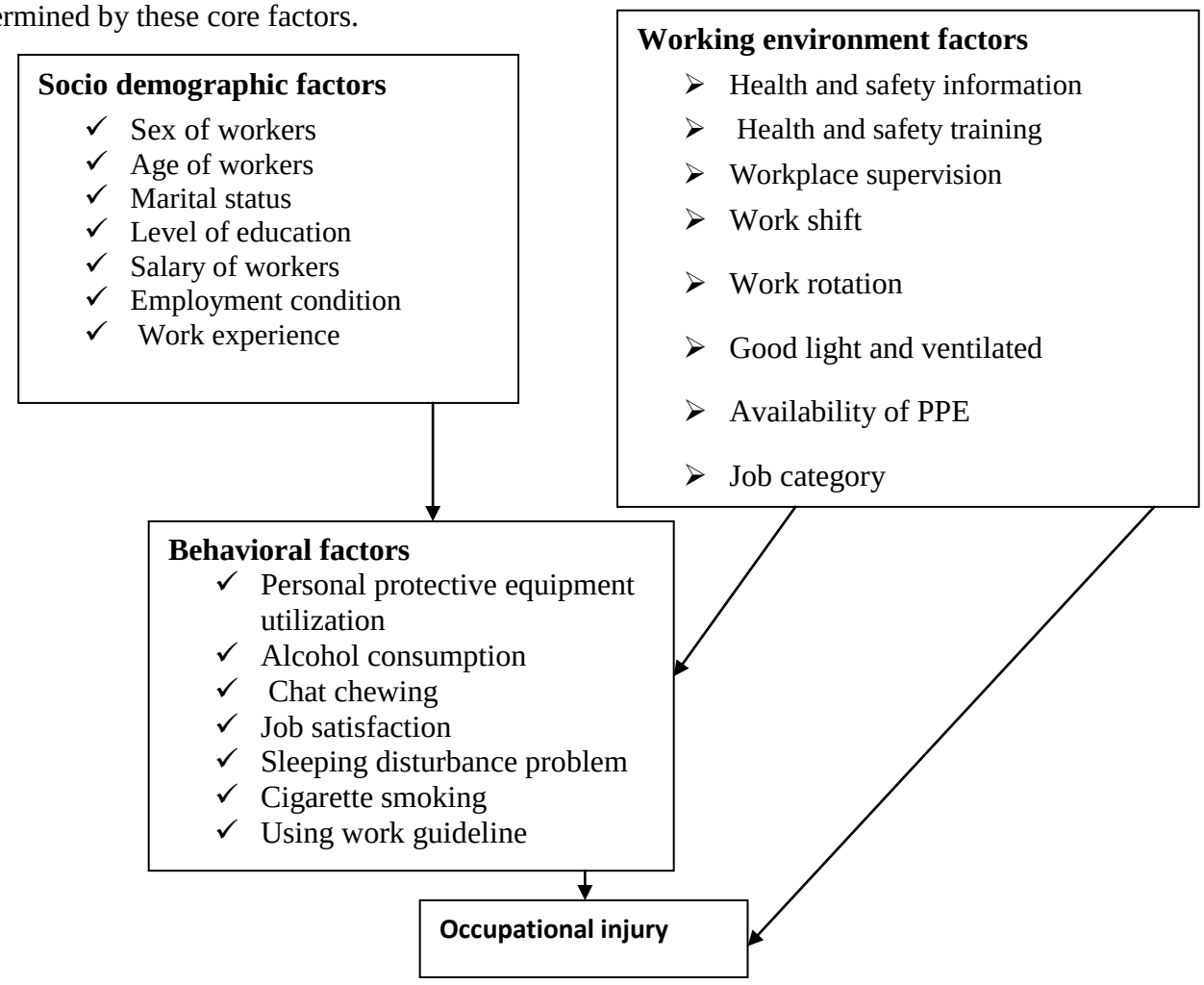

Figure 1 Conceptual framework from my literature review

In summary, the conceptual framework (figure-1) illustrates that, there are several factors influencing occupational injury such as socio- demographic factors, working environmental factors and behavioral factors.

The relationship between factors that may contribute to increase or decreases occupational injury shows the socio-demographic and working environment related factors influence the behavioral factors, which play great role for the occurrence of occupational injury. Especially use of personal protective device and personal behavior which potentially influence the presence and absence of occupational injury in the textile factory.

The findings of the study are hoped to contribute to the planning and implementation of interventions to improve the occupational injury among textile factory workers.

3. OBJECTIVES

3.1 General objective

- ✓ The aim of this study is to assess the prevalence of occupational injury and associated factors among workers of Ayka Addis Textile factory in Sebeta-Oromia Region, Ethiopia.

3.2 Specific objectives

- ✓ To determine the prevalence of occupational injury among workers of Ayka Addis Textile factory.
- ✓ To identify factors associated with occupational injury among workers of Ayka Addis Textile factory.

4. METHODS AND MATERIALS

4.1 Study area

The study was conducted in Ayka Addis Textile factory, Ethiopian subsidiary of the Turkish textile giant Ayka textile, inaugurated in 2010 its factory at a cost of US$140 million at Sebeta, which is 20km west of Addis Ababa, that create a job for more than 4736people. There is an insurance mechanism for workers that may be injured during work in the factory. The factory owns a clinic, which is functional for 24 hours a day inside its compound. The factory uses cotton to manufacture towels and bed sheets for export. The factory production process flow includes: the cotton passes the blowing and feeding processes in carding section. Then proceed to drawing, roving, ring frames, and open end (winding). Finally, it is warped, sized, and checked for quality through brushing and folding in the weaving department. Ayka Addis has the capacity to export textile products worth US$100 million a year per annum. I select this factory by argument from textile factory found in Sebeta town because its large scale textile that contains high number of workers and it's integrated with full components starting from raw materials to the finished products where the level exposure for occupational hazards and associated effects could be different across all departments.

4.2 Study design and period

Institution based cross-sectional study design was conducted to assess the prevalence of occupational injury and associated factors among workers of Ayka Addis Textile factory in Sebeta-Oromia Region, Ethiopia from February 20-30, 2019.

4.3 Population

4.3.1 Source population

The source populations were all workers found in Ayka Addis textile factory.

4.3.2 Study Population

The production workers involved in spinning, packaging and loading unloading, dyeing, garment, knitting and quality control works in Ayka Addis textile factory who worked permanently for at least one year were studied.

4.4 Inclusion and Exclusion Criteria

4.4.1. Inclusion Criteria

All employees who were involved in the production process in the last 1 year were included in the study until the required sample size was obtained.

4.4.2. Exclusion criteria:

Factory production workers who were seriously ill or hospitalized were excluded. Workers who are absent from work for any reason during the time of data collection were excluded from the study.

4.5. Sample size determination

For the first objective:

For the first objective, sample size was calculated by using single proportion formula based on the following assumption, the prevalence of occupational injury among textile worker is 36.7% (3).This proportion where taken from study done in Kombolcha textile factory because its relatively high prevalence than study done in Arba Minch.

$$n = \frac{\left[\left(Z\frac{\alpha}{2}\right) 2 * p(1-p)\right]}{d2}$$

- ✓ Where sample size Proportion of work-related physical injury score; P = 36.7%
- ✓ Z α/2- standard normal distribution = 1.96, CI- Confidence interval = 95%
- ✓ d-margin of error (5%) n= (1.96)2 (0.5) = 357

Add as non-response rate 10% of the total sample size = **393** workers

The sample size for the second objective: was calculated by using double population proportion formula.P1 = 62.3% (51) and P2= 79.4% (27).

$$n1 = \frac{\left[Z\frac{\alpha}{2}\sqrt{\left(1+\frac{1}{r}\right)P(1-P)} + Z\beta\sqrt{P1(1-p1) + \frac{p2(1-p2)}{r}}\right]2}{(P1-P2)2}$$

Where

n1 = Number of sample, P1= proportion of occupational injury among PPE users = 62.3%, P2= proportion of occupational injury among PPE non-users = 79.4%

Z $\alpha/_2$=0.05 the probability of committing try or error (1.96)**, β**= the probability of rejecting a true difference 20%**.** If OR=2.3 n=244; if OR=1.5 n=912; and if OR=2 n=344 by using Epi Info version 3.5.1.

From these three sample size I took the sample size with OR=2 because this feasible and manageable which is (**n= 344)**

By considering 10% non-response rate $\mathbf{n}_{total} = 378$

The final sample size for this study was **393** which are the largest to satisfy the two specific objectives.

4.6. Sampling procedures

Stratified simple random was used to select the study subject. The exposure level to injury among different department is not uniform. Therefore, using stratification in to six different strata namely spinning, packing and loading unloading, dyeing, garment, knitting and quality control the number of samples from each stratum is determined by using proportional allocation formula. Finally, 393 study populations were included by simple random sampling technique.

Finally, reaches each study population was used stratified simple random sampling technique by worker payroll list**,** and then interview the selected worker.

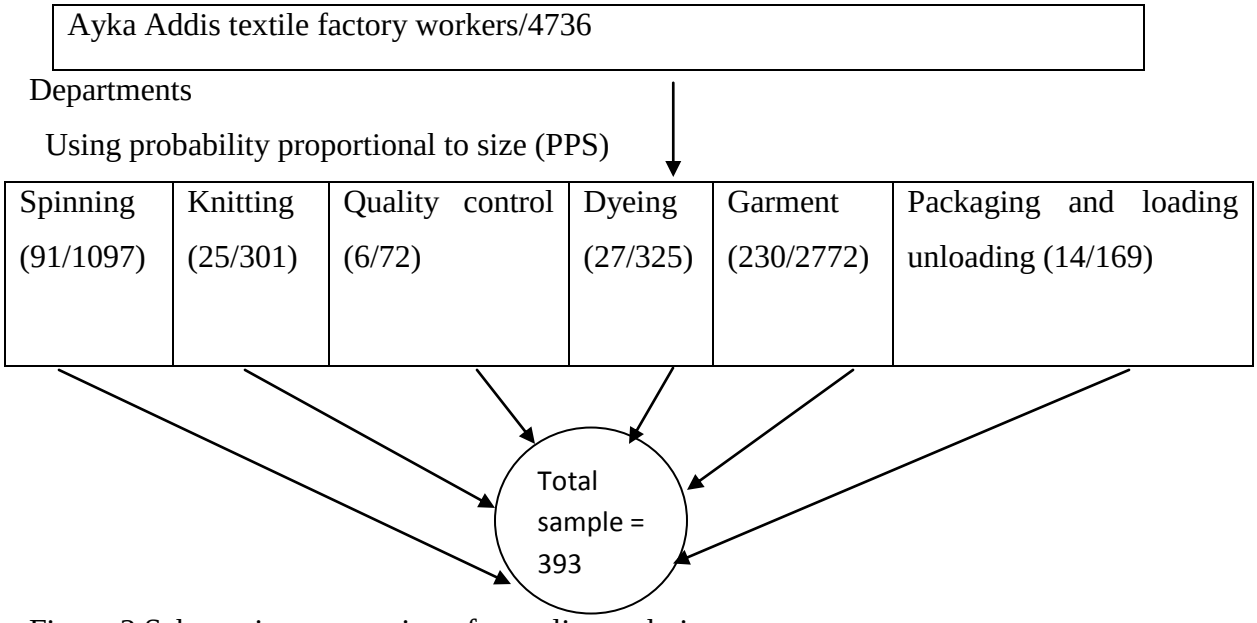

Figure 2 Schematic presentation of sampling technique

4.7. Data collection procedure

Data were collected using pretested, structured Amharic and Afan Oromo version questionnaire via face to face interview of the study participants. The questionnaire focused on socio demographic, behavioral, and environmental factors that can determine an occupational injury within the production area. And also, we used observational cheek list for cross check mechanism. Data were collected by ten BSc environmental health professionals and two supervisors who have BSc in Environmental health (MPH) after two days of training: - Data collectors are recruited and trained with the inclusion and exclusion criteria for workers in factory. Additionally the principal investigator checked the completeness of questionnaires during data collection.

4.8. Operational Definitions

- **Alcohol drinker**: An employee who drinks alcohol at least five drinks per week for men and two drinks per week for women for at least 1 year (29).
- **Cigarette smoker:** An employee who will be smoking one cigarette a day or occasional for at least 1 year (52).
- **Job satisfaction:** a state of pleasurable emotional feeling reported by the worker as the result of one's job. It is a subjectively perceived response of in study participants to their job (45).
- **Chat chewer:** An employee is chewing chat/a mild psychoactive substance/ three times a week for at least 1 year (52).
- **Occupational injury**: For the purpose of this study defined as any physical injury condition sustained by the workers in connection with the performance of his/her work that caused damage to workers by referring medical evidence for the past one year prior to this study (40).
- **Permanent employee:** Any contract of employment between employee and employer concluded for an indefinite period (40).
- **Utilization of Protective Equipment:** Use of all the necessary worker-specialized clothing or equipment by workers for protection against health and safety hazards in the workplace the necessary worn PPE at the time of data collection noted by observation were (Glove, Ear plug, Respirators, Helmet,

Overalls, Goggles; Face shield and Boots /shoes) that necessary to be worn during a particular activity (21).

- **Sleeping disorder**: The presence of sleeping problems when the worker is at work in the factory that occurred due to workers spending more than eight hours without shifting working in evening, trying to work more than one task at a time, excessive heat at the work place, *etc. (21).*
- **Temporary employee**: any employment contract between employee and employer made for defined period (40).

4.9. Study Variables and Measurement

4.9.1. Dependent Variables

- Occupational injury (Yes, No).

4.9.2. Independent variables

- Socio-demographic factors:- Sex (male, female), Age (years), Religion(Orthodox, Muslim, Protestant, Catholic and others), Marital status (Married, Single, Divorced, Windowed, Separated), Educational status (Illiterate, read and write, primary school(1-8), secondary school(9-12), technical and vocational, degree or higher), working experience (years), employment condition (temporary, permanent) and salary of workers (ETB/month).
- Organizational factors:- Health and safety information (Yes, No), availability of PPE(Yes, No), Health and safety training(Yes, No), Health and safety supervision(Yes, No), Work shift(Yes, No), Work rotation(Yes, No), good light and ventilated(Yes, No) and job category (spinning, packaging loading unloading, dyeing, garment, knitting and quality control)
- Behavioral factors (smoking cigarette (Yes, No), chewing chat (Yes, No), sleeping disturbance problem (Yes, No), alcohol consumption (Yes, No),job satisfaction (Yes, No), used work guideline (Yes, No) and personal protective equipment utilization (Yes, No).

4.10. Data management

Two days training was given for data collectors and supervisor giving emphasize to the purpose of the study, data collection instruments, field methods, the questionnaire, process of assigning study participants, and ethical concerns during data collection**.**

The supervisors and principal investigator were carrying out close supervision of the data collection. Data were checked for its completeness by supervisor and investigator daily. Data entry was conducted using the Epi Data version 3.1 and then exposed to SPSS version 20 software packages for further analysis.

4.11. Data analysis

1st specific objective

SPSS version 20 used for data analysis. Descriptive statistics such as frequency distribution, percentage; mean, standard deviation and median were employed for the variables. Principal investigator performed descriptive analysis that presents the results.

2nd objective

All independent variables were separately put into bivariate logistic regression model to evaluate the degree of association with injury and Crude Odds ratio with 95% confidence intervals and significance level at P< 0.05 were used to see the association between determinant factors and occupational injury.

Multivariable logistic regression: analysis, variables with 95% confidence interval and P-value <0.20 during the bivariate analysis were included in the multivariable logistic regression were done by controlling confounders (39). Adjusted odd ratios with 95% confidence interval were calculated.

4.12. Data quality assurance

The quality of the data was maintained before, during and after the data collection. Before the data collection designing/adapting structured standard questionnaire, two days training of data collectors and supervisors about the objective, questionnaire, methodology and ethical issues of the study, and the interview questionnaire was pre-tested on 20 respondents at Jay Jay textile factory in order to identify potential problem areas, unanticipated interpretations and cultural objections to any of the questions. Based on the pre-test results, the questionnaire was adjusted contextually. During the data collection period, the collected data was checked for completeness and

consistencies by the supervisors and the investigator through close follow up. Missed variable/s during the first visit was filled by re-interviewing the study participants. After the data collection, the collected data was rechecked for its completeness and consistency by the supervisors and principal investigator.

4.13. Ethical consideration

The study was conducted after getting ethical clearance from research ethics committees of the School of Public Health, AAU. Support letter was written to Ayka Addis Textile Factory Administration. The objective of the study, expected benefits and risks, then how long it takes the interview and the fact that they have the right to decide not to participate or discontinue the interview were informed to participant. Privacy and confidentiality were ensured. For each participant were reassured oral informed consent for confidentiality of the information they provide to this study on unsigned questionnaires. The explanations and interviews were conducted by respondent's local language, Afan-Oromo and Amharic. If there were an incident that results in injury to the worker while interviewing, first aid service and immediate referral to the surrounding clinic were arranged prior to the data collection. However, injured study participants informed on common causes and methods of preventing occupational injuries by the interviewer after completing the interview. Average exposure group provided to factory administration on request.

4.14. Dissemination plan

A detailed report of this study which consists of the main findings will be disseminated to Ayka Addis Textile Factory, Addis Ababa University, School of Public Health, Sebeta City Administration, Oromia Industry Bureau, Oromia Labour and Social Affair Bureau, Oromia Health Bureau, Ministry of Industry and Ministry of Labour and Social Affair. In addition effort will be exerted to Present on different conference and publish the study findings in the scientific journal.

5. RESULTS

5.1. Socio-demographic characteristics

A total of 382 participants were interviewed for this study with a response rate of 97.2%. Of the total participants, 260 (68.1%), were female workers, under the age of 30 years350 (91.6%) and the mean age was 24.67 (SD ±3.73). Regarding the marital status of workers, majority of them were single 217 (56.8%), about educational level of worker 199 (52.1%) completed secondary level. Majority of the participants, 225 (58.9%) are orthodox followers, 366 (95.8%) are permanently employed workers and about 256 (67%) were below five years' work experience; the mean of the monthly salary of the workers were 2163.935 (SD ±917.060) (Table 1)

Table 1 Selected socio-demographic factors among workers in Ayka Addis Textile factory, Sebeta-Oromia Region, Ethiopia, April, 2019.

Variable	No.	Percent (%)
Sex		
Female	260	68.1
Male	122	31.9
Age		
≤29	350	91.6
≥30	32	8.4
Educational status		
Illiterate	3	0.8
Read and write	6	1.6
Primary school (1-8)	8	2.1
Secondary school (9-12	199	52.1
	126	33.0
Technical and vocational	40	10.5
Degree or higher		
Work experience in textile		
≤5 years	250	65.4
	132	34.6
>5years		
Monthly salary		
≤2000 ETB	218	57.1
	164	42.9
>2000 ETB		

5.2. Availability and utilization of personal protective equipment

Only 23.6% of the respondents utilize PPE on duty and 38(42.2%) used Mask (respiratory), among PPE utilize on duty respondent 27 (30%) were used PPE all times. The majority of worker's reasons for not use PPE were not fill discomfort and no access. Among PPE user on duty respondent 92.2% of PPE supplied by institution and the rest bought by workers by themselves. (Figure 3 and table 2).

Table 2 Availability and utilization of PPE and safety training of Ayka Addis Textile Factory workers, Sebeta-Oromia Region, Ethiopia, April, 2019.

Variables	Frequency	Percent (%)
PPE on duty (n=382)		
Yes	90	23.6
No	292	76.4
PPE all the time (n=90)		
Yes	27	30
No	63	70
From where do you get PPE (90)		
Supplied by institution	83	92.2
You buy it for yourself	7	7.8
Reason for not use PPE on duty and all time(355)		
Not to fill discomfort	107	30.1
To safe time	11	3.1
Not aware of risk	26	7.3
No access	211	59.4
Health and safety information (n=382)		
Yes	199	52.1
No	183	47.9
Health and safety training (n=382)		
Yes	157	41.1
No	225	58.9

5.3. Behavioral associated variables

Among the total of respondent only 14 (3.7%) smoke cigarette, 17 (4.5%) drink alcohol and 7 (1.8%) chew chat, 151 (39.5%) have sleeping disorder, 240 (62.8%) of workers did not satisfied on their job/works/ and 35 (9.2%) of workers were not use guideline during their job/works/.

Table 3 Distribution of behavioral factors among workers of Ayka Addis Textile factory in Sebeta-Oromia Region, Ethiopia, April, 2019 G.C.

Variables	Frequency	Percent (%)
Smoke cigarette (n=382)		
Yes	14	3.7
No	368	96.3
Drinking alcohol (n=382)		
Yes	17	4.5
No	365	95.5
Chewing chat (n=382)		
Yes	7	1.8
No	375	98.2
Sleeping disorder (n=382)		
Yes	151	39.5
No	231	60.5
Job satisfaction (n=382)		
Yes	142	37.2
No	240	62.8
Using work guideline (n=382)		
Yes	347	90.8
No	35	9.2

Among the total 90 (23.6%) who are use at list one PPE. Majority workers use masks (respiratory) 38 (42.2%).

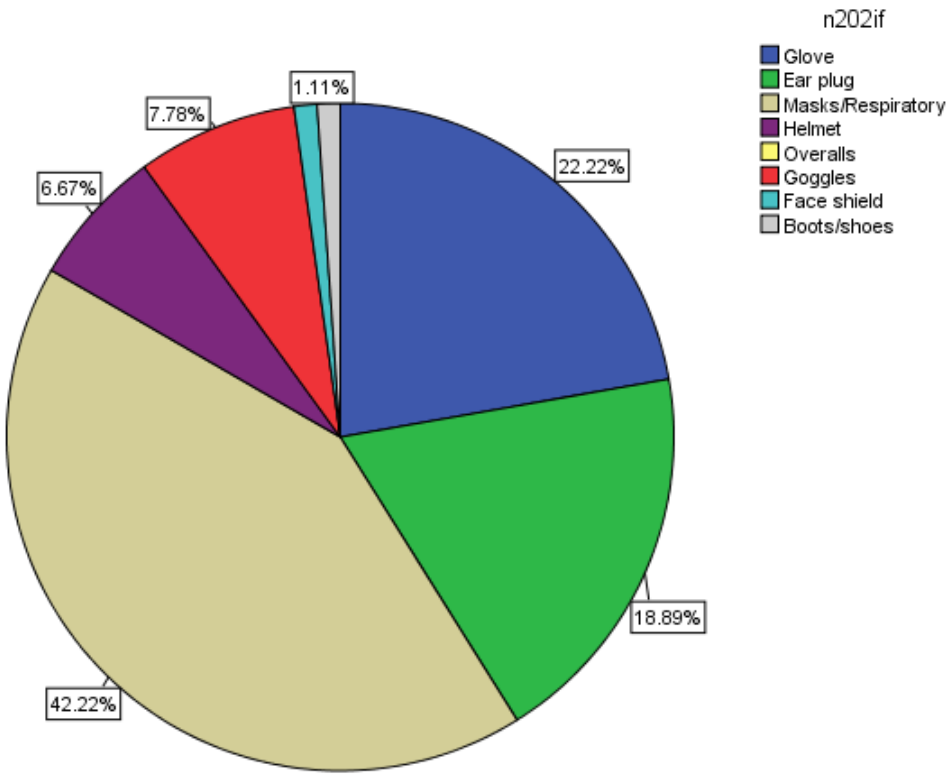

Figure 3 Types of protective equipment used by Ayka Addis Textile Factory workers, Sebeta-Oromia Region, Ethiopia, April, 2019 G.C.

5.4. Prevalence of occupational injury

The prevalence of occupational injury in the last 12 month was 156 (40.8%) 95%CI (36.4, 45.4).Upper back 49 (31.4%) and wrists/hand 34 (21.8%) were the most injured body part of respondent. The result shows that types of accident occur in workers were falling by slippery or wet floor 49 (31.4%), exposure to dust/noise 28 (17.9%), falling from height 22 (14.1%), chemicals burn 18 (11.5%) and falling by object 15 (9.6%) respectively. The two weeks incidence rate of occupational injury was 36 (9.4%) (Table 4).

Table 4 Distribution of injured body parts and types of injuries during last one year among workers of Ayka Addis Textile in Sebeta-Oromia Region, Ethiopia, April, 2019 G.C.

Variables	Frequency	Percent (%)
Occupational injury		
In the last 12 month (n=382)	156	40.8
In the last two week	36	9.4
Injured body part (n=156)		
Neck	9	5.8
Shoulders	4	2.6
Elbows	5	3.2
Wrists/hands	34	21.8
Upper back	49	31.4
Lower back	13	8.3
Hips/thighs	6	3.8
Knees/ankles	6	3.8
Feet/fingers	9	5.8
Eye	12	7.7
Others	9	5.8
Causes of injury (n=156)		
Falling from height	22	14.1
Falling by slippery or wet floor	49	31.4
Falling by object	15	9.6
Cuts	14	9
Chemicals burn	18	11.5
Exposure to dust/noise	28	17.9
Exposure to light/heat	4	2.6
Visual concentration	4	2.6
Others	2	1.3

5.5. Working environment related variable

Respondents were asked about health and safety information 183 (47.9%) workers did not have information. 155 (40.6%) of workers were not done regular health and safety supervision work place and 225 (58.9%) of did not have safety training in connection with new employment, equipment, or work process.

5.6. Observational finding

Regarding to observational result of this study all most all environmental health and safety factors in textile production area such as equipment not put in correct place, sign of warning and safety rule, first aid equipment, work rotation, training of workers, supervision of work place by safety professionals, PPE utilization and supply, loading unloading activities with forklift were not fulfilled within the working site.

5.7. Bivariate analysis

Among socio-demographic variables, monthly salary and work experience had shown significant association with occupational injury.

Regarding monthly salary workers who had earn less than or equal to 2000 ETB were 2.158 times higher occupational injured than those of earn monthly salary greater than birr 2000 (COR [95% CI] =2.158 [1.410, 3.302]) and also workers who have less than or equal to five year work experience were 3.500 times higher injured than those of worker who have greater than five year work experience (COR [95% CI] =3.500[2.152, 5.227]).

Bivariate analysis of environmental condition with respect to occupational injury, health and safety information (COR [95%Cl] =6.517 [4.131, 10.282]), health and safety training (COR [95%Cl] = 4.055 [2.565, 6.413]), regular work place supervision (COR [95%Cl] = 2.432 [1.596, 3.705]), work shift (COR [95%Cl] = 1.753 [1.138,2.700]), workplace good light and ventilation (COR [95%Cl] = 1.846 [1.217,2.800]), availability of personal protective equipment (COR [95%Cl] = 5.322 [2.704,10.476]) and working department (quality control department (COR [95%Cl] = 0.320 [0.123,0.832]) and dyeing department(COR [95%Cl] = 1.677 [1.020,2.758]) were statically significantly associated with occupational injury. Workers who working didn’t regular health and safety supervision work places were 2.432 higher

occupational injured than those of worker who work regular health and safety supervision work place. (Table 5)

The crude analysis of behavioral determinants of occupational injury use PPE on duty (COR [95%Cl] = 8[3.988, 16.050]), sleeping disorder (COR [95%Cl] = 10.790 [6.659, 17.483]), job satisfaction (COR [95%Cl] = 2.154 [1.387, 3.347]) and using guideline (COR [95%Cl] = 2.356 [1.158, 4.790]) were significantly associated with occupational injury. Workers who couldn't use PPE on duty were 8 times higher injured than those of worker who use PPE on duty (Table 5-7).

Table 5 Selected socio-demographic determinants among workers of Ayka Addis Textile Factory, Sebeta-Oromia Region, April, 2019 G.C.

Variables		Occupational injury (n=382)		COR (95%) CI	P-Value
		Yes	No		
Sex					
	Male	57(46.7%)	65(53.3%)	1.426(0.923, 2.203)	0.110
	Female	99(38.1%)	161(61.9%)	1.00	
Age					
	≤29	143(40.9%)	207(59.1%)	1.010(0.483, 2.110)	0.980
	≥30	13(40.6%)	19(59.4%)	1.00	
Monthly salary	≤2000	106(48.6%)	112 (51.4%)	2.158(2.031, 5.227)	0.001
	>2000	50(30.5%)	114(69.55)	1.00	
Work experience in Ayka Addis Textile factory	≤5	128(50.0%)	128(50.0%)	3.500(2.152, 5.692)	0.001
	>5	28(22.2%)	98(77.8%)	1.00	
Educational status	Illiterate	1(33.3%)	2(66.7%)	1.000(0.004, 2.504)	0.820
	Read and write	5(83.3%)	1(16.7%)	0.500(0.031, 7.994)	0.078
	Primary school (1-8)	4(50.0%)	4(50.0%)	0.728(0.065, 8.167)	0.602
	Secondary school(9-12)	81(40.7%)	118(59.3%)	0.786(0.069, 8.898)	0.934
	Technical and vocational	49(38.9%)	77(61.1%)	0.750(0.063, 8.978)	0.900
	Degree or higher	16(40.0%)	24(60.0%)	1.00	

Table 6. Selected working environment related factors among workers of Ayka Addis Textile Factory, Sebeta-Oromia Region, April, 2019 G.C.

Variables		Occupational injury (n=382)		COR (95%) CI	P-Value
		Yes	No		
Health and safety information					
	Yes	41(20.6%)	158(79.4%)	1.00	
	No	115(62.8%)	68(37.2%)	6.517 (4.131, 10.282)	0.001
Health and safety training					
	Yes	35(22.3%)	122(77.7%)	1.00	
	No	121(53.8%)	104(46.2%)	4.055(2.565, 6.413)	0.001
Workplace supervision	Yes	73(32.2%)	154(67.8%)	1.00	
	No	83(53.5%)	72(46.5%)	2.432(1.596, 3.705)	0.001
Work shift	Yes	93(36.3%)	163(63.7%)	1.00	
	No	63(50%)	63(50%)	1.753(1.138, 2.700)	0.011
Working department	Spinning	43(47.85)	47(52.2%)	1.830(0.712, 4.704)	0.210
	Knitting	8(33.3%)	16(66.7%)	0.915 (0.175, 4.778)	0.961
	Quality control	3(50%)	3(50%)	0.320(0.123, 0.832)	0.019
	Dyeing	20(74.1%)	7(25.9%)	1.677(1.020, 2.758)	0.041
	Garment	78(35.3%)	143(64.7%)	2.287(0.668, 7.834)	1.880
	Packaging loading unloading	4(28.6%)	10(71.4%)	1.00	

Table 7. Selected behavioral factors among workers of Ayka Addis Textile Factory, Sebeta-Oromia Region, April, 2019 G.C.

Variables		Occupational injury (n=382)		COR (95%) CI	P-Value
		Yes	No		
PPE use on duty					
	Yes	10(11.1%)	80(88.9%)	1.00	
	No	146(50%)	146(50%)	8(3.988, 16.050)	0.001
Drinking alcohol					
	Yes	10 (58.8%)	7 (41.2%)	2.143	0.131
	No	146 (40.0%)	219 (60%)	(0.798,5.757)1.00	
Sleeping disorder					
	Yes	110(72.8%)	41(27.2%)	10.790(6.659,17.483)	0.001
	No	46 (19.9%)	185(80.1%)	1.00	
Job satisfaction					
	Yes	42 (29.6%)	100 (70.4%)	1.00	
	No	114(47.5%)	126 (52.5%)	2.154 (1.387, 3.347)	0.001
Using guideline					
	Yes	135 (38.9%)	212 (61.1%)	1.00	
	No	21 (60%)	14 (40%)	2.356 (1.158, 4.790)	0.018

5.7. Multivariate analysis

To reduce extreme number of variables, P value less than 0.2 during the bivariate analysis were included in the multivariate logistic regression analysis to see the relative effect of confounding variables.

Multicollinearity of significant independent variables were checked by tolerance and it's reciprocal called variance inflation factor (VIF).if the value of VIF lies between 1-10, there is no multicollinearity and if the value of VIF <1 or >10, multicollinearity is problematic. In this study VIF values of all independent variables included in multivariate logistic regression were lies between 1-10, so multicollinearity was not problematic.

The multivariate logistic analysis for behavioral and environment determinants of occupational injury use of PPE on duty (AOR [95%CI] = 10.704[4.087, 28.034]), health and safety information (AOR [95%CI] = 2.112[1.012, 4.406]), work shift (AOR [95%CI] = 2.407[1.188, 4.875]), sleeping disorder (AOR [95%CI] = 10.014[5.260, 19.063]) and working department(dyeing department) (AOR[95%CI]= 3.530[1.253, 9.944]) showed significant association with the occupational injury.

The analysis showed workers who didn't use personal protective equipment on duty had more than 10.704 times higher the odds of having occupational injury than workers who uses personal protective equipment. The odds ratio of having occupational injury in workers who had sleeping disorder was 10 times higher than who didn't have sleeping disorder. Workers who were working in dyeing department, workers who had not health and safety information and workers who had working without shifting also showed significantly associated with occupational injury (Table 8).

Table 8 Summary of logistic regression analysis of socio-demographic, environmental and behavioral factors on occupational injury among workers of Ayka Addis Textile Factory, Sebeta-Oromia Region, April, 2019 G.C.

Variables		Occupational injury (n=382)		COR (95%) CI	Adjusted OR(95%)CI
		Yes	No		
Sex					
	Male	57 (46.7%)	65 (53.3%)	1.426 (0.923, 2.203)	0.675 (0.226, 2.020)
	Female	99 (38.1%)	161(61.9%)	1.00	1.00
Monthly salary	≤ 2000	106(48.6%)	112 (51.4%)	2.158 (1.410, 3.302)	0.921 (0.439, 1.934)
	>2000	50 (30.5%)	114 (69.5%)	1.00	1.00
Experience in Ayka Addis	≤ 5	128 (50.0%)	128 (50.0%)	3.500 (2.152, 5.692)	7.077 (0.924, 54.185)
	>5	28 (22.2%)	98 (77.8%)	1.00	1.00
Health and safety information	Yes	41 (20.6%)	158 (79.4%)	1.00	1.00
	No	115 (62.8%)	68 (37.2%)	6.517 (4.131, 10.282)	2.112 (1.012, 4.406)*
Work shift	Yes	93 (36.3%)	163 (63.7%)	1.00	1.00
	No	63 (50%)	63 (50%)	1.753 (1.138, 2.700)	2.407 (1.188, 4.875)*
PPE use on duty	Yes	10 (11.1%)	80 (88.9%)	1.00	1.00
	No	146 (50%)	146 (50%)	8 (3.988, 16.050)	10.704(4.087,28.034)**
Drinking alcohol	Yes	10 (58.8%)	7 (41.2%)	2.143 (0.798, 5.757)	0.647 (0.158, 2.648)
	No	146 (40.0%)	219 (60.0%)	1.00	1.00
Sleeping disorder	Yes	110 (72.8%)	41 (27.2%)	10.790(6.659,17.483)	10.014(5.260,19.063)**
	No	46 (19.9%)	185 (80.1%)	1.00	1.00
Using guideline	Yes	135 (38.9%)	212 (61.1%)	1.00	1.00
	No	21 (60%)	14 (40%)	2.356 (1.158, 4.790)	1.222 (0.424, 3.519)

**** Significant at P-value < 0.01, * Significant at P-value <0.05**

6. DISCUSSION

This institution-based cross-sectional attempted to assess the prevalence and factors associated with occupational injuries in the last 12 months among the workers of Ayka Addis Textile Factory Sebeta-Oromia Region, Ethiopia.

The study showed that the overall prevalence of occupational injury in the last 12 month was 156 (40.8%) when we compare with different country study like USA 39.9% (25),Japan 35.6% (26) and also in north Africa Egypt Mit-Ghamr City 46.2% (37) alien with Japan study. In contrary, study done in India, 22.9%(36) and Egypt, 18.4% (34) have lower prevalence reported than our study. This difference may be safety concern; awareness and education of workers in these countries are greater than ours with regard to this sector. Also the study areas in these studies were done in big textile companies' not included small ounces, which give concern for health and safety for their workers. Study done in Ethiopia, Arba Minch 31.4%(27)and Kombolcha 36.7%(3) relatively lower prevalence reported. So, this discrepancy may be because of our study area conducted in large scale factory including about 5000workers whereas study done in Arba Minch and Kombolcha conducted in factory with small scale status And also another reason for lower prevalence overall working process and capacity of the setting completely different.

Regarding the work environment factors, we found that work shift was significantly associated with occupational injury, which is in agreement with other studies conducted in Ethiopia and India (28, 29).

From the studied behavioral factors, sleeping disorder was associated with work-related injury in this study. This is consistent with studies performed in Ethiopia, but not for alcohol consumption, smoking and chewing chat. This might be attributed to the fact that workers may not want to express these personal behaviors at the time of data collection.

Based on our findings workers who earn low monthly salary (≤2000) were 2.158 times more likely injured than those of workers who earn more than two thousand birr. This is supported by studies conducted in Ethiopia (3, 27) may be as higher payment is related to with high experience, and higher exposure to have health and safety information and training, although this factor was significant in this study and workers with lower experience are usually placed in working sections involving manual contact with machines and others.

This study find out the leading cause of occupational injury among textile workers were falling by slippery or wet floor 49 (31.4%), follow exposure to dust/noise 28 (17.9%) and Falling from height 22 (14.1%) . this result is relatively similar to study done Ethiopia (27). In this study the main type of injuries were upper back 49(31.4%), wrists/hand 34 (21.8%), lower back 13 (8.3%) and eye 12 (7.7%). This result was consistent with report of Ethiopian textile workers (3). This is might be the working behavior of textile industry.

A strong association exists between health and safety training, and work-related injuries, as agreed upon by many scholars (21, 29, 49). Consistent with these literatures, this study revealed that having health and safety training is statistically related with significant decrease in injury. Health and safety training refreshes and motivates workers about occupational health, safety, standards and practices, which in turn may be associated with decreased injuries.

Evidences from literatures dictating the work environment determinants of occupational injury evinced, involving in activities requiring manual handling exposes workers to injury considerably (3). Comparably, this survey indicated that manual handling of very heavy objects was significantly associated with prominent injury presence.

Another finding of this study were the Odds Ratio of occupational injury among non PPE users was 10.704 times higher than PPE users (AOR [95%CI] = 10.704 [4.087, 28.034]). Compare to study done in north Gondar zone work-related injury among Small and Medium-Scale Industries workers (28)and Addis Ababa city municipal solid waste collectors (49) this slightly variation might be study population difference and the working activity of the sector. But, our result study consistent with study had done in Kombolcha textile workers (3).

According to this study result showed that behavioral variable such as smoking cigarette and chewing chat didn’t associated with occupational injury. This study was supported by Arba Minch textile workers study result (27).

According to this study the odds Ratio of injury among who had sleeping disorder were 10 times more likely being injured compared to those who had not sleeping disorder (AOR [95%CI] = 10.014 [5.260, 19.063]). The possible explanation for this may be workers who gained enough sleep/rest for their work may have positive thinking about the physical environment and always take necessary safety precautions and when free from sleeping disorder is increased, on- task activities are enhanced, leading to greater attention to safety motivation, knowledge, and compliance. And also this study supported by study done in Kombolcha textile, North-East-Ethiopia (3).

Even though most quantitative environmental factors didn't show association to occupational injury, the observational checklist result showed environmental health and safety matters such as floor were not inspected, portable circular saws were not equipped with protective guards, unsafe handling of material not prohibited by supervisors, working site had no electrical panel knockout in a place; chemicals were not kept in free of worker contact this can be explained by the absence of training and supervision of working site by health and safety professional regularly that could motivate workers to be safer and instruct them in correct safety behaviors.

7. STRENGTHS AND LIMITATIONS OF THE STUDY

7.1 Strength

- Data were collected by trained data collectors with all aspects of the study.
- Face to face interview supported by supervision should have minimized measurement error.
- Using stratification in order to address the variety of exposure in different units.
- Using observational checklist as additional tools to address and assure some qualitative aspects of the questions.

7.2 Limitations

- Reported unavailability of PPE could be a source of social desirability bias, hence might have undermined it as a factor.
- A qualitative study might have improved reported findings in reference to availability of resources and work conditions such as ventilation.
- The one year injury prevalence may be under or over-estimated due to recall bias.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

- The report of this study indicated relatively higher prevalence of injury among textile employees compared to other studies
- The study showed that the independent factors associated with occupational injury were, health and safety information, work shift, Personal Protective Equipment use and sleeping disorder.

8.2 Recommendation

- The Ministry of Labor and social affairs should assign occupational health and safety professionals for monitor working site that will important for reinforce and remind the basic health and safety matters fulfillment.
- Based on the findings from this study, provision of sustainable and proper health and safety information for workers, regular and continuous work shift, and standard quality personal protective equipment for all workers with strict follow up of proper utilization, should be encouraged.
- Further case-control and cohort study should be conducted especially on the employment type of workers and occupational injuries.

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10. ANNEXES

Annex 1: Participant's Information Sheet

Title of the research project: Assessment of occupational injury and associated factors among workers of Ayka Addis Textile factory in Sebeta-Oromia Region, Ethiopia 2019.

Name of Principal investigator: Jemal Musa

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

Introduction: Occupational injury is unintentional physical damage resulting from an occupational accident. Studies in developing countries indicate that occupational injury due to an unsafe working environment is increasing. There existed limited data on occupational injury among textile factories using improved technology in Ethiopia. This information sheet and consent form will prepare for Ayka Addis Textile factory 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 occupational injury and associated factors among workers of Ayka Addis Textile factory in Sebeta-Oromia Region, Ethiopia Investigating the source of occupational injury and associated factors in industries 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 occupational injury and associated factors in Ayka Addis Textile factory found in Sebeta 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 environmental factors that can determine an occupational injury within the production area. And also, we will use observational cheek list for cross check mechanism. Data will be collected by ten BSc environmental health professionals and two supervisors 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: December, 2018 to January, 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:

Jemal Musa (BSc)

Mobile: +251 912 45 14 85 Addis Ababa Foods, Medicine and Health Care Administration and Control Authority.

Email address: info_jemal@yahoo.com

Advisor's name and Address:

1. Abera Kumie (PhD), Addis Ababa University, School of Public Health, Addis Ababa Mobile:- +25911 88 29 12
   Email address: aberakumie2@yahoo.com
2. Ansha Nega (MSc.), Addis Ababa University, School of Public Health, Addis Ababa Mobile:- +251918 15 10 73
   Email address: anshanega@yahoo.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 Ayka Addis Textile factory Administration.

Annex 2: Consent form

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

Addis Ababa University, School of Public Health, a Study on Assessment of occupational injury and associated factors among workers of Ayka Addis Textile factory in Sebeta-Oromia Region, Ethiopia 2019 G.C.

Good morning/Good afternoon, my name is _____. I am working with Mr.Jemal Musa 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 occupational injury and associated factors in textile factory workers. 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 occupational injury 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 occupational injury and associated factors in textile factory. 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 20-30 minutes.

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

For any information you can contact:

1. Abera Kumie (PhD), Addis Ababa University, School of Public Health, Addis Ababa Mobile:- +25911 88 29 12
   Email address: aberakumie2@yahoo.com
2. Ansha Nega (MSc.), Addis Ababa University, School of Public Health, Addis Ababa Mobile:- +251918 15 10 73
   Email address: anshanega@yahoo.com
3. Jemal Musa (BSc) Addis Ababa Foods, Medicine and Health Care Administration and Control Authority.

Mobile: +251 912 45 14 85 Email address: info_jemal@yahoo.com

Consent form

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:

Mr.Jemal Musa E-mail:info_jemal@yahoo.com Tel: +251912 45 14 85

I thank you for your cooperation!

Annex 3: English version questionnaire

Questionnaire on the assessment of occupational injury and associated factors among workers of Ayka Addis Textile factory in Sebeta-Oromia Region, Ethiopia 2019 GC.

Part I. Socio-demographic characteristics of respondent's assessment of prevalence and factors affecting occupational injuries among Ayka Addis textile factory workers in Sebeta-Oromia Region, Ethiopia, 2019.

No	Question	Possible response	Code	Remark
101	Sex	1. Male 2. Female		
102	Age	----------in years		
103	Religion	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. Others		
104	Ethnicity	1.Amara 2.Oromo 3.Tegre 4.SNNP		
105	Marital status	1. Married 2.Single 3. Divorced 4.Widowed 5. Separated		
106	Educational status	1.Illitrate 2.read and write 3.Primary school(1-8) 4.Secondary school(9-12) 5.Technical and vocational 6. Degree or higher		

107	Employment condition	1. Temporary 2. Permanent		
108	Monthly income including over time	---------- ETB/month		
109	Work experience in textile factory	-------- in years		
110	Work experience in Ayka Addis textile factory	-------- in years		

Part II. Availability and utilization of personal protective measure

No	Question	Possible response	Code	Skip
201	Do you use any PPE while you are on work?	1.Yes 2.No →		Skip to Q206
202	If yes to Q201 what type?(more than one answer is possible)	1. Glove 2. Ear plug 3. Respirators 4. Helmet 5. Overalls 6. Goggles 7. Face shield 8. Boots/shoes 9. Others, specify_____		
203	If yes to Q201,do you use PPE all the time while on working	1.Yes → 2.No		Skip to Q 205
204	If No to Q203, what are the reasons not use safety equipment all the time? (more than one answer is possible)	1. Not to fill discomfort 2. To safe time 3. Not aware of risk 4. No access		If answer 4 skip to Q Part III

		5. Others, specify--		
205	From where do you get PPE? (more than one answer is possible)	1.It is supplied by institution 2. You buy it for your self 3.Others, specify_____		

Part III. Occupational (work related) injury characteristics

No	Question	Possible response	Code	Remark
301	Have you had an incident at work that resulted injury to you in the last 12 months?	1. Yes 2. No		If No skip to Part IV
302	What type injury you face in the last 12 months in factory?	1. Musculoskeletal disorder(MSD) 2. back pain 3.cuts 4. falling from height and by object 5. chemicals burn 6.blunt injury 7.crush/collision 8. respiratory problems 9.Hearing problems 10.vision problems 11. Others		
303	Have you had an incident at work that resulted injury to you in the	1. Yes 2. No		

	last 2 weeks?			
304	Parts of the body affected	1. Neck 2. shoulders 3. elbows 4. wrists/hands 5. upper back 6. lower back 7. hips/thighs 8. knees/ankles 9. feet/fingers 10. eye 11. Others		
305	Types of accident	1.Fallig to from height 2. Falling by slippery or wet floor 3. falling by object 4. cuts 5. chemicals burn 6. exposure to dust/noise 7.exposure to light/heat 8. Visual concentration 9. Other (specify)----		
306	What was your reason(s) at, the time of injury?	1. I was new for the work process 2. Thinking about private affairs 3. Due to other medical problem 4. I think accident is beyond control 5. It is the working behavior 6. It is due to not using PPD/E 7.I don't remember 8. Others (specify)		
307	Are you hospitalized due to injury?	1.yes 2.No		

Part -IV-Working environment related variables

No	Question	Possible response	Code	Skip
401	Health and safety information	1.Yes 2.No		
402	Health and safety training	1.Yes 2.No		
403	Workplace supervision	1.yes 2.No		
404	Work shift	1.Yes 2.No		
405	Work rotation	1.Yes 2.No		
406	Good light and ventilation	1. Yes 2. No		
407	Availability of personal protective equipment	1. Yes 2. No		
408	Job category (working department)	1. Spinning 2. Knitting 3. Quality control 4. Dyeing 5. Garment 6. Packaging and loading unloading		

Part-V- Workers behavior and characteristics

No	Question	Possible response	Code	Skip
501	Do you smoke?	1.Yes 2.No		
502	Do you drink alcohol?	1.Yes 2.No		
503	Do you chew chat?	1.Yes 2.No		
504	Do you have any sleeping disorders	1.Yes 2.No ——→		If no skip To Q506
505	If yes to Q504, what is the reason	1. Working greater than 8 hours without Shifting 2. Working in evening 3. Trying to work more than one task at a time 4. Excessive heat 5.Others(specify)_____		
506	Are you satisfied with your job or task required to do at Present?	1.Yes 2.No		
507	Used work guideline	1.Yes 2.No		

This is the end of our questionnaire. Thank you very much for taking time to answer these Questions. We appreciate your cooperation.

Annex 4: Amharic version questionnaire

አባሪ 1፡የአማሪኛ ትርጉም መጠይቅ

በጥናቱ ላይ ለሚሳተፉ የሚሰጥ መረጃ

ጤና ይስጥልኝ፡ እኔ _____እባላለሁ፡፡እዚህ የመጣሁት ይህንን ጥናት ለማካሄድ የአዲስ አበባ ዩኒቨርሲቲ የጥናት ቡድን ሆኜ ነዉ፡፡ከሙያ ጋር በተያያዙ ጉዳቶች እና ተያያዥ መንስኤ ሊሆኑ ስለ ሚችሉ ነገሮች ለሰላሳ ደቂቃ ብቻ የሚፈጅ ትንሽ ጥያቄ ልጠይቅዎት እፈልጋለሁ፡፡እርስዎ የሚሰጡን ትክክለኛ መልስ ለህግ አርቃቂዎች በቀላሉ ከሙያ ጋር በሚደርሱ ጉዳቶችን በመከላከል እና በመቆጣጠር ጤናማ የሰራተኛ ሀይል እንዲፈጠር በዚህ ጥናት ላይ የሚሳተፍ ማንኛዉም ሰዉ ከዚህ በታች ስለጥናቱ የተሰጠዉን መረጃ በትክክል ተረድቶ ፍቃደኝነቱን ሲያሳይ ብቻ ነዉ፡፡

የጥናቱርዕስ፡ **በአይካ አዲስ ጨርቃ ጨርቅ ፋብሪካ ውስጥ የሚስሩ ሰራተኞች ላይ የሚደርሱትን ከሙያ ጋር የተያያዙ ጉዳቶችን መንስኤዎቻቸዉን ለይቶ ማወቅ ነው፡፡**

የጥናቱዋናአላማ፡ **በአይካ አዲስ ጨርቃ ጨርቅ ፋብሪካ ሰራተኞች ላይ የሚደርሱ ከስራ ጋር የተያያዙ ጉዳቶችን ብዛታቸው እና አጋላጭ መንስኤዎቻቸዉን ለይቶ ማወቅ፡፡**

የተጠኝዎች መብት፡ **በጥናቱ ላይ መሳተፍም ይሁን አለመሳተፍ ይችላሉ፡፡ተሳታፊዎች ጥናቱን በፈለጉት ቦታ ማቋረጥ ይችላሉ፡፡ መመለስ ያልፈለጉትንም ጥያቄ መዝለልም ይችላሉ፡፡ተሳታፊዎች ማንኛዉንም ያልገባቸዉን ጥያቄ መጠየቅ ይችላሉ፡፡**

የጥናቱሚስጢራዊነቱ፡በመላሾች የሚሰጥ ማንኛዉም አይነት መልስ በሚሰጢር ይያዛል፡ስማቸዉም አይገለፅም፡፡

የተሳታፊዎች የፈቃደኝነት መጠየቂያ ቅፅ

ይህ መጠይቅ በአይካ አዲስ ጨርቃ ጨርቅ ፋብሪካ ሰራተኞች ላይ በሚደርስ ከስራ ጋር የተያያዙ ጉዳቶችን ለማጥናት የተዘጋጀ ነዉ፡፡

ከላይ ያለዉን ፎርም ብታነቡት ወይም ቢነበብልዎት እና ስለጥናቱ ፍሬሀሳብ ቢረዱ እርስዎ በዚህ ጥናት ላይ ይሳተፉ ነበር?

አዎ_____አልሳተፍም_____

የተሳታፊዎች ፊርማ_____

ክፍል1፡ማህበራዊና ስነ-ህዝባዊ ገፅታዎችን የተመለከቱ ጥያቄዎች

ተ.ቁ	ጥያቄ	የመልስ አማራጮች	መለያ	ዝለል
101	ፆታ	1. ወንድ 1.ሴት		
102	እድሜ	_____		
103	ሀይማኖት	1. ኦርቶዶክስ 2.ሙስሊም 3.ፕሮቴስታንት 4.ካቶሊክ 5.ሌላ፡ይጠቀስ_____		
104	ብሄር	1.አማራ 2.ኦሮሞ 3. ትግሬ 4. ደቡብ		
105	የጋብቻ ሁኔታ	1. ያገባ/ች 2. ያላገባ/ች 3. የፈታ/ች 4. የሞተችበት/ባት 5. ተነጣጥሎ የሚኖሩ		
106	የትምህር ትደረጃ	1.ማንበብና መፃፍ የማይችሌ/ትችሌ 2.ማንበብና መፃፍ 3.የመጀመሪያ ደረጃ ትምህርት(1-8) 4.የሁለተኛ ደረጃ ትምህርት(9-12) 5.ሙያና ቴክኒክ 6. የመጀመሪያ ድግሪና ከዚያ በላይ		

107	የቅጥር ሁኔታ	1. በጊዜያዊነት 2. በቋሚነት		
108	የወር ገቢ	----------ብር		
109	የስራ ልምድ በጨርቃ ጨርቅ ፋብሪካ ውስጥ	---------ዓመት		
110	የስራ ልምድ በአይካ አዲስ ጨርቃ ጨርቅ ፋብሪካ ውስጥ	---------ዓመት		

ክፍል 2 የመከላከያ መሳርያዎች አቅርቦትና አጠቃቀም በተመለከተ

ተ.ቁ	ጥያቄ	የመልስ አማራጮች	መለያ	ዝለል
201	ስራ በሚስሩበት ግዜ የአደጋ መከላከያ ይጠቀማሉ	1.አዎ 2.የለም ⟶		ወደቁ. 206 ዝለል
202	ለጥያቄቁ.201፡ መልስዎ አዎ ከሆነ ምን አይነት (ካንድ በላይ መልስ መስጠት ይቻላል)	1. ግላቭ/ንንት 2. የጆሮ መከላከያ 3. የአፍና የአፍንጫ መከላከያ. 4. የጭንቅላት መከላከያ 5. ሁለንም የሰውነት ክፍሌ 6. የአይን መከላከያ መነፅር 7. የፊት መሸፈኛ 8. ቦቲ/ቆዳ ጫማ 9. ሌላ ካለ ይገለፅ ----------		
203	ለጥያቄ ቁ.201 መልስዎ አዎ ከሆነ መከላከያዎቹን ሁል ግዜ ይጠቀማሉ	1.አዎ 2.የለም ⟶		ወደቁ. 205 ዝለል

204	ለጥያቄ ቁ.203 መልስዎ የለም ከሆነ ሁሌ መከላከያ እንዳይጠቀሙ የሚያደርጎት ነገር ምንድን ነው ;(ካንድ በላይ መልስ መስጠት ይቻላል)	1.ስለማይመች 2. ስዓት ለመቆጠብ 3. ጉዳት ያመጣል ብዬ ስለማላስብ 4. ስለሌለኝ 5.ሌላ ካለ ይገለ……		
205	መከላከያ መሳርያውን ከየት ነው የሚያገኙት (ካንድ በላይ መልስ መስጠት ይቻላል)	1.ከተቋሙ 2.እራሴ እገዛዋለሁ 3. ከሌላ/ይጠቀስ/ ----------		

ክፍል 3፡የስራ ላይ ጉዳትን በተመለከተ

ተ.ቁ	ጥያቄ	የመልስ አማራጮች	መለያ	ዝለል
301	ባለፉት አስራ ሁለት ወራት ውስጥ ከስራዎ ጋር በተያያዘ አደጋ ደርሶበታል?	1. አዎ 2. አይ		አይ ከሆነ ወደ ክፍል 4

302	ባለፉት አስራ ሁለት ወራት ውስጥ ከስራዎ ጋር በተያያዘ ምን አይነት ደርሶበታል?	1. የመስኩሎ ስኬልታል ድስ ኦርድር 2. የወገብ ህመም 3. መቆረጥ 4. ከከፍታ መውደቅ 5. በኬሚካል መቃጠል 6. ወለምታ 7. ስብራት 8. የአተነፋፈስ ችግር 9. የመስማት ችግር 10. የእይታ ችግር 11. ሌላ ካለ ይገለፅ ---------		ወደጥያቄ ቁጥርክፍል 4 ይሸጋገሩ
303	ባለፉት ሁለት ሳምንታት ውስጥ ከስራዎ ጋር በተያያዘ የደረሰበዎት አደጋአለ?	1. አዎ 2. የለም		
304	ጉዳት የደረሰበት የሰውነትዎ ክፍል	1. አንገት 2. ትከሻ 3. ክንድ 4. እጅ 5. የላኛው ወገብ 6. ከወገብ በታች 7. ተፋ 8. ጉልበት 9. እግር/የእግርጣት 10. አይን 11. ሌላ ካለ ይገለፅ ----------		
305	የአደ ጋአይነት	1. ከከፍታ መውደቅ 2. አዳልቶ መውደቅ		

		3. በእቃ መውደቅ 4. መቆረጥ 5. በኬሚካል መቃጠል 6. ለአዋራ መጋለጥ 7. ከፍተኛ ሙቀት 8. ለብርሀን መጋለጥ 9. ሌላ ካለ ይገለፅ ----------		
306	አደጋው ለምን የደረሰበዎ ይመስለዎታል?	1. ለስራው ሂደት አዲስ ነበርኩ 2. ስለግሌ ህይወቱ እያሰብኩ ነበር 3. ሌላ የጤና ችግር ስለ ነበረብኝ 4. አደጋን መከላከል ስለማይቻል ነው ጉዳቱ የደረሰብኝ 5. የስራው ባህሪ ስለሆነ ነው 6. የአደጋ መከላከያ ባለ ማድረጌ ነው 7. አላስታውስም 8. ሌላ ካለ ይጠቀስ----------		
307	በአደጋው ምክንያት በጤና ተቋም ወይም በቤትዎ አልጋ ይዘው ነበር	1. አዎ 2. የለም		

ክፍሌ 4፡የስራ ቦታን በተመለከተ

ተ.ቁ	ጥያቄ	የመልስ አማራጮች	መለያ	ዝለል
401	ደህንነት መከላከያ መሣሪያ አጠቃቀም ግንዛቤ	1 አለ 2 የለም		
402	የሙያ ደህንነትና ጤንነት ስልጠና ወስደው ያውቃለ?	1.አዎ 2. የለም		
403	በመደበኛ የስራ ቦታዎ የሙያ ደህንነትና ጤንነት ቁጥጥርተደርጎ ያውቃለ	1.አዎ 2. የለም		
404	የሥራ ሰዓት መቀያያር	1.አዎ 2. የለም		
405	የሥራ ቦታ መቀያየር	1.አዎ 2. የለም		
406	የሥራ ቦታው በቂ አየርና ብርሃን	1.አዎ 2. የለም		
407	የሥራ ቦታው የደህንነት መጠበቂያ መሣሪያ አቅርቦት	1. በቂ ነው 2 በቂ አይደለም		
408	የስራ ክፍል	1.ፈትል 2. ሽመና 3. ጥራት ማረጋገጥ 4. መቅለሚያና ማተሚያ 5.ስፌት 6.መሸግና መጫንና ማውረድ		

ክፍል 5፡የሰራተኞችን ባህሪ በተመለከተ

ተ.ቁ	ጥያቄ	የመልስ አማራጮች	መለያ	ዝለል
501	ያጭሳሉ?	1.አዎ 2. አይ		
502	አልኮል ይጠጣሉ?	1.አዎ 2. አይ		
503	ጫት ይቅማሉ?	1.አዎ 2. አይ		
504	ስራ ላይ እያሉ የእንቅልፍ ችግር አለበዎት	1.አዎ 2. አይ		
505	ለጥያቄ ቁ.504 መልሰዎ አዎ ከሆነ ምክንያቱ ምንድን ነው?	1. ያለዕረፍት/ቅያሬ ከ8 ሰአት በላይ መስራት 2. በምሽት መስራት 3. በአንድ ጊዜ ከአንድ በላይ ስራ መስራት 4. ከፍተኛ የሙቀት ጫና 5. ሌላ ካለ ይጠቀስ ------		
506	በአሁኑ ጊዜ በስራዎ ደስተኛ ነዎት?	1.አዎ 2. አይ		
507	የስራ ላይ መመሪያ ይጠቀማሉ?	1.አዎ 2. አይ		

ይህ የመጠይቃችን መጨረሻ ነው፡፡አነዚህ ጥያቄዎች ጊዜ ወስደው በመመለስ ላደረጉልን ትብብር ከልብ እናመሰግናለን::

Annex 5: Afan Oromo Version questionnaire

Waraqaa Odeeffannoo (kutaa Afaan Oromoo)

Uunka Beeksisa Waliigaltee

Maqaan koo----------jedhama. Kan an asitti argameef Kolleejjii Saayinsii Fayyaa Yuunivarsiitii Finfinneetti mana barnootaa saayinsii fayyaa hawaasaa barataa eebbifamaa digirii lammaffaa kan ta'an Jamaal Muusaa bakka bu'eeti. Isaanis hojjattoota warshaa huccuu keessa hojjataniin balaa hojiin wal qabatee fi taateewwan isaaniin wal qabatanirratti qo'annoo hojjachaa jiru. Qo'annoo kana gaggeessuuf hirmaattota kan ta'an sumudaa bahumsa lootariitiin calalliin erga godhameen booda isin qo'annoo kana irratti akka hirmaattan kan filatamtan waanta'eef yeroo qo'annichi gaggeeffamutti balaa hojiin wal qabatee fi taateewwan isaaniin wal qabatan xiinxala gochuuf.

Odeeffannoonnuuf kennitanis icciitiin isaa kan eegamee fi uunkaa irratti maqaan hin guutamu. Qo'annicha irraa faayidaan kallattiin argattan hin jiru. Haa ta'u malee al-kallattiin hojjattoota warshaa huccuu keessa hojjatan irratti balaa hojiin wal qabatee fi taateewwan isaan walqabatan ittisuufi to'achuuf bu'aa guddaa ni qabaata. Dabalataanis hojii qorannoo itti aanuufis bu'uura ta'ee ni fayyada.

Akkasumas qo'annoo kana bu'uura godhachuun mootummaanii fi qaamoleen qooda fudhattoota aadda addaa xiyyeeffannoo kennuun rakkoo kana irratti tumsa mataa isaanii akka godhan ni fayyada jedheen yaada. Kanaafuu hirmaannaan keessan qorannoo kanaaf barbaachisaadha. Qorannoo kana irratti hirmaachuun miidhaa biraa tokko illee hin qabu.Kanaafuu qo'annoo kana irratti hirmaachuunis ta'ee hirmaachuu dhiisuun mirga keessan.Qo'annoo waliin gaaffii walqabatu yoo qabattan yookiin odeeffannoo dabalataa yoo barbaaddan Kolleejjii Saayinsii Fayyaa Uunivarsiitii Finfinnee kutaa barnootaa saayinsii fayyaa hawwaasaa yookiin qo'annoo gaggeessaa teessoo armaan gadiin argachuu ni dandeessu.

Qo'annoo kan godhe:-Jamaal Muusaa

Lakk.Bilbilaa:- +251-912 45 14 85

E-mail:- info_jemal@yahoo.com

Waliigaltee Beeksifame (kutaa Afaan Oromo)

Uunka Waliigalteen Itti Taasifamu

Qo'annicha qaama gaggeessuun odeeffannoon gahaan naaf kennameera. Kaayyoon qo'annoo kanaas balaa hojiirraa fi taateewwan isaan wal qabatan fi qo'achuu ta'uu hubadheera.Odeeffannoon ana irraa fudhatamu miidhaa kamiyyuu kan narratti hin qaqqabsiisnee fi odeeffanichis kaayyoo qo'annoof qofa akka oolu hubadheera.

Odeeffannoon na ilaallatu kamiyyuu icciitummaan isaa eeggamaadha. Akkasumas qo'annicha irratti hirmaachuuf eeyyamamaa ta'uu yoon baadhe qo'annicha irratti hirmaachuuf akkan hin dirqisiifamne haa ta'u malee qo'annoo kana irratti hirmaachuun koo beekumsa saayinsiif odeeffannoo faayidaa qabeessa gumaachuu fi gara fuulduraatti hojiiwwan kana irratti hojjatamaniif galumsa bu'uura ta'u kennuu akkan danda'u hubadheera. Kana ta'uu isaatiif qo'annoo kana irratti hirmaachuuf kanan waliigale ta'uu mallattoo kootiin nan mirkaneessa.

Mallattoo hirmaataa----------Guyyaa----------

Maqaa fi mallattoo odeeffannoo funaanaa----------Guyyaa---------

Gaaffilee waa'ee balaa iddoo hojiifi taateewwan isaan walqabate kan hojjattoota Warshaa Huccuu Aykaa Addis qorachuuf qophaa'e, Sabbataa-Naannoo Oromiyaa, Itiyoophiyaa 2019 ALA.

Kutaa I. Dimoogiraafii hawaasummaa hojjattoota warshaa huccuu Aykaa Addis keessa hojjatanii Sabbataa-Naannoo Oromiyaa, Itiyoophiyaa 2019, ALA.

T.L	Gaaffii	Deebii	Koodii	Hubachiisa
101	Saala	1. Dhiira 2. Dhalaa		
102	Umrii	Waggaa--------		
103	Amantii	1. Ortodoksii 2. Muslima 3. Protestaantii 4. Kaatoolikii 5. Kan biraa		
104	Saba	1.Amaara 2.Oromoo 3.Tigree 4.Ummattoota kibbaa		
105	Haala maatii	1. kan fuudhe/te 2.Kophaa 3. Hiikkaa 4.Du'aan 5. Gargar jiraachuu		
106	Haala barumsaa	1.Hin baranne 2.Dubbisuu fi barreessuu 3.Sadarkaa jalqabaa (1-8) 4.Sadarkaa lammaffaa (9-12) 5.BLTO		

		6. Digrii fi isaaol		
107	Haala hojii	1. Kan yeroo 2. Dhaabbataa		
108	Galii ji'aa	Birrii---------- ji'aan		
109	Tajaajila hojii warshaa huccuu keessa	Waggaa----------		
110	Tajaajila hojii Aykaa keessa	Waggaa ----------		

Kutaa II. Jiraachuufi itti fayyadamummaa meeshaalee of eeggannoo.

T.L	Gaaffii	Deebii	Koodii	Ce'uumsa
201	Meeshaale of eeggannoo yeroo hojii ni fayyadamtuu?	1. Eeyyee 2.Lakki →		Gara G206
202	Yoo G201 eeyyee ta'e gosa kami? Tokkoo ol deebisuun ni danda'ama.	1. Gilaavii 2. Gurraaf 3. Hargansuuf 4. Ijaaf 5. Guutumatti 6. Googilii 7. Fuulaaf 8. Boottii 9. Kan biraa----------		
203	G201 eeyyee yoo ta'e yeroo hojii hundaa ni fayyadamtuu?	1.Eeyyee 2.Lakki		Skip to Q 205
204	G203 lakki yoo ta'e maal sababniisaa?	1. Michuumiti 2. Yeroo qusachuuf		

		3. Hubannoo dhabuu 4. Hin argamu 5. Kan biraa----------		
205	Meeshaalee of eeggannoo eessaa argattu?	1Warshicharraa 2. Dhuunfaan bitanna 3.Kan biraa----------		

Kutaa III. Amaloota balaa hojiin walqabatanii.

No	Question	Possible response	Code	Remark
301	Ji'oota 12 darban keessa balaan si muudate beekaa?	1. Eeyyee 2. lakki		Lakki yoo ta'e gara kutaa 4 ce'i
302	Ji'oota 12 darban keessa balaa gosa kamtu si muudate?	1. Faalla'uu maashaalee lafee 2. Dhukkubbii dugdaa 3.muramuu 4. Wantootaa fi fageenyaa irraa kufuu 5. gubaa keemikaalaa 6.balaa 7.crush/collision 8. rakkoo hargansuu 9.rakkoo dhageettii 10.rakkoo arguu 11. kan biraa----------		
303	Torbee lamaan darbe keessa wanti si muudate jiraa?	1.Eeyyee 2.Lakki		
304	Qaama miidhame	1. Morma		

		2. Ceekuu 3. Ciqilee 4. Harka 5. Dugda gara olii 6. Dugda gara gadii 7. Tafa/mudhii 8. Jilba 9. Miila/kottee 10. Ija 11. Kan biraa----------		
305	Gosa balaa	1.Fageenyarraa kufuu 2. mucucaatuu 3. wantootaan kufuu 4. muramuu 5. gubaa keemikaalaan 6. awwaaraaf saaxilamuu 7. ho'aaf saaxilamuu 8. ifaaf saxilamuu 9. kan biraa----------		
306	Maal waan ta'eef balaan kun si qunnamuu danda'e?	1. Hojiif haaraa ta'uu 2. Dhimma dhuunfaatiin dhiphachuu 3. Rakkoo dhibee biraa 4. Too'annoo ol jedhee yaaduu 5. Haala hojiiti. 6. meeshaalee of eeggannoo waan hin fayyadaminiif		

		7. hin yaadadhu 8. Kan biraa---------- -------		
307	Sababa dhukkubichaatiif ciistee beektaa?	1.Eeyyee 2.Lakki		

Kutaa -IV-Taateewwan bakka hojiitiin walqabatan.

T.L	Gaaffii	Deebii	Koodii	Ce'uumsa
401	Odeeffannoo fayyaa	1.Eeyyee 2.Lakki		
402	Leenjii fayyaa irratti	1.Eeyyee 2.Lakki		
403	Too'annoo bakka hojii	1.Eeyyee 2.Lakki		
404	Dabaree hojii	1.Eeyyee 2.Lakki		
405	Naannawa hojii	1.Eeyyee 2.Lakki		
406	Ifaa fi qilleensa gaarii	1.Eeyyee 2.Lakki		
407	Jiraachuu meeshaalee of eeggannoo	1.Eeyyee 2.Lakki		
408	Gosa hojii	7. Foo'aa 8. Jibrii addaan baasuu 9. Too'annoo qulqullinaa 10. Halluu 11. Hodhaa 12. Haguuggaa fi baachuu fi buusuu		

Kutaa-V- Amalahojjattootaa

T.L	Gaaffii	Deebii	Koodii	Ce'uumsa
501	Ni aarsitaa?	1.Eeyyee 2.Lakki		
502	Alkoolii ni dhugdaa?	1.Eeyyee 2.Lakki		
503	Ni qamaataa?	1.Eeyyee 2.Lakki		

504	Hanqina hirriibaa qabdaa?	1.Eeyyee 2.Lakki		Lakki yoo ta'e gara G506
505	G504 eeyyee yoo ta'e sababni maal?	1. Sa'aatii 8 ol dabaree malee hojjachuu 2. Galgalaan hojjachuu 3. Yeroo tokkotti hojii baay'ee hojjachuu 4. Ho'a olaanaa 5. Kan biraa---		
506	Hojii amma hojjachaa jirtutti ni gammaddaa?	1.Eeyyee 2.Lakki		
507	Qajeelfama hojii ni fayyadamtaa?	1.Eeyyee 2.Lakki		

Galatoomaa.

Annex 6: Observational checklist

Ser. No.	Checklist Items	Responses		Indicators Notes/Comments
		Yes	No	
1.	**Spinning** No of workers; Male_____, Female_____			
	Is there good housekeeping in the weaving section? (Because, workers spend most of their workday patrolling the area)			
	Are work surfaces kept dry and slip-resistant?			
	Are all spilled materials or liquids cleaned up immediately?(Like; oil, grease and water spots)			
	Are wastes stored safely and removed from the worksite promptly?			
	Is there sufficient work clearance, not affecting free movement?			
	Are there workers exposed to noise?(Shout to communicate with a person standing 0.5-1 meter away)			
	Are there noise sources which are not enclosed effectively or placed in a separate room?			
	Is there artificial humidification of the air?			
	Is the level of temperature in the room comfortable?			

	Are there workers using ear-protectors in noisy area?			
	Are workers carrying out tasks that expose them to vibration? (either of their hands and arms, or their whole body)			
	Are there machines with unprotected or unguarded moving parts?			
	Do the neck and shoulders have to be curved to view the task?			
	Can the work be done without twisting or overly bending the lower back?			
	Is there a suitable break time?			
	Are portable fire extinguishers provided, mounted and readily accessible to employees?			
	Is there a sounding emergency alarms in the workplace?			
	Are "No Smoking" signs conspicuously posted?			
	Are there emergency and escape plans?			
	Are escape routes marked?			
2.	**Knitting;** No of workers; Male_____, Female_____			
	Is there good housekeeping in the weaving section? (Because, workers spend most of their workday patrolling the area)			
	Are work surfaces kept dry and slip-resistant?			

	Are all spilled materials or liquids cleaned up immediately? (Like; oil, grease and water spots)			
	Are wastes stored safely and removed from the worksite promptly?			
	Is there sufficient work clearance, not affecting free movement?			
	Is there high-speed shuttle less weaving machine?			
	Are all machine guards, secured firmly and not easily removable?			
	Are there any exposed belts or chain drives?			
	Are there workers exposed to noise? (Shout to communicate with a person standing 0.5-1 metre away)			
	Are there noise sources which are not enclosed effectively or placed in a separate room?			
	Do the workers use mask?			
	Is the thermal comfort maintained? (humidity, temperature, air speed)			
	Is there adequate natural ventilation?			
	Are there suitable warning signs in place?			
	Are portable fire extinguishers provided, mounted and readily accessible to employees?			
	Is there a sounding emergency alarms in the workplace?			
	Are “No Smoking” signs conspicuously posted?			

	Are there emergency and escape plans?			
	Are escape routes marked?			
3.	**Quality control** No of workers; Male_____, Female_____			
	Is there good housekeeping?			
	Are work surfaces kept dry and slip-resistant?			
	Is lighting at the workplace sufficient to perform tasks efficiently and accurately?			
	Are there visible shadows in the task area which may affect efficiency and accuracy of work?			
	Are emergency lighting is operable?			
	Can the work be performed without eyestrain or glare to the employees?			
	Are there excessive contrasts in the field of vision which can result in fatigue?			
	Is the chair stable; does it ensure free movement and a comfortable body posture?			
	Do the neck and shoulders have to be curved to view the task?			
	Can the work be done without twisting or overly bending the lower back?			
	Is there a suitable break time?			
4.	**Dyeing**			

	No of workers; Male_____, Female_____			
	Do workers use hazardous chemicals (for example, arsenic compounds, dimethyl sulphate, carbon disulphide, ethylene oxide, epichlorhydrine or formaldehyde)			
	Are Material Safety Data Sheets available for all the hazardous chemicals that are used?			
	Are all hazardous chemicals properly labeled?			
	Are all hazardous chemicals properly handled?			
	Are all spilled materials or liquids cleaned up immediately?			
	Are wet surfaces covered with non-slip materials?			
	Is there a safety instruction displayed in appropriate place. (Displayed on the wall, in any visible place)			
	Are workers aware of the dangers posed by the chemicals they are using?			
	Do pregnant or breastfeeding women work in this section?			
	Is the room sufficiently ventilated?(Sufficient windows/doors opining, mechanical fan etc.)			
	Is there any local exhaust ventilation system?			
	Are the workers use respirator?			
	Are respirators used in the correct manner?(Recommended type, well fitted, majority of			

	the workers used)			
	Is the room properly illuminated? (If you read a normal hand written words at the middle of the room)			
	Are the workers use gloves? (Chemical proof gloves)			
	Are the workers use goggles/face shield			
	Are portable fire extinguishers provided, mounted and readily accessible to employees?			
	Is there a sounding emergency alarms in the workplace?			
	Are "No Smoking" signs conspicuously posted?			
	Are there emergency and escape plans?			
	Are escape routes marked?			
5.	**Garment** No of workers; Male_____, Female_____			
	Is there good housekeeping?			
	Are wastes stored safely and removed from the worksite promptly?			
	Is lighting at the workplace sufficient to perform tasks efficiently and accurately?			
	Are there visible shadows in the task area which may affect efficiency and accuracy of work?			

	Are materials placed near where they are to be used?			
	Is there stable work surface where items can be firmly placed			
	Are materials and tools reached easily by the worker without bending or twisting?			
	Are there platforms to make sure proper work height?(Around elbow level)			
	Are there firm chairs with correct seat height and a sturdy backrest?			
	Is there enough leg space to allow easy leg movement?			
	Is there a footrest, particularly for seated workers?			
	Is there sufficient work clearance, not affecting free movement?			
	Do employees work at a monotonous or forced pace?			
	Is there a separate storage containers for each productive item?			
	Is there a multilevel rack available? (save space, easy accessibility to items and tools & improved inventory)			
	Are sharps and scissors placed in a safe place?			
	Is there clear and marked passageways?			

	Is there multipurpose trolley in place?			
6.	**Packaging & Loading unloading** No of workers; Male_____, Female_____			
	Is there good housekeeping?			
	Are wastes stored safely and removed from the worksite promptly?			
	Is there a mobile storage			
	Is there a platforms for loading and unloading heavy items			
	Are heavy objects or loads lifted manually? (for example, boxes containing reels of yam, rollers or rolls of cloth)			
	During manual handling, do the workers keep the back straight and raise the load?			
	During manual handling, do the workers keep the load close to the body			
	During manual handling, do the workers twist to pick up or put down a load			
	During manual handling, do the workers handle things between hips and chest level			
	During manual handling, do the workers minimize bending or difficult reaching			
	Is appropriate lifting equipment provided for handling heavy loads?			
	Is there multipurpose trolley available?			

	Do workers have to carry out repetitive tasks?			
	Does considerable force need to be used to push or pull equipment such as trolleys?			
	Is the floor of the room comfortable, not making the movement of goods difficult (Uneven/ rough floor, sloppy etc.)			
	Is there safe clearance for walking?			
	Are changes of direction or elevations readily identifiable?			
	Are all exits marked with an exit sign and illuminated by a reliable light source?			
	Are measures in place to stop workers and objects from falling?			

Annex 7: Declaration

I, the undersigned declared that this my original work, has not been presented for degree in this or other university and that all sources of materials used for this thesis has been fully acknowledged.

Name: Jemal Musa

Signature: _____

Place: Addis Ababa University

Date of submission: _____

This thesis has been submitted for examination with my approval as a university advisor,

Name: Abera Kumie (MD, MSC, Ph.D.)

Signature: _____

CV of Jemal Musa (Student)

Jemal Musa Osman

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ethiojobs08@gmail.com

Addis Ababa, Ethiopia

Photo

CURRICULUM VITAE (CV)

I. PERSONAL INFORMATION

Full Name: Jemal Musa Osman

Sex: Male

Date of Birth: 15 JAN 1989 G.C

Place of Birth: Bale

Marital Status: Single

Nationality: Ethiopian

Address: Addis Ababa, Ethiopia

Tel: Mobile +251-912-45-14-85

E-mail: info_jemal@yahoo.com

II. EDUCATIONAL BACKGROUND

Educational level	Name of Institute	Year	Type (subject)
Higher Education	Jimma University	22/09/2009-16/06/2011 G.C	BSc in Environmental Health Bachelor Degree)
Preparatory School	Robe preparatory school	11/10/2007-01/07/2008 G.C	Preparatory completed (Pre university)
Secondary School	Goro secondary school	05/09/2005-09/07/2006 G.C	High school completed
Primary School	Rayitu Anole	01/09/1997-10/07/2004 G.C	Primary /Elementary class completed

III. LANGUAGE SKILLS

	Listening	***Speaking***	***Reading***	***Writing***
Afan Oromo	Fluent	Fluent	Fluent	Fluent
Amharic	Fluent	Fluent	Fluent	Fluent
English	Fluent	Fluent	Fluent	Fluent

IV. QUALIFICATION AND SKILLS

- ✓ BSC Degree in ***Environmental Health Science from Jimma University with CGPA of 3.80.***

V. EXPERIENCE:- Since11/12/2011 to 09/12/2013 I am working as Urban Health Extension Program Supervisor in Kolfe Keranyo Sub City woreda 9 Health Office and from 10/12/2013 to 07/02/2014 I am working as an Environmental Health Officer in Kolfe Keranyo Sub City Health Office and starting from 08/02/2014 to 07/07/2014 I am serving in job capacity of food beverage institutions and industries environmental health protection competency assurance performer in Kolfe Keranyo Food, Medicine and Healthcare Administration and Control Office, Addis Ababa-Ethiopia and I have been serving in job capacity of health related institutions and industries, environmental health protection competency assurance performer under Food, Medicine and Healthcare Administration and Control Office of the kolfe keranyo sub city as of 08/07/2014 to April2018 and starting from May 2018 to this date I have been serving in similar job capacity under Food, Medicine and Healthcare Administration and Control Authority of the Addis Ababa City Administration

VI. LANGUAGE CERTIFICATION

- Letter of language proficiency from Jimma University, Jimma, Ethiopia(All level of Education took in English Language)

VII. AWARD

▪Health professional Licensing Certificate by Oromia National Regional Government Health Bureau by 20/10/2011, Addis Ababa, Ethiopia

▪The Degree of Bachelor of sciences in Environmental health, June 16, 2011 by Jimma University, Jimma, Ethiopia

VIII. TRAINING SKILL CERTIFICATE

- BPR, BSC and Integration certificate by Addis Ababa City Administration Urban Management Institute on June 13,2014
- I have certificate of Jimma University student Union Science and Technology club
- I have certificate of Jimma University student Union Charity club
- I have certificate of Jimma University student Union HIV/AIDS club
- I have certificate of Jimma University student Union Natural & Environmental club
- I have certificate of Jimma University student Union Food Committee club
- I have certificate of Kolfe Keranyo sub city administration office appreciation certificate of performance.

IX. ADDITIONAL CURRICULA

- To be qualified Environmentalist and specialized by Health sciences and other health and health related field of study
- Helping my country and world communities with improving my ability related with new health care services.
- Educates with any university/Institute with valuable opportunity to utilize my educational and knowledge where I can prove my capacity for professional and research development
- Loyal to wards my work and duties

▪Update my knowledge, attitude, practice and skills

▪Capture any country cultures and resist every condition

▪Hard workers, self-confidence, quick learning, ability to work as team as well as individual, honest, polite, kind, excellent organization skill and excellent communication skills.

X. HOBIES

- First my hobby is spending my time with works other than leisure. Especially give

community care, perform good community services, listening music, visiting new place, cooking, sport, listening music and visiting place.

XI. BEHAVIOR

Free from any types of addictive, sociable, respectful, hardworking, and ability to work with others

XII. REFERENCES/CONTACT PERSON

A. From Jimma University college of public Health and Medical Sciences

S.N	Name	Position/Responsibility	Address
1	DESSALEGN DADI OLANI (MSc)	*Jimma University College of Public Health & Medical Sciences Lecturer*	0911-78-40-61
2	AMANA JEMAL (MSc)	*Jimma University College of Public Health & Medical Sciences Lecturer*	0917-80-75-45
3	SEBLEWORK MEKONEN SHEGEN (B.Pharm,MSc)	*Jimma University College of Public Health & Medical Sciences Lecturer*	0910-88-21-28
4	EMBIALE MENGISTU (MSc)	*Jimma University College of Public Health & Medical Sciences Lecturer*	0912-91-81-28

B. Kolfe Keranyo sub city woreda 9 Administration

S.N	Name	Position/Responsibility	Address
1	KIDU SIBHATU	*Kolfe Keranyo Sub City Worda 9 Health Office Head (my current supervisor)*	0913-47-88-51
2	ABDULKERIM NURADIN JEMAL	*Kolfe Keranyo Sub City Worda 9 Sport Office Head*	0913-09-72-37
3	MISGANAW DENUSSA NEME	*Kolfe Keranyo Sub City Worda 9 Education Office Head*	0911-18-23-38

C. From Food, Medicine and Healthcare Administration and Control Authority of the Addis Ababa City Administration

S.N	Name	Position/Responsibility	Address
1	Mamo Bekele	Food, Medicine and Healthcare Administration and Control Authority of the Addis Ababa City Administration my immediate supervisor	0911 39 47 29