ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

DEPARTMENTS OF EMERGENCY MEDICINE

ASSESSMENT OF OCCUPATIONAL INJURY AND ASSOCIATED FACTORS AMONG BUILDING CONSTRUCTION WORKERS IN ADDIS ABABA, ETHIOPIA, 2021

BY FENTA WONDIMNEH (BSC)

A RESEARCH THESIS TO BE SUBMITTED TO ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCE DEPARTMENT OF EMERGENCY MEDICINE IN PARTIAL FULFILMENT OF THE REQUIREMENT OF MASTER OF SCIENCE IN EMERGENCY MEDICINE AND CRITICAL CARE NURSING

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APPROVAL SHEET

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Thesis Title;

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By; Fenta Wondimneh (BSc).

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Acronyms and abbreviations

AA: Addis Ababa

AOR: Adjusted odd ratio

CI: Confidence interval

DRERC: Department of research ethics review committee

ETB: Ethiopia birr

ILO: International labor organization

MSD: Musculoskeletal disorder

PI: Principal investigator

PLC: Private limited company

PPE: Personal protective equipment

SPSS: Software Package for Statistical Analysis

TMC: Transport management center

USA: United States of America

WHO: World health organization

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ABSTRACT

Background: The World Health Organization (WHO) describesoccupational injury as an epidemic problem in the field of public health in underdeveloped countries.An occupational injury is defined as any personal damage or loss of human life due to the consequences of an occupational accident.Work-related injuries are significantly associated with various factors including employing young workers**,** low literacy workers, low work experiences, and not using PPE.

Objective: This study aimed toassess prevalence of occupational injury and associated factors among building construction workers in Addis Ababa, Ethiopia 2021.

Methods:A cross-sectional study was conducted in selected construction sites governed under Addis Ababa administration construction office in Addis Ababa city, Ethiopia.Data were collected via face-to-face interviews. The collected data wereentered using the epi data version 4.2.0 and exported to SPSS version 26 for further analysis and interpretations.Bothbivariate and multivariate logistic regression analysis wereperformed to see the association. P-value less than 0.05 was considered statistically significant and finally, the result of the study was presented by using texts, tables, and figures.

Results: Out of the total 220 study participants, 88(40%) workers reported occupational injury during the past 12 months and the main causes of injury were struck by an object 24(27.2%), and falling at ground level 23(26.1%). Workers who had employed temporarily 2.6 times high risk for occupational injury than those of workers who had employed permanently (AOR [95%) =2.694[1.021, 7.104]). Workers who have less than two years' experience were 2.8 times high risk for occupational injury than those of workers who have greater than two years (AOR [95%]= 2.892[1.468,5.697]). Workers who work greater than 48 hours per week 2.3 times more injured than workers who work less or equals to 48 hours per week (AOR [95%]= 2.346[1.345,4.092]).

Conclusion and recommendation: This study finding showed that there is highoccupational injury and this might be due to lack of work experience, prolonged working hours per week.So it is recommended that occupational health training to all construction workers and limiting

working time to less than 48 hours per week will havegreater effect to reduce occupational injury.

Keywords: Occupational injury, construction workers, personal protective equipment, health and safety training.

1. INTRODUCTION

1.1. Background

The World Health Organization (WHO) describes the occupational injury as an epidemic problem in the field of public health in underdeveloped countries(1).An occupational injury is defined as any personal damage, disease, or loss of human life due to theconsequences of an occupational accident(2).

The International Labor Organization (ILO) appraisals that above 270 million occupational injuries are causing two million deaths per year(3). Over 350,000 workers losetheir lives a year as a result of occupational injury, significantly higher in low and middle-incomecountries resulting,substantialexpenses to employers, extraload to healthcare personnel's, and long-term health and socio-economic eminence of injured employees(4).

Work-related injuriesmostly arise from a dynamic interplay of multiple risk factors like exposure to physical, mechanical, and chemical hazards in addition totheseperformances of unsafe practice by workers leading to work-related injuries(5).

In the area of globalization,the Construction industry is one of the world's rapidly expanding sectors and7.5% of the global labor force is made up of construction labor(6).Construction workers are estimated to be three times more likely to dieand twice as likely to be injured as workers of any other professions(7).However, there are work-related injuries especially on the building construction workers that lead to a major public health problem and serious social and economic consequences, which can be prevented if properactions are taken(8).

The construction industry has been reflected as an accident-prone industry that is due to working places are often filled with probable hazards that can lead to disability or fatal injury and these activities always have a high-risk ranking among all industrial sectors due to time stress in construction projects and the harsh and changing nature of construction tasks(9).

Studies have shown that work-related injuries are significantly associated with various factors including shortages of health and safety training programs, engaging young workers**,** low literacy

among workers, smoking, low work experiences, and not using personal protective equipment(10).

While numerous studies have been performed, the occupational complications of the construction sector have not been addressed or reduced in many parts of underdeveloped countries(11). In the majority of underdeveloped countries like Ethiopia, occupational safety and health aspects have been given less attention, this is due to lack of education, poverty, lack of health, and safety training and information on health hazards and risks at the workplaces(12).

1.2.Statements of the problem

Even though it is difficult to count the amount of deadly occupational injuries in the construction industry all over the world as study findings on this problem are not accessible for most

countries, it would be reasonable to estimate that at least 55,000 fatalities occur at construction sites around the world every year. This means globally one fatal accident occurs in this sector approximately every ten minutes(13).Globally, musculoskeletal disorders (MSD) is the mainoccupational illness, accounting for over 33% of all newly reported occupational illnesses in the overall population and 77% among theconstruction workers(14).

Studiesconducted across industries suggest that injury rates and cost rates are higher for construction than for the average of all industries(15). In the world it is probable that injuries due to falls at a lower level in construction work costs $427 million once a year (2005–2008 average) for medical care alone(16).

Although countries differ significantly in their physical industrial distribution or level of work-related health and safety, the construction worker'sinjuries are the main occupational injuries in various countries(17).

The effects of occupational health and safety threats confronted by construction workers in underdeveloped countries are 10 to 20 times higher than those in developed countries(18).It is estimated that more than 16,000 fatal occupational injuries occur in the established market economies (developed countries) with a mortality rate of 4.2 and the accident rate of 3240 per 100,000 workers respectively. These are lower than the fatality and accident rates in underdeveloped countries like in Asia at 21.5 and 16,434 per 100,000 workers respectively and Sub-Saharan Africa at 21 and 16,012 per 100,000 workers respectively(19).

Like many other African and low-income countries, occupational injury is high in Ethiopia. A previous study conducted in Addis Ababa showed that the prevalence of occupational injury among building construction workers was reported to be 38.3% a year(1).

In Ethiopia, little work has been done, including the study areaassociated with occupational injury and related factors among building construction workers. Therefore this study was aimed to assessthe occupational injury and related factors among construction workers in Addis Ababa city, Ethiopia.

1.3.Significant of the study

In Ethiopia, while there is some data that were studied in Dessie, Gonder and Addis Ababa city on occupational injury among building construction workers, there is still insufficient data

related to occupational injuries and associated factors among these employers. So this study was designed to identify the types of injury and major factors that can determine occupational injuries among building construction workers. It will be recommended for responsible stakeholders to reduce work-related injuries.

Furthermore, these findings willadd knowledge or valuable information for employers to design a plan on how to prevent work-related injuries especially in building construction sites. This study will also serve as baseline data for policymakers and researchers interested to conduct further studies especially in the areas of construction works.

2. LITRACHERE REVIEW

2.1. Prevalence of occupational injury

A study conducted in the USA showed that the prevalence of occupational injury among building construction workers was 39.9% in the whole one year period (20). Similar cross-sectional

studies conducted in Japanand Iran showed that 35.6% and 30% respectively, in a yearamong building construction workers(10,21).

In Africa like Ghana a study revealed that the prevalence of occupational injury among building construction workers was 57.9% in the whole one year period(2). Asimilar cross-sectional study done in Egypt showed that the prevalence of work-related injury among building construction workers within 12 months duration was 18.4%(17). According to the study done in Kampala city, Uganda the prevalence of work-related injury among building construction workers was 32.4%(19).

A study also conducted in our country Ethiopia, Gonder town showed that a one year prevalence ofoccupational injury among building construction workers was 38.7%(13).On the other hand, a study done in Afar Regional State, on Tendaho agricultural development Social company workers annual prevalence of occupational injury rate was783/1000 (22). A similar study was also done in Dessie town among building construction employees overall annual prevalence of occupational injury was 32.6%(23).

In Addis Ababa city a one year cross-sectional study also conducted showed that, the prevalence of work-related injury among building construction workers was 38.3%(1).

2.2. Common occupational injury, causes and parts of the body affected

Most studies showed that the leading cause of occupational injury among construction workers are falling ground level, struck by an object, cutting by a sharp object and slipping(24).The study conducted in Uganda among building construction workers reported that cut by a sharp object is the leading cause of injury(27.2%)(19).

Analysis of data in Iran showed that the injuries among building construction workers were mainly due to harms to the Upper Extremities (36.44% of all injuries) and head injury had the second rank in the frequency of injured parts of the body (18.56%), Lower Extremity injuries, had the third rank of frequent injury (17.10%)(25).ASimilar study also conducted in Egypt showed that the injured body part among building construction was lower leg 48.2%(17).

A study conducted in Ethiopia, Gondar among construction worker show that the major occupational problems are skin disorder 16%, eye problem and headache 15%, musculoskeletal problem, and harm by the sharp instrument 14%(7).

2.3. Factors affecting occupational injury

2.3.1.Socio demographic factors of occupational injury

Association between socio-demographic variables and occupational injury in different investigators result showed a significant association. Gender has a significant association with work-related injury in both developed and developing countries, male workers were around 2.5 times more likely to experience workplace injury than female workers in countries such as Canada(26), Japan(5), China, India, and Ethiopia(27).

Studies in different places showed that younger populations of less than 30 years workers suffer more occupational injury at a higher rate than older workers(28).

The study conducted in India on occupational injury in underground coal mine employees shows that age 45 and above had a higher risk of work related injury, but most of the time the types of injuryoccurred in the under 45 age group(29).

In the study conducted in Ethiopia, Gonder town workers above ≥ 45 years in age were 3.16 times more likely to be injured than workers found in the age group between 14−29 [AOR: 3.16, 95% CI: (1.03, 9.64)] however, no statistically significant association was found between workers in the age range of 14-29 and 30-44 years [AOR: 1.47, 95% CI: (0.82, 2.63)](8).

The study was done in India, the socio-demographic factor like education level, age, and marital status had a significant contribution to occupational injury(28)**.**

The cross-sectional study in Gonder town shows that the occurrence of occupational injury among unmarried building construction workers was 50% to be lower compared with married workers [AOR = 0.50, 95% CI = 0.25, 0.97]. The likelihood of injury occurrence among workers who worked for more than 5 years was 2.79 times to be higher compared with workers who worked for five and below years [AOR = 2.79, 95% CI = 1.72, 4.53](9).And also recent studies conducted in Ethiopia, among building construction workers, workers who worked greater than 48 hours per week had significantly associated with occupational injury(4).

The Cross-sectional study was done in Ethiopia, Amhara region among municipal solid waste collectors shows that education level and a monthly salary of less than 600 ETB are significantly

associated with severe occupational injury(22,30). The study was done in Iran shows that temporary working conditions had a significant association with occupational injury(31).

2.3.2Working environment factor of occupational injury

Different studies showed that working hours per day, workplace supervision, and health and safety training were significant associations with occupational injury(1,27).

Studies done in Uganda among building construction workers showedthe majority (41.2%) of the respondents were casual laborers (porters) and over half (52.2%) never had any health and safety training. Even those who had ever had health and safety training, the majority 50.7% (77/152) were trained at their workplaces(19).

A study done in Ethiopia north Gondar zone among small-and medium-scale factory workers revealed that the risk of occupational injury decreased with job satisfaction and workplace supervision(30).Another study done in Addis Ababa health training did not show a significant association with the occurrence of occupational injury(1).

2.3.3.Behavioralfactor of occupational injury

In Both developed and developing countries the major determinant or risk factors of occupational injury in the workplace are workplace stress, tobacco, drug, and alcohol consumption in the workplace(32). Different investigators emphasize that factors work-related injuries are the use of personal protective equipment, work experience, and khat chewing were greatly associated(6,33).

A Cross-sectional study in Egypt showed that extended working hours, poor safety climate, and short duration of work, job dissatisfaction, and job stress were significant risk factors of occupational injuries. While sleeping disturbance and poor machinery design and maintenance didn’t show a significant association with occupational injuries among the studied sample of construction workers(17).

Institutional based cross-sectional study done in Addis Ababa,Ethiopia among workers in micro scale and small scale woodworking Enterprises showed individual characteristics such as khat chewing, job satisfaction, work-related stress and job category were significantly associated with the occurrence of nonfatal occupational injury at $p < 0.05$(34).

2.4 Conceptual framework

The conceptual framework (figure-1) illustrates that; there are several factors influencing occupational injury like socio- demographic factors, working environmental factors and behavioral factors that may contribute to increase or decreases occupational injury.

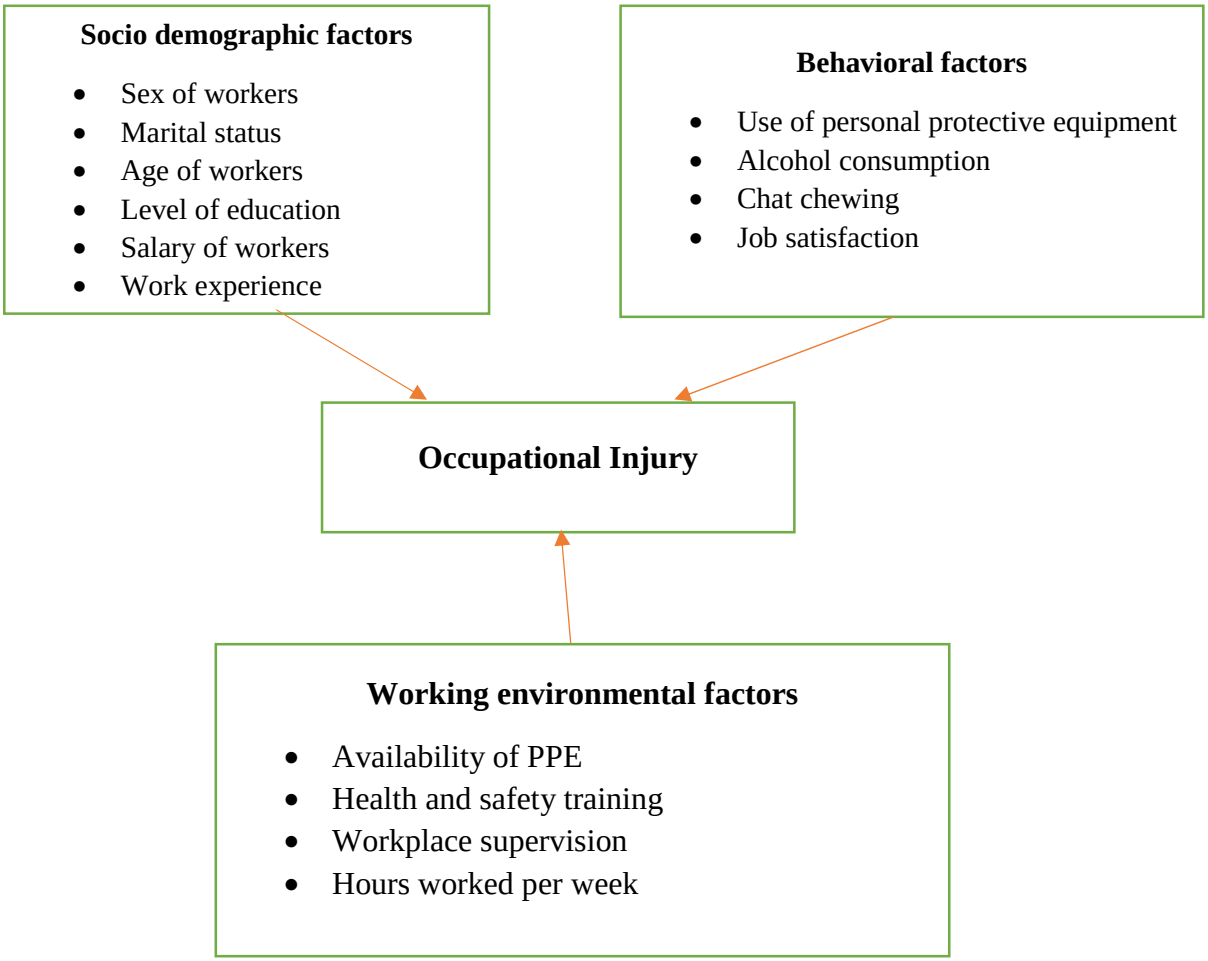


Figure 2.1 conceptual frame work adapted from literature review

3. OBJECTIVES OF THE STUDY

3.1. General objectives

To assess occupational injury and associated factors among building construction workers in Addis Ababa city, Addis Ababa Ethiopia, 2021.

3.2. Specific objectives

1. To assess occupational injury among building construction workers.
2. To identifyfactors associated with occupational injury among building construction workers.

4.METHODS AND MATERIALS

4.1. Study Area

The study was conducted in Addis Ababa city construction sites which has direct regulatory communication with the Addis Ababa city administration construction office.

Addis Ababa is the capital city of Ethiopia and a head seat for the African Union, set for more than 92 embassies and consular representatives, international agencies. It is also the country's commercial, industrial, and cultural center found in central Ethiopia with an elevation of about

2440 m. above sea level on a plateau that is crossed by numerous streams and surrounded by hills.The city is divided into 10 boroughs called sub cities and 99 woredas. According to the report from the central statics agency of Ethiopia in 2020, the total population was 4,794,000 with an annual growth rate of 4.4 %(35).

Currently,eight active construction sites were directly regulated by the Addis Ababa city administration construction office. Among these,Akakie zonal stadium which is found in akakie kalitie sub city and contains around 180 construction workers, Lideta secretariat found in lideta sub city and which contains 103 construction workers, Megenagna traffic management center found in bolie sub city and contains 95 construction workers, Arada police found in arada sub city and which contains 73 construction workers, andNefassilk secretariat found in nefasilk sub city and contains 84 construction workers were the selected study sites.

4.2. Study design and period

An institutional based cross-sectional study was conducted to assess the occupational injury and associated factors among building construction workers from March to April 2021.

4.3 Populations

4.3.1. Source of population

All construction workers worked in Addis Ababa city construction sites

4.3.2. Study population

All construction workers worked in selected construction sites in Addis Ababa city

4.3.3. Study subject and study unit

Selected construction workers whoparticipated in the study and fulfill the inclusion criteria

4.4. Inclusion and Exclusion criteria

4.4.1. Inclusion criteria

All construction workers who were directly involved in the construction work at selected organizations were included in this study.

4.4.2 Exclusion criteria

Administrative and other supportive staff and also workers who were absent from work for any reason during the time of data collection were excluded from this study.

4.5 Sample size determination

The actual sample size for the study was determined by using a single population proportion

Formula for single proportion population,

$$ni = \frac{(Za/2)^2 (p)(1-p)}{(d)^2}$$

Where ni = Initial estimated sample size

Z = Confidence level

P = prevalence

d = marginal error

To determine the sample size, I used the previous studythat wasconducted in Addis Ababa city with a prevalence(p) of occupational injury 38.3%(1). A 95% confidence level and margin of error (0.05).

$$ni = \frac{(1.96)^2 x 0.383(1-0.383)}{(0.05)^2} = 363.12 \approx 363.$$

Since the total population (building construction workers under the control of Addis Ababa city administration construction office during the study period) is 537,which is less than 10,000 I used the correction formula:

$$nf = \frac{ni}{1+ni/N}$$

Where, nf = final sample size

ni = initial sample size

N = total population

$$Nf = \frac{363}{1+363/537} = 216.6 \approx 217$$

Taking none-response rate to be 10% =

217 × 10% = 21.7≈22

The final sample size was: 217 + 22 = **239** building construction workers.

4.6. Sampling procedure

There were eight active construction sites under theAddis Ababaadministration construction office in Addis Ababa city. Five sites were selected by using lottery methods namelyLideta secretariat, Arada police, Megenagna traffic management center (TMC), Nefasilk secretariat and akaki zonal stadium construction sites.

Then the number of study unit to be sampled from each construction sites was determined using proportion to size allocation formula =ni*nf/N

Where: ni= number of workers in each construction sites

nf= final sample size of the study

N= total number of workers in selected construction sites

Akakie zonal stadium =180*239/537=80.1≈**80** workers

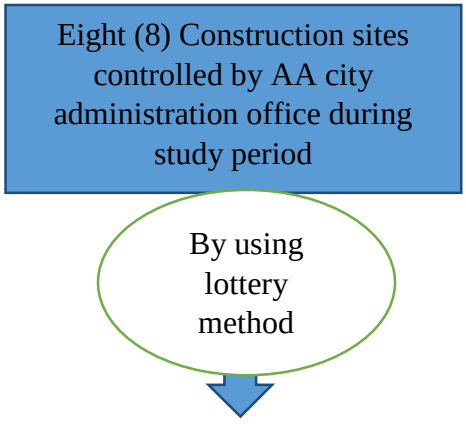
Lideta secretariat =103*239/537=45.8≈**46** workers

Arada police =73*239/537=32.5≈**33** workers

Megenagna TMC =95*239/537=42.2≈**42** workers

Nefassilk secretariat =84*239/537=37.5≈**38** workers

A Simple random sampling technique was used to select sampled construction workers from each construction site. Each study unit in the population who was presented during data collection had been represented by a slip of paper, these were put in a box and had been mixed, and a sample of the required size had been drawn from the box.



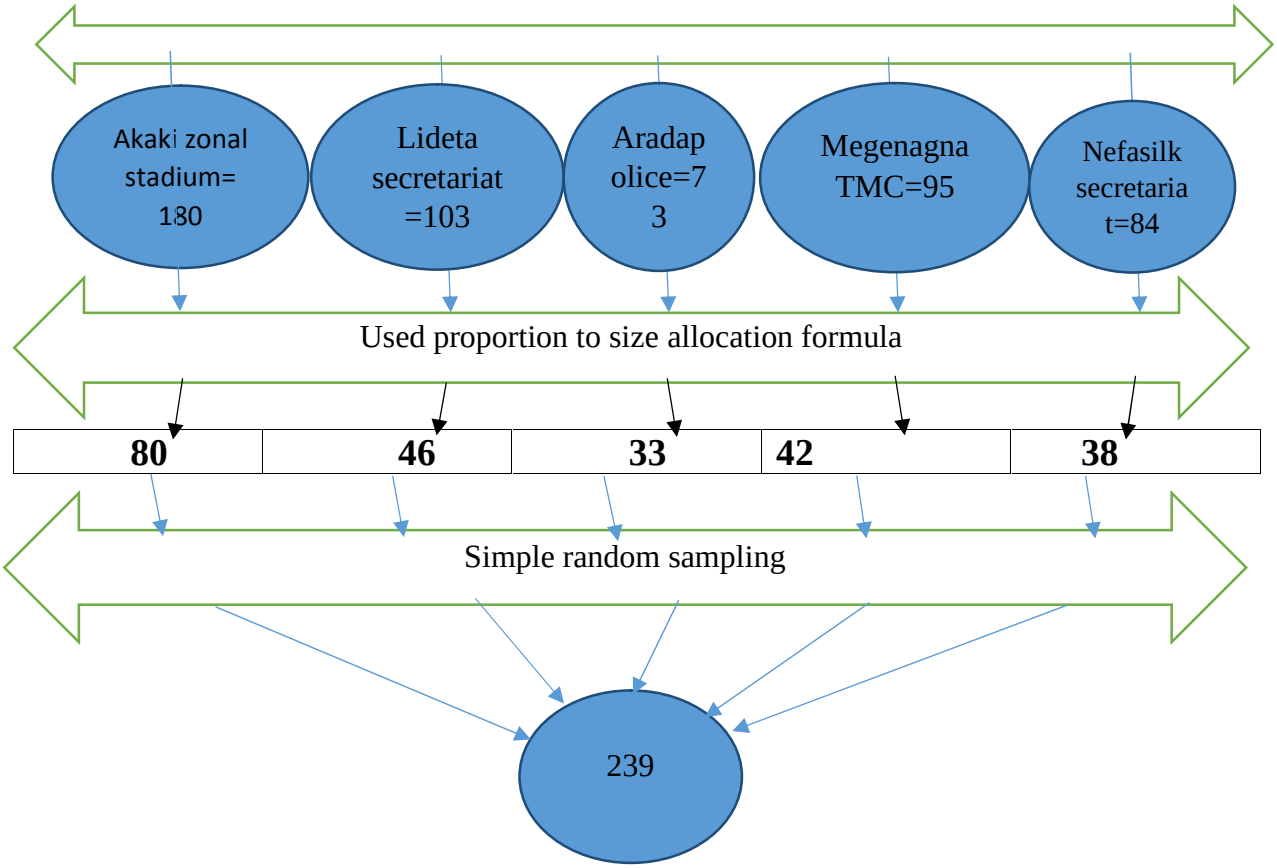


Figure 4. 1 diagrammatic presentation of sampling procedure for prevalence of occupational injury and associated factors among building construction workers in Addis Ababa city, 2021

4.7. Operational definition of terms

Occupational injury: Any physical injury resulting from an accident in the course of construction work which is reported by the respondent in the past one year(36).

Construction worker: worker employed in manual labor of the physical construction of the built environment and infrastructure(37).

Health and safety training: Short-term training given on health and safety to construction workers(36).

Personal protective equipment: Specialized clothing or equipment (such as goggles, gloves, ear plug, masks, helmets, face shield, boots, protective clothing) worn by employees for protection against health related and safety hazards at the time of working hours(37).

4.8 Study variables

4.8.1. Dependent variables

- Occupational injury

4.8.2. Independent variables

- Socio-demographic factors (Sex, Age, Marital status, Educational status, working experience, and employment condition)
- Working Environmental factors (Availability of PPE, Health and safety training, Health and safety supervision, and Hours worked per week or day)
- Behavioral factors (smoking, chewing khat, alcohol, job satisfaction and Use of PPE)

4.9. Data Collection Technique and Tool

Data were collected by using pretested and structured questionnaire via face-to-face interviews that were adapted from the previously studied literaturewith some modifications(23). The questionnaire focused on socio-demographic, behavioral, and environmental factors that can determine an occupational injury within the construction area. The questionnaire was translated to the Amharic language in written form then back to the English version after data collection for its analysis and processing.

Three trained BSc nurses for data collection and one MSc nurses for supervisor were recruited and participated throughout the data collection and trained for one day by the principal investigator on the study instrument and data collection procedures. The principal investigator and the supervisor collect the filled questionnaire and also checked for missed values and completeness on daily basis.

4.10. Data quality management

Semi-structured Questionnaires, which fit with the context, were prepared using an expert in English. The training was given both to data collectors and supervisors.To identify potential

problem areas and unanticipated interpretations,the interview questionnaires were pretested on 12 respondents at lideta police construction site two weeks before the actual data collection and based on the pretest results, the questionnaires were adjusted contextually.

The principal investigator and supervisor made spot-checking and reviewing the completed questionnaires to ensure completeness and consistency of the information collected.

4.11.Data processing and analysis

The collected data were cleaned for completeness and consistency before data entry. Responses in each question were coded for simplicity of data entry. The coded data were entered into Epi data 4.2.0 and exported to SPSS version 26.0 statistical software for data analysis. In the first step, the descriptive analysis like; percentages, frequency distribution, and measures of central tendency were computed. Both bivariate and multivariate logistic regression models were computed to see the association between independent versus dependent variables. Then factors with p-value < 0.2 in bivariate analysis were entered into multivariate logistic regression models to control the effect of confounding factors and $p < 0.05$ cutoff point was considered as statistically significant for all the independent variables. Then the result was presented with text, graphs, figures and tables.

4.12.Ethical consideration

Ethical clearance was taken from the emergency departments ofthe research ethics review committee (DRERC) ofAddis Ababa University. A formal permission letter was obtained from the city government of the Addis Ababa Construction office before data collection for each study site.

Informedwritten consent was obtained from participants who will Signe or gave written consent to fill the questionnaires were allowed to do so. 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 before the data collection.

4.13.Dissemination of results

The findings of this study will be presented and submitted to the Addis Ababa University College of health science department of emergency medicine. In addition, it will be disseminated to Addis Ababa construction bureau, Addis Ababa labor and Social Affair Bureau and Addis Ababa Health Bureau. Furthermore, the finding will be presented at appropriate seminars and effort will be exerted to publish the study findings in the international journal.

5. RESULT

5.1 Socio-demographic characteristics

A total of 220 participants were interviewed for this study with a response rate of 92%. Of the total participants,145(65.9%) were male workers and most of them 173(78.6%) were, within the

age range of ≤ 30 years with a mean of27.67(SD ±7.488). Regarding to marital status, the majority of them were married 105(47.7%) and 91(41.4%) have the educational level of secondary school complete. One hundred seventy eight (80.9%) are temporary employed works and 122(55.5%) were below two yearsof work experience. The mean monthly salary of the workers was 3581.72(SD ±1533.806). (Table 5.1).

Table 5. 1 Selected socio demographic determinants of occupational injury among building construction workers in Addis Ababa city, Ethiopia, 2021

Variable	NO	Percent (%)
Sex		
Female	75	34.1
Male	145	65.9

Age		
≤30	173	78.6
>30	47	21.4
Educational status		
Illiterate	28	12.7
Read and write	25	11.4
Primary (1-8)	54	24.5
Secondary (9-12)	91	41.4
College and above	22	10
Work experience		
≤ 2 years	122	55.5
>2 years	98	44.5
Department		
Mason	38	17.3
Carpenter and roofer	36	16.4
Plumbers and electrician /welder/	17	7.7
Workers carrying out finishing work /painters/	22	10
Plasterer	13	5.9
Daily laborer and other helpers	76	34.5
Operator /driver/	18	8.2
Employment conditions		
Temporary	178	80.9
Permanent	42	19.1
Monthly salary		
910-2000	46	20.9
2001-5000	147	66.8
>5001	27	12.3

5.2 Availability and utilizations of personal protective equipment

From the total study participants, only 79(35.9%) were used personal protective equipment during their working time. Of them, 68(86.1%) were used the helmet, and 48(60.8%) were not always used PPE during their working time. The majority of workers responded that reasons for not to use PPE were no access, negligence and low awareness to use. Sixty nine (87.3%) of PPE users were got from their institutions and the rest bought by themselves. (Table 5.2).

Table 5. 2 Availability and utilizations of PPE and safety training among building construction workers in Addis Ababa city, Ethiopia 2021.

Variable	Frequency	Percent (%)
PPE on duty (n=220)		
Yes	79	35.9
No	141	64.1
PPE all the time (n=79)		
Yes	31	39.2
No	48	60.8
From where do you get PPE (n=79)		
Supplied by institution	69	87.3
You buy it for yourself	10	12.7
Helmet (n=79)		
Yes	68	86.1
No	11	13.9
Glove (n=79)		
Yes	26	32.9
No	53	67.1
Respirators (n=79)		
Yes	63	79.7
No	16	20.3
Overalls (n=79)		
Yes	17	21.5
No	62	78.5
Boots /shoos/ (n=79)		
Yes	47	59.5
No	32	40.5
First training (n=220)		
Yes	62	28.2
No	158	71.8
On job training (n=220)		
Yes	63	28.6
No	157	71.4

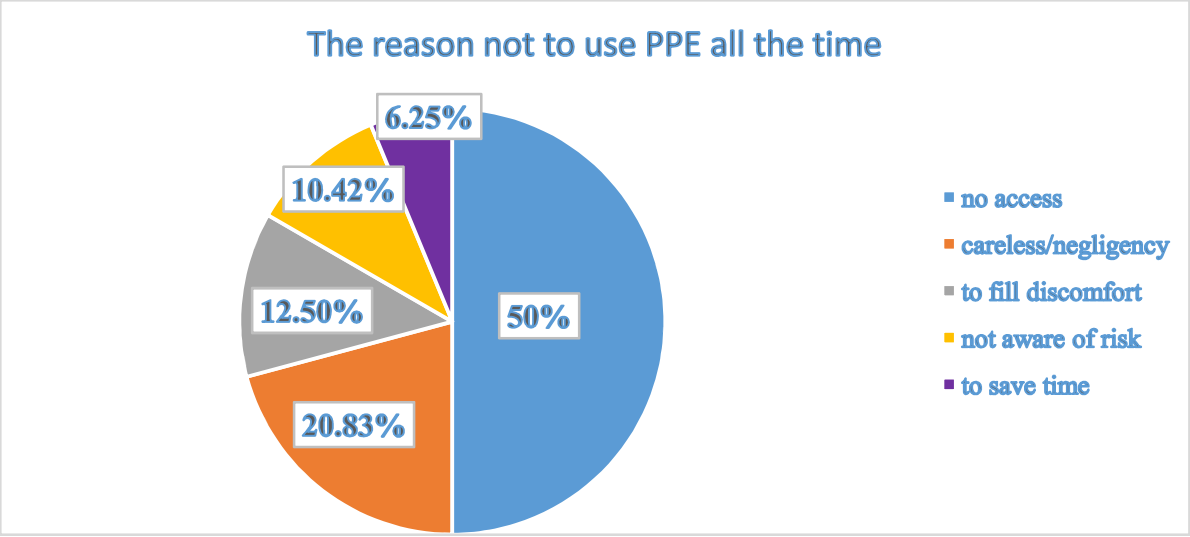


Figure-5.1 the reason of respondents not use PPE all the time among building construction workers in Addis Ababa city, Ethiopia, 2021.

5.3 Behavioral associated variables

Among the total respondents 63(28.6%) smoke cigarettes, 87(39.5%) drink alcohol and 21(9.5%) chew chat, 35(15.9%) have sleeping disorders and 108(49%) of respondents are not satisfied with their job. (Table 5.3).

Table 5. 3 distribution of behavioral factors among building construction workers in Addis Ababa city, Ethiopia 2021.

Variable	Frequency	Percent (%)
Smoke cigarette (n=220)		
Yes	63	28.6
No	157	71.4
Drinking alcohol (n=220)		
Yes	87	39.5
No	133	60.5
Chewing chat (n=220)		
Yes	21	9.5
No	199	90.5
Sleeping disorders (n=220)		
Yes	35	15.9
No	185	84.1
Job satisfaction (n=220)		
Yes	112	50.9
No	108	49.1

5.4 Occupational injury related issue

The total prevalence of occupational injury in the last 12 months was 88(40%). Among those injured respondents 59(67.8%) were injured once a time and 12(13.6%) were injured 3 or more times in their working time within the past one year. Thirty seven (42%) of them did not remember the exact day of the week when they were injured, followed by Tuesday 17(19.3%) and Friday 8(9%). Among the injured respondents, 49(55.7%) of injuries occurin the afternoon time of the day when the injury had occurred. Hand 21(23.9%)and toe 17(19.3%) were the most injury body parts of respondents. The type of accident occurs in the workers were struck by objects 24(27.3%), falling at ground level 23(26%) and stuck against an object 18(20.5%) respectively. The main reason for injury occurrence that was reported by respondents was due to working behaviors of construction work 31(35.2%), not using PPE 30(34.1%) and accident is beyond control 13(14.8%) respectively. Seventy eight (88.6%) of injured respondents workplaces were both groundsand high. Among the total injured respondents, 75(85.2%) does not visit hospitals and 35(39.8%) of workers were 2-3 days absent from work because of injury. (Table 5.4).

Table 5.4Distribution of injured body parts during last 12 months among building construction workers in Addis Ababa city, Ethiopia 2021.

Variables	Frequency	Percent (%)
Occupational injury		
In the last 12 months (220)	88	40
Number of occurrence (n=88)		
One times	59	67.1
Two times	17	19.3
≥3 times	12	13.6
Injured body parts (n=88)		
Eye	7	8
Tooth	2	2.3
Hand	21	23.9
Knee	13	14.8
Toes	17	19.3
Head	9	10.2
Upper arm	8	9.1
Lower leg	14	15.9
Back	5	5.7
Chest	7	8

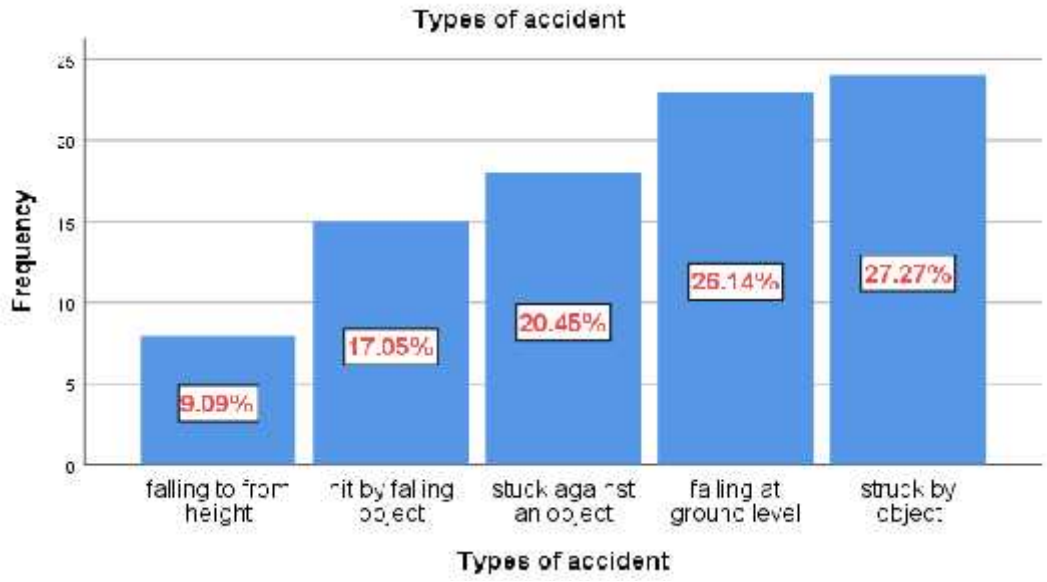


Figure-5.2 Types of accident that occurs among building construction workers in Addis Ababa city, Ethiopia 2021.

5.5 working environment related factors

Respondents were asked about working hours per week and 115(52.3%) work ≥48 hours per week. Among the total workers,125(56.8%) of workers were done regular health and safety supervisions on working places, 113(51.4%) of workers did not have safety training related to new employment, equipment, or work process, and also all 220(100%) workers involve manual handling activities like pulling, pushing, caring and lifting. Among those 134(60.9%) were carrying very heavy or greater than 50kg and 182(82.7%) of workers on average 4 hours and above time spend at this work per day.

5.6 Bivariate analysis

All independent variables were tested by binary logistic regressions among them,educational status, employment conditions, working experiences, and working hours per week were showed significant association with occupational injury at p< 0.05. Regarding educational status, illiterate workers were 4 times more likely injured than workers who are educated (COR [95%]=4.121[1.233,13.771]) and also temporary workerswere 2.5 times more injured compared with permanently employed construction workers (COR [95%] = 2.496[1.156, 5.387]). Workers who have less than two years of working experience were 3.7 times more likely injured than those workers who have greater than two years of work experience (COR [95%] = 3.719[2.067, 6.689]).Workers who work greater than 48 hours per week were 2.3 times more injured than workers who work less than 48 hours (COR[95%]= 2.346[1.345,4.092]). But some variables like sex, marital status, monthly salary, safety training and use of personal protective equipment during working time and personal behaviors like alcohol drinking, smoking and chewing kchat don't show significant association with occupational injury.

5.7 Multivariate analysis

Variables with p-values less than 0.20 during the bivariate analysis were included in the multivariate logistic regression. Among them, educational status, employment condition, working experiences, and working hour greater than 48 hours per week were showed association with occupational injury.

Those workers who had only read and write were about 6.4 times more injured than workers who had college and above construction workers (AOR [95%] =6.435[1.373,30.157]) and also workers who had employed temporarily 2.6 times higher associated with occupational injury than those of workers who had employed permanently (AOR [95%) =2.694[1.021, 7.104]). Workers who have less than two years' experience were 2.8 times more likely injured than those of workers who have greater than two years of working experience (AOR [95%]= 2.892[1.468,5.697]). Workers who work greater than 48 hours per week 2.3 times more injured than workers who work less or equals to 48 hours per week (AOR [95%]= 2.346[1.345,4.092]).

Table 5. 5 Summary of logistic regression analysis of factors on occupational injury among building construction workers in Addis Ababa city, Ethiopia, 2021.

Variable		Occupational injury		COR(95%)CI	AOR(95%)CI	p-value
		Yes	No			
Age	≤30	75(43.4%)	98(56.6%)	2.002(0.988,4.056)	1.975(0.824,4.736)	0.127
	>30	13(27.7%)	34(72.3%)	1.00	1.00	
Educational Status	Illiterate	17(60.7%)	11(39.3%)	4.121(1.233,13.771)	2.052(0.527,7.992)	0.000*
	Read and write	21(84%)	4(16%)	14.000(3.375,58.067)	6.435(1.373,30.157)	
	1-8	21(38.9%)	33(61.1%)	1.697(0.573,5.028)	0.712(0.202,2.505)	
	9-12	23(74.7%)	68(25.3%)	0.902(0.315,2.579)	0.424(0.125,1.437)	
	College & above	6(27.3%)	16(72.7%)	1.00	1.00	
Employment condition	Temporary	78(43.8%)	100(56.2%)	2.496(1.156,5.387)	2.694(1.021,7.104)	0.045*
	Permanent	10(23.8%)	32(76.2%)	1.00	1.00	
Work experience	≤2 years	65(53.3%)	57(46.7%)	3.719(2.067,6.689)	2.892(1.468,5.697)	0.002*
	>2 years	23(23.5%)	75(76.5%)	1.00	1.00	
PPE use on duty	Yes	26(32.9%)	53(67.1%)	1.00	0.990(0.497,1.973)	0.978
	No	62(44%)	79(56%)	0.625(0.352,1.111)	1.00	
Working hours per week	≤48 hrs	31(29.5%)	74(70.5%)	1.00	1.00	0.001*
	>48	57(49.6%)	58(50.4%)	2.346(1.345,4.092)	2.952(1.520,5.735)	

Note *, significant at $p < 0.05$.

6. DISCUSSION

This study attempted to assess the prevalence of occupational injury and associated factors in the last 12 months among building construction workers in Addis Ababa city.

The study result showed that the overall prevalence of occupational injury in the last 12 month in the study area was 88(40%), this study is similar to a study done in the USA 39.9%(20), but slightly higher compared with other countries done in Japan 35.6%(10), Iran 30%(21), Egypt 18.4%(17), and Uganda 32.4%(19). This gap may be due to low educational level and lack of awareness to occupational injury in our study cites. In a study was done in Ghana 57.9%(2) is higher compared with our study findings. This could be the study area and sample population difference. This study is also slightly higher compared with the previous studies that were conducted in different parts of Ethiopia, Gondar 38.7%(13), Dessie town 32.6%(23) and Addis Ababa 38.3%(1).This difference might be due to poor personal protective equipment utilization, working conditions and long working hours per week in our current study cites.

This study depicted that the most frequent causes of occupational injury were struck by an object 27.3% (of all injured individuals), followed by falling at ground level 26%. This result is relatively similar to the study done in Iran and Egypt where accidents related to falling represent a significant portion of occupational injury among building construction workers(17,24). A study also conducted in Addis Ababa, showed that the most common causes of occupational injury were cutting by sharp objects 66.3% and falling 28.5% (1).This is might be the working behaviors of the construction industry.

In this study, the main body parts or primarily affected by occupational injury among building construction workers were hand or upper extremities 23.9%and this result is in line with studies done in Iranand theUSA(20,24). But, a similar study done in Egypt showed lower leg was primarily affected body parts due to occupational injury among building construction workers 48.2%(17), This discrepancy in this study may be due to a lack of personal protective equipment specially hand gloves.

Different studies report shows that illiterate workers were significantly associated with occupational injury(22,30) which is in line with this study.The odds of occupational injury for workers who can read and write only were 6.4 times more likely injured than those of workers who have college and above. This might be due to the fact that education is more likely to increase workers safety and health practice that can prevent them from an occupational injury. The high risk of occupational injury among construction workers with low literacy might be due to lack of awareness and low level of knowledge about unsafe actions and most of the time being given difficult and dangerous tasks in contrast with educated workers were work in safe working environments.

The study finding showed that temporary workers were 2.6 times more likely injured than those of permanent construction workers. This is in line with other study conducted in Iran(31). This may due to temporary workers don't get a chance to work for a whole year like the permanent workers and lack of experience on a specific task can play an important role in occurring accidents for such construction workers.

Another important finding of this study was years of experience.Construction workers who served for 2 or less than 2 years were 2.8 times higher than workers who served for more than 2 years.But this finding was contrary to a study done in Gondar and Addis Ababa(1,9). This might be the shorter duration of employment is associated with less experience and less awareness about workplace hazards which contribute to risk-taking behaviors.

According to this study,the result showed that workers who work greater than 48 hours per week were more likely injured (2.9 times) than workers who work less or equals to 48 hours per week. This result is relatively similar to studies done in Egypt and Addis Ababa(4,17). This may excessive workload that enhances to fatigue and also it may lead to unsafe acts and ignorance to health and safety information.

7. STRENGTH AND LIMITATIONS OF STUDY

7.1. Strength of the study

Use of face to face interview during data collection reduces nonresponse rate, permit clarification of questionnaires and addressing all participants who differ in educational status.

7.2. Limitations of the study

The study was a cross-sectional study. The possibility of recall biases resulting in under or over reporting and misreporting of events was likely.

The study did not find fatality and severe injuries that occurred within the past one year due to study participants were employees present in work during my study, did not find severely injured workers.

Workers who were absent from work due to illness were not included in this study. Therefore the result of the study might be affected by the healthy workers effect.

8. CONCLUSION AND RECOMMENDATIONS

8.1. Conclusions

The report of this study indicated a relatively higher prevalence of occupational injury among building construction employees compared to other studies conducted in Ethiopia. Struck by an object and falling at ground level were the leading causes of occupational injury.

Factors like low work experience, illiteracy, working hours more than 48 hours per week and temporary work in the construction industry have significantly associated with occupational injury.

8.2. Recommendation

Ministry of Health, Addis Ababa health bureau, Labor and Social Affairs bureau and Addis Ababa house construction bureau should have an integrated emphasis to reduce occupational injury by setting safety regulations on the construction industry.

Contractors, who select employees during recruitment, should consider important socio demographic and behavioral factors such as work experience, educational status, etc.

Implementations of basic occupational health and safety services with the provisions of personal protective devices, not spending more than 48 hours per week at work, ensuring sustained workplace inspections, and promotions of education and/or training on occupational health and safety to all categories of workers are highly advised.

More comprehensive studies need to be carried out at different sites and among workers enrolled at different construction activities along with monitoring and medical checkups of the workers to get more relevant and evidence-based information about construction workers.

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Annexes

Annex A: English questionnaire

ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCE

DEPARTMENT OF EMERGENCY MEDICINE

Questionnaire on the Assessment of Occupational Injury and Associated Factors among Building Construction Workers in Addis Ababa city, Ethiopia, 2021

Questionnaire ID: _____

Name of construction site by code _____

Consent Form

Hello! My name is ……. We are interviewing with construction workers who had direct involved in construction work. The objective of this study is to assessoccupational injury and associated factors among building construction workers in Addis Ababa city. You are selected randomly and we are requesting you to answer the questions that we have prepared for you.

We will ask you a series 48 of questions which will take 20-30 minutes of your time. Your answers to these questions will remain confidential. Your name will not be written on questionnaire. You have the rights to withdraw from the study at any stage or to restrict the information you provide from being used as a part of the data analysis. There is no anticipated risk except time consumption with expected benefits.

Confidentiality: - Any information forwarded will be kept private and his/her name will not specified

Do you agree to participate in the study?

A. Yes ---------- continue with the interview

B. No -------- go to the next interview

Thank you for being voluntary to participate in the study.

I have been briefly informed about the study and I clearly understood the objective. Therefore, I hereby approve my consent to take part in the study as an Interview With my signature.

Identification number of respondent's _____Signature_____ Date_____

Name of data collector_____ Signature_____ Date_____

Questionnaire

Part I

Socio demographic characteristics of respondents

No	Question	Possible response	Code	Remark
101	Sex	1.male 2.female		
102	Age	……..in years		
103	Marital status	0. Married 1.Single 2.Divorced 3.Widowed		
104	Educational status	0.Illitrate 1.read and write 2.Primary school(1-8) 3.Secondary school(9-12) 4.college and above		
105	Employment pattern	0. Temporary 1. Permanent		

106	monthly income including over time	---------- ETB/month		
107	What is your working department?	0. mason 1. Carpenter & roofers 2. Plumbers & electrician /welder/ 3.worker carrying out finishing work /painter/ 4. plasterer 5. Daily laborer and other helpers 6.operater/driver 7. Others specify….		
108	Work experience	-------- in years ---------in months		

Part II

Availability and utilization of personal protective measures.

No	Question	Possible response	Code	Remark
201	Do you use any PPE while you are on work?	1.Yes 0.No →		Skip to Q206
202	If yes to Q201 what type?(more than one answer is possible)	0. Glove 1.Yes 0.No 1. Ear plug 1.Yes 2.No 2. Respirators 1.Yes 2.No 3. Helmet 1.Yes 2.No 4. Overalls 1.Yes 2.No 5. Goggles 1.Yes 2.No		

		6. Face shield 1.Yes 2.No 7. Boots /shoes1.Yes 2.No 8. Others, specify_____		
203	If yes to Q201,do you use PPE all the time while on working	1.Yes 0.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)	0. Not to fill discomfort 1. To safe time 2. Not aware of risk 3.careless/negligence 4. No access		
205	From where do you get PPE? (more than one answer is possible)	0. It is supplied by institution 1. You buy it for yourself 2. Others, specify		
206	Have you had training on any type of occupational safety issues when you were first engaged in this job?	1.Yes 0.No		
207	Have you ever had on job training on any type of occupational safety issues?	1.Yes 0.No		
208	If yes to Q207, from where did you get? (more than one answer is possible)	1. From institution 2.From NGOs		

Part III

Occupational (work related) injury characteristics.

No	Questions	Possible response	Code	Remark
301	Have you had an incident at work that resulted injury to you in the last12 months	1. Yes 0. No		If no skip to Part IV
302	Have you had an incident at work that resulted injury to you in the last 2 weeks?	1. Yes 0. No		
303	If yes for Q301 or 302, how many times?	1.----------in12 months 2.--------- in 2 weeks		
304	Day of injury	0. Monday 1.tuesday 2.Wedensday 3.Thuresday 4.Firday 5.Saturday 6.Sunday 7.I don't remember		
305	Time of injury	0.Morning 1.Afternoon 2.Evening 3.Midnight 4.I don't remember		
306	Parts of the body affected	0. Eye 1.Yes 2.No 1. Tooth 1.Yes 2.No 2. Hand 1.Yes 2.No 3. Ear 1.Yes 2.No 4. Knee 1.Yes 2.No		

		5. Toe 1.Yes 2.No 6. Fingers 1.Yes 2.No 7. Head 1.Yes 2.No 8. Upper arm 1.Yes 2.No 9. Lower arm 1.Yes 2.No 10. Upper leg 1.Yes 2.No 11. Lower leg 1.Yes 2.No 12. Back 1.Yes 2.No 13.Chest1.Yes2.No 99. other ,specify		
307	Types of accident	0.Fallig to from height 1.struck by object 2.stuck against an object 3.Hit by falling object 4.Falling at ground level 99.other specify----------		
308	What was your reason(s) at, the time of injury?	0. I was new for the work process 1. Thinking about private affairs 2. Due to other medical problem 3. I think accident is beyond control 4. It is the working behavior 5. It is due to not using PPD/E 6. I don't remember 99. Others (specify)		
309	Working condition	0.At height 1.Ground		

		2.Both 3.underground		
310	Were you hospitalized due to injury?	1.yes 0.No		
311	If yes for Q310, how long it takes (hours)	----------hours		
312	If yes for Q310, how long it takes (day)?	----------days		

Part IV

Working environment related variables

No	Question	Possible response	code	Remark
401	Hours worked per week	----------		
402	Regular health and safety supervision	1.Yes 0.No		
403	Have you had safety training in Connection with new employment, equipment, or Work Process?	1.Yes 0.No		
404	Does your work involve manual handling activity (pulling, pushing, carrying, and lifting)?	1.yes 0.No		
405	If yes for Q404 On average how much weight did you handled per day?	0.light (not greater than 5kg) 1. medium (6-25kg) 2. heavy (25-50)kg) 3.very heavy (greater than 50kg)		
406	On average how much time did you spend at this	0. Not more than 2 hours. 1. 4.hours		

	work per day	2. 4 hours and above		
407	Did your work need visual concentration?	1.Yes 0.No		
408	Do you use vibrating tools at your work place?	1. Yes 0. No		
409	If your answer for Q408 is yes for how long per day	0.Not greater than 1 hour 1. 2-4 hours 2. greater than 4 hours		
410	Are machines you are working with always guarded or installed With safety devices?	1. Yes 0. No		
411	Are machines you are working withal ways maintained Immediately when old or unsafe?	1. Yes 0. No		

Part v

Workers behavior and characteristics.

No	Questions	Possible response	code	Remark
501	Do you smoke?	1.Yes 0.No		If no skip to Q503
502	If yes for Q501, how often?	0.Every day 1.1-3 days/ week 2.Ocassionally		
503	Do you drink alcohol?	1.Yes 0.No		If no skip to Q35
504	If yes to Q503, how Often?	0. Every day 1. 1-3days/wk 2.Ocassionally		

505	Do you chew khat?	1.Yes 0.No		If no skip To Q507
506	If yes to Q505, how Often	0. Every day 1.1-3 days/wk. 2.Ocassionally		
507	Do you have any sleeping disorders	1.Yes 0.No		If no skip To Q509
508	If yes to Q507, what is the reason	0. Working greater than 8 hours without Shifting 1. Working in evening 2. Trying to work more than one task at a time 3. Excessive heat 99. Others, Specify___		
509	Are you satisfied with your job or task required to do at Present?	1.Yes 0.No		

Thank you!!!

Annex B: Amharic questionnaires

አዲስአበባዩኒቨርስቲጤናሳይንስኮሌጅየ ድንገ ተገ ኛእናፅኑህክምናትምህርትክፍል

በአዲስአበባከተማበስራላይያለየ ህንፃ ግንባታሰራተኞችበሚ ነ ቧቸውቤቶችግንባታውስጥየ ሚሩሰራተኞችላይየ ሚደርሱትን ከሞ ጋርየ ተያያዙጉዳቶችንእናማስኤዎቻቸውንለይቶማወቅይረዳዘንደየ ተዘጋጀመጠይቅ, 2013ዓ.ም ፡

ጤናይስጥልኝ፡ እኔ

______________________________እባላለሁ ፡ ከሞ ጋርበተያያዙጉዳቶችእናማስኤለሆኑስለሚችሉነ ገሮችከ20-30 ደቂቃበቻየ ሚፈጅ 48

ጥያቄልጠይቅዎትእፈልጋለሁ ፡ እርስዎየ ሚሰጡትክክለኛመልስለህግአርቃቂዎችበቀላሉከሞ ጋርበሚደርሱጉዳቶችንበመከ ላከልእናበመቆጣጠርጤናማየ ሰራተኛሀይልእንዲፈጠርይረዳል፡ ፡ በዚህጥናትላይየ ሚተፍማኝኛውምስወዉዘህበታችስለጥናቱ የ ተሰጠውንሚጃበትክክልተረድተፍቃደኝነ ቱንሲያሳይብቻነ ው ፡

የ ጥናቱርዕስ፡ በአዲስአበባከተማበስራላይያለየ ህንፃ ግንባታሰራተኞችበሚ ነ ቧቸውቤቶችግንባታውስጥየ ሚሩሰራተኞችላ ይየ ሚደርሱትንከሞ ጋርየ ተያያዙጉዳቶችንናማስኤዎቻቸውንለይቶማወቅነ ው።

የ ጥናቱዋናአላማ፡ በአዲስአበባከተማበስራላይያለየ ህንፃ ግንባታሰራተኞችበሚ ነ ቧቸውህንፃ ወችግንባታሰራተኞችላይየ ሚ ደርሱከስራጋርየ ተያያዙጉዳቶችንብዘታቸውእናአጋላጭማስኤዎቻቸውንለይቶማወቅ፡ ፡

የ ተጠኝዎችመብት፡ በጥናቱላይመሳተፍምሆነአለመሳተፍይችላሉ፡ ተሳታፊዎችጥናቱንበፈለጉትበታማቋረጥይችላሉ፡ መመለስ ያልፈለጉትንምጥያቄማዘለልምይችላሉ፡ ፡ ተሳታፊዎችማንኛውንምጥልገ ባቸውንጥያቄመጠየ ቅይችላሉ፡ ፡

የ ጥናቱሚስጥራዊነ ቱ፡ በመልሶችየ ሚጥማንኛውምአይነ ትመልስበሚስጥርይያዛል፡ ስማቸውምአይገ ለፅም ፡

የ ተሳታፊዎችየ ፈቃደኝነ ትመጠየ ቂያቅፅ

በጥናቱ ለመሳተፍ ፍቃደኛ ነ ወት??

አዎ------------ አልሳተፍም--------------

የ ተሳታፊዎችፊርማ---------------------

የ ሚጃስብሰበውሰዎፊርማ-------- ---------ቀን-----------

ክፍል 1፡ ማህበራዊ እና ስነ -ህዝባዊ ገፅታወችን የተመለከቱ ጥያቄወች

ተ.ቁ	ጥያቄ	የመልስአማራጮች	መለያ	ዝለል
101	ፆታ	1. ወንድ 2.ሴት		
102	ዕድሜ	----------አመት		
103	የጋብቻህኔታ	1. ያገባ/ች 2. ያላገባ/ች 3. የፈታ/ች 4. የሞተችበት/ባት		
104	የትምህርትደረጃ	1.ማንበብናመፃፍየማይችል/ትችል 2.ማንበብናመፃፍ 3.የመጀመሪያደረጃትምህርት(1-8) 4.የሁለተኛደረጃትምህርት(9-12) 5. ኮሌጅእናከዚያበላይ		
105	የቅጥርሁኔታ	1. በጊዜያዊነት 2. በቋሚነት		
106	የሙገቢ	----------ብር		
107	የስራክፍልምንደኅነው	1. ማንበኛ 2. አናፂእናጣሪሰራተኛ 3. የቱቦዎችንእናመብራትገጣሚ 4. የሜዳሻስራዎችንየሚሩ /painter/ 5.ለሳኝ 6. የቀንሰራተኞችእናለሊችየረዳትስራየሚሩ 7. ሼፊር/ኦፕሬተር/		
108	የስራልምድ	----------አመት ----------ወር		

ክፍል 2፡ የመከላከያመላርያዎችአቅርቦትናአጠቃቀምንተመለከተ

ተ.ቁ	ጥያቄ	የመልስአማራጮች	መለያ	ዝለል
201	ስራበሚሩብትግዜየአደጋመከላከያይጠቀማሉ	1.አዎ 2.የለም		ወደቁ. 206
202	ለጥያቄቁ.201፡ መልስዎአዎከሆነ ምንአይነት(ካንደበላይመልስመጠትይቻላል)	a. ጓንት 1. አዎ 2. የለም b. የጆሮመከላከያ 1. አዎ 2. የለም c. የአፍናየአፍንጫመከላከያ 1. አዎ 2. የለም		ዝለል

		d. የጭንቅላት መከላከያ 1. አዎ 2.የለም e. ሁለንም የ ሰዉ ነትክፍል 1. አዎ 2.የለም f. የአይንመከላከያመነ ፅር 1. አዎ 2.የለም g.የፊትመሸፈኛ 1. አዎ 2. የለም h.ቡቲ/ቆዳጫማ 1. አዎ 2. የለም i.ሌላካለ ይገ ለፅ ----------------		
203	ለጥያቄቁ.201 መልስዎአዎከሆነ መከላከያዎቹንሁልግዜይጠቀማሉ	1.አዎ → 2.የለም		ወደቁ. 205 ዝለል
204	ለጥያቄቁ.203 መልስዎየ ለምከሆነ ሁሉመከላከያእንዳይጠቀሙ የሚያደርጎትነ ገ ርምንድን ነ ዉ(ካንደበላይመልስመስጠትይቻላል)	a.ስለሚያመቸ 1. አዎ 2. የለም b.ስዓትለመቁጠብ1. አዎ 2. የለም c.ጉዳትያመጣሉብዬስለማላስብ1. አዎ 2. የለም d.ግደለሽነ ት 1. አዎ 2. የለም e.ስለሌለኝ 1. አዎ 2. የለም		
205	መከላከያመሳርያዉንከየ ትነ ዉ የ ሚያገ ኙት(ካንደበላይመልስመስጠትይቻላል)	1.ከተቋሙ 2.እራሴእገ ዛዋለሁ 3. ከሌላ/ይጠቀስ/ ------------		
206	በዚህስራስትሰሚ የ ጥን ቃቄስልጠናወስደዉ በር	1.አዎ 2.የለም		
207	በስራላይእያሉየ ጥን ቃቄስልጠናወስደዉያዉቃሉ	1.አዎ 2.የለም		
208	ለጥያቄ 207 መልሶአዎከሆነ ስልጠናዉንከየ ትነ ዉያገ ኙት(ካንደበላይመልስመስጠትይቻላል)	1.ከተቋሙ 2.ማንግስታዊካልሆነ ግብረሰናይድርጅት 3.ሌላካለይጠቀስ------------		

ክፍል 3፡ የስራላይጉዳትንበተመለከተ

ተ.ቁ	ጥያቄ	የመልስአማራጮች	መለያ	ዝለል

301	ባለፉትአስራሀለትወራትወላጥከስራዎጋርበተያያዘየደረሰበዎትአደጋአለ?	1. አዎ 2. የለም		ወደክፍል 4 ይሸጋገሩ
302	ባለፉትህለትሳምንታትወላጥከስራዎጋርበተያያዘየደረሰበዎትአደጋአለ?	1. አዎ 2. የለም		
303	ለጥያቄቁጥር 301 እና 302መልሰዎአዎከሆነ ለስንትጊዜ?	1.ባለፉት 12 ወራትወላጥ-------ጊዜ 2.ባለፊትህለትሳምንታት-------ጊዜ		
304	አደጋወየደረሰብዎትዕለትመቼነ ው?	1.ሰኞ 2.ማክሰኞ 3.ዕረቡ 4.ሐሙስ 5.ዓርብ 6.ቅዳሜ 7.እሁድ 8.አላስታወሳም፤		
305	ምንጊዜነ ወአደጋወየደረሰብዎት?	1.ጠዋት 2.ከስዓት 3.ማታ 4.ሌሊት 5.አላስታወሳም		
306	ጉዳትየደረሰበትየሰዉነትዎክፍል	a. አይን1.አዎ 2.የለም b. ጥርስ 1.አዎ 2.የለም c. እጅ1.አዎ 2.የለም d. ጆሮ 1.አዎ 2.የለም e. ጉልበት 1.አዎ 2.የለም f. እግር 1.አዎ 2.የለም g. የእግርጣት 1.አዎ 2.የለም h. ራስ 1.አዎ 2.የለም i.የላይኛዉክንድ 1.አዎ 2.የለም j.የታችኛዉክንድ 1.አዎ2.የለም k.ከጉልበትበላይያለዉእግር1.አዎ 2.የለም l.ከጉልበትበታችያለዉእግር1.አዎ2.የለም m. ጀርባ 1.አዎ 2.የለም n. ደረት 1.አዎ 2.የለም o.ሌላካለይገለፅ----------		
307	የጉዳቱአይነት	1. ከከፍታበታመዉደቅ 2.በተቀጣጣይነገሮችመቃጠል 3. ከተቀጣጣይነገሮችጋርመጋፈጥ 4. የሚያደክሙ ገሮች 5.ሜትላይመዉደቅ		

		6.ሌለካለይጠቅስ		
308	አደጋመላምየደረሰበዎይመስለዎታል?	a. ለስራመሪያቶችአዲስነ በርኩ 1. አዎ 2. የለም b. ስለግልህይወቴአያሰብኩኝ በር 1. አዎ 2. የለም c. ሌለየጠፍችግርስለነ በረብኝ 1. አዎ 2. የለም d. አደጋንመከላከልስለሞይቻልነ ወጉዳቱ የደረሰብኝ 1. አዎ 2. የለም e. የስራመባህሪስለሆነ ነ ው1. አዎ 2. የለም f. የአደጋመከላከያባለሞረጌነ ው1. አዎ 2. የለም g. አላስታወስም1. አዎ 2. የለም h. ሌለካለይጠቅስ----------		
309	የሚሩብትቦታየ ትነ ው	1.ከፍታቦታ/ፎቅላይ/ 2.ሜት/ምድር/ 3.ሀለቱምባታ 4.ሌለካለይጠቅስ…		
310	በአደጋመከንያትብጠፍተቋምወይምቤትዎአልጋይዘው በር	1. አዎ 2. የለም		
311	ለጥያቄቁ.310 መልሰዎአዎከሆነ ለምንያህልጊዜ(በሰአት)	----------ሰአት		
312	በአደጋመከንያትከስሪየ ቀሩብትቀናት	----------ቀናት		

ክፍል 4፡ የስሪቦታዓበተመለከተ

ተ.ቁ	ጥያቄ	የመልስአማራጮች	መለያ	ዝለል
401	በሳምንትብአማከይምንያህልሰአትይሰሪሉ?	---------- ሰዓት		
402	በመደበኛየ ስሪቦታዎየ መዋደህንነ ትናጤነ ትቁጥጥርተደረጎ ያወቃሉ	1.አዎ 2. የለም		
403	የ መዋደህንነ ትናጤነ ትስልጠናመኪደመዋወቃለ?	1.አዎ 2. የለም		
404	በስሪቦታዎከፍተኛዕቃየ ማሳት፣ የ ማጓጓዝ፣ መግፋትናየ መሸከምየ መላሰሉትን ስራያከናወናለ?	1.አዎ 2. የለም		ወደቁ.407 ዝለል
405	ለጥያቄቁ.404 መልሰዎአዎከሆነ በቀንበአማከይምንያህልክብደትያነ ሳለ?	1.ቀላል (ከ5ኪግየ ሞይበ		

		ልጥ) 2. መካከለኛ(ከ6-10ኪ.ግ) 3. ከባድ (ከ11-20ኪ.ግ) 4.በጣም ከባድ (ከ 20ኪያ ሚልጥ)		
406	በአማካይ በዘህ ስራላይ ለምን ያህል ጊዜ ይቆያሉ?	1. ከ2 ሰአትያነ ሰ 2. ከ2-4 ሰአታት 3. ከ 4 ሰአታትበላይ		
407	ስራዎ የሞ ትትክረትንየ ሚሹነ መን?	1. አዎ 2. የለም		
408	በስራቦታዎአርግብግቢትያለባቸውንመላሪያዎችይጠቀማሉ?	1.አዎ 2. የለም		ወደቁ.410
409	ለጥያቄቁ.408 መልሰዎአዎከሆነ ለምን ያህልጊዜ?	1.ከ1 ሰአትአይበልጥም 2. ከ2-4 ሰአት 3. ከ 4 ሰአትበላይ		
410	ስራብሚሩብትጊዜየ ሚሩበትመሽንከላልአለው?	1.አዎ 2. የለም		
411	ሚሽኑሲበላሽበወቅቱጥገ ናይደረግለታል?	1.አዎ 2. የለም		

ክፍል 5፡ የስራተኞችንባህሪበተመለከተ

ተ.ቁ	ጥያቄ	የመልስአማራጮች	መለያ	ዝለል
501	ያጨሳሉ?	1.አዎ 2. የለም		መልሰዎየለምከሆነ ወደጥያቄቁ.503 ይሸጋገሩ
502	ለጥያቄቁ.501 መልሰዎአዎከሆነ በስንትጊዜ	1.በየቀኑ 2 ከ.1-3 ቀንበሳምንት 3. አልፎአልፎ		
503	አልኮልይጠጣሉ?	1.አዎ 2. የለም		መልሰዎየለምከሆነ ወደጥያቄቁ.505 ይሸጋገሩ
504	ለጥያቄቁ.503 መልሰዎአዎከሆነ	1. በየቀኑ 2 ከ.1-3 ቀንበሳምንት 3. አልፎአልፎ		

505	ጫትይቅማሉ?	1.አዎ 2. የለም		መልሰዎየ ለምከሆነ ወደጥያቄቁ.507 ይሸጋገሩ
506	ለጥያቄቁ.505 መልሰዎአዎከሆነ በስንትጊዜ	1. በየቀኑ 2 ከ.1-3 ቀንበሳምንት 3. አልፎአልፎ		
507	ስራላይእያለየ እንቅልፍትግርአለ በዎት	1.አዎ 2.የለም		መልሰዎየ ለምከሆነ ወደጥያቄቁ.509ይ ሸጋገሩ
508	ለጥያቄቁ.507 መልሰዎአዎከሆነ ምክንያቱምንድን ነ ው፡	a. ያለዕረፍት/ቅያሬከ8 ሰአትበላይመሻራት 1. አዎ 2. የለም b. በምሽትመሻራት 1. አዎ 2.የለም c. በእንድጊዜከእንደበላይስራመ ስራት 1. አዎ 2.የለም d. ከፍተኛየመቅጫ 1.አዎ 2.የለም e. ሌለካለይጠቅስ ----------		
509	በአሀትጊዜበስራዎደስተኛነ ዎት?	1. አዎ 2.የለም		

ለትብብርዎ አመሰግናለሁ