



**ADDIS ABABA UNIVERSITY**  
**COLLEGE OF HEALTH SCIENCE SCHOOL**  
**OF PUBLIC HEALTH**

**Assessment of occupational skin diseases and associated factors among building construction industry workers in Adama town, Oromia region, Ethiopia.**

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A research Thesis submitted to Addis Ababa University College of Health Science and School of Public Health in partial fulfillment for the degree of Master of Public Health in Environmental and Occupational Health

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## Acronyms and Abbreviations

AOR:	Adjusted Odds Ratio
CI:	Confidence Intervals
COR:	Crude Odds Ratio
EOH	Environmental and Occupational Health
ILO:	International Labor Organization
IRB:	International Review Board
NOSQ	Nordic Occupational Skin Questionnaire
OSH	Occupational Safety and Health
PI:	Principal Investigator
PPE:	Personal Protective Equipment
SD	Standard Deviation
SPSS:	Statistical Package for Social Sciences
WHO:	World Health Organization

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## Abstract

**Background:** - Occupational skin diseases are an occupational dermatosis that is caused by exposure to hazards at work, or skin contact with substances used at work activities. The activities are practiced in construction work, such as masonry, painting, plastering, sand, and cement mixing. These may finally lead to exposures that can issue the workers with risks of developing occupational skin diseases.

**Objective:** The main objective of this study was to assess the prevalence of occupational skin disease and associated factors among building construction industry workers in Adama Town, Oromia region, Ethiopia.

**Methods and Materials:** - Institutional based cross-sectional study design was conducted from March 15, 2023 to April 15, 2023, in Adama Town, Ethiopia. A total of 420 randomly selected workers from eleven construction industries participated in the study. NOSQ version 2002 for assessment of skin disease was used through interview and observation checklist to collect primary data. Data were entered into Epi info version 7.2 and cleaned and transferred to SPSS version 26 windows for analyses. Bivariate and multivariate logistic regression analyses were performed to determine factors associated with the occurrence of skin diseases.

**Result:-**The prevalence of occupational skin disease among construction workers was 58.6 % in the preceding 12 months. The factors that were significantly associated with the occurrence of skin disease included illiterate [AOR= 3.97, 95% CI (1.09 - 14.41)], assistant mason workers [AOR= 2.18, 95% CI (1.02 - 4.66)], working hours per day: >8 hours [AOR= 1.80, 95% CI (1.09 - 2.98)], permanent [AOR= 6.84, 95% CI (3.49 - 13.38)], not provided hand washing facilities [AOR= 2.19, 95% CI (1.24 - 3.864)], unavailability of PPE [AOR= 2.86, 95% CI (1.61 - 5.11)], not implemented of rules [AOR= 2.86, 95% CI (1.61 - 5.11)], and didn't use PPE [AOR= 2.24, 95% CI (1.22 - 4.10)], were influenced the prevalence of occupational skin diseases.

**Conclusion:** It can be concluded that the prevalence of occupational skin diseases is high in these construction workers. The determinant factors; educational status, job category, working hours per day, employment condition, provided with hand washing facilities, unavailability of PPE, not using personal protective equipment and enforcement of OSH-related rules had shown a significant association with an increased prevalence of skin disease. **Key Words:** Contact dermatitis, Personal protective equipment, Occupational skin disease, Preventive Measures, Construction workers.

# 1. Introduction

## 1.1 Background:

Skin diseases are one of the most common types of diseases (1). It occurs at all ages and affects between 30% and 70% of individuals with diseases, likewise higher rates in at-risk subpopulations (2). Skin diseases represent an important public health burden, in both developing and developed countries (3).

Occupational skin diseases (OSDs) are the second most common occupational diseases and are responsible for an estimated 25% of all lost work days (4), and the most commonly reported notifiable occupational disease. The number of individuals with OSD varies from country to country: between 3.8% and 10.2% in the USA (5), 48.8% in France (6), 7.9% in Denmark (7), and 28.7% in the UK (8). Particularly in developing countries, including Ethiopia, high prevalence numbers (21%–87%) have been reported (9).

Occupational skin diseases (OSDs) are an outcome, that results from working environments or skin contact with substances used at work activities and caused by physical, chemical, or biological agents at work (10). OSDs the most familiar occupational diseases that have had a significant impact on workers (11). There are different types of occupational skin diseases, including contact urticaria, folliculitis, acne, infective and mechanical skin disease, skin cancer, and contact dermatitis (12). Contact dermatitis has two types, such as irritant contact dermatitis, and allergic contact dermatitis (13).

Occupational contact dermatitis (OCD) which is more common, accounts for 70 – 90% of all occupational skin diseases in the workplace (14). Occupational contact dermatitis is caused by Chemical agents (cleaning materials, solvents, acids, detergents, solvents used in paints, glues, wet cement, and abrasives), biological, and physical agents (15). A worker can develop both irritant and allergic contact dermatitis and found excess dermatitis risk among certain workers including farmers, chemical workers, electronics workers, health and social care workers, machine operators, metalworkers, vehicle assemblers, and construction workers (13).

In the construction industry, various categories of workers are involved such as masons, helpers, fitters, supervisors, carpenters, and painters (16). These workers perform a variety of tasks, like mixing, pouring, and spreading concrete, asphalt, gravel, and other materials (17). Consequently, the common irritants at the construction sites are cement, chalk, fly ash, hydrofluoric acids, fiberglass, and rock wool and the common sensitizers are fly ash, chromate, cobalt, epoxy resin, rubber, leather gloves, adhesives (phenol or urea-formaldehyde resins), wood preservatives, fiberglass impregnated with phenol-formaldehyde, epoxy,

polyurethane resins, and others (16). The above activities give rise to occupational diseases of the skin around the world (18).

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

The construction industry is one of the largest and most hazardous industries in the world, with many challenges of health and safety risks (19,20). Construction workers are exposed to a wide variety of health hazards at work (19), and these exposures vary from activities to activities, such as masonry, welding, painting, paving, plumbing, roofing, plastering, carpentry and others, and construction workers work with glues, cement powder, thinners, and other solvents, which may lead to health effects, including dermatological disorder (21).

Cement and concrete are products used widely in the construction sector, with traditional perception employers and builders do not think that concrete is a chemical (22). However, contact dermatitis is one of the most frequently reported health problems among construction workers due to contact with cement and concrete. Literature suggests that cement has constituents that produce both irritant contact dermatitis and corrosive effects from alkaline ingredients such as lime and sensitization, leading to allergic contact dermatitis from ingredients such as chromium (23).

Many scientists and researchers have reported on different occupational health hazards among construction workers (24,25). Some studies show that the prevalence of occupational skin disease is 47.8% reported out of 92 construction workers in Ahmedabad and Vadodara (22), 59.5% has been reported among construction workers in Dhaka, Bangladesh (24), and 54% also reported among construction workers in Tanzania (21).

The construction sector is rapidly growing, however, still it is an unorganized sector, and health and safety problem is the major issue (26). Often the construction industries are not guided by the legislation made for the health and welfare of the workers (27). The hazard that occurs in work settings is due to the absence of proper preventive practices (28). Inadequate awareness of occupational hazards, limited use of PPE at the workplace, and poor personal hygiene were noted to be contributing factors to excess exposures in the Ethiopian construction sector (14), and there is a lack of data about estimation, evaluation, and intervention of work-related health problems among construction workers. In addition, there is no study conducted regarding occupational skin disease among construction sector workers in Ethiopia. Therefore, to fill this gap, the current study aims to assess the prevalence of occupational skin disease, and associated factors among construction industry workers in Adama Town, Oromia region; Ethiopia.

### 1.3. Rationale of the study

In the construction industry, occupational skin diseases are still often under-reported because their association with the workplace is not recognized by physicians, employers, or workers themselves (29). A wide range of activities are involved in this industry and the workers engaged in this industry are exposed to multiple risks and victims of different occupational diseases (30,31). In most construction factories, attention is mainly given to treating sick people rather than preventing work-related health problems.

Due to less attention given to occupational health and safety at the workplace, policies, and practices is not carried out properly. Consequently, the threat to the safety of workers, likewise occupational disease arises since the corrective measure is not taken before disease occurrence. Concerning construction occupation in Ethiopia, a few studies were conducted that deal only prevalence of injury among construction workers, there is no consideration of the prevalence of occupational skin disease.

### 1.4. Significance of the study

The study will provide the existing reality in the area of occupational health and safety, particularly on the prevalence of skin diseases and factors that affect skin disease. The findings can be used by regulators, standard developers, and policymakers in considering the suitability of requirements and enforcement mechanisms of the standard in the sector. It will help construction workers and employers by increasing their awareness of the importance of utilizing personal protective equipment (PPEs), as well as how to protect themselves from other variables those raise the risk of developing a disease. It helps the Adama town Labour and Social Affairs office to develop appropriate workplace intervention measures to protect the health of construction workers. In addition to this, it can be used as an input for further research in the area.

## 2. Literature Review

### 2.1. Prevalence of occupational skin disease in the construction industry

The prevalence of occupational skin disease in the construction industries was in Ahmedabad and Vadodara at 47.8% (23), Bangladesh at 59.5% (24), the valley of Kashmir at 78.6% (27), and Tanzania at 54% (21).

### 2.2. Common occupational skin disease, causes, and parts of the body affected

The most common types of occupational skin diseases include contact dermatitis, urticaria, and skin cancer (32). The majority of research finding shows that activities with multiple risks factors for workers in construction related to occupational skin disease are exposure to cement, acids, solvents and paints, various adhesives and glues, including epoxy resins and other allergens, in addition, carcinogenic hydrocarbons affecting those working with asphalt in road construction and crystalline silica dust are responsible for contact dermatitis and scleroderma in masons, miners and potters (16,21).

Practically 90% of skin diseases are acquired at the workplace. Most frequently this is contact dermatitis, caused by direct contact with one or various hazardous substances at the workplace, with the hands and forearms being the most affected body sites. Relevant occupational risk factors are exposure to water, multiple irritants (substances that directly damage the outer layer of the skin) and allergens (substances that cause the immune system to respond in a way that affects the skin) contained in cleaning products, organic solvents, resins, metalworking fluids, cement and other chemicals, and some plants (29).

The parts of the body frequently affected Hands, forearms, face, legs, other uncovered areas, and Covered areas. Hands were the most affected body part (85.4%), hands (59.6), legs (30.3%), and other uncovered areas (7.9%). Covered areas were affected in 14.6 % of cases (24). The studied population in Cartagena city presented skin eruptions in 76.67% in the face and hands, other affections were in the eyelids with a percentage of 36.67% and arms at 46.67% (17).

### 2.3. Factors associated with occupational skin disease in the construction industry

#### 2.3.1. Socio-demographic factors of occupational skin disease

Most studies show that socio-demographic variables are a significant contributing factor to the occurrence of occupational skin disease in the workplace (13,24,32).

The association between socio-demographic variables and occupational skin disease in different investigators'

results shows that significant association. such as age significance association with work-related skin disease both developed and developing countries like Iran (32), India (22), Mombasa (20), and Tanzania 55 age workers were about 5.51 times more likely to report occupational skin disease than younger workers (14). In other words, the prevalence of occupational skin disease between aged 34 and 33, 26 to 33, and 42 to 49 years, had a higher risk. In addition, it is pointed out that the main ones affected by dermatitis are men with 86%, more than women 14% (13).

Some studies done on occupational skin disease among construction workers revealed that the age group of 36 and above had a high prevalence of occupational skin diseases 63.4% (21), and The skin conditions were high in the age group of  $\geq 40$  years and 62.5% of the males (24).

#### **2.4.2. Work related factors of occupational skin disease:**

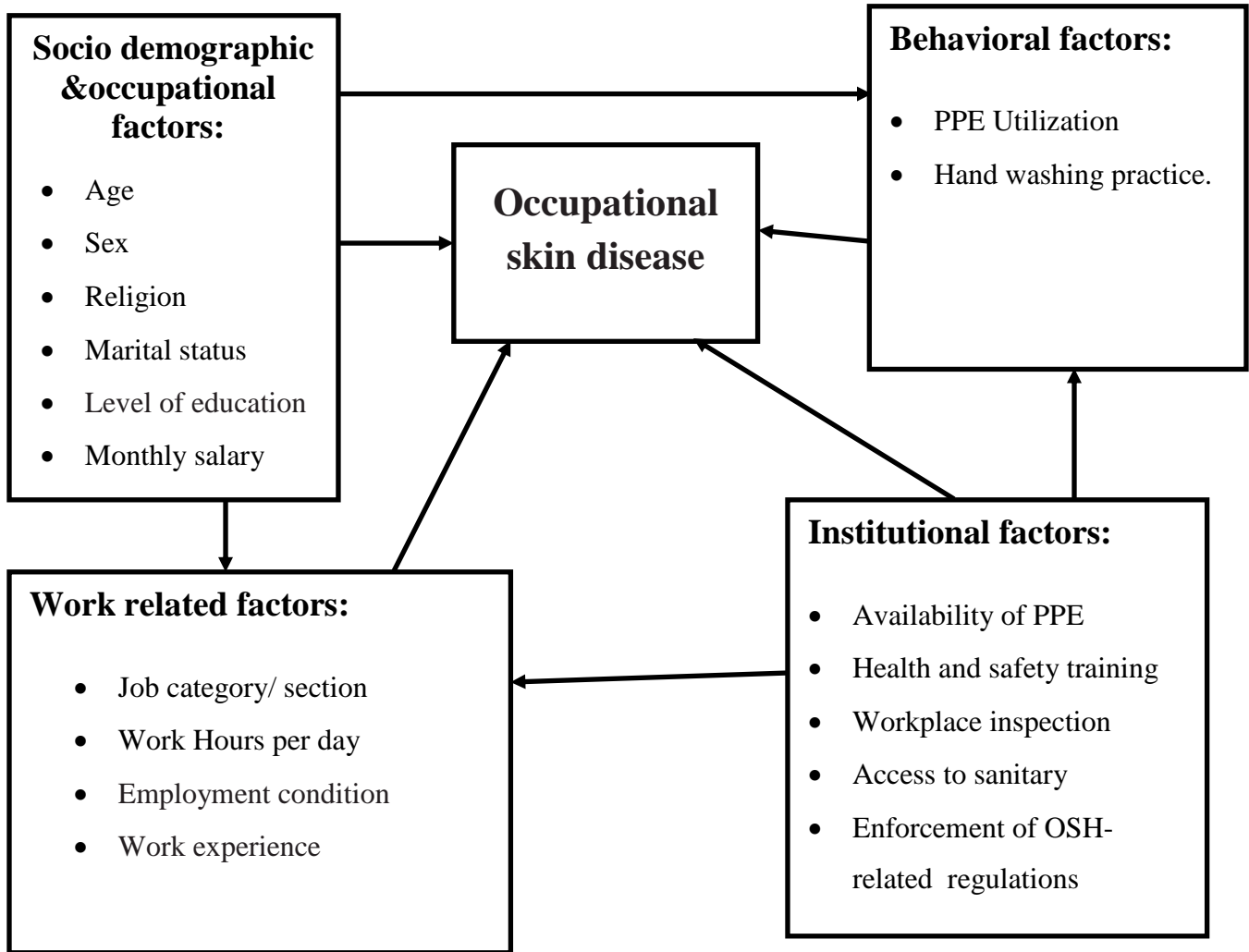
Out of the participants, who indicated that they had been working for  $\leq 8$  hrs per day 49.8% were less affected than  $>8$  hrs per day 78.9% (20). The skin conditions were common; those working for more than 10 hours had 75% (23). work experience was more than 6 years higher Occupational Skin diseases than less than 6 years and the job category of construction worker showed to be highly associated with an increase in skin diseases  $p < 0.001$  (21).

#### **2.4.3. Behavioral and Managerial/institutional factors of occupational skin disease:**

The majority, (71.8%), said that they had not received any training on health and safety issues (33). Another study done in Tanzania revealed that only 28.0% of workers had an opportunity to use any form of protective measure (21). The prolonged exposure to construction materials for years without almost any protective measures may be a cause of this high rate of contact dermatitis. Due to fewer skills, lack of training, and lack of sufficient health education (24).

Construction workers who did not receive safety training had a high prevalence of skin diseases (62%) compared to those who got safety training before work began, safety inspection was not done, had a high prevalence of skin diseases (59%) in comparison to places where site managers did not do the inspection, and workers who did not use PPE had a higher prevalence (60%) than those who had use PPE (21).

### 3. Conceptual framework



*Figure 1: Conceptual framework for Occupational skin disease (21,24,34).*

This adopted framework with certain modifications shows how the dependent variable (Occupational skin disease) is affected by independent factors (socio-demographic factors, work related factors, Managerial/institutional factors, and behavioral factors). Some independent factors are also affected by another one such as socio-demographic factors affecting work related factors and behavioral factors; institutional factors affecting work related factors and behavioral factors (21).

## **4. Objective of the study:**

### **4.1. General Objective**

- To assess the Prevalence of occupational skin disease and associated factors among construction industry workers in Adama Town, Oromia region, Ethiopia.

### **4.2. Specific Objectives**

- To determine the prevalence of occupational skin disease among construction industry workers in Adama Town, Oromia region, Ethiopia.
- To identify factors associated with occupational skin disease among construction industry workers in Adama Town, Oromia region, Ethiopia.

## 5. Methods

### 5.1. Study Design and Period

The institutional-based cross-sectional study was undertaken from March 15, 2023 to April 15, 2023.

### 5.2. Study area

This study was conducted in the building construction large-scale industry found in Adama town, in the Oromia region, which is found 99 kilometers southeast of Addis Ababa (the capital city of Ethiopia). Adama town is divided into 14 kebeles with an estimated 155,349 population with 79,013(50.8%) males and 76,336(49.2%) females. Adama town has generally 22 large-scale construction industries having 4,738 workers.

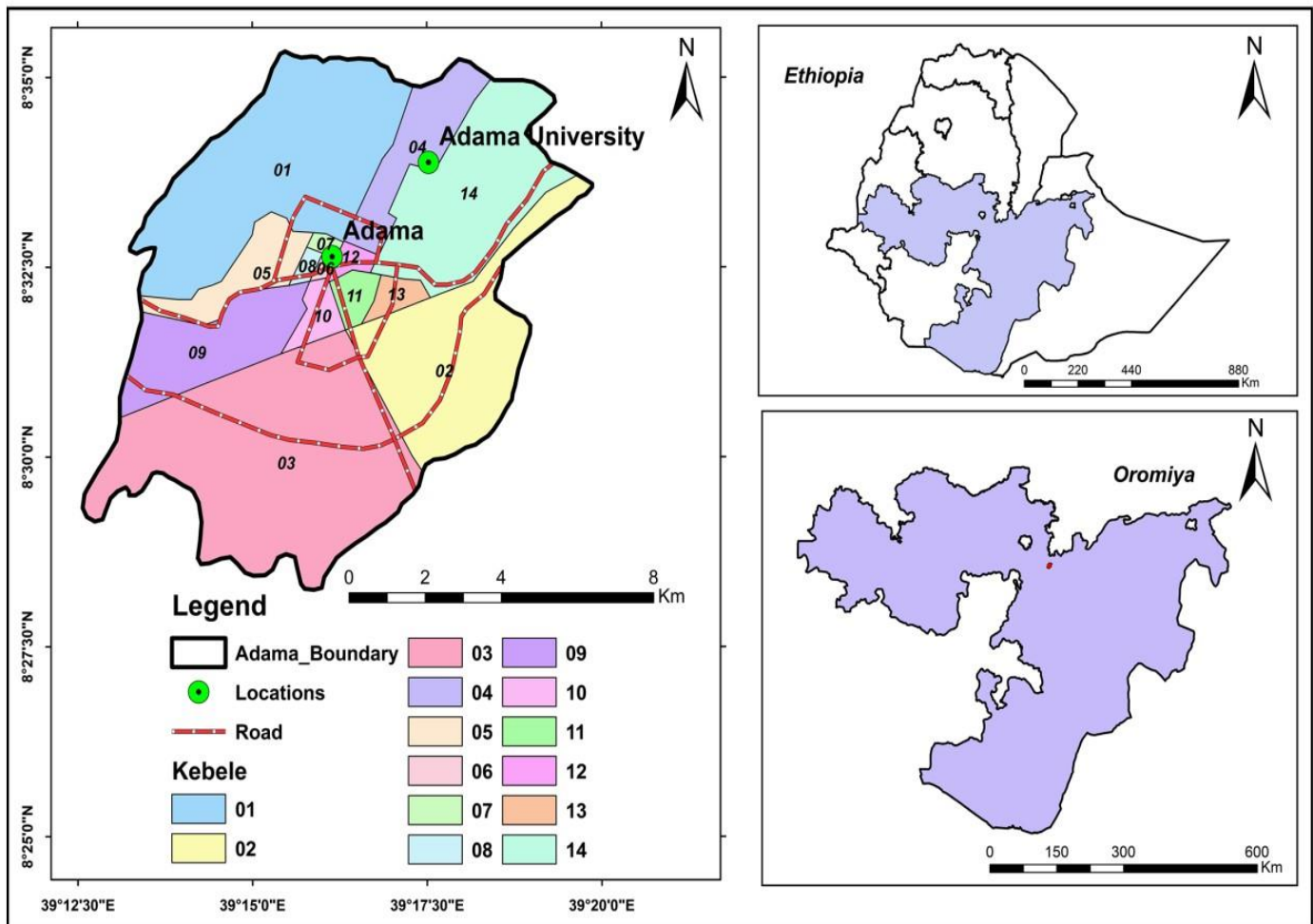


Figure 2: Map of the location of Adama town

## 5.3. Population

### 5.3.1. Source population

The source populations were all workers working in building construction industries found in Adama town.

### 5.3.2. Study population

Randomly selected construction workers, who work on construction activities such as masonry, bricklaying, concrete and mortar work, plastering, and painting. These were grouped in the job categories of masons, assistant masons and Plasterers & painters.

## 5.4. Selection criteria

### 5.4.1. Inclusion criteria:

Workers who are directly engaged in the building activities in the construction industry and found during the study period and workers their experience greater than 1 years were included.

### 5.4.2. Exclusion criteria:

Participants who are absent from their work due to any reason at the time of data collection and workers their age less than 18 years were excluded.

## 5.5. Sample size determination:

### For the first objective:-

The sample size to assess the prevalence of occupational skin disease among construction industry workers was determined using a single population proportion formula with the following assumptions:

P: 54 %, prevalence of occupational skin disease among construction industry workers (21).

D: Margin of error or maximum error to commit = 5 %

Z $\alpha/2$ : Critical value at 95% confidence interval = 1.96.

n: Required sample size is  $n = \frac{(Z\alpha/2)^2 * p(1-p)}{d^2}$  ,  $n = \frac{(1.96)^2 * 0.54(1-0.54)}{(0.05)^2} = 382$

Considering 10% non-response rate, the sample size is;  $n = 382 + (382 \times 10\%) = 420$

### For the second objective (associated factors):-

A study conducted in Tanzania showed that the prevalence of occupational skin disease among construction industry workers for longer duration of employment ( $\geq 4$  years) and short duration of employment ( $< 4$  years) were 66% and 49% respectively. The sample size to determine factors associated with occupational skin disease among construction workers is calculated using Epi Info version 7.2 with the following assumptions;

n= sample size to be determined

P1= 66 % (proportion of occupational skin disease among workers with longer duration of employment ( $\geq 4$  years))

P2= 49 % (proportion of occupational skin disease among workers with shorter duration of employment ( $< 4$  years)) (21).

$Z_{\alpha/2}$  = Level of statistical significance 1.96 at the confidence level of 95%

$Z_{\beta}$  = Desired power for 80% power has a value of 0.84 and Detecting OR = 2.00

P1-P2 = Difference between proportions

$$n = \frac{\left(\frac{Z_{\alpha}}{2} + Z_{\beta}\right)^2 * p1(1-p1) + p2(1-p2)}{(p1-p2)^2}$$

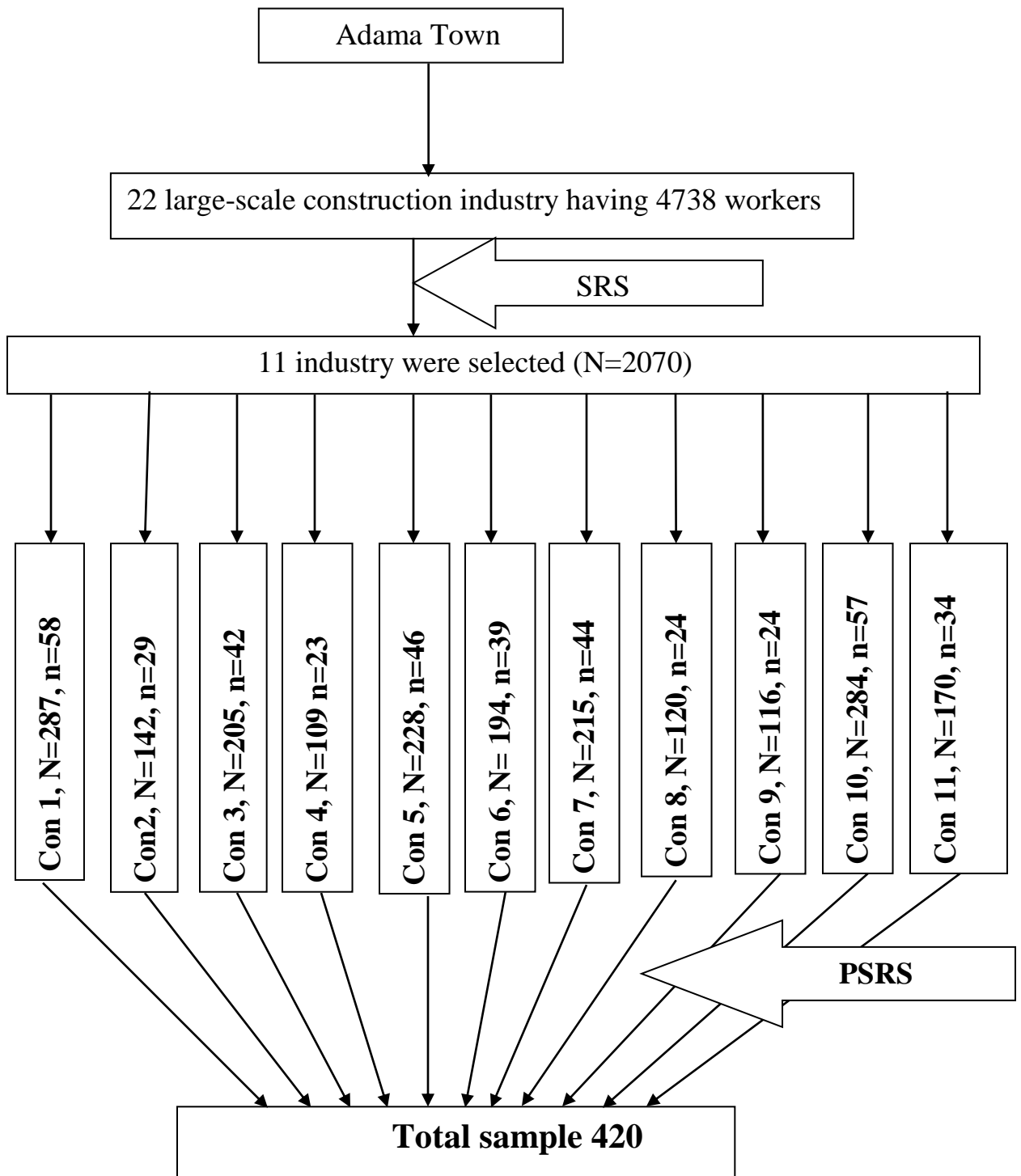
The sample size becomes 258

Considering 10% non-response rate, the sample size is;  $n = 258 + (258 \times 10\%) = 284$

The sample size for the first objective (420) is found to be higher than the second objective (284) as a result **420** was the final sample size.

### 5.6. Sampling Procedure:

Numbers of the construction industry with workers were identified from the construction office of Adama town. Adama town has generally 11 small, 14 medium, and 22 large construction industries 165, 335, and 4738 respectively workers were employed, out of the 22 large-scale industries 11 industries were selected by simple random sampling method due to time limitations. The total populations of workers of selected 11 industries are 2070. The total sample size was distributed for each industry by using the proportionate stratified random sampling (PSRS) formula:  $n_h = \frac{N_h}{N} * n$  Where  $n_h$ = sample size for each h stratum.  $N_h$  = population size for h stratum  $N$ = Size of the entire population (2070),  $n$  = Size of the entire sample (420).



*Figure 3: Schematic presentation of sampling procedures for construction industries in AdamaTown, Ethiopia.*

## 5.7. Data Collection Tools and Procedures

The standardized Nordic Occupational Skin Questionnaire version 2002 (NOSQ) for assessment of Skin disease through interview and observation checklist was used as tools to collect primary data (36). NOSQ was adopted and modified to fit Ethiopian settings (21). This questionnaire's contents have been including socio-demographic and occupational factors 11, assessing Occupational Skin diseases 10, exacerbating factors 5, and control & preventive measures 11. The questionnaire with the English version was adopted and prepared with certain modifications, translated into Afan Oromo and Amharic language, then back to English to ensure its consistency. The primary data were collected by four data collectors who are Environmental Health professionals were recruited.

The questionnaire was pretested some days before actual data collection to assure its content validity. Considering their work similarity with the study population the pretest respondents planned to be selected from other kebeles with the size of 5% of the study population. Based on the pretest results the questions were modified.

## 5.8. Variables:

**Dependent variable:** - Occupational skin disease

**Independent variables:**

- **Socio-demographic and occupational factors:** - Sex, age, religion, ethnicity, marital status, level of education, monthly income.
- **Behavioral factors:** - Usage of PPE and hand washing practices.
- **Work related factors:** - Work section/category, employment condition, work experience, and work hours per day.
- **Managerial/institutional factors:** - Health and safety training, workplace supervision, availability of PPE, access to sanitary, enforcement of regulations, and work instructions.

## 5.9. Operational Definitions

**Occupational skin disease:** - is an occupational dermatosis that is caused by exposure to hazards at work, or made worse by a work-related agent or contact, including contact dermatitis, urticaria, Eczema (31).

**Contact dermatitis:** - Contact dermatitis is the most common occupational skin disease, and can occur whenever the skin comes in frequent contact with chemicals and other materials used at work. Symptoms may include dryness, redness, itching, swelling, burning, cracking, and blistering. Many work-related cases are on exposed parts of the body, notably the hands, and arms (15).

**Urticaria:** - is a skin condition that consists of hives, swelling, and redness and results from contact with something that causes an allergic or non-allergic reaction (31).

**Eczeema:** - is an older term for itchy red rashes that initially weep but over time become crusted, thicken, and scaly (37).

**Occupational safety and health (OSH):-** is generally defined as the science of the anticipation, recognition, evaluation, and control of hazards arising in or from the workplace that could damage the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment (38).

## 5.10. Data management

On each day of data collection, the paper-based data were transferred to soft copy using an Excel spreadsheet. The entered data were Cross checked with the hard copy if there is any missing and/or double entry. The entered and cleaned data were stored in Excel with a backup at different storage sites to make it secure.

Data entry was conducted using the Epi info version 7.2 and then cleaned data were exported to the statistical package for social sciences (SPSS) version 26 for data analysis. The purpose of the data management plan is aimed to prevent errors and increase the quality of analyses and the result of the study furthermore it is good to save time and resources.

## 5.11. Data analysis

### 1<sup>st</sup> specific objective

Descriptive statistics including frequency, and percentage were done to determine the prevalence of skin disease and other characteristics. Tables, graphs, and charts were used to present the results.

### 2<sup>nd</sup> second objective

To determine the independent factors associated with occupational skin disease. Bivariate logistic regression was used to explore the presence of a statistical association between different independent variables and outcome

variables using crude odds ratio (COR) with 95% C.I. A bivariate logistic regression was conducted for every single determinant, and then variables with a P-value less than 0.25 in the bivariate analysis were selected for multivariate analysis by controlling confounders. A value of  $p < 0.05$  at a 95% confidence interval was considered statistically significant. For any variable that had more than two by two tables, the contingency coefficient was used to set a significant value. Finally, the outcomes were presented with an adjusted odds ratio (AOR) with a 95% confidence interval were calculated.

### **5.12. Data Quality Assurance**

The quality of data was assured before, during, and after the data collection. Before the data collection standard questionnaire were carefully developed. Two days of training were given for data collectors and supervisor emphasizing the purpose of the study, data collection instruments, the questionnaire, the process of assigning study participants, and ethical concerns during data collection. The questionnaire was pretested to assure its effectiveness in collecting data. Based on the pretested results, the questionnaire was adjusted contextually.

During the data collection period, the completeness and consistency of the collected data were frequently checked every night by both researcher and data collectors daily before the next day's activity. On each day of data collection, the paper-based data were transferred to soft copy using Excel. If incomplete data is obtained appropriate corrective measures were taken. These measures could be re-interviewing the respondent or considering the case as a non-response. After the data collection, the entered data were rechecked for completeness and consistency by the supervisor and principal investigator.

### **5.13. Ethical Considerations**

Ethical clearance has been obtained from the School of Public Health Addis Ababa University Ethical Committee. After obtaining ethical approval, written permission has been obtained from the construction office in Adama town. Verbal consent from the construction workers has been obtained before the start of the interview, after explaining their full rights to refuse and to withdraw at any time during the interview. The questionnaires were disseminated to those who volunteered to be a participant and signed the consent form. Code was assigned to each questionnaire so that confidentiality was respected. They were also assured that the data were not abused. The participants benefited in the future intervention considering the finding of this study. The study is free of any risk.

#### **5.14. Dissemination of results**

The finding of this study will be disseminated to the Addis Ababa University School of Public Health, construction industries found in Adama Town, the Oromia Labour, and Social Affair Bureau, and all responsible bodies. Finally, the findings of this study will be published in scientific journals to invite other researchers to conduct further studies and initiate the concerned bodies to reduce the prevalence of occupational skin disease among workers of construction at Adama Town.

## 6. Result

A total of 415 workers from 11 Construction industries were involved in this study, with a response rate of 98.8%.

### A) Socio-demographic characteristics of the participants.

Among the total participants 243 (57.9%) were males and age range from 18 up to 49 years. From this range the majority of participants 94 (38.7%) were found to be 26 up to 30 years old. Regarding marital status, the majority of the study subjects were single 212 (50.5%), about educational level of workers the largest number of respondents 150 (35.7%) have attended secondary school. Two hundred twenty eight (53.3%) respondents didn't use personal protective equipment and 175 (41.7%) workers washed of hand less than or equal to five times. Table 1 summarizes the socio demographic characteristics and behavioral factors of the study participants.

**Table 1: Socio-demographic characteristics and behavioral factors of participants of construction workers, at Adama town, Oromia, Ethiopia, June 2023.**

S. No	Variables	Frequency	Percent (%)	
1	<b>Age in years</b>	18-25	141	33.6
		26-30	157	37.4
		31-35	70	16.7
		>36	52	12.3
2	<b>Sex of respondents</b>	Male	243	57.9
		Female	177	42.1
3	<b>Marital status</b>	Single	212	50.5
		Married	176	41.9
		Divorced	32	7.6
4	<b>Educational Status</b>	Illiterate	29	6.9
		Primary school	138	32.9
		Secondary school	150	35.7
		Certificate and above	103	24.5
5	<b>Usage of PPE</b>	Yes	87	20.7
		No	333	79.3
6	<b>Frequency of hand washing</b>	Do not wash hands	59	14.0
		<= 5 times	175	41.7
		6 - 10 times	154	36.7
		> 10 times	32	7.6

## B) Work related factors and managerial/institutional factors

The majority 294 (70.0%) of participants were temporary workers, and engaged in assistant mason workers 213 (50.7%). The majority of the participants, 251 (59.8%) did not have any kind of occupational health and safety training. When it comes to working hours 226 (53.8%) of the respondents worked above 8 hours per day, and two hundred forty one (57.4%) respondents had three up to six years of working experience. The majority of the workers, 214 (51%) said the organization didn't provide personal protective equipment. Out of the total workers, 319 (76.0%) of the respondents indicated that their workplace had never been inspected by managers in the past 12 months. Two hundred forty-six (58.5%) of participants didn't know about occupational safety and health related legislation (**Table 2**).

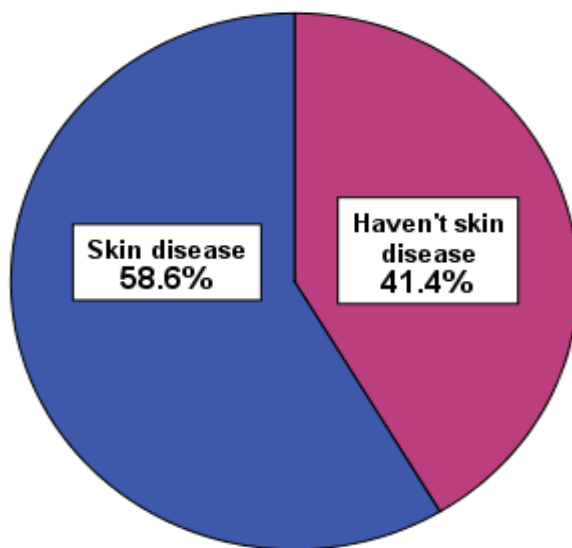
**Table 2: Work related factors and managerial/institutional factors of participants of construction workers, at Adama town, Oromia, Ethiopia, June 2023.**

<b>S. No</b>	<b>Variables</b>	<b>Frequency</b>	<b>Percent (%)</b>
<b>1</b>	<b>Pattern of employment</b>		
	Permanent	<b>126</b>	<b>30.0</b>
	Temporary	<b>294</b>	<b>70.0</b>
<b>2</b>	<b>Job category</b>		
	Masons	<b>115</b>	<b>27.4</b>
	Assistant mason workers	<b>213</b>	<b>50.7</b>
	Plasterers & painters	<b>64</b>	<b>15.2</b>
	Others	<b>28</b>	<b>6.7</b>
<b>3</b>	<b>Service duration (in year)</b>		
	<3	<b>183</b>	<b>43.6</b>
	3-6	<b>178</b>	<b>42.4</b>
	>6	<b>59</b>	<b>14.0</b>
<b>4</b>	<b>Working hours per day</b>		
	8	<b>194</b>	<b>46.2</b>
	>8	<b>226</b>	<b>53.8</b>
<b>5</b>	<b>Received Occupational Health and safety training</b>		
	Yes	<b>169</b>	<b>40.2</b>
	No	<b>251</b>	<b>59.8</b>
<b>6</b>	<b>A safety inspection is done by site managers</b>		
	Yes	<b>86</b>	<b>20.5</b>
	No	<b>334</b>	<b>79.5</b>
<b>7</b>	<b>Do you know OSH-related legislation</b>		
	Yes	<b>174</b>	<b>41.5</b>
	No	<b>246</b>	<b>58.5</b>
<b>8</b>	<b>Availability of PPE</b>		
	Yes	<b>206</b>	<b>49.0</b>
	No	<b>214</b>	<b>51.0</b>

### C) Prevalence of skin diseases and other characteristics

Out of the total 420 study subjects, 246 (58.6%) of respondents reported that they had occupational skin disease (dermatological symptoms such as eczema (redness, itching/urticaria), blisters, dry skin, fissures, prickling), at least one sign and symptoms of skin problems in the past 12 months (*Figure 4*).

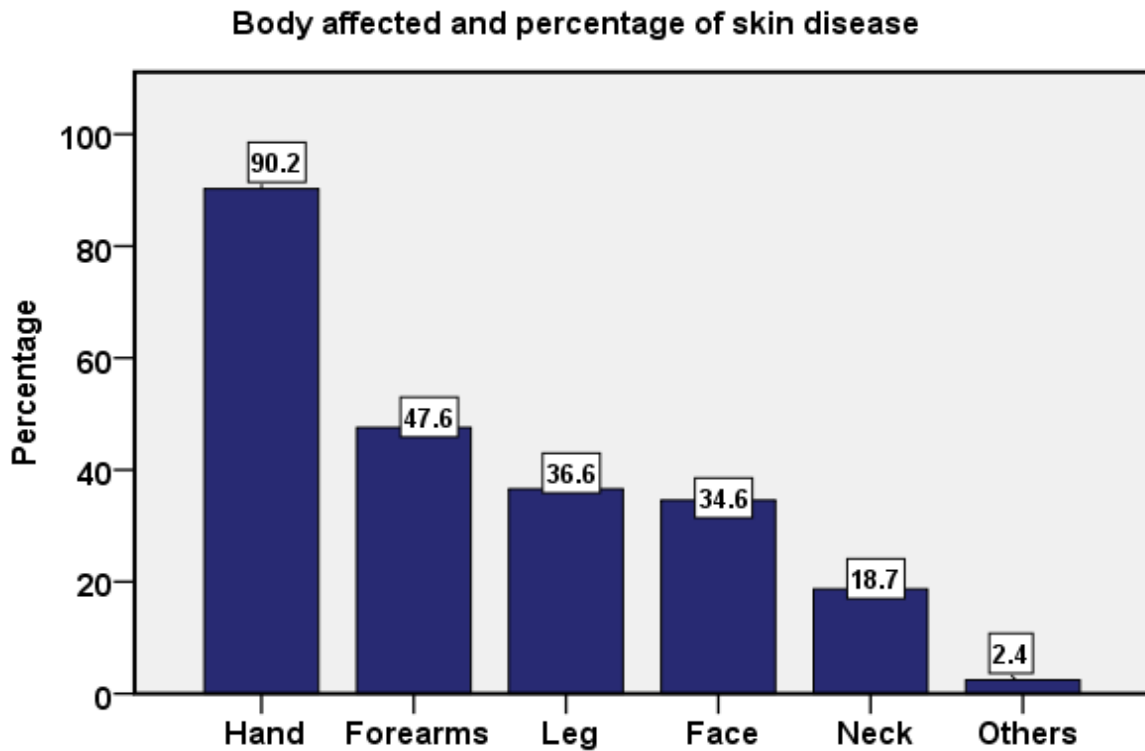
**Prevalence of Skin disease in past 12 months**



*Figure 4: Prevalence of occupational skin disease among construction workers, in the past 12 months in Adama town, Oromia, Ethiopia, June 2023.*

### Reported Occupational Skin Diseases and Body Area Affected

Construction workers were affected with different skin diseases symptoms on different body parts related to their place of work. The most commonly affected body parts by occupational skin diseases were 222 (90.2%) the hands and followed by 117(47.6%) forearms (*Figure 5*).



**Figure 5: Distribution of occupational skin diseases on body parts of construction workers at Adama town, Oromia, Ethiopia, July 2023.**

About 41(57.7%), of workers, reported that they got occupational skin diseases only once and for less than two weeks, 44 (72.1%) only once but for two weeks, and 161 (65.7%) more than once. Out of workers that reported having occupational skin diseases 222 (60.8%) of workers noticed that their skin diseases worsen by contact with materials or chemicals during work time. And the number of workers who had skin diseases improvement on skin diseases when away from work section during weekends was 229 (60.7%). One hundred eight (56.3%) of workers reported that they had as diagnosed with skin diseases.

**Bivariate analysis results (factors associated with occupational skin disease among construction workers)**

Bivariate logistic regression was conducted for all independent variables to evaluate the degree of association with the prevalence of skin disease.

## Bivariate analysis for socio-demographic variables and behavioral factors associated with Occupational Skin Disease

From the socio-demographic variables and behavioral factors, four variables educational status with [COR = 3.12, 95% CI (1.26 - 7.70)], age of respondents [COR = 1.71, 95% CI (0.87 - 3.33)], marital status [COR = 3.51, 95% CI (1.39 - 8.90)], and using personal protective equipment [COR = 2.83, 95% CI (1.89 - 4.22)] were candidate variables or had a p-value less than 0.25 with the skin disease in the bivariate analysis ( **Table 3**).

**Table 3: Socio-demographic characteristics and Behavioral factors associated with Occupational Skin Disease among Construction Workers in Adama Town, 2023 (n=420)**

Characteristics	Skin disease		COR (95% CI)	P-value
	Yes (%)	No (%)		
<b>Sex</b>				
Male	147 (60.5)	96 (39.5)	1.206 (0.815 - 1.787)	<b>0.349</b>
Female	99 (55.9)	78 (44.1)	1	
<b>Age group (years)</b>				
18-25	77 (54.6)	64 (45.4)	1	<b>0.115</b>
26-30	92 (58.6)	65 (41.4)	1.176 (0.743 - 1.862)	
31-35	42 (60.0)	28 (40.0)	1.247 (0.697 - 2.231)	
>36	35 (67.3)	17 (32.7)	1.711 (0.878 - 3.336)	
<b>Education level</b>				
Illiterate	17(58.6)	12(41.4)	3.128 (1.269-7.707)	<b>0.002</b>
Primary school	87(59.6)	59(40.4)	2.288 (1.364 - 3.836)	
Secondary school	92(64.8)	50(35.2)	1.628 (0.977 - 2.715)	
Certificate and above	50(48.5)	53(51.5)	1	
<b>Marital status</b>				
Single	117 (55.2)	95 (44.8)	1	<b>0.029</b>
Married	103 (58.5)	73 (41.5)	1.146 (0.765 - 1.716)	
Divorced	26 (81.3)	6 (18.7)	3.519 (1.391- 8.900)	
<b>Religion</b>				
Muslim	60 (49.6)	61 (50.4)	1	<b>0.577</b>
Orthodox	97 (63.8)	55 (36.2)	1.793 (1.103 - 2.916)	
Protestant	38 (59.4)	26 (40.6)	1.932 (0.830 - 4.495)	
Catholic	19 (65.5)	10 (34.5)	1.486 (0.805 - 2.743)	
Others	32 (59.3)	22 (40.7)	1.479 (0.772 - 2.831)	
<b>Monthly income</b>				
<7500	178 (61.0)	114 (39.0)	1.765 (0.961 – 3.243)	<b>0.270</b>
7500-15000	45 (57.0)	34 (43.0)	1.496 (0.731 - 3.062)	
>15000	23 (46.9)	26 (53.1)	1	
<b>Using PPE</b>				

Yes	86 (45.0)	105 (55.0)	1	<b>0.001</b>
No	160 (69.9)	69 (30.1)	2.831 (1.896- 4.229)	

### Frequency of hand washing

#### per day

Do not wash hands	46 (78.0)	13 (22.0)	4.549 (1.793 - 11.542)	<b>0.610</b>
<= 5 times	103 (64.0)	58 (36.0)	2.283 (1.058 - 4.926)	
6 - 10 times	83 (49.4)	85 (50.6)	1.255 (0.586 - 2.687)	
> 10 times	14 (43.8)	18 (56.2)	1	

### Bivariate analysis for Work related factors and institutional factors associated with Occupational Skin Disease

Bivariate logistic regression was conducted to evaluate degree of association of the prevalence of skin disease with work related factors and institutional factors showed significant for job category [COR = 2.16, 95% CI (1.36 - 3.44)], working hours/day [COR = 1.57, 95% CI (1.06 - 2.33)], employment condition [COR = 2.33, 95% CI (1.49 - 3.62)], availability of personal protective equipment [COR = 2.47, 95% CI (1.659 - 3.68)], received safety training [COR = 1.99, 95% CI (1.32 - 3.00)], safety inspection [COR = 1.90, 95% CI (1.21 - 2.99)], enforcement of legislation [COR = 3.29, 95% CI (2.19 - 4.94)], and provided with hand washing facilities [COR = 2.60, 95% CI (1.71 - 3.96)], had a p-value less than 0.25 with the skin disease in the bivariate analysis (Table 4).

**Table 4: Work related factors and institutional factors associated with Occupational Skin Disease among Construction Workers in Adama Town, 2023 (n=420)**

Characteristics	Skin disease		COR (95% CI)	P-value
	Yes (%)	No (%)		
<b>Job category</b>				
Mason	54 (47.0)	61 (53.0)	1	<b>0.019</b>
Assistant masons	140 (65.7)	73 (34.3)	2.166 (1.364 - 3.441)	
Plasterer and painting	40 (65.6)	21 (34.4)	2.152 (1.131 - 4.092)	
Others	12 (38.7)	19 (61.3)	0.713 (0.317 - 1.637)	
<b>Working hours/day</b>				
≤ 8 hours	105 (52.8)	94 (47.2)	1	<b>0.022</b>
>8 hours	141 (63.8)	80 (36.2)	1.578 (1.067- 2.332)	
<b>Employment condition</b>				
Permanent	97 (71.9)	38 (28.1)	2.330 (1.499 - 3.622)	<b>0.001</b>
Temporary	149 (52.3)	136 (47.7)	1	

<b>Experience in construction by years</b>					<b>0.500</b>
<3	71 (59.2)	49 (40.8)	1		
3-6	137 (56.8)	104 (43.2)	0.909 (0.583 - 1.418)		
>6	38 (64.4)	21 (35.6)	1.249 (0.655 - 2.381)		<b>0.500</b>
<b>Availability of PPE</b>					
Yes	98 (47.6)	108 (52.4)	1		
No	148 (69.2)	66 (30.8)	2.471 (1.659 - 3.682)		<b>0.001</b>
<b>Received safety training on work</b>					
Yes	70 (47.6)	77 (52.4)	1		
No	176 (64.5)	97 (35.5)	1.996 (1.328 - 3.000)		<b>0.014</b>
<b>Safety inspection</b>					
Yes	47 (46.5)	54 (53.5)	1		
No	199 (62.4)	120 (37.6)	1.905 (1.213 - 2.994)		<b>0.005</b>
<b>Enforcement of OSH-related rules</b>					
Yes	74 (42.0)	102 (58.0)	1		
No	178 (70.5)	72 (29.5)	3.293 (2.193 - 4.944)		<b>0.001</b>
<b>Hand washing facilities</b>					
Yes	127 (49.8)	128 (50.2)	1		
No	119 (72.1)	46 (27.9)	2.607 (1.714 - 3.967)		<b>0.001</b>

### Multivariate analysis results (factors associated with skin disease among construction workers)

After controlling for the possible confounders, eight factors; educational status, job category, working hours per day, employment condition, provided with hand washing facilities on site, availability of PPE, use of personal protective equipment and enforcement of OSH-related rules were significantly associated with skin diseases with a p-value less than 0.05.

Participants with educational status, and illiterate were significantly associated with the dependent variable. Those participants who hadn't education or illiterate were 3.9 times more likely to develop skin diseases as compared to those who had certificate and above level [AOR= 3.97, 95% CI (1.09 - 14.41)].

Those participants who worked as assistant mason were 2.1 times more likely to developing skin diseases as compared to those who worked as mason [AOR= 2.18, 95% CI (1.02 - 4.66)].

Regarding working hours per day those participants who worked over 8 hours were 1.8 times more likely to develop skin diseases as compared to those who worked less than or equal to 8 hours [AOR= 1.80, 95% CI (1.09 - 2.98)].

The analysis also indicated that workers who worked as permanent were 6.8 times more likely to develop skin diseases as compared to those who worked as temporary [AOR= 6.84, 95% CI (3.49 - 13.38)].

Furthermore the study indicated that industry that did not provide hand washing facilities were 2.1 times more likely to develop skin diseases as compared to the industry provided hand washing facilities [AOR= 2.19, 95% CI (1.24 - 3.86)].

Similarly, industry that did not provide personal protective equipment were 2.8 times more likely to develop skin diseases as compared to the industry provided personal protective equipment [AOR= 2.86, 95% CI (1.61 - 5.11)].

The multivariate analysis also revealed that industries that did not implement the rules were 2.4 times more likely to develop skin diseases as compared to the industry implemented of rules [AOR= 2.86, 95% CI (1.61 - 5.11)].

The use of personal protective equipment was also identified as a statistically significant association with the dependent variable. That is those who didn't use personal protective equipment were 2.2 times more likely to develop skin diseases as compared to those who used personal protective equipment [AOR= 2.24, 95% CI (1.22 - 4.10)]. A summary of the multivariate analysis is presented in (Table 5)

**Table 5: Multivariate Analysis to Identify Factors Associated with Occupational Skin Disease among Construction Workers in Adama Town, 2023 (n=420)**

Variables	Categories	Occupational skin		AOR 95% CI
		diseases		
		Yes (%)	No (%)	
<b>Educational status</b>	Illiterate	17(58.6)	12(41.4)	<b>3.974 (1.095 - 14.414)*</b>
	Primary school	87(59.6)	59(40.4)	<b>2.021 (0.854 - 4.783)</b>
	Secondary school	92(64.8)	50(35.2)	<b>1.393 (0.637-.3.047)</b>
	Certificate and above	50(48.5)	53(51.5)	<b>1</b>
<b>Job category</b>	Mason	54 (47.0)	61 (53.0)	<b>1</b>
	Assistant mason worker	140 (65.7)	73 (34.3)	<b>2.185 (1.023 - 4.669)*</b>

	Plasterer and painter	40 (65.6)	21 (34.4)	<b>2.217 (0.883 - 5.563)</b>
	Others	12 (38.7)	19 (61.3)	<b>0.392 (0.123 - 1.246)</b>
<b>Working hours/day</b>	≤ 8 hours	105 (52.8)	94 (47.2)	<b>1</b>
	> 8 hours	141 (63.8)	80 (36.2)	<b>1.802 (1.090 - 2.981)*</b>
<b>Employment condition</b>	Permanent	97 (71.9)	38 (28.1)	<b>6.842 (3.497 - 13.389)*</b>
	Temporary	149 (52.3)	136 (47.7)	<b>1</b>
<b>Provided with hand washing facilities on site</b>	Yes	127 (49.8)	128 (50.2)	<b>1</b>
	No	119 (72.1)	46 (27.9)	<b>2.190 (1.241 - 3.864)*</b>
<b>Availability of PPE</b>	Yes	98 (47.6)	108 (52.4)	<b>1</b>
	No	148 (69.2)	66 (30.8)	<b>2.869 (1.610 - 5.113)*</b>
<b>Using of PPE</b>	Yes	39 (44.8)	48(55.2)	<b>1</b>
	No	207 (62.2)	126 (37.8)	<b>2.246 (1.227 - 4.109)*</b>
<b>Enforcement of OSH-related rules</b>	Yes	74 (42.0)	102 (58.0)	<b>1</b>
	No	178 (70.5)	72 (29.5)	<b>2.431 (1.321 - 4.473)*</b>

1=indicate for reference group, \*Significant association at p-value < 0.05

### Workplace Observation

A thorough observation of done in all construction industries. The observation focused on the usage of personal protective equipment, availability of sanitation, and working safety rules in the workplace.

The observational results revealed that in all construction industries, the majority of workers didn't use personal protective equipment, and in some industries, washing facilities were not provided on-site, and all working fields are dirty and unhealthy.

In all construction industries, there weren't written safety signs displayed on the walls to safeguard employees from harm.

## 7. Discussion

Occupational skin diseases include irritant contact dermatitis, allergic contact dermatitis, and contact urticaria. This study was done to determine the prevalence of occupational skin disease and its associated factors among construction workers selected in Adama town.

According to the results of this study, the prevalence of occupational skin disease among construction workers was 58.6 % in the preceding 12 months. In this study, the overall prevalence of occupational skin diseases was almost similar to findings reported in a study done Tanzania (54%), Mangalore (53.74%), Dhaka city (59.5% ) and Bangladesh (60.0%) of the construction workers (21,24,39,40).

In other studies done in India, Ahmedabad and Vadodara 47.8% (23) and Iran 30.1% (32) presented a lower prevalence of skin disease than this study. This difference may be due to different sample size, data collection techniques and safety concern; awareness and education of employees in these countries are greater than ours with regard to this sector, and study done in the valley of Kashmir, 78.6% (27) indicated a higher prevalence of skin diseases compared to this study. This difference may be due to the difference in the study area, time, and working process and activities of the industry.

The current study reported a prevalence of skin disease of 65.7% among assistant masons, and 65.6% among plasters and painters, and 54% among masons, with a lower prevalence among others (38.7%). These findings are similar with findings of Bangladesh and Dhaka city (39,24), this means, workers involved as assistant mason works had a high prevalence of skin disease. In contrary, this study is different when compared to reported in Tanzania (68%) of carpenters had skin disease followed by assistant masons and masons with a lower prevalence in painters (21). This difference may be attributed to the definition of skin disease between the studies and the job categories included in the study.

In this study, construction workers having skin diseases in the age group of 36 and above reported a high prevalence of occupational skin diseases (67.3%) followed by age group of 31-35 and 26-30 compared to that age group of 18-25. A study done in Tanzania reported similar findings (21). Other studies reported a high prevalence of skin diseases in lower age groups: 20–25 years had a high prevalence of skin disease compared to the age group 30–35 years (23). This could be because of the minimum age group for employment between the two study locations.

In this study, the educational status of the participants was among the factors found to influence the development of skin disease were the illiterate workers had 3.9 times more developing occupational skin diseases [AOR= 3.97,

95% CI (1.09 - 14.41)]. This finding was consistent with another study that indicated the determinant for developing skin disease among construction workers was illiterate workers (27). In Mombasa showed that in educational status, the secondary school level was a determinant for developing skin disease among construction workers (20). This result showed that, literate workers are more conscious than illiterate workers to protect themselves from occupational hazards.

Workers in the job category, assistant mason workers was two times more likely to developing skin diseases compared to mason [AOR= 2.18, 95% CI (1.02 - 4.66)]. Other studies also reported the same findings (23, 24,41).This findings different from study done in Tanzania showed that carpenter was found to have higher odds of developing skin disease (21). This discrepancy may be due to carpenters were not included in this job categories, because of in construction workers who deal with sensitizer, such as cements. So, this study revealed that assistant mason workers are most prone to the development of skin diseases.

In this study, working hours per day showed, those participants who worked over 8 hours were a determinant for developing skin disease among construction workers [AOR= 1.80, 95% CI (1.09 - 2.98)].This findings was similar with other studies, conducted among construction workers (23,24,39).

Another finding of this study was the odds ratio of occupational skin disease among non PPE users was 2.2 times higher than PPE users [AOR= 2.2, 95% CI (1.2 - 4.1)]. This finding was similar to the other studies conducted, among construction workers (16,23,42), and lack of PPE was one of significant factor for occurrence of the skin disease. Similarly, this study indicated that, the industries did not provide personal protective equipment were 2.8 times more likely to develop skin diseases than the industry provided personal protective equipment [AOR= 2.86, 95% CI (1.61 - 5.11)]. A study conducted in Valley of Kashmir and Bangladesh also recorded similar findings (27,39).

According to this study, hand washing facilities and enforcement of rules were the factors for developing skin disease among construction workers. However, study done in Tanzania in construction workers depicted that, no statistically significant for occurrence of skin disease. This could be due to construction workers having low knowledge on the hand washing facilities and enforcement of rules.

In this study, hand was the most affected body parts 222 (90.2%) followed by forearms 117(47.6%). This finding was similarly with other studies done in other places, the most common part of the body affected by occupational skin diseases was the hands (16,21,27).

## **8. Strengths and limitations of the study**

### **8.1. Strengths of the study**

- The use of various data collecting tools, such as interviews, observational checklists, and the Nordic Occupational Skin Questionnaire used in data collection is validated, standardized, and accepted for assessment worldwide, which means the results of this study are comparable with the results of similar studies.

### **8.2. Limitations of the study**

There are limitations to this study:-

- Lack of research studies or material on the topic.
- The one-year prevalence of disease may be under or over-estimated due to recall bias.
- The study was based on self-reported symptoms that may be over-or underreported.

## 9. Conclusions and recommendations

### 9.1. Conclusions

- ❖ It can be concluded that construction workers have a high prevalence of occupational skin disease.
- ❖ The results indicate that determinant factors; educational status, job category, working hours per day, employment condition, provided with hand washing facilities, unavailability of PPE, not using personal protective equipment and enforcement of OSH-related rules had shown a significant association with an increased prevalence of skin disease.

### 9.2. Recommendations

Based on the study findings, the following important actions are recommended.

#### **For employers**

- Hand washing facilities, should be provided to workers on-site.
- Standard and sufficient personal protection equipment should be offered, and employees should be encouraged to utilize them throughout working hours.

#### **For workers**

- Workers should respect to organization's OSH regulations and utilize personal protective equipment.
- Employees are required to properly wear personal protective equipment provided by the institution.
- Employees should frequently wash off their hands to protect their health at work.

#### **For Adama Town of Labor and Social Affairs Office**

- There should be regular monitoring to ensure the implementation of rules and regulations.
- In cooperation with the management of the industries, the office should provide workers with OSH training.

#### **For Researchers:**

- Finally, further studies are recommended to examine the real cause-and-effect relationship of the determinants.

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## 11. Annexes

### Annex I Participant Information

#### **Investigators name:**

Hello, my name is Mrs. Radiya Sultan, a postgraduate student at Addis Ababa University, school of public health.

#### **Title of the study:**

I am conducting research entitled Assessment of Occupational skin disease, and Associated Factors among Construction Workers in Adama Town. I am going to interview you.

#### **Purpose of this interview:**

The purpose of this interview is to conduct scientific research that may help us to identify problems related to Occupational skin disease and to forward some recommendations to the concerned bodies that will help to improve the existing situation.

To conduct this study permission was received from the Adama town Administration Office. The interview will just take a few minutes. Your responses will help to understand the current situation of the prevalence of Occupational skin disease in the construction industry.

#### **Confidentiality:**

Your answers will be completely confidential. If you want to stop your participation at any time, you are free to do so. When you are willing to participate in the study, you will be requested to provide written informed consent before the interview. If you have any questions or if something is not clear please feel free to ask at a spot.

#### **Risks and disadvantages:**

when you participate in this research you may waste your time a few minutes but this may not be too much as you are one of the members of the community, so your response will be an important input to show the gap and means to improve Occupational skin disease preventive in the construction industry. There is no risk in participating in this research project.

#### **Incentives/Payments for Participating:**

You will not be provided any incentives or payment to take part in this study. I assure you that the interview process did not bring any harm to you and it has no disadvantage.

Investigator's name and address:

Radiya Sultan, Oromia Labour and Social Affair Bureau, Mobile: 0901733601

**Advisor's name and Address:**

Dr. Samson Wakuma Addis Ababa University, School of Public Health, Addis Ababa Mobile: 0923940998

Dr. Abera Kumie, Addis Ababa University, School of Public Health, Addis Ababa Mobile: 0911882912

**Consent form**

I, the undersigned participant, have been informed about the study Assessment of Occupational skin disease, Associated Factors and preventive measures among Construction Industry Workers in Adama Town; I have been requested to reply answers to the questions asked by the data collectors after I have been briefed that there are no direct benefits or incentives as well as no risks in participating in the study. I have been well informed that I have the right to withdraw from the study and this will not have any consequence (will not cause any harm to my future career). I have been given enough time to think over before I give my consent to participate in this study and I understand my personal information will be kept confidential and will be used for this study only. In addition, I have been well informed that my name will not be asked. My agreement to participate in this study is with the assumption that the information that I provide will help to improve occupational safety and health service in this organization. Was the information/objective clear? Yes ..... No .....

Are you willing to participate in the study? Yes..... No.....

Participant signature: \_\_\_\_\_ Date: \_\_\_\_\_, Name of data collector \_\_\_\_\_ Signature: \_\_\_\_\_  
Date: \_\_\_\_\_

For any convenience and problem, you can contact the principal investigator by Phone at 0901733601 E-mails- at [radiisultan1258@gmail.com](mailto:radiisultan1258@gmail.com). Thank you for your kind cooperation

**Annex II English version questionnaire**

**The occupational disease assessment questionnaire**

The purpose of this particular study is to assess occupational skin disease among construction industry workers in Adama Town.

Sub city/ kebele: \_\_\_\_\_

Woreda: \_\_\_\_\_

Name of the industry: \_\_\_\_\_

I	Socio-demographic and occupational factor		
No	Questions	Response	Remark
101	Age in complete years	_____	
102	Sex	1. Male  2. Female	
103	Educational status	1. Illiterate (can't read and write)  2. Literate but no formal education  3. Primary school (grades 1-8)  4. Secondary school (grade 9-12)  5. Certificate and above	
104	Marital status	1. Never married  2. Married  3. Living together  4. Divorced /separated  5. Widowed	

105	Religion	1. Orthodox 2. Muslim 3. Catholic 4. Protestant 5. Other (specify _____ )	
106	What is your present occupation?		
107	Where is your work section?		
108	Where did you work before the current job?		
109	A pattern of employment?	1. Permanent 2. Temporary	
110	Monthly salary?	Birr	
111	What are your major activities?		
112	Total services year in the construction?	Months/years	
113	Service duration in the same job?	Months/years	
114	How many hours in a day do you engage in your job?		
115	How many hours per week, months per year do you work on the job?	-----	
<b>II</b>	<b>Assessing Occupational Skin diseases related questions</b>		
201	Have you had any of the following symptoms on any part of the body during the past 12 months?  (Multiple answers possible)	1. No symptoms 2. Redness 3. Burning 4. Blisters 5. Itching (wheals/welts (urticaria))	
202	Show areas on the hands or forearms where you commonly have skin disease		
203	How often have you had skin disease on your hands, wrists or forearms, or other body parts?	1. Only once and for less than two weeks 2. Only once but for two weeks or more	

204	On average how long in one year do you suffer from skin disease?	<ol style="list-style-type: none"> <li>1. One week</li> <li>2. One month</li> <li>3. Three months</li> <li>4. 3-6 months</li> <li>5. Over 6 months</li> </ol>	
205	When did you last have skin disease on your hands, wrists, or forearms?	<ol style="list-style-type: none"> <li>1. I have it just now</li> <li>2. Not just now but within the past 3 months</li> <li>3. Between 3-12 months ago</li> </ol>	
206	What do you think was the cause of skin disease on your hands, wrists, or forearms when it started?		
207	What was your occupation when the skin disease started?		
208	What were your major activities at work when the skin disease started?		
209	How do you know about the cause of skin disease?	<ol style="list-style-type: none"> <li>1. My thinking</li> <li>2. Clinic visit</li> <li>3. Others specify</li> </ol>	
210	Have you visited a doctor as an adult for skin disease-related problems?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>	
211	What treatment are you getting (multiple answers possible )	<ol style="list-style-type: none"> <li>1. No treatment</li> <li>2. Self-treatment</li> <li>3. Dermatologists</li> <li>4. Herbal treatment</li> <li>5. Health supplements</li> </ol>	
<b>III</b>	<b>Exacerbating factors</b>		
301	Have you noticed that contact with certain materials, chemicals, or anything else in your work makes your contact dermatitis	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>	

302	What do you consider the most important things at the workplace that worsen your skin disease?		
303	Have you noticed that contact with certain materials, chemicals or anything else outside your work makes your skin disease worse?	1. Yes 2. No	
304	Do your skin diseases improve when you are away from your normal work (for example weekends or longer periods)?	1. Yes 2. No	
305	Do you have occupational safety training?	1. Yes  2. No	
<b>IV</b>	<b>Control &amp; prevention</b>		
401	Do you know any of the following occupational health and safety-related legislation?	1. Labor Proclamation 2. Occupational Health and Safety Directive 3. ILO Convention 1981 (No. 155) 4. I don't know about the regulation	
402	Do you know how to reduce/prevent the harmful effects that chemicals can have on your health?	1. Yes 2. No 3. I don't know	
403	Do you use PPE regularly at work? list type  (Observe for the presence of PPE)	1. Yes     If yes, please list  2. No     If no, why?	
404	Safety is a high priority for me when I am doing my job.	1. Yes  2. No	

405	My health can be threatened while doing my job.	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>3. I don't know</li> </ol>	
406	The OSH regulation is not effective to protect workers in construction	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>3. I don't know</li> </ol>	
407	Do you believe proper use of PPE can protect your health?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>3. I don't know</li> </ol>	
408	Do you know the Period of safety training?	<ol style="list-style-type: none"> <li>1. Before the start of work</li> <li>2. During the start of work</li> <li>3. I don't know</li> </ol>	
409	Is safety inspection done by site managers?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>	
410	Provided with hand washing facilities on site?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>	
411	How often washing your hand (frequency/day)	<ol style="list-style-type: none"> <li>1. <math>\leq 5</math> times</li> <li>2. 6–10 times</li> <li>3. <math>&gt; 10</math> times</li> </ol>	

### **Annex III Odeeffannoo Hirmaattotaa**

Maqaa qorataa:

Akkam jirtu, maqaan koo Aadde Raadiyaa Sulxaan jedhama, barattuu digirii lammaffaa Yuunivarsiitii Addis Ababa, mana barumsaa fayyaa ummataa.

#### **Mata duree qorannichaa:**

Mata dureen qorannoo Madaallii dhukkuba gogaa bakka hojii, haal-dureewwan isaan walqabatani fi tarkaanfiiwwan ittisaa Hojjattoota Ijaarsa Magaalaa Adamaatti gaggeessuuf. Gaaffii fi deebii isin waliin gaggeessuuf jira.

#### **Kaayyoo af-gaaffii kanaa:**

Kaayyoon af-gaaffii kanaa qorannoo saayinsii rakkoolee dhukkuba gogaa sababa hojiitiin walqabatan adda baasuuf nu gargaaruu danda’u gaggeessuu fi yaada tokko tokko qaamolee dhimmi ilaallatuuf dabarsuu fi kan haalarra jiru fooyyessuuf gargaarudha.

Qo’annoo kana gaggeessuuf hayyamni Waajjira Bulchiinsa Magaalaa Adamaa irraa argadheera. Gaaffii fi deebii gara daqiiqaa 25-37 qofa fudhata. Deebiin keessan haala yeroo ammaa babal’ina dhukkuba gogaa sababa hojiin industirii ijaarsaa keessatti mul’atu hubachuuf ni gargaara.

#### **Iccitii eegu:**

Deebiin keessan guutummaatti iccitii ta’a. Yeroo barbaaddetti hirmaannaa kee dhaabuu yoo barbaadde bilisa ta’a. Qorannoon keessatti hirmaachuuf fedhii akka qabdu, af-gaaffiin dura barreeffamaan hayyamamaa akka taate si gaafatama. Gaaffii yoo qabaattan ykn wanti tokko bakka tokkotti ifa yoo hin taane bilisaan gaafachuu dandeessu.

#### **Balaa fi miidhaa:**

yeroo qorannoo kana irratti hirmaattu yeroo kee qisaasuu dandeessa (gara daqiiqaa 25- 37) garuu kun miseensa hawaasaa keessaa tokko waan taateef baay’ee ta’uu dhiisuu danda’a, kanaaf deebii kee qaawwaa fi mala agarsiisuuf galtee barbaachisaa ta’a fooyya’iinsa Ittisaa dhukkuba gogaa hojii industirii ijaarsaa keessatti. Pirojektii qorannoo kana irratti hirmaachuun balaa hin fidu.

Unka hayyamaa

Ani hirmaataa armaan gaditti mallatteesse waa'ee qorannichaa akka Madaallii dhukkuba gogaa Hojii, Qabxiilee Walqabatan fi tarkaanfiiwwan ittisaa Hojjettoota indaastirii Ijaarsa Magaalaa Adamaa gidduutti; Qorannicha irratti hirmaachuu keessatti faayidaan kallattiin ykn onnachiiftuu akkasumas balaan akka hin jirre erga naaf ibsamee booda, gaaffii namoota odeeffannoo walitti qaban gaafataniif deebii akkan kennu na gaafatameera. Qorannicha keessaa ba'uuf mirga akkan qabuu fi kunis bu'aa akka hin qabne (hojii koo gara fuula duraa irratti miidhaa akka hin geessisne) sirriitti naaf beeksiseera. Qorannoon kana irratti hirmaachuuf hayyama koo osoon hin kennin dura yeroon gahaan akkan yaadu naaf kennameera odeeffannoon dhuunfaa koo iccitii ta'ee akka eegamu fi qorannoo kanaaf qofa akka oolu hubadheera. Kana malees maqaan koo akka hin gaafatamne sirriitti beeksifameera. Qorannoon kana irratti hirmaachuuf walii galteen koo, odeeffannoon ani kennu tajaajila nageenyaafi fayyaa hojii dhaabbata kana keessatti fooyyessuuf gargaara jedhee tilmaama.

Odeeffannoon/kaayyoon sun ifa turee? Eeyyee..... Lakkii.....

Qorannicharratti hirmaachuuf fedhii qabdaa? Eeyyee..... Lakki.....

Mallattoo hirmaataa: \_\_\_\_\_ Guyyaa: \_\_\_\_\_.

Maqaa nama odeeffannoo walitti qabu \_\_\_\_\_ Mallattoo: \_\_\_\_\_ Guyyaa: \_\_\_\_\_.

Mijannaa fi rakkoo kamiifuu qorataa muumme qunnamuu dandeessu Bilbila 0901733601 E-mails-radiisultan1258@gmail.com

Tumsa gaarummaa keessaniif galatoomaa.

#### **Annex IV Gaafannoo Afaan oromoo**

##### **Gaaffii madaallii dhukkuba sababa hojiiitiin dhufu**

Kaayyoon qorannoo kanaa dhukkuba gogaa sababa Hojiiitiin dhufan, hojjettoota indaastirii ijaarsaa Magaalaa Adama keessa jiran madaaluudha.

Magaalaa xiqqaa/ganda: \_\_\_\_\_.

Aanaa: \_\_\_\_\_.

Maqaa industirii: \_\_\_\_\_.

I.	odeeffannoo hawaasummaa fi dhimma hojii		
Lakk	Gaaffii	Deebii	Yaada
101	Umurii kee waggaadhaan	_____	
102	Saalaa	1. Dhiira 2. Dubartii	
103	Haala barnootaa	1. Dubbisuu fi barreessuu hin danda'u 2. Dubbisuu fi barreessuu kan danda'u garuu barnoota idilee kan hin qabne 3. Mana barumsaa sadarkaa tokkoffaa (kuta 1-8). 4. Mana barumsaa sadarkaa lammaffaa (kuta 9-12). 5. Ragaa fi isaa ol	
104	Haala gaa' ilaa	1. Takkaa fuudhee/heerumee hin beeku 2. Fuudhe ykn heerume 3. Waliin jiran 4. Hiikan /addaan bahan 5. Dubartii abbaan manaa irraa du'e/haati manaa irraa duute	
105	Amantii	1. Ortodoksii 2. Muslima 3. Kaatolikii 4. Pirootestaantii 5. Waqeffataa	
106	Hojiin kee ammaa maali?		
107	Kutaan hojii keetii kami?		
108	Eessa hojjataa turte hojii kana dura?		

109	Akkaataa hojii keetii maali?	1.Dhaabbataa 2.Yeroodhaaf	
110	Mindaa ji'aa kee meeqa?	Birrii	
111	Hojiwwan gurguddoon kee maal fa'a?		
112	Waliigala tajaajila bara ijaarsa keessatti qabdu meeqa?	Ji'oota/waggoota	
113	Yeroo tajaajilaa hojii tokko keessatti qabdu meeqa?	Ji'oota/waggoota	
114	Guyyaatti sa'aatii meeqa hojii kee irratti bobbaafta?		
115	Torbanitti, waggaatti ji'oota meeqa hojii irratti dabarsita?	-----	
<b>II.</b>	<b>Gaaffilee dhukkuboota Gogaa sababa Hojiitiin walqabatan madaaluu</b>		
201	Ji'oota 12 darban keessatti mallattoolee armaan gadii keessaa kutaa qaamaa kamiyyuu irratti mul'atee jiraa?  (Deebii dachaa deebisuun ni danda'ama)	1. Mallattoo hin qabu 2. Diimachuu 3. Gubachuu 4. Bishaan dhangala'aa 5. hooksisuu. 6. Gogaan goguu 7. babaqaquu/dhooyuu 8. Dhukkubbii 9. boo'uu 10. madaa 11. hoqqisiisuu 12. Lallaafaa ta'uu	
202	Bakkeewwan harka ykn harka duraa irratti bakka yeroo baay'ee dhukkuba gogaa qabdu agarsiisi		

203	Yeroo meeqa dhukkubni gogaa harka kee, ykn irree ykn kutaalee qaamaa biroo irratti si mudate?	<ol style="list-style-type: none"> <li>1. Al tokko qofaafi torban lamaa gadi</li> <li>2. Al tokko qofa garuu torban lamaa fi isaa ol</li> <li>3. Yeroo tokkoo ol</li> </ol>	
204	Giddu galeessaan waggaa tokko keessatti hanga yoomiitti dhukkuba gogaatiin rakkatta?	<ol style="list-style-type: none"> <li>1. Torban tokko</li> <li>2. Ji'a tokko</li> <li>3. Ji'a sadii</li> <li>4. Ji'a 3-6</li> <li>5. Ji'a 6 ol</li> </ol>	
205	Yeroo dhumaaf dhukkubni gogaa harka, ykn irree irratti yoom argite?	<ol style="list-style-type: none"> <li>1. Amma qofa qaba</li> <li>2. Amma qofa osoo hin taane baatii 3 darban keessatti</li> <li>3. Ji'a 3-12 gidduutti</li> </ol>	
206	Dhukkubni gogaa harka, ykn irree irratti yeroo jalqabu sababni maal ture jettanii yaaddu?		
207	Yeroo dhukkubni gogaa jalqabu hojiin keessan maal ture?		
208	Yeroo dhukkubni gogaa jalqabu hojiiwwan gurguddoo hojii keessan maal turan?		
209	Waa'ee sababa dhukkuba gogaa akkamitti beektu?	<ol style="list-style-type: none"> <li>1. Yaada mataa kootiin</li> <li>2. Daawwannaa mana yaalaan</li> <li>3. Kan hime ibni</li> </ol>	
210	Rakkoolee dhukkuba gogaa wajjin walqabatan akka nama tokkotti doctora bira deemtanii jirtu?	<ol style="list-style-type: none"> <li>1. Eeyyee</li> <li>2. Lakki</li> </ol>	
211	Wal'aansa akkamii argachaa jirta (deebii dachaa ni danda'ama )	<ol style="list-style-type: none"> <li>1. Wal'aansa hin qabu</li> <li>2. Ofii of yaala</li> <li>3. Ogeessota gogaatiin</li> <li>4. Wal'aansa baala mukaatiin</li> <li>5. Dabalata fayyaa</li> </ol>	
<b>III.</b>	<b>Wantoota dhibee hammeessan</b>		

301	Hojii keessan keessatti meeshaalee tokko tokko, keemikaalota ykn waan biraa waliin wal qunnamuun dhukkuba gogaa tuttuqaa keessan akka hammaatu hubattanii jiruu?	1. Eeyyee 2. Lakki	
302	Bakka hojiitti wantoota dhukkuba gogaa keessan hammeessan maal akka ta'an beektuu?		
303	Meeshaalee tokko tokko, keemikaalota ykn wantoota hojii keetiin ala jiran tokko tokko waliin wal qunnamuun dhukkuba gogaa kee akka hammeessu hubattee jirtaa?	Eeyyee Lakki	
304	Yeroo hojii idilee kee irraa fagaattu (fakkeenyaaf dhuma torbanii ykn yeroo dheeraa) dhukkuboonni gogaa kee ni fooyya'aa?	1. Eeyyee 2. Lakki	
305	Leenjii nageenyummaa hojii qabduu?	1. Eeyyee 2. Lakki	
<b>IV.</b>	<b>To'annoo &amp; ittisa</b>		
401	Seerota fayyummaa fi nageenyummaa hojii wajjin walqabatan armaan gadii keessaa kam beektu?	1. Labsii Hojjetaa 2. Qajeelfama Fayyummaa fi Nageenyummaa Hojii 3. Konveenshinii ILO bara 1981 (Lakk. 155). 4. Waa'ee dambii hin beeku	
402	Miidhaa keemikaalonni fayyaa keessan irratti fiduu danda'an akkamitti akka hir'isuu/ittisuu dandeessan beektuu?	1. Eeyyee 2. Lakk 3. Hin beeku	
403	Hojii irratti yeroo hunda MIB fayyadamtuu? gosa tarreessi (MIB jiraachuu isaa ilaali)	Eeyyee Yoo eeyyee ta'e, maaloo tarreessi ----- Lakki Yoo lakki ta'e maaliif?----- -----	

404	Yeroon hojii koo hojjedhu nageenyi anaaf dursuu qaba.	1. Eeyyee 2. Lakki	
405	Hojii koo osoon hojjedhu fayyaan koo balaadhaaf saaxiluu danda'a.	1. Eeyyee 2. Lakki 3. Hin beeku	
406	Dambiin OSH hojjettoota ijaarsa keessa jiran eeguuf bu'a qabeessaa?	1. Eeyyee 2. Lakki	
407	PPE sirnaan fayyadamuun fayyaa keessan eeguu danda'a jettanii amantuu?	1. Eeyyee 2. Lakki 3. Hin beeku	
408	Yeroo leenjii nageenyummaa beektuu?	1. Hojii jalqabuun dura 2. Yeroo hojiin jalqabuu	
409	Too'annoon nageenyummaa hoggantoota iddootiin ni raawwatamaa?	1. Eeyyee 2. Lakki	
410	Bakka hojitti bakki harka dhiqannaa ni jira?	1. Eeyyee 2. Lakki	
411	Harka kee yeroo meeqa dhiqatta guyyatti irra deddebin?	1. yeroo 5 gadi 2. yeroo 6-10 3. yeroo 10 oli	

**አባሪ V የአማረኛ ስራት መጠይቅ**

**በሥራ ምክንያት የምመጣ በሽታ ግምገማ መጠይቅ**

የዚህ ልዩ ጥናት ዓላማ በአዳማ ከተማ ከሚገኙ የኮንስትራክሽን ኢንዱስትሪ ሠራተኞች መካከል በሥራ ምክንያት የምመጣ የቆዳ በሽታን መገምገም ነው።

ክፍለ ከተማ/ ቀበሌ : \_\_\_\_\_

ወረዳ : \_\_\_\_\_

የኢንዱስትሪው ስም:- \_\_\_\_\_

<b>I. ማህበራዊና ስነ-ሕዝባዊ እና የሙያ ምክንያት ገጽታዎችን በተመለከተ</b>			
ተ.ቁ	ጥያቄዎች	ምላሽ	አስተያየት
101	ዕድሜ	_____	
102	ጾታ	1. ወንድ                      2. ሴት	
103	የትምህርት ደረጃ	1. ያልተማራ/ች (ማንበብ እና መጻፍ የማይችል) 2. ማንበብና መጻፍ የሚችልግን መደበኛ ትምህርት የልተማረ/ች። 3. የመጀመሪያ ደረጃ ትምህርት ቤት (1-8ኛ ክፍል) 4. ሁለተኛ ደረጃ ትምህርት ቤት (9-12 ክፍል) 5. የምስክር ወረቀት እና ከዚያ በላይ	
104	የጋብቻ ሁኔታ	1. በጭራሽ አላገባም/ች 2. ያገባ/ች 3. አብሮ መኖር 4. የተፋታ/የተለያየ 5. የሞተበት/ባት	
105	ሃይማኖት	1. ኦርቶዶክስ 2. ሙስሊም 3. ካቶሊክ 4. ፕሮቴስታንት 5. ሌላ(_____)	
106	አሁን ያለህበት ሙያ ምንድን ነው?		
107	የስራ ክፍልህ የት ነው?		
108	አሁን ካለው ስራ በፊት የት ሰሩ?		
109	የቅጥር ሁኔታ?	1. ቋሚ                      2. ጊዜያዊ	
110	ወርሃዊ ደሞዝ?	_____ ብር	
111	ዋና ዋና ተግባራትህ ምንድናቸው?		
112	በግንባታው ውስጥ አጠቃላይ የአገልግሎት ዓመት?	ወራት / ዓመታት	
113	የአገልግሎት ቆይታ በተመሳሳይ ሥራ?	ወራት / ዓመታት	
114	በስራዎ በቀን ውስጥ ስንት ሰዓታትን ይሳተፋሉ?		
115	በሥራ ላይ በሳምንት ስንት ሰዓት፣ በዓመት ስንት ወራቶች ይሰራሉ?		
<b>II ከሥራ ጋር የተያያዙ የቆዳ በሽታዎችን መገምገም</b>			
201	ባለፉት 12 ወራት ውስጥ በማንኛውም የሰውነት ክፍል	1. ምንም ምልክቶች የሉም                      2. መቅላት	

	ላይ ከሚከተሉት ምልክቶች አንዱን አጋጥሞታል ? (በርካታ መልሶች ይቻላል)	3. ማቃጠል 6. የቆዳ መድረቅ ህመም	4. እብጠቶች 7. ስንጥቆች/መሰንጠቅ	5. ማሳከክ 8.	
202	የቆዳ በሽታ በዋናነት የሚያጠቃቀምት የሰውነት ክፍል የቱ ነዉ?	1. እጅ 2. ፊት 3. እግር 4. እንገት 5. ሌላ ይግለጹ _____			
203	በእጅቸዎ፣ወይም በግምባሮቸዎ ወይም በሌሎች የሰውነት ክፍሎቸዎ ላይ የቆዳ በሽታ ምን ያህል ጊዜ አጋጥሞታል?	1. አንድ ጊዜ ብቻ እና ከሁለት ሳምንታት በታች 2. አንድ ጊዜ ብቻ ግን ለሁለት ሳምንታት ወይም ከዚያ በላይ 3. ከአንድ ጊዜ በላይ			
204	በአማካይ በአንድ አመት ውስጥ ምን ያህል በቆዳ በሽታ ይሠቃያሉ?	1. አንድ ሳምንት 2. አንድ ወር 3. ሦስት ወራት 4. 3-6 ወራት 5. ከ 6 ወር በላይ			
205	በእጅቸዎ፣ወይም በግንባሮቸዎ ላይ የቆዳ በሽታ ለመጨረሻ ጊዜ ያጋጠመዎት መቼ ነበር?	1. አሁን አለብኝ 2. አሁን ሳይሆን ባለፉት 3 ወራት ውስጥ 3. ከ 3-12 ወራት በፊት			
206	በእጅቸዎ፣ወይም በከንዶቸዎ ላይ የቆዳ በሽታ መንስኤው ምን ይመስልዎታል?				
207	የቆዳ በሽታ ሲጀምር ሥራህ/ሽ ምን ነበር?				
208	የቆዳ በሽታ ሲጀምር በስራ ቦታ ላይ ስሰሩ የነበሩ ዋና ዋና ተግባራት ምን ምን ነበሩ?				
209	ስለ ቆዳ በሽታ መንስኤ እንዴት ያውቃሉ?	1. የራሴ አስተሳሰብ 2. ከሊኒክ ጉብኝት 3. ሌሎች ይገልጹ _____			
210	ከቆዳ በሽታ ጋር ለተያያዙ ችግሮች ዶክተር ንብኝተዋል?	1. አዎ 2. አይ			
211	ምን ዓይነት ህክምና ታገኛለህ (ብዙ መልስ ማግኘት ይቻላል)	1. ሕክምና የለም 2. ራስን ማከም 3. የቆዳ ህክምና ባለሙያዎች 4. የእፅዋት ሕክምና 5. የጤና ማሟያዎች			
<b>III</b>	<b>የሚያባብሱ ምክንያቶች</b>				
301	በስራዎ ውስጥ ከተወሰኑ ቁሳቁሶች፣ ኬሚካሎች ወይም ሌላ ማንኛውም ነገር ጋር መገናኘት የእርሶን የቆዳ በሽታ እንደሚያባብስ አስተውለዋል ?	1. አዎ 2. አይ			
302	በስራ ቦታ ላይ የቆዳ በሽታዎን በጣም የሚያባብሱት ነገሮች ምን ምን እንደሆኑ ያስባሉ?				
303	ከአንዳንድ ቁሳቁሶች፣ ኬሚካሎች ወይም ከስራዎ ውጪ ካሉ ነገሮች ጋር መገናኘት የቆዳ በሽታዎን እንደሚያባብስ አስተውለዋል?	1. አዎ 2. አይ			
304	ከመደበኛ ስራዎ (ለምሳሌ ቅዳሜና እሁድ ወይም ረዘም ያለ ወር) ሲቀሩ የቆዳዎ በሽታ ይሻሻላል?	1. አዎ 2. አይ			
305	የሰራአካባቢ የሙያ ደህንነት ስልጠና ወስደህል/ሻል?	1. አዎ 2. አይ			
<b>IV</b>	<b>ቁጥጥር እና መከላከል</b>				
401	ከሚከተሉት ከስራ ጤና እና ደህንነት ጋር የተያያዙ ህጎችን ያውቁታል?	1. የአሰሪና ሰራተኛ አዋጅ 2. የሙያ ጤና እና ደህንነት መመሪያ 3. ILO ኮንቬንሽን 1981 (ቁጥር 155) 4. ስለ ደንቡ አላውቅም			

402	ኬሚካሎች እና ሲሚንቶ በጤናዎ ላይ የሚያደርሱትን ጉዳት እንዴት መቀነስ/መከላከል እንደሚችሉ ያውቃሉ?	1. አዎ 2. አይ	
403	በሥራ ቦታ PPE በመደበኛነት ይጠቀማሉ? የዝርዝር አይነት (የ PPE መኖርን ይከታተሉ)	1. አዎ 2. አይ	
404	ሥራዬን በምሥራብት ጊዜ ደህንነት ለእኔ ከፍተኛ ቅድሚያ የሚሰጠው ጉዳይ ነው።	1. አዎ አዎ ከሆነ ፣ እባክዎ ይዘርዝሩ _____ 2. አይደለም አይደለም ከሆነ ለምን? _____	
405	ሥራዬን በምሥራብት ጊዜ ጤንነቴ አደጋ ላይ ሊወድቅ ይችላል።	1. አዎ 2. አይ 3. አላውቅም	
406	በግንባታ ላይ ያሉ ሰራተኞችን ለመጠበቅ የ OSH ደንብ ውጤታማ አይደለም።	1. አዎ 2. አይ 3. አላውቅም	
407	PPE በትክክል መጠቀም ጤናዎን ሊጠብቅ ይችላል ብለው ያምናሉ?	1. አዎ 2. አይ 3. አላውቅም	
408	የ ሙያ ደህንነት ስልጠና ወቅቱን ያውቁታል።?	1. ሥራ ከመጀመር በፊት 2. ሥራ የጀመረ ወቅት 3. አላውቅም	
409	በጣቢያዉ አስተዳዳሪዎች(በድርጅቱ) የደህንነት ቁጥጥር (ምርመራ)ይከናወኗል?	1. አዎ 2. አይ	
410	በሥራ ቦታ የእጅ መታጠብያ ቦታ አለ?	1. አዎ 2. አይ	
411	በቀን ምን ያህል ጊዜ እጅን ይታጠባሉ? (ድግግሞሽ)	1. ≤ 5 ጊዜያት 2. 6-10 ጊዜያት 3. > 10 ጊዜያት	

## Annex VI. Working environment Checklist

Industry location \_\_\_\_\_

Industry identification code \_\_\_\_\_

Date \_\_\_\_\_

NO	Activities	Yes	NO	Remark
1	Are there working safety rules in the workplace?			
2	Are there any preventive measures implemented for hazards in the working environment?			
3	Does the industry have a copy of the most important health regulation?			
4	Is protective equipment used by workers?			
5	Does the industry follow the writer's safety and health plan of action in the workplace?			
6	Does the working section have first aid equipment?			
7	Is there any health service near the industry?			
8	Is there a hand-washing facility on site?			

## ANNEX VII: DECLARATION FORM

I hereby declare that this thesis is my own work, has never been presented in this or any other University, and that all the resources and materials used for the thesis, have been fully acknowledged.

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Place: Addis Ababa, University College of health science school of public health

Date of submission: \_\_\_\_\_

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

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