

ADDIS ABABA UNIVERSITY  
COLLEGE OF HEALTH SCIENCE  
SCHOOL OF PUBLIC HEALTH

ASSESSMENT OF NON-FATAL OCCUPATIONAL INJURIES AND ASSOCIATED  
FACTORS IN BUILDING CONSTRUCTION SECTOR OF ADAMA SCIENCE AND  
TECHNOLOGY UNIVERSITY, RESEARCH PARK CONSTRUCTION SITE,  
ADAMA, ETHIOPIA

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## **Abbreviations and Acronyms**

<b>AOR</b> .....	Adjusted odds ratio
<b>CI</b> .....	Confidence interval
<b>COR</b> .....	Crude odds ratio
<b>EIA</b> .....	Environmental Impact Assessment
<b>Epi Info</b> .....	Epidemiological information
<b>HSE/ EHS/ SHE</b> .....	Health, Safety & Environmental Department
<b>GoE</b> .....	The government of Ethiopia
<b>HCB</b> .....	Hollow Concrete Block
<b>ILO</b> .....	International Labor Organization
<b>MOLSA</b> .....	Ministry of Labor and Social Affairs
<b>OSH</b> .....	Occupational Safety and Health
<b>OR</b> .....	Odds ratio
<b>PPE</b> .....	Personal Protective Equipment's
<b>SD</b> .....	Standard deviation
<b>SPSS</b> .....	Statistical package for social science
<b>WHO</b> .....	World Health organization

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## **Abstract**

**Introduction:** Construction industry has been identified as one of the most hazardous industries both in industrialized and industrializing countries. This sector is growing very fast in Ethiopia in recent times. Work-related injuries in construction sector present a major public health problem resulting in serious social and economic consequences that could be prevented if appropriate measures are taken.

**Objectives:** The aim of this study was to determine the magnitude of non-fatal occupational injuries and describe factors affecting its happening on building construction site workers of Adama Science and Technology University, Research Park Construction site, Adama

**Methods:** Cross-sectional study was conducted at Adama Science and Technology University (ASTU) Research Park Construction site from March 01- April 10, 2016, Adama City. Stratified sampling method was done to select the eligible participants. Binary Logistic regression analysis was used to determine OR and 95% CI. Variables with p-value <0.2 in the bivariate analysis were entered in to multivariate analysis and with p-value <0.05 in the final model were considered as significant.

**Results:** Occupational injuries in the past 12 months were reported by 34.9% (1.65± 0.48) of workers. The most common body parts injured were lower and upper limbs (73.3% and 16%). The majority of injuries were puncture/cuts/lacerations (75%) and contusions (22.1%). Walking on/Handling of sharp objects (61.4%), falls (10.7%) and injuries by manual tools (10.7%) were the main causes of injuries. All of injured workers (100%) reported complete recovery. Extended working hours, job dissatisfaction, not using PPE, substance usage and job stress were predictors of occupational injuries.

**Conclusion:** Non-fatal occupational injuries are common among this sample of construction workers with significant relation to extended working hours and job stress and other risk factors. So, workers training and orientation to raise safety awareness and consciousness to improve safety practices, effective communication between management and workers, general housekeeping and falls protections should be fulfilled.

# **1. INTRODUCTION**

## **1.1 Back ground**

Today in world, together with the growth and improvement of the industry, the size of the constructions has got enormous and much more complex than ever before (1).

This, of course, has brought up huge construction organizations and high construction technologies together. As the construction durations become shorter, the speed and intensity of works have extremely increased. Technological changes have introduced new hazard types (1).

construction projects cover a range of activities such as site clearance, the demolition or dismantling of building structures or plant and equipment, excavations, reinforcement-bar works, concrete works, HCB (Hollow concrete block) fabrication, decoration, cleaning, installation and the removal and maintenance of services (electricity, water and telecommunications).also includes the use of woodworking, painting and decorating and the use of heavy machinery, site landscaping (2).

Within the workplace Construction processes involve hazardous activities, such as working at height, manual handling, exposure to hazardous materials, demolition, frame erection, lifting operations, scaffolding and ground works, bulk materials and heavy equipment handling, as well as the varying jobsite personnel and the regularly changing worksites (2).

All those have created enough reasons and conditions for the work accidents and ill health to be risen up. Of course, in many countries, authorities described heavy health and safety laws and regulations corresponding to the new situations (1). But some others countries do not.

Health is the protection of the bodies and minds of people from illness resulting from the materials, processes or procedures used in the workplace (2).

Safety is the protection of people from physical injury. The borderline between health and safety is ill-defined and the two words are normally used together to indicate concern for the physical and mental well-being of the individual at the place of work (2).

Welfare is the provision of facilities to maintain the health and well-being of individuals at the workplace (2).

Accident is defined by the Health and safety Executive (HSE, 2003) as any unplanned event that results in injury or ill health of people, or damage or loss to property, plant, materials or the environment or a loss of a business opportunity.

A hazard is any source of potential damage, harm or adverse health effects on something or someone under certain conditions at work (3).

## **1.2. Statement of the problem**

Nearly, 317 million accidents occur on the job annually most of them occurred in low and middle income countries; many of these resulting in extended absence from work or death. Every day, 6300 people die as a result of occupational accidents or work-related diseases (31).

Construction industry is one of the most hazardous and accident prone occupations as reported by the International Labor Organization, which is because several potential hazards are present in the construction sites that can lead to serious injury or death . Construction workers face a risk of fatal and non-fatal injuries higher than any other groups of workers. Although countries differ substantially in their structural industrial distribution or level of occupational health and safety, the construction workers' injuries are the major occupational injuries in many countries. Moreover, the rate of death of workers is higher in construction industry than in any other industry (4).

In comparison with other industrial sectors, the construction industry has a disproportionately high percentage of injuries and fatalities, accounting for almost 20% of the fatalities of all industrial workers but employing only 6-8% of the industrial work force (5).

In developing countries the occupational health and safety hazards faced by construction workers are greater than those in industrial countries. The impact is also 10 to 20 times higher in these countries,

On a study of Occupational Injuries among Building Construction Workers at six licensed construction sites in Gondar City, Ethiopia. The Result were the prevalence rate of work-related injuries in the preceding one year was 38.7 % (6).

There are various reasons for the poor occupational safety situation in developing countries: Such as use of outdated machinery, poor maintenance and little safety guarding of machinery, inadequate training of workers; poor design of equipment and workstations; and lack of personal protective equipment. While unsafe working environments commonly cause most workplace injuries, human factors such as young age, sex, lack of experience, job dissatisfaction, sleep disorders, smoking habit, excess alcohol use, and lack of physical activity are inherent factors (7).

In Ethiopia, little work has been done on occupational health and safety aspects of building construction workers and as per literature review there is lack of data about prevalence and determinant factors of occupational injuries among these workers (6).

Identifying the causes of non-fatal occupational Injuries is very crucial for the effective implementation of safety and health promotion programs, for policy formulation and the general assessment of resource requirements and intervention prioritization.

So, this was assessed the magnitude and relationship of non-fatal occupational Injuries among construction site workers with the different demographic and socio-economic, occupational and behavioral factors.

### **1.3. Rational and Significance of the Study**

The government of Ethiopia (GoE) has an ambitious plan for promoting economic development and employment growth. To achieve its development goals, it is critical for GoE to improve compliance with international and domestic labor standards, which in turn depends on building capacity in the labor inspectorates. Labor inspectorates help ensure that worker rights are respected, workplace injuries and deaths are reduced, and businesses' costs from lost man-hours and unsafe practices are reduced. With a safer environment and more efficient labor administration, investors will view Ethiopia as an even more promising country for long-term investment. Employers will have a stable environment and worker lives will be measurably improved (8).

The cause of non-fatal occupational injury of building construction workers in developing countries is multi-factorial. The workers safety depends on the interaction of socio-economic,

occupational, behavioral and environmental factors. Hence, it is very important to see the relation and interaction of these factors to understand workers health condition.

Very limited information on the magnitude and effects of socio-economic, behavioral and occupational factors is incorporated in studies conducted on construction workers occupational injury.

Finding the factors associated with non-fatal occupational injury helps to find possible prevention methods. So, this study will have important implications for occupational health & safety management practice and with a view of adding to the existing body of knowledge.

## **2. LITERATU REVIEW**

### **2.1. Magnitude of Occupational accidents**

#### **Magnitude of occupational accidents of the world**

Information of occupational accidents is not standardized worldwide. Especially, developing countries do not have reliable information on their occupational accidents due to lack of proper recording and notification systems. Global estimates of occupational accidents are presented for 175 countries, in 1998 the average estimated number of fatal occupational accidents was 350 000 and there were 264 million non-fatal accidents (9).

#### **Magnitude of occupational accidents of developed countries**

In 2012, there were just under 2.5 million non-fatal accidents that resulted in at least four calendar days of absence from work and 3 515 fatal accidents in the EU-28. These figures marked a substantial reduction in relation to 2009, when there had been approximately 313 thousand more non-fatal accidents and 310 more fatal accidents. Men are considerably more likely than women to have a non-fatal accident or to die at work. In the EU-28, almost four out of every five (78.5 %) non-fatal accidents at work and 19 out of every 20 (95.6 %) fatal accidents at work involved men (10).

When we see fatal and non-fatal accidents at work by economic activity, EU-28, 2012 (% of fatal & % non-fatal accidents) respectively construction (22% fatal & 13 % non-fatal) was the first, manufacturing (16% fatal & 21% non-fatal) the second, transportation and storage (14% fatal & 8% non-fatal) third and activities of extraterritorial organizations and bodies with (<1% fatal & <1% non-fatal) accidents were the last of all 21 economic activities of this study data (10).

The U.S. construction worker, with a death rate of 39 deaths per 100,000, is exposed to a risk of death on job over five times greater than that of other American workers (12).

In USA, in the four decades since the Occupational Safety and Health Act (OSH Act) was signed into law, workplace deaths and reported occupational injuries have dropped by more than 60 percent. Yet the nation's workers continue to face an unacceptable number of work-related deaths, injuries and illnesses, most of them preventable: Every day, more than 12 workers die on the job – over 4,500 a year. Every year, more than 4.1 million workers suffer a serious job-related injury or illness (13).

Workers involved in small-scale manufacturing businesses are known to comprise a high-risk population for occupational injury. The prevalence of study-defined occupational injury among the workers was 35.6% (male 43.0%, female 17.9%). For males, younger age, current or former smoking, insomnia symptoms, and disease(s) currently under treatment were correlated with injury, whereas for females, being unmarried, higher educational status, and insomnia symptoms were the correlating factors (14).

### **Magnitude of occupational accidents of developing countries**

In Botswana a total of 281 fatalities were reported to government agencies, mainly recorded in the high risk sectors over the period of 2000-2004 (15).

A Cross-Sectional Study on Construction Building Workers about Non-Fatal Occupational Injuries and Safety Climate: in Mit-Ghamr City, Dakahlia Governorate, Egypt. The occupational injuries in the past 12 months were reported by 46.2% of workers. The most common body parts injured were upper and lower limbs (31.0% and 26.2%). The majority of injuries were cuts/lacerations (30.9%) and contusions (28.6%). Falls (47.6%) and injuries by manual tools (23.8%) were the main causes of injuries. The majority of injured workers (90.5%) re-ported complete recovery after the most serious injury. The average of working days was lost per year due to occupational injuries ( $18.6 \pm 7.8$  days/year). None of the injured workers reported receiving sufficient first-aid treatment at worksite or filling an accident notification form. Extended working hours, poor safety climate, short duration of work, job dissatisfaction, young age, and job stress were significant risk factors of occupational injuries (4).

### **Magnitude of occupational accidents of Ethiopia**

In Ethiopia, little work has been done on occupational health and safety aspects of building construction workers and as per literature review there is lack of data about prevalence and determinant factors of occupational injuries among these workers (6).

On a study of Occupational Injuries among Building Construction Workers in Gondar City, Ethiopia, Institution-based cross-sectional study was conducted from May 1 – 20, 2009 at six licensed construction sites in Gondar city. The Results were the prevalence rate of work-related injuries in the preceding one year was 38.7%. Of the total injuries, more than half (68.39%) were reported by males while the rest reported by females workers. The leading causes of

injuries were fall from ground level (21.3%) followed by overexertion during lifting (20.6%), and fall from elevation (16.1%). Old age, being male, job dissatisfaction, lack of vocational training and working overtime were found to elevate the odds of having occupational injuries among construction workers. The study revealed that occupational injuries were common among building construction workers (6).

Personal protective equipment, or PPE, is designed to protect employees from serious workplace injuries or illnesses resulting from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Besides face shields, safety glasses, hard hats, and safety shoes, PPE includes a variety of devices and garments such as goggles, coveralls, gloves, vests, earplugs, and respirators (16).

## **2.2. Factors affecting injury in Construction Sector**

### **Factors affecting injury in construction sector of developed countries**

To assess cause- and occupation-specific risks of work related fatal injuries among U.S. construction workers, the National Traumatic Occupational Fatalities (NTOF) surveillance system and Current Population Survey were used to obtain injury and employment data for the years 1990 through 1994. Risks were assessed by both rate and working lifetime risk. The occupation found to have the highest fatal-injury rate in construction was electrical-power installers and repairers (96.6 deaths/100,000 workers), followed by structural-metal workers (86.4) and operating engineers (41.0). The occupation found to have the largest numbers of fatalities was construction laborers (1133 deaths), followed by carpenters (408), and construction supervisors (392). The leading causes of death varied by occupation (11).

### **Factors affecting injury in construction sector of developing countries**

A Cross-Sectional Study on Construction Building Workers about Non-Fatal Occupational Injuries and Safety Climate: in Mit-Ghamr City, Dakahlia Governorate, Egypt. Bivariate analysis showed that young age (workers younger than 30 years old) and short working duration (less than 10 years) were significantly associated with occupational injuries. Extended working hours (more than 48 hours/week) and poor machinery design and maintenance were also significantly associated with occupational injuries among this sample of construction building workers. Moreover, sleeping disturbance, job dissatisfaction, job stress, and poor safety climate

were significantly associated with occupational injuries. Multiple logistic regression analysis of the significant risk factors showed that extended working hours, poor safety climate, short duration of work, job dissatisfaction, young age, and job stress were significant risk factors of occupational injuries. While, sleeping disturbance and poor machinery design and maintenance didn't show significant association with occupational injuries among the studied sample of construction workers (4).

### **Factors affecting injury in construction sector of Ethiopia**

On a study of Occupational Injuries among Building Construction Workers in Gondar City, Ethiopia, The result of multivariate logistic regression analysis showed that the prevalence of occupational injury among building construction workers was significantly associated with age, sex, job satisfaction, lack of vocational training, and total work hours/day. Workers above  $\geq 45$  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)]. Similarly, occupational injuries were significantly associated with workers gender i.e. males were 2.01 times [AOR: 2.01, 95% CI: (1.20, 3.37)] more likely to experience injury than females. Likewise, job satisfaction showed statistically significant association with occupational injury; construction workers who reported current job satisfaction were 45% less likely to face injury compared to their counter parts [AOR: 0.55, 95% CI: (0.34, 0.90)]. Also, workers who did not undergo vocational training were 2.37 times more likely to have injury than those who underwent vocational training [AOR: 2.37, 95% CI: (1.08, 5.22)]. In addition, working  $> 8$  hours/day raised the odds of occupational injury by 14.06 folds compared to those who worked for 8 hours/day [AOR: 14.06, 95% CI: (5.67, 34.86)] (6).

### **Occupational accidents prevention and its benefits**

An enhanced focus on prevention is needed to bring these numbers down. To accomplish this, an effective, flexible, commonsense tool is available that can dramatically reduce the number and severity of workplace injuries and illnesses: the injury and illness prevention program. This tool helps employers find hazards and fix them before injuries, illnesses or deaths occur. It helps

employers meet their obligation under the OSH Act to “furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees.” It also helps employers avoid the significant costs associated with injuries and illnesses in the workplace (13).

Employees often face a conflict between production targets, quality assurance, and adherence to safety policies. In a time when layoffs are on the rise, it is important to understand the effects of employee job insecurity on these potentially competing demands. A laboratory experiment manipulated the threat of layoffs in a simulated organization and assessed its effect on employee productivity, product quality, and adherence to safety policies. Results suggest that student participants faced with the threat of layoffs were more productive, yet violated more safety rules and produced lower quality outputs, than participants in the control condition (17).

There is a growing trend toward new forms of labor-management cooperation, through negotiated agreements involving job-site safety and health, workers' compensation, and preventive medicine. These developments are likely to change safety and health in the industry. To structure occupational safety and health programs for construction workers, the safety and health professions need to engage in the labor-management processes that are changing the industry (18).

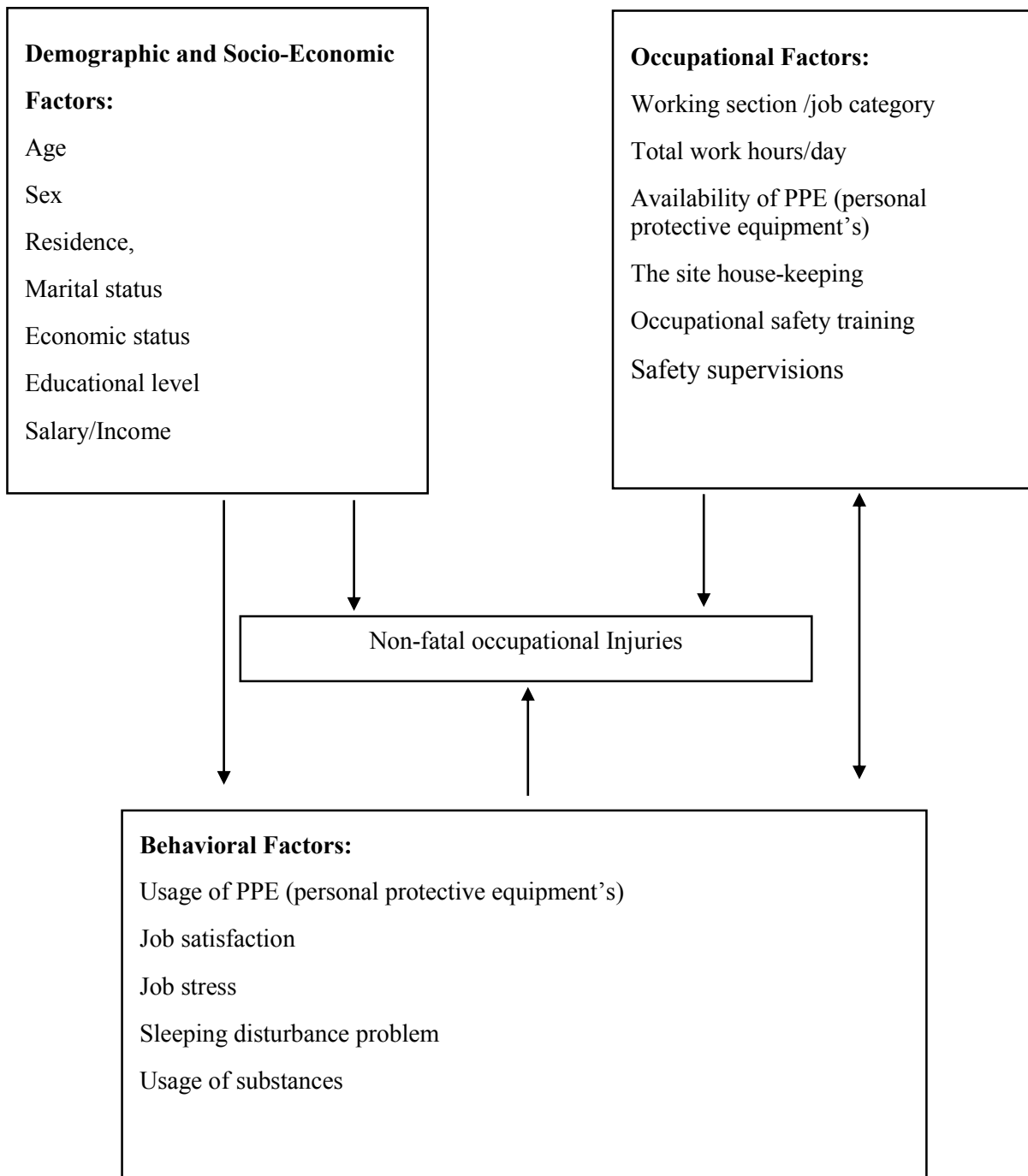
There are many benefits from developing a safety culture at your company none of which is more valuable than employee loyalty. “When employees know you care about their personal well-being and you prove that to them in their workplace, it increases morale, engagement, awareness, motivation and productivity” (19).

## **Conceptual Frame Work**

Because our main concern was demographic and socio-economic, occupational and behavioral factors as main determinants of non-fatal occupational Injuries, we have constructed a conceptual framework by reviewing different literatures which is expected to explain how those factors affect non-fatal occupational Injuries.

Non-fatal occupational Injuries is expected to be less pronounced in younger age groups than older once. Having PPE (personal protective equipment's), vocational or any trainings (literates), and total work hours/day of not more than 8 hours/day can potentially decrease the threat of non-fatal occupational Injuries. Non-fatal occupational Injuries is also expected to be less likely in some behavioral factors such as proper Usage PPE (personal protective equipment's), job satisfaction, no job stress and no usage of substances.

Socio-economic factors have an effect on non-fatal occupational Injuries directly or indirectly by their influence on occupational and behavioral factors. Again, environmental factors can affect non-fatal occupational Injuries directly or indirectly by changing the behavior of individuals toward their method of PPE (personal protective equipment's) Usage, tools and machineries usage. The behavior of individuals such as proper usage of PPE (personal protective equipment's), job satisfaction, job stress, sleeping disturbance problem and usage of substances could also have direct effect on non-fatal occupational injuries or indirect effect by their influence on occupational factors.



**Figure 1: Conceptual framework on the potential determinants of non-fatal occupational Injuries, constructed from different literatures.**

### **3. OBJECTIVES**

#### **3.1. General objective**

- To assess the magnitude of non-fatal occupational injuries and associated factors among construction site workers.

#### **3.2. Specific objective**

- To determine the magnitude of non-fatal occupational injuries among construction site workers.
- To identify and describe factors affecting non-fatal occupational injuries among construction site workers.

## **4. METHODS**

### **4.1. Study design**

Institution based cross-sectional study was done to assess the magnitude and associated factors of non-fatal occupational Injuries among construction site workers.

### **4.2. Study area and period**

The research was conduct in Adama city, Adama Science and Technology University Research Park Construction Site the data was collected from March 01- April 10, 2016, Adama is located in central Ethiopia forms a Special Zone of Oromia and is surrounded by Misraq Shewa Zone. It is located at 8.54°N 39.27°E at an elevation of 1712 meters, 99 km southeast of Addis Ababa. The city sits between the base of an escarpment to the west, and the Great Rift Valley to the east.

The construction work is executed by Tekleberehan Ambaye Construction PLC. It is level 1 category Construction Company which works on Building, Road and Railway, as mentioned on The Construction Industry Registration Proclamation 2013 in accordance with article 55(1) of the Constitution of the Federal Democratic Republic of Ethiopia (20). this construction projects cover a range of activities such as site clearance, the demolition or dismantling of building structures or plant and equipment, excavations, reinforcement-bar works, concrete works, HCB (Hollow concrete block) other material fabrication, decoration, cleaning, installation and the removal and maintenance of services (electricity, water and telecommunications).also includes the use of woodworking, painting and decorating and the use of heavy machinery, finally site landscaping.



**Figure 2:** Location of Ethiopia in African continent, 2016 **Figure 3:** Location of Adama (Nazret) in Ethiopia, 2016



**Figure 4:** Location of ASTU (Adama Science and Technology University) in Adama, 2016

### **4.3. Source population**

The source population were all Adama Science and Technology University Research Park Construction Site workers, the number of workers fluctuates time to time from a minimum of 430 to maximum of 570 or more, so it is appropriate to take the average 500 as a source population.

#### **Study population**

The study population were Adama Science and Technology University Research Park Construction Site workers whom were stratified in to eight different strata Based upon the job description, daily laborer, plasterer, carpenter, mason, welder /electrician, painter, driver/operator and office/site engineers.

### **4.4. Inclusion and exclusion criteria**

#### **Inclusion criteria**

The study included all available Adama Since and Technology University Research Park Construction Site workers who were working as daily laborer, plasterer, carpenter, mason, welder /electrician, painter, driver/operator and office/site engineers under Tekleberehan Ambaye Construction PLC at the time of the study.

#### **Exclusion criteria**

For this study par time workers “whom work a contract work activities/task and gone when they finished that task” & sick workers at the time of data collection were excluded from the study.

#### 4.5. Sample size determination

Sample size was calculated for each specific objective and the highest size was taken (n=401).

**Specific objective one:** magnitude of Non-Fatal Occupational Injuries in the construction site.

Using single population proportion formula by assuming 38.7% the prevalence rate of work-related injuries in one year on a study of Occupational Injuries among Building Construction Workers in Gondar City (6) with 95% confidence level, 5% desired precision and Adding 10% for none response rate, the total calculated sample size were 401.

$$n1 = \frac{[(Z\alpha/2)^2 \times P \times (1-P)]}{d^2}$$

Where: n= the required sample size

Z= the standard score corresponding to 95% CI, and was equal to 1.96

P= the proportion of injuries which was assumed to be 38.7%

d<sup>2</sup>= level of precision (margin of error) which was taken 5%

**Specific objective two:** factors affecting Non-Fatal Occupational Injuries on construction site workers.

Using two population proportion formula:

Considering working hours/week >48, Using PPE and Job Satisfaction as major determinant of Non-Fatal Occupational Injuries taken from study done in Egypt about Non-Fatal Occupational Injuries and Safety Climate: A Cross-Sectional Study of Construction Building Workers in Mit-Ghamr City, Dakahlia Governorate (4).

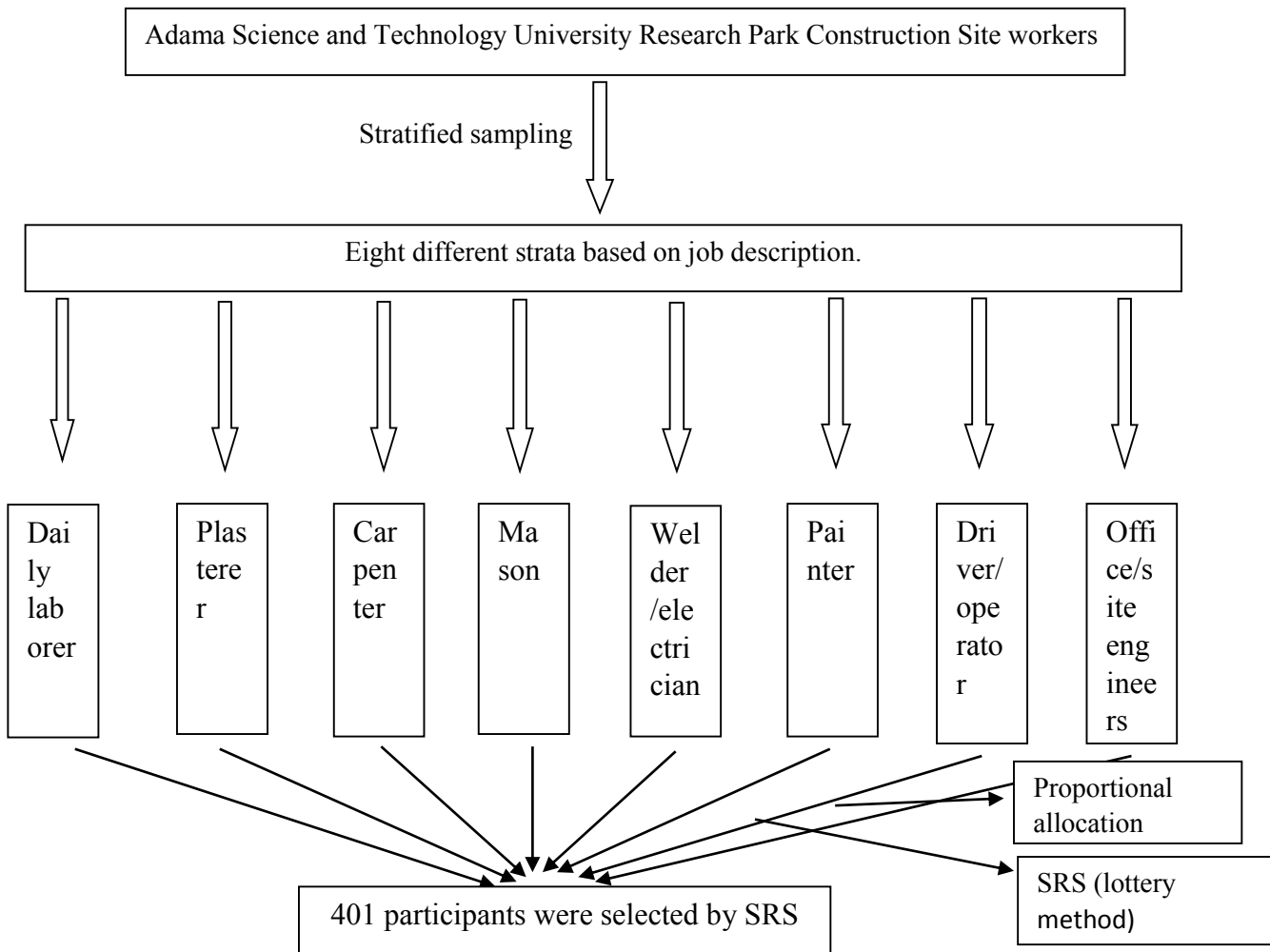
Determinant factor	$Z\alpha/2$ of $1-\beta$ (power)	$Z\alpha/2$ of 95% confidence level	Ratio (Unexposed: Exposed)	P1	RR	OR	P2	n
Working hours/week >48	0.84	1.96	1	23.7%	2.6	5.3	62.3%	55
Using PPE	0.84	1.96	1	42.9%	1.2	1.4	51.4%	385
Job Satisfaction	0.84	1.96	1	27.8%	2.1	3.6	58.2%	57

Where p1 is the proportion of Occupational Injuries among unexposed (unexposed for the following factors working hours/week >48, Using PPE and Job Satisfaction)

Where p2 is the proportion of Occupational Injuries among exposed (exposed for the following factors working hours/week >48, Using PPE and Job Satisfaction)

#### 4.6. Sampling procedure

Stratified sampling method was employed to select construction workers based up on the job description. The source populations were stratified in to eight different strata i.e. daily laborer, plasterer, carpenter, mason, welder /electrician, painter, driver/operator and office/site engineers. The number of samples from each stratum were determined by using proportional allocation formula. Finally, simple random sampling technique i.e. lottery method was employed to select the 401 sample sizes from the strata. Then each participant was selected randomly depending on the allocated proportion. When the selected participant is not available the next person from the list of the strata was selected.



**Figure 5:** Schematic presentation of sampling procedure

## **4.7. Data collection**

### **Data collection tool**

Data was collected using standard questionnaire and observational check list tested previously and administered by an interviewer. The questionnaire was prepared in English and translated to Amharic (native language) and then back to English by different independent language experts to verify the consistency and content of translation. Work environment observation was conducted using a structured checklist involving physical hazards. Reviewing of injury records were also employed to complement self-reported information.

### **Personnel involved**

Two data collectors were recruited and trained in questionnaire administration and data collection procedures which made the data collector to had good understanding of the respondents' responses. The data collection was supervised by one supervisor whom was trained in questionnaire administration and supervision procedures.

### **Data quality assurance**

Pretest was done in 5% the respondents in another similar construction project which is also engaged in Adama Science and Technology University by another level 1 construction company "Afretsion construction P.L.C.". The result of the pretest was used to correct some unclear ideas and statements. The data collection was supervised by one Occupational Health and Safety professional (safety engineer). Their role was to daily check the consistency, clarity and completeness of the collected questionnaires. The data collectors along with their supervisors took one days training about the questionnaire and data collection procedures.

## 4.8. Study Variables

### Outcome (Dependent) Variables

Occurrence of work related non-fatal injuries on building construction workers

### Independent variables

#### Demographic and Socio-Economic Factors:

Age, Residence, Marital status, Economic status, Educational level, Medical condition, Pattern of employment, Salary

#### Occupational Factors:

Working section /job category, Total work hours/day, Availability of safe tools, Availability of safe machineries, The site cleanliness/tidiness, Type of construction project, Occupational safety training, Availability PPE (personal protective equipment's)

#### Behavioral Factors:

Usage of PPE (personal protective equipment's), Job satisfaction, Job stress, Sleeping disturbance problem, Usage of substances

## 4.9. Operational definitions

**Non-fatal Occupational injury:** for the purpose of this study was defined as any personal injury resulting from an accident in the course of work for the past one year prior to this study. Participant responded injury must be at least make him/her stop working for more than 1 day. Reported injury were used by use of records, only incidence of the event for a given time is recorded as an injury.

**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. (Annex)(QRE last page) Job satisfaction was measured using the generic job satisfaction scale. It is a valid and reliable scale that is short and easily administered in the workplace. It includes ten statements. The degree of agreement ranged from 1 = strongly disagree to 5 =

strongly agree, thus the total estimated score = 50. Job satisfaction was categorized according to the calculated score into; yes (32 - 50) and no (10 - 31) (22).

**Job stress:** a state of unpleasant 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. (Annex)(QRE last page)

Job stress was measured using the workplace stress scale. It includes five negative statements and three positive statements. Job stress was categorized according to the calculated score into; yes (16 to 40) and no (lower than or equal 15) (23).

**Extended working hours:** is referring to working more than 48 hours per week (24)

**Skilled worker:** defined as any worker who has some special skill, knowledge, or ability in the work. A skilled worker may have attended a college/university or technical school or, may have learned skills on the job.

**Unskilled worker:** is a person lacking skill or technical training (25).

**Par time workers:** are workers whom work a contract work activities/task and gone when they finished that task.

**Use Substances:** smoke cigarette, drink alcohol, chew "chat"...

#### **4.10. Data management and Data analysis procedures**

The data was entered in to a computer using Epi Info 3.5.1 software and exported to SPSS V.23 statistical software for cleaning and further analysis of the data. Descriptive statistics was done to describe the study participants using measures of frequency, injury occurrence, central tendency and dispersion that were displayed using tables. Due to the binary nature of the outcome variable, binary logistic regression analysis was used to determine the OR and 95% CI of the effect of the different independent variables on the outcome variable. To reduce excessive number of variables and instability of the model, only variables with P-value < 0.2 in the bivariate analysis were considered for inclusion in the multivariate analysis to control

for the effect of confounders. Variables with P-value < 0.05 in the multivariate analysis (final model) were considered as significantly associated with the outcome variable.

#### **4.11. Ethical consideration**

Ethical approval and clearance for this study was obtain from Addis Ababa University, Collage of Health Science and School of Public Health. Permission was also secured from Tekleberhan Ambaye Construction PLC Adama Since and Technology University, Research Park Construction Site Project Manager. Confidentiality and privacy was maintained only ID number was used during data collection, analysis and reporting in which the information obtained from the respondents was not shared with anyone other than the data collectors and principal investigator. Workers during the data collection process were given health education related to non-fatal occupational Injuries by the data collectors.

#### **4.12. Dissemination of findings**

The result of this study will be disseminated to concerned Ministry (MOLSA), the company management, regional concerned body, company health & safety department and AAU school of public Health. The findings will also be disseminated to different concerned organizations that will have contributions to improve the health & safety condition of building construction workers through presentation and publication of the paper.

## **5. Results**

### **5.1. Descriptive statistics of the study populations**

#### **5.1.1. Demographic and socio-economic characteristics of Construction workers**

A total of 401 Construction workers were included in the study and a complete response (100%) was obtained from all respondents. The mean age of the respondents was 23.9 ( $\pm 5.343$ ) years with the majority of them 383 (95.5%) were less than 35 years of age. The majority of the respondents 287 (71.6%) were male. The majority of the respondents 313 (78.1%) were learned basic education. The majority of the Participants 286 (71.3%) were single (Table 1).

**Table 1:** Demographic and Socio-economic Characteristics of Construction workers of Adama Science and Technology University Research Park Construction Site, Adama, Ethiopia 2016

<b>Variable name</b>	<b>Frequency (n=401)</b>	<b>Percentage</b>
<b>Residence</b>		
Urban	277	69.1
Rural	124	30.9
<b>Sex</b>		
Male	287	71.6
Female	114	28.4
<b>Age</b>		
15-24	258	64.3
25-34	125	31.2
Above 35	18	4.4
<b>Marital status</b>		
Single	286	71.3
Ever married	115	28.7
<b>Religion</b>		
Orthodox	234	58.4
Muslim	127	31.7
Protestant	40	10
<b>Education</b>		
Basic education	317	79.1
Diploma/Degree	84	20.9
<b>Pattern of employment</b>		
Permanent	35	8.7
Temporary	366	91.3
<b>Pre-employment medical check up</b>		
Yes	8	2
No	393	98
<b>Salary/Income</b>		
1000-1999	275	68.6
2000-3999	92	22.9
Above 4000	34	8.5

### **5.1.2. Occupational characteristics of the respondents**

Most of the participants were unskilled workers 274 (68.3%), 106 (26.5%) were skilled workers and only 21 (5.2%) Office/Site Engineer. Their average working hours per week (50.41(± 0.86)). All participants were daytime workers with no shift work (Table 2).

**Table 2:** Occupational Characteristics of Construction workers of Adama Science and Technology University Research Park Construction Site, Adama, Ethiopia 2016

<b>Variable name</b>	<b>Frequency (n=401)</b>	<b>Percentage</b>
<b>Work section/ Job category</b>		
Daily laborer	274	68.3
Plasterer	40	10
Carpenter	18	4.5
Mason	12	3
Welder/Electrician	23	5.7
Driver/Operator	13	3.2
Office/Site Engineer	21	5.2
<b>Work Experience (year)</b>		
1 year	309	77.1
2 years	38	9.5
3 years	30	7.5
4 years	13	3.2
Above 5 years	11	2.7
<b>Working hour per week</b>		
48 hours per week	116	28.9
> 48 hours per week	285	71.1
<b>&gt; 48 hours per week(n=285)</b>		
49 hours per week	46	16.1
50 hours per week	104	36.5
51 hours per week	110	38.6
52 hours per week	25	8.7

### **5.1.3. Behavioral characteristics of the respondents**

Most of the respondents (78.8%) do not use PPE. Majority of the respondents do not use Substances 350 (87.3%). Most of the respondents 245(61.1%) have job stress (Table 3).

**Table 3:** Behavioral Characteristics of Construction workers of Adama Science and Technology University Research Park Construction Site, Adama, Ethiopia 2016

<b>Variable name</b>	<b>Frequency (n=401)</b>	<b>Percentages</b>
<b>Use PPE</b>		
Yes	85	21.2
No	316	78.8
<b>Use substances</b>		
Yes	51	12.7
No	350	87.3
<b>Sleep disturbance</b>		
Yes	15	3.7
No	386	96.3
<b>Job stress</b>		
Yes	245	61.1
No	156	38.9
<b>Job satisfaction</b>		
Yes	199	49.6
No	202	50.4

#### **5.1.4 Prevalence and Pattern of Occupational injury of respondent**

Occupational injuries in the past 12 months were reported by 140 out of 401 workers 34.9% (1.65± 0.48). The most common body parts injured were lower and upper limbs (70.7% and 16.4%, respectively). The most common injuries were cuts and lacerations 105 (75%), contusions 35 (24.9%). The most common causes of injuries were Walking on/ Handle sharp & other material 86 (61.4 %), Falls 15 (10.7%), Manual tools 25 (10.7%). All of injured workers (100%) reported complete recovery. All of the injured workers reported receiving sufficient first aid treatment and other general treatments (**Table 4**).

**Table 4:** Pattern of Occupational injury among Construction workers of Adama Science and Technology University Research Park Construction Site, Adama, Ethiopia 2016

<b>Variable name</b>	<b>Frequency (n=140)</b>	<b>Percentage</b>
<b>Encountered injury the past 12 month(n=401)</b>		
Yes	140	34.9
No	261	65.1
<b>Nature of injury</b>		
Puncture/cut/laceration	105	75
Contusions	35	24.9
<b>Cause of injury</b>		
Walking on/ Handle sharp & other material	86	61.4
Falls	15	10.7
Manual tools	15	10.7
Other causes	24	17.2
<b>Treatment</b>		
Yes	140	100
<b>Kind of treatment</b>		
First aid	117	83.6
General treatment	23	16.4
<b>Outcome</b>		
Recovery	140	100
<b>Body part</b>		
Upper limb	23	16.4
Lower limb	99	70.7
Head/Neck	9	6.4
Trunk/Back	9	6.4
<b>How many injury</b>		
One	98	70
Two	42	30
<b>Time of injury</b>		
Morning	23	16.4
Afternoon	75	53.6
Evening	42	30

## **5.2. Factors of non-fatal occupational injury: Bivariate analysis**

### **5.2.1. Socio-demographic and work-related risk factors**

Bivariate analysis showed that educational status [COR: 2.73, 95 % ( 1.51, 4.92)] were significantly associated with occupational injuries. Extended working hours (more than 48 hours/week) [COR: 2.05, 95 % ( 1.27, 3.32)] and safety supervision [COR: 1.72, 95 % ( 0.88, 0.34)] were significantly associated with occupational injuries among this sample of building construction workers (Table 5).

**Table 5:** Socio-demographic and work-related risk factors of occupational injuries among construction building workers of Adama Science and Technology University Research Park Construction Site, Adama, Ethiopia 2016: Results of bivariate analysis.

Variable name	Encountered injury the past 12 month		COR (95% CI)	P - value
	Yes n (%)	No n (%)		
<b>Residence</b>				
Urban	91 (32.9)	186 (67.1)	1.0	0.2
Rural	49 (39.5)	75 (60.5)	0.75(0.22, 1.7)	
<b>Sex</b>				
Male	109 (38.0)	178 (62)	1.0	0.042
Female	31 (27.2)	83 (72.8)	1.64(0.24, 4.14)	
<b>Age</b>				
15-24	95(36.8)	163(63.2)	1.373(0.52, 3.59)	0.52
25-34	37(29.6)	88(70.4)	1.9(0.96, 5.2)	0.21
Above 35	8(44.4)	10(55.6)	1.0	
<b>Marital status</b>				
Single	99(34.6)	187(65.4)	1.0	0.844
Ever married	41(35.6)	74(64.4)	0.956(0.66,1.65)	
<b>Education</b>				
Basic education	124(39.1)	193(60.9)	2.731(1.51, 4.92)	0.001
Diploma/Degree	16(19)	68(81)	1	
<b>Salary/Income</b>				
1000-1999	93(33.8)	182(66.2)	1.0	0.126
2000-3999	40(43.5)	52(56.5)	0.50(0.21, 1.2)	
Above 4000	7(20.6)	27(79.4)	0.33(0.13, 0.85)	
<b>Family size</b>				
Four & below	43(30.3)	99(69.7)	1.0	0.036
Five & above	16(50)	16(50)	0.43(0.2, 0.95)	
<b>Work section/ Job category</b>				
Unskilled workers	99(36.1)	175(63.9)	0.94(0.54, 1.32)	0.452
Skilled workers	15(37.5)	25(62.5)	1.0	
<b>Over time (&gt; 48 h/ week)</b>				
Yes	111(39.5)	170(60.5)	2.05(1.27, 3.32)	0.004
No	29(24.2)	91(75.8)	1.0	
<b>Safety Supervision</b>				
Yes	127(36.4)	222(63.6)	1.0	0.111
No	13(25)	39(75)	1.72(0.88, 0.34)	

### 5.2.2. Behavioral risk factors

Bivariate analysis was done on the relationship of behavioral characteristics and a risk encountering injury. According to this study, workers with job stress more likely to encounter injury related to workers without job stress [COR: 7.6, 95%(4.381, 13.2)], workers who use substances were more likely to encounter injury related to workers whom not use substances [COR: 2.15,95%(1.19, 3.8950)] and workers have sleep disturbance problem were more likely to encounter injury than workers whom don't have sleep disturbance problem with [COR: 2.92, 95%(1.017, 8.38)] (**Table 6**).

**Table 6:** Behavioral risk factors of occupational injuries among construction building workers of Adama Science and Technology University Research Park Construction Site, Adama, Ethiopia 2016: Results of bivariate analysis.

Variable name	Encountered injury the past 12 month		COR (95% CI)	p-value
	Yes n (%)	No n (%)		
<b>Use PPE</b>				
Yes	21(24.7)	64(75.3)	1.0	0.028
No	119(37.7)	197(62.3)	0.54(0.27, 4.84)	
<b>Substances</b>				
Yes	26(51)	25(49)	2.15(1.19, 3.8950)	0.011
No	114(32.6)	236(67.4)	1.0	
<b>Sleep disturbance</b>				
Yes	9(60)	6(40)	2.92(1.017, 8.38)	0.046
No	131(33.9)	255(66.1)	1.0	
<b>job stress</b>				
Yes	122(49.8)	123(50.2)	7.6(4.381, 13.2)	0.001
No	18(11.5)	138(88.5)	1.0	
<b>Job satisfaction</b>				
Yes	45(22.6)	154(77.4)	1.0	0.001
No	95(47)	107(53)	0.33(0.21, 0.51)	

### **5.3. Associated factors of non-fatal occupational injury: Multivariate analysis**

In the bivariate analysis any possible confounders were not controlled and assessing the independent effects of the covariates was difficult. So, an enter method of binary logistic regression technique was used to assess the independent effects of explanatory variables on construction workers. To avoid excessive number of variables and unstable estimate in the final model, only variables with P-value less than 0.2 in the bivariate analysis were taken in the multivariate analysis. Model fit was checked by Hosmer-Lemeshow goodness-of-fit test statistics.

Multiple logistic regression analysis of the significant risk factors showed that the odds of having injury of construction workers working (>48 hour per week) were higher than the odds in workers who worked(48 hour per week) [AOR: 2.1,95%(1.1, 3.69)], According to this study workers with job stress were more likely to encounter injury than workers without job stress [AOR: 8.37,95%(4.7, 15.9)], workers with safety supervision were less likely to encounter injury than workers without safety supervision [AOR: 1.9,95%(0.87, 4.0)], workers who use substances were more likely to encounter injury than workers whom not use substances [AOR: 2.1,95%(0.9, 5.2)] (Table 7).

**Table 7:** Predictors of occupational injuries among construction building workers of Adama Science and Technology University Research Park Construction Site, Adama, Ethiopia 2016: Results of stepwise multiple logistic regression analysis.

Variable name	Encountered injury the past 12 month		COR (95% CI)	AOR (95% CI)
	Yes n (%)	No n (%)		
<b>Sex</b>				
Male	109 (38.0)	178 (62)	1.0	1.0
Female	31 (27.2)	83 (72.8)	1.64(0.24, 4.14)	1.7(0.96, 3.1)
<b>Salary/Income</b>				
1000-1999	93(33.8)	182(66.2)	1.0	1.0
2000-3999	40(43.5)	52(56.5)	0.50(0.21, 1.2)	1.2(0.4, 4.0)
Above 4000	7(20.6)	27(79.4)	0.33(0.13, 0.85)	0.97(0.3, 2.9)
<b>Safety Supervision</b>				
Yes	127(36.4)	222(63.6)	1.0	1.0
No	13(25)	39(75)	1.72(0.34, 2.54)	1.9(0.87, 4.0)
<b>Education</b>				
Basic-education	124(39.1)	193(60.9)	2.731(1.51, 4.92)	2.7(1.3, 5.5)
Diploma /Degree	16(19)	68(81)	1.0	1.0
<b>Working hours (&gt;48 h/w)</b>				
Yes	111(39.5)	170(60.5)	2.05(1.27, 3.32)	2.1(1.1, 3.69)
No	29(24.2)	91(75.8)	1.0	1.0
<b>Use PPE</b>				
Yes	21(24.7)	64(75.3)	1.0	1.0
No	119(37.7)	197(62.3)	0.54(0.27, 4.84)	0.6(0.32, 1.17)
<b>Substances</b>				
Yes	26(51)	25(49)	2.15(1.19, 3.8950)	2.1(0.9 , 5.2)
No	114(32.6)	236(67.4)	1.0	1.0
<b>Sleep disturbance</b>				
Yes	9(60)	6(40)	2.92(1.017, 8.38)	2.76(0.64, 11.9)
No	131(33.9)	255(66.1)	1.0	1.0
<b>Job stress</b>				
Yes	122(49.8)	123(50.2)	7.6(4.381, 13.2)	8.37(4.7, 15.9)
No	18(11.5)	138(88.5)	1.0	1.0
<b>Job satisfaction</b>				
Yes	45(22.6)	154(77.4)	1.0	1.0
No	95(47)	107(53)	0.33(0.21, 0.51)	0.34(0.21, 0.6)

## 6. Discussion

In the current study, occupational injuries in the past 12 months were reported by 140 out of 401 construction workers (34.9%). Which is similar to a study of Occupational Injuries among Building Construction Workers in Gondar City, Ethiopia, Institution-based cross-sectional study was conducted from May 1 – 20, 2009 at six licensed construction sites in Gondar city. The Results were the prevalence rate of work-related injuries in the preceding one year was 38.7%.

The magnitude of non-fatal occupational injury in this study is also similar with a cross-sectional Study on Construction Building Workers about Non-Fatal Occupational Injuries and Safety Climate: in Mit-Ghamr City, Dakahlia Governorate, Egypt. The occupational injuries in the past 12 months were reported by 46.2% of workers.(4) and with a study of non-fatal occupational injuries among construction workers that was carried out in Kuwait, injured construction workers constituted more than half of the total number of occupationally injured workers, (57.1%, 61.9% and 54.2%) in the years 2003, 2004 and 2005, respectively. However, it should be noticed that countries vary substantially in the education and training back-ground of their workers (32). Moreover, construction workers are exposed to a wide variety of safety hazards, this exposure differs according to the job demands (26).

Till now many developing countries including Ethiopia do not have reliable information about worksite injuries due to lack of proper recording and notification particularly for minor non-fatal injuries. Underreporting of occupational injuries means that preventative measures are not taken and early treatment is not conducted (33).

Many safety hazards are present in the construction industry, consequently knowing the causes of an accident is useful to develop and implement a program for preventing accidents in the future the following results were detected by the present study, Walking on/ Handle sharp & other material (61.4 %), Falls (10.7%), Manual tools (10.7%), Struck by (2.9) and Other causes (14.3).

In a study that was conducted on construction workers (n = 2916) treated at the George Washington University Emergency Department over a 7-year period, the main causes of injury were sharp objects (26.1%), struck by/against an object (19.9%), and falls (17.1%). Machinery (4.9%) and caught between (4.4%) were less important mechanisms (36). Which can partially

relate with current study findings Walking on/ Handle sharp & other material 86 (61.4 %), Falls (10.7%), Manual tools 25 (10.7%), Struck by 4(2.9) and Other causes (14.3).

Moreover, other studies revealed that struck by an object (33.6% and 29.9%) and falls (30.2% and 29.3%) were the major causes of injury among construction workers (26, 32).

Regarding the types of injury, the results of the present study agree with those of another similar study, where the data indicated that contusions (29.4%) and cuts (22.4%) were the most common injury types among a sample of construction workers (27). Partially coincide results were obtained by another hospital-based study, where lacerations (37%), sprain, strains, and pain (22.3%), and contusions/abrasions (15.3%) were the main types of injury. Eye injuries (10.8%) and fractures (8.7%) were less important injury types (36). Whereas, a three years period study in Kuwait revealed that fractures (59.4%) and wounds (cut, contused, and penetrating) (24%) were the commonest types of injuries among construction workers (32).

In agreement with the present study, hands (39.8%), lower extremities (31.2%) and upper limbs (arms and forearms) (16.2%) were the most frequently injured body parts among construction workers in Kuwait (32). And a study of Non-Fatal Occupational Injuries and Safety Climate: in Egypt The most common body parts injured were upper and lower limbs (31.0% and 26.2%). More- over, in the same studied city, lower and upper limbs (35.3% and 32.9%, respectively) were the commonest anatomical locations of injuries (27). While, the results of a hospital-based study partially agree with those of the present study, where upper limb (42.7%), head and neck (23.7%), and lower limb (18.5%) were the main body parts injured (36).

In the present study, the vast majority of injured workers (100%) reported complete recovery. the vast majority of injured workers (90.5%) reported complete recovery after the most serious injury; while disability occurred in only (9.5%) of them in a study of Non-Fatal Occupational Injuries and Safety Climate: in Egypt.

Consistent with this study results, a recent literature review demonstrated that shift work (afternoon and night shifts) and extended working hours were significantly related to increased risk of occupational accidents (37).

In the industrialized countries physical environments are now less important and dangerous than before, while organizational threats are becoming more important in many workplaces (28). In the present study, job stress was found to be a significant risk factor for occupational injuries among the studied sample of construction workers. This finding can be explained as job stress can result in physiological and psychological problems that may increase the risk of sustaining more occupational injury at worksites (29). Moreover, the results of this study showed significant association between job supervision and occupational injuries among the studied sample of construction workers. This is may be due to that job supervision plays an important role in the overall productivity and workers' safety at any given industry.

Regarding the risk factors of occupational injuries among construction workers, the results of the current study coincide with those of another study, where it was found that unsafe working environment and certain individual factors, not using PPE, work stress, use of substance, sleep disorders, lack of safety supervision and lack of job satisfaction can increase the risk of accidents (32). Consistent with our results, a recent literature review demonstrated that extended working hours were significantly related to increased risk of occupational accidents (35).

## **7. Strengths and Limitations of the study**

### **7.1. Strength of the study**

- Being an institution based study help to detect the true magnitude and factors, and helps to generalize the finding.
- One of the strengths of the present study is that the data depend on self-reported injuries, where in other studies the data of injuries were obtained mostly from the official companies records with a possibility of underreporting.
- Use of observation supported by check list.

### **7.2. Limitation of the study**

- Respondents difference in perception on definition of non-fatal occupational injury, some behavioral and occupational factors.
- As being a cross sectional study, it is difficult to detect work progress variations (since Construction has different type of work performance from excavation to finishing work with different types of injuries)
- Social desirability bias
- Recall bias

## **8. Conclusions and recommendations**

### **8.1. Conclusion**

- Non-fatal injuries in the form of cuts/lacerations and contusions in upper and lower limbs were common among this sample of construction workers.
- The main causes of injuries were walking on/ Handle sharp & other material, falls and handling of manual tools.
- Extended working hours, using of PPE, Substances usage and job stress were significantly associated with injuries.
- Age, and Marital status didn't show significant association with occupational injuries among the studied sample of construction workers.

### **8.2. Recommendation**

- Workers training and orientation to raise safety awareness and consciousness and to improve safety practices, effective communication between management and workers, general housekeeping, fall protection (Guard rail) preparation and training about proper usage of manual tool should be fulfilled at worksites.
- The management should provide basic PPE (personal protective equipment's) to workers as we can see from this study majority of the injuries were preventable by using of PPE.
- The management should also work on reducing the work stress level by frequently communicating with workers
- Implementation and enforcement of occupational safety legislations and reviewing of the legislation with current advance technological and safety condition is very necessary.

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## **Annex I**

### **Participant's information sheet**

A Research Project to determine the magnitude of Non-Fatal Occupational Injuries and to identify and describe factors affecting its happening on construction site workers.

#### **Introduction**

I would like to invite you to participate in this project, which is concerned with work related Non-Fatal Occupational Injuries and describe factors affecting its happening on construction workers like you.

#### **Why am I doing the project?**

The project is part of my final year Partial Fulfillment of the Requirements for the Master's Degree in Master of Public Health (MPH) course at Addis Ababa University, Collage of Health Science and School of Public Health. It is hoped that the project could provide useful information for construction company administration and safety health, environmental department to know the magnitude of non-fatal occupational injuries and describe factors affecting its happening and take appropriate safety measures.

#### **What will you have to do if you agree to take part?**

When I know you are interested.

1. I will arrange a time to meet, which is convenient for you
2. There will be one, single interview with a data collector during which he will ask you questions from the questionnaire. The interview is expected to last no longer than half an hour and is a one-off event.
3. When I have completed the study I will produce a summary of the findings which I will be more than happy to send you the copy of it if you are interested.

#### **How much of your time will participation involve?**

One interview lasting no more than half an hour.

#### **Will your participation in the project remain confidential?**

If you agree to take part, your name will not be recorded on the questionnaires and the information will not be disclosed to other parties. Your responses to the questions will be used for the purpose of this project only. You can be assured that if you take part in the project you will remain anonymous.

### **What are the advantages of taking part?**

You may find the project interesting answering questions about non-fatal occupational injuries and factors affecting its happening which may help you to stay safe and healthy. Once the study is finished it could provide information about non-fatal occupational injuries and factors affecting its happening, which is useful to the workers themselves, the company administration and safety health and environmental department to take appropriate safety measures.

### **Are there any disadvantages of taking part?**

It could be that you are not comfortable talking about your injury if there is any, and its health effects.

### **Do you have to take part in the study?**

No, your participation in this project is entirely voluntary. You are not obliged to take part, you have been approached as construction site worker that you might be interested in taking part, this does not mean you have to.

If you do not wish to take part you do not have to give a reason.

Similarly, if you do agree to participate you are free to withdraw at any time during the project if you change your mind.

Researcher: Abdurahman Hussien Surur

[Tel:- 0913 85 86 46](tel:0913858646)

Post graduate student, Addis Ababa University, Collage of Health Science and School of Public Health

Supervisor: Dr Abera Kume MD, MSc, PhD: Mobile No: 911-882912

School of Public Health Tel No: 251 11-5517701

### Informed consent

<b>Name of Researcher</b>
Abdurahman Hussen Surur
<b>Title of study</b>
Assessment of health and safety practices in construction sector of Adama Science and Technology University, Research Park Construction Site, Adama, Ethiopia

I have had the research satisfactorily explained to me in verbal and / or written form by the researcher (data collector). I understand that the research will involve: Structured questionnaire, consisting of both closed and open-ended questions about Non-Fatal Occupational Injuries and factors affecting its happening. All information about me will be treated in strict confidence and that I will not be named in any written work arising from this study. I understand that I may withdraw from this study at any time without having to give an explanation and one interview lasting no more than half an hour.

I have had the opportunity to ask questions about the foregoing information and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study

Name of Data collector: \_\_\_\_\_

Signature of data collector: \_\_\_\_\_

Date of Interview: .....

### English version Questionnaire

Addis Ababa University College of health science school of public health

Name of data collector .....Signature.....

Date of interview .....time started ..... Time completed.....

Result of interview:

1. Completed    2. Respondent not available    3. Refused    4. Partially completed

Checked by:

Supervisor Name ..... Signature ..... Date .....

#### Part 1.Socio-demographic Characteristics

Ser. No	Questions	Option	Skip	
101	What is your residence	1.urban 2.rural		
102	Sex	1.male 2.female		
103	Age in year of respondent			
104	What is your marital status	1.single 2.married 3.widowed 4.divorced		
105	What is your ethnicity	1.orormo 2.Arama 3.Gurage 4.Tigray 5. Others/specify.....		
106	What is your religion?	1.Ortodox 2.muslim 3.protestant 4.others		
107	What is your educational level?	1.Illirate 2.Read and write 3.primary(1-8 grade) 4.secondary(9-12) 5.college/Diploma/Degree		
108	What is your pattern of employment?	1.permanent 2.temporary 3.daily (by card, payment by working day) 4. Other.....		
109	Have you signed employment agreement when you were employed?	1.yes 2.no		
110	Have you take pre-employment medical checkup?	1.yes 2.no		
111	If the answer for Q110 is	1.physical examinations		

	Yes, what type of medical checkup do you undergo?	2.Blood test 3.Other/specify		
112	Do you have periodic medical checkup?	1.yes 2.no		
113	If The answer for Q112 is Yes, what type of medical checkup do you undergo?	1.physical examination 2.Blood test 3.other/specify		
114	If The answer for Q112 is Yes, what time interval do you take periodic medical checkup?			
115	What is your salary/monthly income?	.....		
116	How much family do you support?			
117	Income from other source monthly or yearly?			

Part 2. Description of the pattern of occupational injuries

Ser. No	Questions	Option	Skip	
201	What is your working section /job category	1. daily laborer 2. plasterer 3. carpenter 4. mason 5. welder /electrician 6. painter 7. driver/operator and 8. office/site engineers		
202	How much duration in the same category?			
203	Have you ever transferred from one working section to other?	1.yes 2.no		
204	If yes to Q203, from which to which section of work did you transferred?			
205	If Yes to Q203, what was the reason of your transfer?	1.health problem 2.work load 3. for better salary 4.other		
206	What is your total service year in the construction industry?			
207	How much time do you spent working here?			
208	working hours per week	1. < 48 hours per week..... 2. 48 hours per week 3. >48 hours per week..... 4. Other.....		
209	Do you work over 48 hours	1.yes		

	per week (8 hrs. per day)?	2.no		
210	If Yes to Question 209, please mention the work hour per week or per day			
211	Do you think that working in the construction industry can expose to different health problem?	1.yes 2.no		
212	If Yes to Question 211, please list some health problem			
213	If yes to Question 211, What could be the possible causes of the problem?			
214	What do you understand about construction injury and hazard?			
215	Have you encountered any injury before? in the past 12 months	1.yes 2.no		
216	If yes to Question 215, What kind of injury you encountered?			
217	If yes to Question 215, What was the cause of the injury	1. Specify .....		
218	If yes to Question 215, was cause of the injury due to personal failure or occupational safety failure	Specify briefly .....		
219	If yes to Question 215, were you wearied PPE(personal protective equipment's)	Specify PPE		
220	If yes to Question 215, did you gate any treatment	1.yes 2.no		
221	If yes to Question 220, what kind of treatment did you gate?	1. first aid 2. general treatment 3. referred to specialty hospital other		
222	If yes to Question 215, Was there any health effect caused by the injury			
223	If yes to for Question, 222 What was the health effect of the injury			
224	Please tell us the anatomical location and body part injured			
225	If yes to Question 215, Does			

	the injury cost you money			
226	If yes to for Question 225, could you estimate the cost			
227	How many injuries you encountered in one year period?			
228	If yes to Question 215, Time of injury	..... happens In the morning ..... happens In the Afternoon ..... happens In the evening ..... happens In the midnight		
229	If yes to Question 215, Personal condition 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. Accident is beyond control 5. It is the work behavior 6. occupational safety failure 7. It is due to not using PPD/E 8. I don't remember 9. Others (specify) .....		

Part 3. Information about common work-related determinants of injuries

Ser. No	Questions	Option	Skip	
301	Have you taken pre-employment occupational safety training?	1.yes 2.no		
302	Have you ever take any training related to occupational injury and hazard?	1.yes 2.no		
303	Does the company have regular occupational safety training?	1.yes 2.no		
304	If yes for question no 303 how often			
305	If yes to question no 303 does the training help you on understanding work related injuries & how to prevent them	1.yes 2.no		
306	Does your work done by using machineries	1.yes 2.no		
307	If yes to question no 306, Does the machinery you working with design in a way that does not cause accident and injury	1.yes 2.no		
308	If No to question no 307, do you think good machinery design could prevent from accident and	1.yes 2.no		

	injury			
309	If yes to question no 306, Does machinery maintained when appropriate maintenance needed to prevent injuries.	1.yes 2.no		
310	If No to question no 309, do you know the reason and where the responsibility goes	1. Employee don't inform 2. Employer doesn't care 3. Other.....		
311	Does the company perform regular workplace supervision concerning safety	1.yes 2.no		
312	If yes to question no 311, what was the supervision about?	1. Proper safety training session 2. PPE availability & usage 3. Safe machinery design 4. machinery maintenance 5. Other.....		

Part 4. About common behavioral risk factors

Ser. No	Questions	Option	Skip	
401	Do you have personal protective equipment? Which are appropriate with your working section /job category.	1.yes 2.no		
402	If yes for question no 401, which type does you have?			
	Helmet/ hardhat	1.yes 2.no		
	Safety shoe	1.yes 2.no		
	Gauntlet gloves	1.yes 2.no		
	Coverall	1.yes 2.no		
	Facemask	1.yes 2.no		
	Google	1.yes 2.no		
	Dust mask	1.yes 2.no		
	Other PPE	1.yes 2.no		
	If yes for other PPE, specify the PPE? .....			
403	Do you use your PPE properly? (All the time when you are at work )	1.yes 2.no		
	Helmet/ hardhat	1.yes 2.no		
	Safety shoe	1.yes 2.no		
	Gauntlet gloves	1.yes 2.no		
	Coverall	1.yes 2.no		
	Facemask	1.yes 2.no		
	Google	1.yes 2.no		
	Dust mask	1.yes 2.no		
	Other PPE	1.yes 2.no		
404	If no to Question 403 A-H,	1.don't believe it prevent from hazard		

	what is the reason?	2. not comfortable for work 3. other/specify		
405	If no to question 401, What is the reason? That you don't have the PPE	1. Not provided by the organization 2. didn't take because I will not use them 3. not aware regarding the presence of such equipment 4. other/specify		
406	Do you use one of the following substances	Cigarette (Smoking), 1.yes 2.no Drinking alcohol, 1.yes 2.no Chew 'chat', 1.yes 2.no Others.....		
407	If yes to question 406 the patterns of usage of the substances	1. Always (every day) 2. Rarely ((2-4 days a week) 3. Weekend 4. Not fixed		
408	Do you had a sleeping disturbance problem	1.yes 2.no		
409	If yes to for Question 408, is there any reason			
410	To know your Job satisfaction, and job stress please answer the following questions.			

### Job satisfaction, and job stress measurement

#### 1) Measuring the job stress level (The workplace stress scale) [25]:

Thinking about your current job, how often does each of the following statements describe how you feel? For statements (A, B, C, D, and E) (Never = 1), (Rarely = 2), (Sometimes = 3), (Often = 4), and (Very often = 5).

For statements (F, G, and H) (Never = 5), (Rarely = 4), (Sometimes = 3), (Often = 2), and (Very often = 1).

- A. Conditions at work are unpleasant or sometimes even unsafe.
- B. I feel that my job is negatively affecting my physical or emotional wellbeing.
- C. I have too much work to do and/or too many un-reasonable deadlines.
- D. I find it difficult to express my opinion or feelings about my job conditions to my superiors.
- E. I feel that job pressures interfere with my family or personal life.
- F. I have adequate control or input over my work duties.
- G. I receive appropriate recognition or rewards for good performance.
- H. I am able to utilize my skills and talents to the fullest extent at work.

**2) Job satisfaction scale [26]:**

For each statement please write the number to indicate your degree of agreement: (Strongly disagree = 1), (Dis-agree = 2), (Don't know = 3), (Agree = 4), and (Strongly agree = 5).

1. I receive recognition for a job well done.
2. I feel close to the people at work.
3. I feel good about working at this company.
4. I feel secure about my job.
5. I believe management is concerned about me.
6. On the whole, I believe work is good for my physical health.
7. My wages are good.
8. All my talents and skills are used at work.
9. I *get along* with my supervisors.
10. I feel good about my job.

**Annex II**

**ለተሳታፊዎች ስለ ጥናቱ መረጃ**

ከ ኮንስትራክሽን ሳይት ስራ ጋር ተያያዥነት ያላቸው የአከል ጉዳዮችንና መንስኤዎቻቸውን ለማዎቅ የሚሰራ ጥናት።

**መግቢያ**

በዚህ ጥናት እንዲሳተፉ እየጋበዝኩ፣ ጥናቱ ከኮንስትራክሽን ስራ ጋር ተያያዥነት ያላቸው የአከል ጉዳዮችንና መንስኤዎቻቸውን ይመለከታል።

**ጥናቱ ለምን እንደሚሰራ ማወቅ ከፈለጉ**

ለአዲስ አበባ ዩኒቨርሲቲ የጤና ሳይንስ ኮሌጅ ማስተርስ ኢን ፕብሊክ ሐልዝ ትምህርት የመጨረሻ አመት የመመረቂያ ፀ-ሁፌ ሲሆን፣ ጥናቱ ለኮንስትራክሽን ድርጅቱ አስተዳደር እና በድርጅቱ ውስጥ ላለው ሴፍቲ ኤንድ ሐልዝ ዲፓርትመንት ከኮንስትራክሽን ስራ ጋር ተያያዥነት ያላቸው የአከል ጉዳዮችንና መንስኤዎቻቸውን ተረድተው አስፈላጊውን ቅድመ ጥንቃቄ እንዲያደርጉ ለማድረግ ሊረዳ ይችላል።

**በጥናቱ ለመሳተፍ ፍቃደኛ ከሆኑ ከእርሶ ይሚጠበቅበት**

1. የሚመችትን ሰዓት በመምረጥ ቀጠሮ እንይዛለን።
2. የአንድ ወቅት ግንኙነት ብቻ ከመረጃ ሰብሳቢው ባለሞያ ጋር በማድረግ ከመጠይቅ ወረቀቱ ጥያቄዎችን የሚጠይቁት ይሆናል።
3. ጥናቱን ካጠናቀቁ በኋላ የጥናቱን ማጠቃለያ ለማየት የምትፈልጉ ከሆነ በእኔ በኩል ለመስጠት ከፍቃደኝነትም በላይ ደስተኛ ነኝ።

**የእርሶ ተሳትፎ ሚስጥረኝነትን ማወቅ ከፈለጉ**

በጥናቱ ለመሳተፍ ፍቃደኛ ከሆኑ ስሞት በጥናቱ መጠይቅ ላይ አይመዘገብም ከዚህ በተጨማሪ የሚሰጧቸው መረጃዎች ለሌላ ሰስተኛ ወገን አይሰጥም ለመጠይቅ ወረቀቱ ጥያቄዎች የሚሰጧቸው መልሶች ከጥናቱ ውጪ ለሌላ ተግባር አይውሉም።

**በጥናቱ የመሳተፉ ጥቅም እንዳለ ማወቅ ከፈለጉ**

በጥናቱ ሲሳተፉና ከመጠይቁ ከኮንስትራክሽን ስራ ጋር ተያያዥነት ያላቸው የአከል ጉዳዮችንና መንስኤዎቻቸው ላይ የተወሰነ ግንዛቤ ሊያገኙና የራሶን ጤንነትና ደህንነት የሚጠብቁበትን መንገድ እንዲያውቁት ሊረዳ ይችላል ይሆናል። ከዚህ በተጨማሪ ጥናቱ ሲጠናቀቅ ለኮንስትራክሽን ድርጅቱ አስተዳደር እና በድርጅቱ ውስጥ ላለው ሴፍቲ ኤንድ ሐልዝ ዲፓርትመንት ከኮንስትራክሽን ስራ ጋር ተያያዥነት ያላቸው የአከል ጉዳዮችንና መንስኤዎቻቸውን ተረድተው አስፈላጊውን ቅድመ ጥንቃቄ እንዲያደርጉ ሊጠቅም (ሊረዳ) ይችላል።

**በጥናቱ በመሳተፎ የሚመጣበት ችግር እንዳለ ማወቅ ከፈለጉ**

መጠይቁ ላይ ከስራ ጋር ተያያዥነት ስላላቸው አካላዊ ጉዳዮች ሲጠይቁ ጉዳት አጋጥሞት ከሆነና ያስከተለበትን የጤና ችግር ማስታወሪያ ምናልባት ደስተኛ ላያደርጉት ከልቻለ በስተቀር ሌላ ምንም እይነት ችግር የለውም።

**በጥናቱ ላይ ሲሳተፉ ያሎትን መብት ማወቅ ከፈለጉ**

በዚህ ጥናት ላይ የመሳተፍና ያለመሳተፍ መብቶች መሰሉ በመሰሉ በራስ ፍቃድኝነት ይወሰናል፤ እርሶ ጥናቱ ከሚሰራባቸው የኮንሰትራክሽን ሳይት ሰራተኞች መካከል ስለሚመደቡ ምናልባት ለመሳተፍ ፍቃድኛ ከሆኑ (ፍላጎቱ ካለ) በስተቀር ያለመሳተፍ ይችላሉ፤ በጥናቱ መሳተፍ ካልፈለጉ ምንም ዓይነት ምክንያት ማቅረብ አይጠበቅቦትም፤ ልክ እንደዚሁ በጥናቱ ለመሳተፍ ፍቃድኛ ከሆኑ እና በጥናቱ በማንኛውም ሰዓት የማቋረጥ ሐሳብ ካሎት ማቋረጥ ይችላሉ።

**ጥናቱን ይሟያጠናው:-** አብዱራህማን ሁሴን ስሩር

ስልክ:- 0913 85 86 46

አዲስ አበባ ዩኒቨርሲቲ የጤና ሳይንስ ኮሌጅ ድህረ-ምረቃ ተማሪ

**ሱፐርቫይዘር:-** ዶክተር አበራ ቁሜ (MD, Msc, PHD): ሞባይል ቁጥር: 0911-882912

ስኩል ኦፍ ፕብሊክ ሀልዝ ስልክ ቁጥር: 251 11-5517701

የፍቃደኝነት ማረጋገጫ ፎርም

<b>ጥናቱን የሚያጠናው ሰው ስም</b>
አብዱራህማን ሁሴን ስሩር
<b>የጥናቱ ርዕስ</b>
የአዳማ ሳይንስና ቴክኖሎጂ ዩኒቨርሲቲ ሪሶች ፓርክ ኮንስትራክሽን ስራተኞች የጤናና የደህንነት አጠባበቅ አተገባበር ሁኔታ ጥናት

ስለጥናቱ አጥጋቢ የሆነ ገለፃ በፁሁፍ ወይም በቃል ተደርጎልኛል፤ ጥናቱ ከ ኮንስትራክሽን ስራ ጋር ተያያዥነት ያላቸው የአክል ጉዳዮችና መንስኤዎቻቸውን የሚመለከቱ የተደራጁ ጥያቄዎች እንደሚኖራቸው ተገልጿል፤ ሁሉም የምስጢታዊ መረጃዎች ለሌላ ሰነድ ወገን እንደዚሁ ለሌላ አላማ እንደማይወጡና በጥናቱ ቀጣይ ደረጃዎችም ቢሆን ስሜ እንደማይገለፅ ተረድቻለሁ፤ ከጥናቱ በፊልኩት ሰዓት ምንም አይነት ምክንያት ማቅረብ ሳይጠነቅብኝ ማቋረጥ እንደምችልና አጠቃላይ ቆይታዬ ከ 30 ደቂቃ እንደማይበልጥ ተረድቻለሁ።

በጥናቱ ላይ ማናቸውም አይነት ጥያቄዎች ካሉኝ የመጠየቅና ተገቢውን ምላሽ የማግኘት እድሉ ነበረኝ፤ በጥናቱ ለመሳተፍ ፍቃደኛ መሆኔን አረጋግጣለሁ ።

የመረጃ ሰብሳቢው ስም .....

የመረጃ ሰብሳቢው ፊርማ.....

መጠይቁ የተሞላበት ቀን.....

**የአማርኛ ቋንቋ መጠይቅ**

አዲስ አበባ ዩኒቨርሲቲ የጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና ሳይንስ ክፍል

የጠያቂው ስም..... ፊርማ.....

መጠይቁ የተሞላበት ቀን..... የተጀመረበት ሰዓት..... የተጠናቀቀበት ሰዓት.....

የመጠይቁ ግምገማ :- 1. ተሟልቷል 2. ተጠያቂው አልተገኘም 3. ተቃውሟል/ለች 4. በከፊል ተሞልቷል

የሱፐርቫይዘሩ ስም..... ፊርማ.....

ክፍል አንድ:- ማህበራዊና ስነ- ልቦናዊ ገፅታዎችን በተመለከተ

ተ.ቁ	መጠይቅ	አማራጭ	ይለፍ	
101	የመኖሪያ ቤታ	1. ከተማ 2. ገጠር		
102	ጾታ	1. ወንድ 2. ሴት		
103	የተሳታፊ ዕድሜ			
104	የጋብቻ ሁኔታ	1. ያላገባ/ች 2. ያገባ/ች 3. የፈታ/ች 4. የሞተበት/ባት		
105	ብሄር	1. አሮሞ 2. አማራ 3. ጉራጌ 4. ትግሬ 5. ሌላ/ይጠቀስ.....		
106	ሀይማኖት	1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ሌላ/ይጠቀስ		
107	የትምህርት ደረጃ	1. ያልተማረ 2. መሰረተ ትምህርት 3. አንደኛ ደረጃ 1-8 4. ሁለተኛ ደረጃ 9-10 5. ኮሌጅና ከዚያ በላይ		
108	የቅጥር ሁኔታ	1. ቋሚ 2. ኮንትራት 3. ሌላ/ይጠቀስ		
109	መጀመሪያ ሲቀጠሩ የቅጥር ፎርም ሞልተዋል	1. አዎ 2. የለም		
110	በመጀመሪያ ወደ እዚህ ስራ ከመስማራቶ በፊት የጤና ምርመራ ተደርጎለታል	1. አዎ 2. የለም		
111	ለጥያቄ 110 መልሱ አዎ ከሆነ የተደረገሎት ምርመራ ምን አይነት ምርመራ ነው	1. የአካል የጤና ምርመራ 2. የደም ምርመራ 3. ሌላ/ይጠቀስ.....		
112	ስራውን ከጀመሩ በኋላ ተከታታይ የጤና ምርመራ ይደረግሎታል	1. አዎ 2. የለም		
113	ለጥያቄ 112 መልሱ አዎ ከሆነ የተደረገሎት ምን አይነት ምርመራ ነው	1. የአካል የጤና ምርመራ 2. የደም ምርመራ 3. ሌላ/ይጠቀስ.....		
114	ለጥያቄ 205 መልሱ አዎ ከሆነ			

	በየሰንት ጊዜ ልዩነት ነው ምርመራ የሚደረግለት			
115	የወር ደመወዝ ስንት ነው			
116	እርሶ የሚደግፉት የቤተሰብ ብዛት ስንት ነው			
117	ሌላ የገቢ ምንጭ ካለ የወር ወይም የአመት ሊሆን ይችላል			

ክፍል ሁለት:- ከስራ ጋር ግንኙነት ያላቸው ጉዳዮችን ሚመለከቱ መጠይቆች

ተ.ቁ	መጠይቅ	አማራጭ	ይለፍ	
201	የስራ መደብ(የስራ ዘርፍ)	1. ቀን ሰራተኛ 2. ለሳኝ 3. አናጂ 4. ግንባኛ 5. የኤሌትትሪክ ባለሙያ/ በያጅ 6. ቀለም ቀቢ 7. ሹፌር/አፕሬተር 8. የቢሮ/የሳይት መሃንዲስ		
202	በሚሰሩበት መደብ ላይ ምን ያህል ጊዜ ሰሩ			
203	ከአንድ የስራ መደብ ወደ ሌላ የስራ መደብ ተዘዋውረዉ ያዉቃሉ?	1.አዎ 2.የለም		
204	ለጥያቄ 203 መልሶ አዎ ከሆነ ከየትኛዉ መደብ ወደ የትኛዉ ነዉ የቀየርከዉ/ሸዉ			
205	ለጥያቄ 203 መልሶ አዎ ከሆነ የቀየሩበት ምክንያት ምንድን ነዉ?	1. የጤና ችግር 2. የስራ ጫና 3. የተሻለ ክፍያ 4. ሌላ/ ይጠቀሱ....		
206	በኮንስትራክሽን ድርጅት ውስጥ ለምን ያህል ጊዜ ሰሩ			
207	አሁን በሚሰሩበት ድርጅት ምን ያህል ጊዜ ቆዩ			
208	በሳምንት ውስጥ የሚሰሩት ሰዓት	1. < 48 ሰዓት በሳምንት... 2. 48 ሰዓት በሳምንት 3. > 48 ሰዓት በሳምንት... 4. ሌላ/ ይጠቀሱ....		
209	በሳምንት ውስጥ ከ 48 ሰዓት ማለትም በቀን ከ 8 ሰዓት በላይ ይሰራሉ			
210	ለጥያቄ 209 መልሶ አዎ ከሆነ ትርፍ የሚሰሩትን ሰዓት በቀን ወይም በሳምንት አድርገዉ ይንገሩን			
211	በኮንስትራክሽን ድርጅት ውስጥ መስራት ለተለያዩ የጤና ችግሮች ሊዳርግ እንደሚችል ያዉቃሉ	1.አዎ 2.የለም		
212	ለጥያቄ 211 መልሶ አዎ ከሆነ የሚያስከትላቸዉን የጤና ችግሮች(ጉዳዮች) ይጥቀሱ			
213	ለጥያቄ 211 መልሶ አዎ ከሆነ ለጤና ችግሩ ምክንያት ሊሆን የሚችለዉ ምንድን ነዉ ብለበዉ ያስባሉ			

214	ሰለ ኮንስትራክሽን ስራ አደጋዎችና ጉዳዮች ምን ያህል ግንዛቤ አሉት			
215	ባለፉት 12 ወራቶች ውስጥ ጉዳት አጋጥሞት ያዎቃል?	1.አዎ 2.የለም		
216	ለጥያቄ 215 መልሱ አዎ ከሆነ ምን አይነት ጉዳት ነበር ያጋጠሞት			
217	ለጥያቄ 215 መልሱ አዎ ከሆነ የጉዳቱ መንስኤ ምን ነበር በዝርዝር ይጥቀሱ	ይጠቀስ....		
218	ለጥያቄ 215 መልሱ አዎ ከሆነ የጉዳቱ መንስኤ በግል ስህተት(መዘናጋት) ወይስ በስራ ቦታ የደህንነት ክፍተት በይትኛዉ ምክንያት ነዉ ብለዉ ያምናሉ	በዝርዝር ይጠቀስ....		
219	ለጥያቄ 215 መልሱ አዎ ከሆነ ጉዳቱ በተከሰተበት ሰዓት ጉዳት መከላከያ ትጥቆችን አድርገዉ ነበር	ትጥቆቹ ይጠቀሱ....		
220	ለጥያቄ 215 መልሱ አዎ ከሆነ የህክምና እርዳታ አግኝተዉ ነበር	1.አዎ 2.የለም		
221	ለጥያቄ 220 መልሱ አዎ ከሆነ ምን አይነት የህክምና እርዳታ አገኙ	1. የመጀመሪያ ደረጃ ህክምና አገልግሎት 2. ጠቅላላ የህክምና አገልግሎት 3. ወደ ሴፕሻሊቲ ሆስፒታል ሪፈር ተደረኩ 4. ሌላ/ ይጠቀስ....		
222	ለጥያቄ 215 መልሱ አዎ ከሆነ ጉዳቱ ያስከተለበት የጤና እክል አለ			
223	ለጥያቄ 222 መልሱ አዎ ከሆነ የጤና ጉዳቱን ይግለጹልን			
224	እባኩ የተጎዱበትን የአካል ክፍልና ቦታ ይንገሩን			
225	ለጥያቄ 215 መልሱ አዎ ከሆነ ጉዳቱ ለወጪ ዳርጎት ነበር (ያወጡት ወጪ ነበር)			
226	ለጥያቄ 225 መልሱ አዎ ከሆነ የብሩን መጠን መገመት ይችላሉ			
227	በአጠቃላይ በአመት ውስጥ ምን ያህል ጉዳት አስተናገዱ			
228	ለጥያቄ 215 መልሱ አዎ ከሆነ የተጎዱበት ሰዓት	1. ጠዋት 2. ከሰዓት 3. አመሻሽ 4. እኩለ ለሊት		
229	ለጥያቄ 215 መልሱ አዎ ከሆነ በጉዳቱ ወቅት የነበሩበት ሁኔታ ( እዚህ ጥያቄ ላይ ከ አንድ በላይ መልሶች ሊኖሩ ይችላሉ)	1. ለስራዉ አዲስ ነበርኩ 2. የግል ጉዳይ እያስጨነቀኝ ነበር 3. ሌላ ይጤና ችግር ነበረብኝ 4. ጉዳቱ የተከሰተዉ ማድረግ ከምችለዉ በላይ ስለሆነ ነዉ 5. የስራዉ ባህሪ ነዉ 6. የስራ ቦታ የደህንነት ክፍተት ነዉ 7. ጉዳቱ መከላከያ ትጥቅ ባለማድረጌ ነዉ 8. አላስታዉስም 9. ሌላ ይጠቀስ		

ክፍል ሶስት፡- ከስራ ጋር ግንኙነት ያላቸው ጉዳት ሚያስከትሉ ተግባራትን ሚመለከቱ መጠይቆች

ተ.ቁ	መጠይቅ	አማራጭ	ይለፍ	
301	ወደ ስራ ከመግባቶ በፊት ስለ ስራ ቦታ ደህንነት ስልጠና ወስደዋል	1.አዎ 2.የለም		
302	ስለ ስራ ቦታ ደህንነት ማንኛውም አይነት ስልጠና ወስደዉ ያዉቃሉ	1.አዎ 2.የለም		
303	ድርጅቶ ስለ ስራ ቦታ ደህንነት ቋሚ ስልጠና ይሰጣል			
304	ለጥያቄ 303 መልሶ አዎ ከሆነ በየሰዓት ጊዜዉ			
305	ለጥያቄ 303 መልሶ አዎ ከሆነ ስልጠናዉ ስለ ስራ ቦታ ጉዳዮችና እንዴት መከላከል እንደሚችሉ የጠቀሞት ነገር አለ			
306	ስራዎትን የሚሰሩት ማሸኛችን በመጠቀም ነዉ	1.አዎ 2.የለም		
307	ለጥያቄ 306 መልሶ አዎ ከሆነ እርሶ ይሚጠቀሙበት ማሸን አሰራር ጉዳትን በማያስከትል መልኩ ነዉ ይተሰራዉ	1.አዎ 2.የለም		
308	ለጥያቄ 307 መልሶ አዎ ከሆነ ጥሩ የሆነ የማሸኛች አሰራር ጉዳትን ይቀንሳል ብለዉ ያምናሉ	1.አዎ 2.የለም		
309	ለጥያቄ 306 መልሶ አዎ ከሆነ ማሸኛቹ ጥገና በሚይስፈልጋቸዉ ሰዓት ተገቢዉ ጥገና ይደረግላቸዋል	1.አዎ 2.የለም		
310	ለጥያቄ 309 መልሶ አይደለም ከሆነ ምክንያቱንና የማን ሃላፊነት እንደሆነ ያውቃሉ			
311	ድርጅቶ ስለ ስራ ቦታ ደህንነቶች በተመለከተ ተከታታይ ቁጥጥር ያደርጋል			
312	ለጥያቄ 311 መልሶ አዎ ከሆነ ቁጥጥሩ ምንን የተመለከተ ነበር	1. ግዜዉን ይጠበቁ የደህንነት ስልጠና መኖሩን በተመለከተ 2. ጉዳት መከላከያ ትጥቆች(መሳሪያዎች) መኖራቸዉንና አጠቃቀማቸዉን በተመለከተ 3. የማሸኛች ጥገናን በተመለከተ 4. ሌላ/ ይጠቀሱ....		

ክፍል አራት፡- የግል አመለካከትንና ባህሪን ሚመለከቱ መጠይቆች

ተ.ቁ	መጠይቅ	አማራጭ	ይለፍ	
401	ለሚሰሩት ስራ አስፈላጊ የሆኑ ጉዳት መከላከያ ትጥቆች(መሳሪያዎች) አለቦት	1.አዎ 2.የለም		
402	ለጥያቄ 401 መልሶ አዎ ከሆነ ከዚህ በታች ከተጠቀሱት የትኞቹ ይገኙበታል			
	ራስ መከላከያ ቆብ	1. አዎ 2. የለም		
	ጉዳት መከላከያ ጫማ	1. አዎ 2. የለም		
	ጉዳት መከላከያ ጓንት	1. አዎ 2. የለም		
	ጉዳት መከላከያ ሙሉ ልብስ	1. አዎ 2. የለም		
	የፊት ጉዳት መከላከያ ማስከ	1. አዎ 2. የለም		

	ጉዳት መከላከያ መነፅር	1. አዎ 2. የለም		
	አዋራ-(ብናኝ) መከላከያ ማስከ	1. አዎ 2. የለም		
	ሌሎች ጉዳት መከላከያዎች	1. አዎ 2. የለም		
	ለሌሎች ጉዳት መከላከያዎች መልሶ አዎ ከሆነ ይገለፅ			
403	ስራ ላይ ሲሆኑ ጉዳት መከላከያ ትጥቆች(መሳሪያዎች) በአግባቡ ትጠቀማለህ	1. አዎ 2. የለም		
	ራስ መከላከያ ቆብ	1. አዎ 2. የለም		
	ጉዳት መከላከያ ጫማ	1. አዎ 2. የለም		
	ጉዳት መከላከያ ጓንት	1. አዎ 2. የለም		
	ጉዳት መከላከያ ሙሉ ልብስ	1. አዎ 2. የለም		
	የፊት ጉዳት መከላከያ ማስከ	1. አዎ 2. የለም		
	ጉዳት መከላከያ መነፅር	1. አዎ 2. የለም		
	አዋራ-(ብናኝ) መከላከያ ማስከ	1. አዎ 2. የለም		
	ሌሎች ጉዳት መከላከያዎች	1. አዎ 2. የለም		
404	ለጥያቄ 403(1.8) መልሶ አይደለም ከሆነ ምክንያቱ ምንድን ነው	1. ጉዳት መከላከያ ትጥቆች(መሳሪያዎች) ከጉዳት ይከላከላሉ ብዬ ስለማላምን 2. ስለብሳቸው(ስጠቀማቸው) ምቹት ስለሚነሱኝ 3. ሌላ/ ይጠቀሱ....		
405	ለጥያቄ 401 መልሶ አይደለም ከሆነ ጉዳት መከላከያ ትጥቆች(መሳሪያዎች) የሌሎት በምን ምክንያት ነው	1. ከድርጅቱ ስላልተሰጠኝ 2. ስለመኖራቸው አላወቅም 3. ስለማልጠቀማቸው አልወሰድኩም 4. ሌላ/ ይጠቀሱ....		
406	ከሚከተሉት ዉስጥ የሚጠቀሙት አለ	ሲጋራ ማጨስ 1. አዎ 2. የለም መጠጥ መጠጣት 1. አዎ 2. የለም ጫት መቃም 1. አዎ 2. የለም ሌላ/ ይጠቀሱ....		
407	ለጥያቄ 406 መልሶ አዎ ከሆነ በሳምንተ ዉስጥ የሚተቀሙት ቀን ብዛት	1. ሁሉንም ቀን 2. አንዳንዴ 3. በሳምንቱ የረፍት ቀናት 4. የተወሰነ ቀን የለም(እንደሁኔታው)		
408	እንቅልፍ የመረበሽ ችግር አለቦት	1. አዎ 2. የለም		
409	ለጥያቄ 408 መልሶ አዎ ከሆነ ምክንያቱን ያውቁታል			
410	በስራዎ ደስተኛ መሆኖን እና አለመሆኖ ለማወቅ የሚከተሉትን ጥያቄዎች ይመልሱ			

በስራዎ ደስተኛ መሆኖን እና አለመሆኖ መለኪያ

1) የስራ መጨናነቅ መለኪያ መስፈርት  
አሁን ስለምትሰራው ስራ እያሰብክ ለሚከተሉትን ጥያቄዎች መልስ ስጥ

ከ (ሀ.ሊ.ሐ.መ. እናሠ) ላሉ አረፍተ ነገሮች (በፍፁም 1) (አልፎ አልፎ 2) (አንድአንዴ 3) (አብዛኛውን ጊዜ 4) (ሁል ጊዜ5)

ከ (ረ.ሰ እና ሸ) ላሉ አረፍተ ነገሮች (በፍፁም 5) (አልፎ አልፎ 4) (አንድአንዴ 3) (አብዛኛውን ጊዜ 2) (ሁል ጊዜ1)

ሀ. ስራ ቦታ ያለው ሁኔታ ደስ የማይል አንዳንዴ ደህንነቱ ያልተጠበቀ ነው

ለ. ስራዬ አካላዊና መንፈሳዊ ጤንነቴ(ደህንነቴ) ላይ አሉታዊ ተፅዕኖ እያመጣብህ እንደሆነ ታስባለህ

ሐ. በጣም ስራ ይበዛብኛል ወይም በጣም ስራ ዉጥረት ይበዛብኛል ብለህ ታስባለህ

መ. ስለ ስራዬ ያለኝን አስተሳሰብና አመለካከት ለአለቆችህ ለመግለፅ አስቸጋሪ እንደሆነብህ ታስባለህ

ሠ. የስራ ጫና በቤተሰቦችና በግል ተፅዕኖ አሳድሮብኛል ብለህ ታስባለህ

ረ. ስራዬን ሙሉ በሙሉ ተወጥቼዋለሁ ብለህ ታስባለህ

ሰ. ለአፈፃፀሜ ተገቢውን እውቅናና ሽልማት አግኝቻለሁ ብለህ ታስባለህ

ሸ. ያለኝን እውቀትና ችሎታ ሙሉ በሙሉ ተጠቅሜበታለሁ ብለህ ታስባለህ

2) የስራ አርካታን መለኪያ መስፈርት

ለእያንዳንዱ ጥያቄ ቀጥሎ በተጠቀሰው የስምምነት ቁጥር መሰረት ቁጥር ስጥ

(በፍፁም አልስማማም 1) (አልስማማም 2) (አላወቅም 3) (እስማማለሁ 4) (በጣም እስማማለሁ 5)

1. ጥሩ ለምሰራው ስራ እውቅና አገኛለሁ

2. ከስራ ባልደረባዎቼ ጋር እንደምትቀራረብ ታስባለህ

3. በምትሰራበት ድርጅት ዉስጥ በመስራትህ ደስተኛ ነህ

4. በስራህ ስጋት አይሰማህም

5. ማኔጅመንቱ ለእኔ ያስባል ብለህ ታምናለህ

6. ባጠቃላይ ስራ ለአካላዊ ጤንነቴ ጥሩ ነው ብለህ ታስባለህ

7. ደሞዜ ጥሩ ነው ብለህ ታስባለህ

8. ሙሉ እውቀቴን እና ችሎታዬን ስራ ላይ ተጠቅሜያለሁ ብለህ ታስባለህ

9. ከ ተቆጣጣሪህ ጋር አብራ እሄዳለሁ(እስማማለሁ) ብለህ ታስባለህ

10. በስራዬ ደስተኛ ነኝ ብለህ ታስባለህ

**ASSURANCE OF PRINCIPAL INVESTIGATOR**

The undersigned agrees to accept responsibility for the scientific ethical and technical Conduct of the research project and for provision of required progress reports as Per terms and conditions of the Research Publications Office in effect at the time of Grant is forwarded as the result of this application.

Name of the student: Abdurahman Hussen  
BSc in Environmental Health

Date. \_\_\_\_\_ Signature \_\_\_\_\_

**Approval of the Primary Advisor**

Name of the primary advisor: Dr Abera kume MD, MSc, PhD

Date. \_\_\_\_\_ Signature \_\_\_\_\_