
Occupational injuries among Saudi Star workers in Abobo District, Agnwa Zone, Gambella region, South-West Ethiopia: a cross-sectional study

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Abstract

Background: Agricultural workers are less-protected compared to workers in other sectors. Vary limited studies in the field of occupational health hazards indicated that the magnitude of occupational injury is serious in Ethiopia.

Objective: To asses Occupational injuries among Saudi Star workers in Gambella regional state, Ethiopia, 2014.

Methods: Institution-based cross-sectional study design using quantitative and qualitative data collection methods were conducted from April 01/2014- may 01/2014. A total of 303 Saudi Star workers were included in the study by using random sampling technique. Quantitative data were collected through interviews using semi-structured and pre-tested interviewer administered questionnaire and the collected data were entered using EPI data version.3.1 and analyzed using SPSS) version 16. Binary logistic regression was used to see the association between independent variables and occupational injury and computed using Odds Ratio. Enter hierarchical method was used. A p-value <0.05 was taken as significant in the final model. Qualitative data was analyzed thematically.

Result: The response rate was 287(94.71%). The overall prevalence rate of work related injury within the past 12 months was 145 out of 287 (50.50%). As compared to respondents those who able to read and write, odds of injury among workers unable to read and write were 9.62 higher (AOR=9.62, 95%CI: 2.98-31.73). Respondents those who trained were 65% less likely injured than those who did not (AOR=0.35, 95%CI: 0.15-0.80). As compared to workers who did not smoke cigarette, odds of injury among the counterpart were 7.44 higher (AOR=7.44, 95%CI; 3.25-17-11).

Conclusion and Recommendation: The magnitude of occupational injury in study area, work place was high. And which needs a joint involvement from regulatory body and the company itself in the process of reducing occupational injury.

Key words: occupational injury, agricultural workers, organizational factors, behavioral factors, Ethiopia

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Abbreviations and Acronyms

AOR Adjusted Odds Ratio

BOLSA Bureaus of Labor and Social Affairs

CI Confidence Interval

COR Crude Odds Ratio

ETB Ethiopian Birr

GNI Gross National Income

ILO International Labor Organization

MOLSA Organization of the Ministry of Labor & Social Affairs

OSH Occupational Safety and Health

RC Reference Category

PPE Personal Protective Equipment

WHO World Health Organization

1. Introduction

1.1. Background

Occupational health in agriculture is a significant international public health issue. Agricultural workers and their families are vulnerable to high injury and fatality rates and exposures that increase the risk of certain diseases (1). Work place is a potentially hazardous environment where many of employees pass at least one-third of their life time. This fact has been recognized for a long time, although developed very slowly until 1900. Workplace associated injuries are by large preventable with the use of appropriate occupational safety and health services. Unless prevented such unfortunate occasions cause a major public health and development problems in work places (2, 3).

From the total about three billion workers in the world, greater than 85% work and live without any access to occupational safety and health services (4). It is estimated that about two hundred fifty million occupational injuries and two million deaths occur each year resulting in a loss of 4% of the world gross national product due to workers' compensation, loss of workdays, interruption of production, retraining, and medical expenses (5, 6, 7). According to the International Labor Organization (ILO), the agricultural sector is one of the most hazardous to health worldwide. Agricultural work possesses several characteristics that are risky for health: exposure to the weather, close contact with animals and plants, extensive use of chemical and biological products, difficult working postures and lengthy hours, and use of hazardous agricultural tools and machinery. This brief outlines the occupational health hazards of agriculture, presents a case study on the trade-offs between their health and economic impacts, and proposes responses (18).

Millions of injuries are known to occur, with at least 170,000 of these being fatal for agricultural workers each year. Unsafe equipment and conditions, inadequate training, and limited availability and use of personal protective equipment all contribute. Health and injury burdens depend on the type of farming activity, the type of worker, and the geographic location. Research in India suggests that agricultural workers using powered machinery are most at risk from fatal accidents, but that injuries are actually more common in less mechanized villages, probably

owing to lower adherence to safety standards. Basic hazards like sharp tools and snake bites can also cause debilitating wounds and fatalities (18).

There are also important differences between developed and developing countries: according to the World Health Organization (WHO), although developing countries accounted for only 20 percent of all pesticide use in the early 1990s, they accounted for more than 99 percent of poisonings, because more toxic products were used under more rudimentary conditions(18).

Agriculture is a major stakeholder to food security issues. In order to ease the global pressure on food security, Agriculture the main stay of most developing countries must be properly developed and efficiently maximized. And it is a dangerous occupation, with millions of workers sustaining injury and death throughout the world (22).

Ill health arising from agricultural work has negative implications for agricultural productivity. A study of women farmers in mixed cropping systems, by the University of Benin (Nigeria), found that the vast majority suffered from intense muscular fatigue, heat exhaustion, and skin disorders, forcing them to take days off from attending to crops. In Madhya Pradesh, India, in 2000, the value of human life lost to fatal injuries in agriculture, plus the cost of nonfatal injuries, was estimated at US\$27 million. The economic costs arising from the occupational health hazards of agriculture often arise because of the economic incentives of agricultural work. A study in Carchi, Ecuador, the country's most important potato growing zone by a group of international scientists and the International Potato Center found that pesticides bring income gains, but overall they result in lower economic productivity owing to their health costs (18).

In Ethiopia there is no systematized recording and reporting on work related injuries organized the national level. If there is, then only few manufacturing industries provide some information to the Ministry of Labor and Social Affairs. Hence, the data gathered from these few industries are incomplete and neither represents all industries nor shows the actual magnitude of work related injuries of the country (34).

1.2. Statement of the problem

Agricultural sector is one of the most hazardous sectors in both developing and industrialized countries (8). Workers in this sector are less-protected compared to other sectors. They suffer with higher rates of accidents and fatal injuries than workers of industries. The most vulnerable groups are daily laborers and temporary workers who are underserved with minimum occupational health services (8, 9).

Health outcomes associated with these hazards range from relatively simple conditions like heat exhaustion to complex threat like death. Exact data on levels of exposure and associated disease prevalence (or health effects) in the developing world are limited. Pesticide-related illnesses, for example, go largely underreported, though it is estimated that 2 to 5 million people every year suffer acute poisonings and that forty thousand die (6, 9, 18).

The reason behind for the poor occupational safety situation in developing countries: Such as use of out-dated machinery, inadequate training of workers; poor design workstations; and lack of personal protective equipment (PPE) (10). Not only unsafe working environments commonly cause most workplace injuries, but also socio-demographic and behavioral factors such as age, sex, lack of experience, job dissatisfaction, sleep disorders, smoking habit, excess alcohol use, and lack of physical activity are inherent factors (11,12,13).

The problem of alcohol-related injuries is particularly alarming in many low- and middle-income countries, where alcohol consumption is increasing, injury rates are extremely high, and appropriate public health policies have not yet been implemented. While there is little doubt that alcohol consumption is associated with injury occurrence, less is known about the level of risk at which various drinking patterns, quantities of alcohol consumed, or drinking situations place the individual at risk for accidental injury (32).

Farm related injuries also predominate in developing countries, where the population involved in agricultural activities is estimated to be over 63% (14). Obviously the nature and type of farm related activities are multiple, the prevention of farm-related injuries requires multiple efforts(14).

Pesticides Registration & Control Decree No 20/1990 Ethiopia, one of the legal instruments, which, specifically deals with handling and safe use of agriculture chemicals i.e. pesticides. The main objective of this decree is to minimize the adverse effects of pesticides on human beings, animals, plants and the environment including the workers and occupational environment(24).

The prevalence rate of occupational injury was higher compared to studies in industrial settings. And it is also higher compared to construction worker in Ethiopia (13, 15).

Vary limited studies in the field of occupational health hazards indicated that the magnitude of occupational injury is serious in Ethiopia. There is an increased investment of land for multinational companies for investment in Gambella Regional State and studies were not done on occupational injuries. This study is needed in order to close the aforementioned gap.

1.3. Significance of the study

The result of this study was determined prevalence of occupational injuries, and explored some of socio-demographic and economic, organizational and behavioral related factors. And indicate specific recommendation on reducing occupational injuries in Saudi Star Agricultural developmental PLC.

After approval from the HSM department of Jimma University, it will help as base line information for further studies and as a source of information for planners, policy makers as well as stakeholders.

2. Literature review

2.1. Socio demographic and economic factors and occupational injury

Most farm operators are aged between 50-55 years, whereas hired farm workers, in contrast to operators, have low educational and socioeconomic status and are also young, on average between 25-34 years of age. The actual number of hired farm workers has been inadequately enumerated in the US as it excludes contract laborers and those farms that employ less than 11 workers. It has been estimated that the number of hired farm laborers is approximately 2.5 million, with 2 million being engaged in crop production (18).

Varying age groups have been shown to be sensitive to all-cause mortality under excessive heat stress, including adults over 65. For type-specific mortality, sensitivity to death from respiratory disease has been demonstrated in the general population and in the elderly (17, 18).

Farm workers incomes are low, with approximately 60% of farm workers living in poverty (25). Undocumented migrant laborer is a significant issue in this sector and these workers are likely to be remunerated at even lower levels; injury and disease amongst these workers is undocumented (25).

In New Zealand a cross sectional survey of 586 individuals on farm; researchers reported high levels of injury, low back pain being the most Common on young's(26). The prevalence of alcohol use disorder among men aged 15-24 years was 57.4% and 39.0% among farm workers. Thirty-two percent of the men in the 15-24 year age group Smoked with 35% of smokers being farm workers (26)

2.2. Organizational related factors

2.2.1. Inadequate training of workers, lack of personal protective equipment (PPE) and length of stay

A cross sectional study shows that; most study participants, 786 (97.0%), did not use personal protective devices at work places. The main reason for not using personal protective devices was absence of the devices, for 773 (98.3%) of the workers and absence of health and safety training among 246 (31.3%) workers (13). Study participants, who were

used to work more than 48 hours per week, were 8 times more likely to be injured compared to those who worked 48 hours and less. Similarly, workers without health and safety training were about 6 times more susceptible to injury than those who had training (13).

Working hours spent in animal confinements was identified as the exposure-response relationship. Research with Norwegian farmers explored the prevalence of asthma in farmers with different exposure levels to microbial agents and irritant gases. Researchers concluded exposure to endo-toxins and fungal spores appears to have a protective effect on atopic asthma but may induce non-atopic asthma in farmers (28).

2.2.2. The Importance of Safety Culture

One definition of safety culture (19) focuses on its impact on the organization:

“The product of individual and group values, attitudes, perceptions, competencies and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization’s health and safety management.”

“Organizations with a positive safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety and by confidence in the efficacy of preventative measures.”

The main purpose of company is to support, consult and inform companies and insured individuals, offering advice on the prevention of accidents at work and on the way to work, the prevention of occupational injuries and about work-related health hazards (19, 20).

2.2.3. Responses to health problems in agriculture

Rigorous evaluations of the health benefit associated with interventions to improve agricultural practices are few. Still, there are a range of opportunities for technologies and policies to substantially reduce the health-related burdens of working in agriculture. Different hazards require different solutions. In general, if occupational health hazards are to be addressed, greater

organization and empowerment of the agricultural workforce and small farmers is needed. The International Federation of Plantation and Agricultural Workers advocates for better working and living conditions for agricultural wage workers, while numerous nongovernmental organizations and some national governments work with small farmers to reduce risks (19).

2.3. Behavioral related factors

2.3.1. Sleeping problem, and substance use as a factor of occupational injury

In Colorado a cross-sectional study of 262 participants investigated the relation between sleep patterns and self reported injury in the preceding year. Univariate analysis was conducted to describe the relationships of study variables with injuries. Multivariate modeling was conducted to assess sleep patterns that were associated with injuries, while controlling for other variables. Researchers concluded that sleep patterns were significantly associated with occurrence of injuries (29).

A cross sectional survey of 1004 part time male farmers in Kentucky explored self reported sleep habits and injury occurrence requiring medical attention in the previous 12 months. Twelve percent reported an injury requiring medical attention in the last year. Farmers reported sleeping an average of 7.6 hours per day and 6.7% of the sample reported symptoms of sleep apnoea. However, results demonstrated that hours of sleep were not related to injury incidence. However, participants using sleep medication and the presence of sleep apnoea were related to injury incidence amongst these farmers (30).

High risk behaviors amongst male youth and failure to wear safety equipment were evident in one study and also that male youth were more likely to use safety equipment if it was recommended by a physician (31).

A cross-sectional study done on Tendamho agricultural developmental PLC. Shows, workers who were used to drink alcohol were more likely to be injured than those who do not consume [OR: 1.62, 95% CI: (1.05-2.48)]. Similarly, those who had sleeping disorder were about 2 times more likely to be injured than those who had no such disorder [OR: 2.31, 95%CI: (1.65-3.24)]. Study participants who were not satisfied with their assigned job were also more likely to be injured than those satisfied [OR: 1.83, 95% CI: (1.30-2.58)] (13).

2.4. Conceptual framework

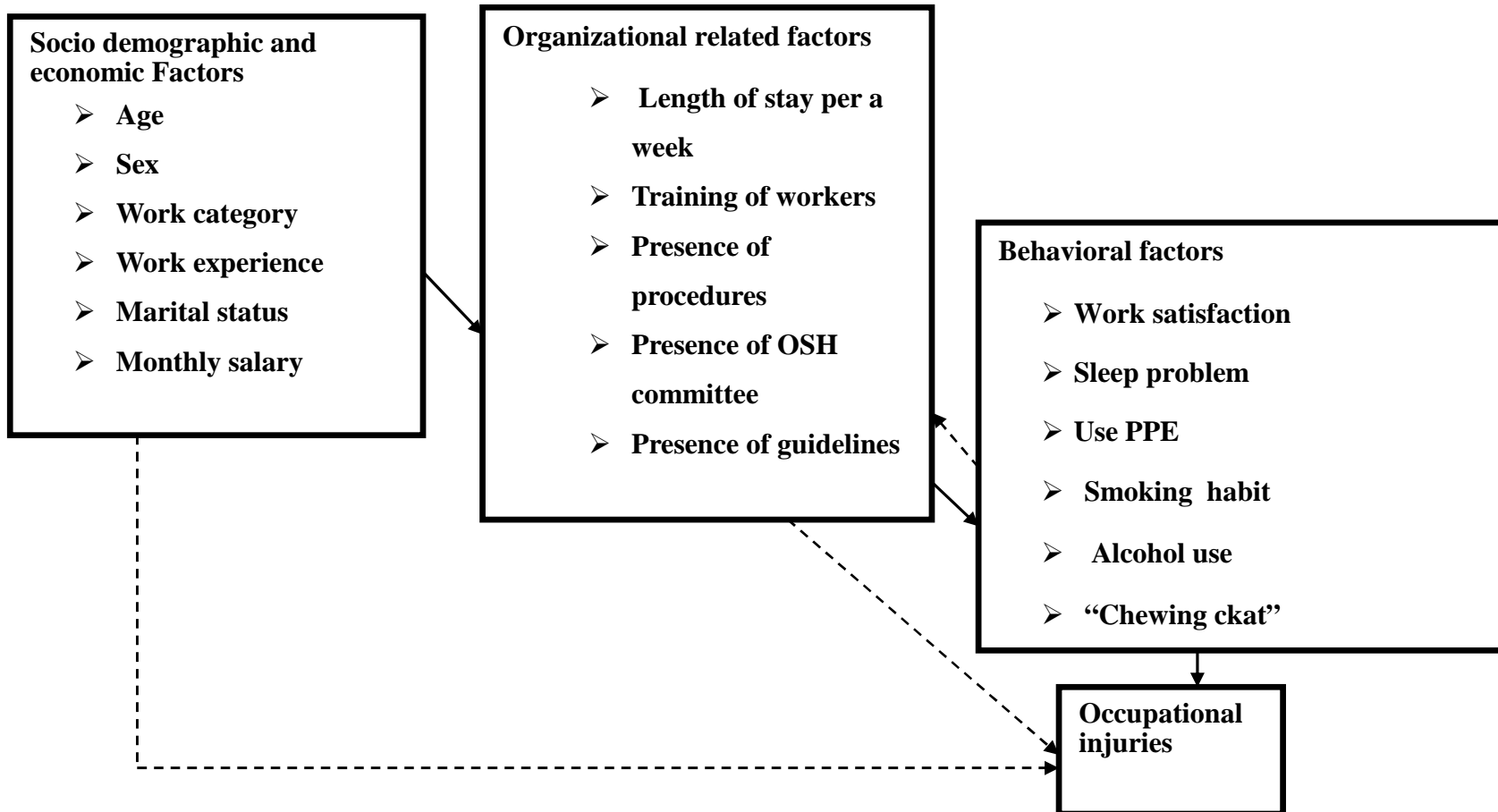


Figure 1. Schematic presentation of conceptual framework to assess occupational injuries among Saudi Star workers in Abobo District, Gambella region, Ethiopia, 2014

(Adapted from [13], [15], [21], [23] and others)

3. Objective

3.1. General objective

- ❖ To assess level of occupational injuries and associated factors among Saudi Star workers in Abobo District, Agnwa Zone, Gambella Region, South West Ethiopia, 2014.

3.2. Specific objectives

- ❖ To determine the prevalence of occupational injury among Saudi Star workers.
- ❖ To measure socio-demography related factors affecting occupational injury happening among Saudi Star workers.
- ❖ To identify organizational related factors affecting occupational injuries among Saudi star workers
- ❖ To identify behavioral related factors affecting occupational injury happening among Saudi Star workers.

4. Methods and materials

4.1. Study area and period

Saudi Star Agriculture Development Plc is found in Abobo District, Gambella Region, and South West Ethiopia. It is located 72 km from Gambella town and 849 km from Addis Ababa.

The absolute location of the study area's district is $7^{\circ} 45' 0''\text{N}$ - $8^{\circ} 15' 00''\text{N}$ latitude and $34^{\circ} 0' 0''\text{E}$ - $35^{\circ} 0' 0''\text{E}$ longitude (Fig. 2).

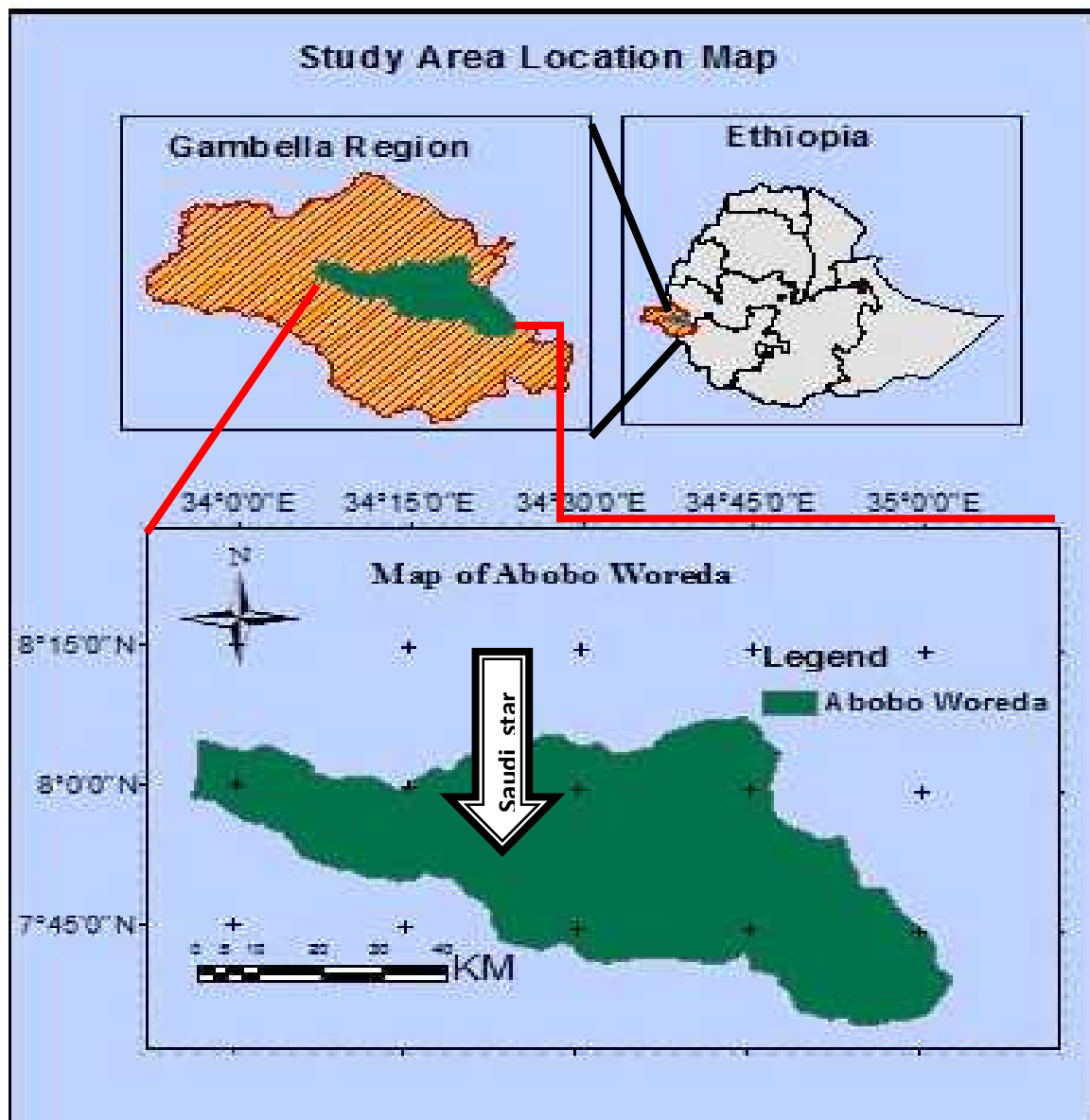


Figure 2: Map of the study area's district; Abobo, Gambella, Ethiopia, 2014

Climatic condition of the region is semi arid and arid. The altitude of the region is 300-2300 M above sea level. The rain fall is 900-2100 mm in rainy season (may- October), and the annual average minimum temperature 18⁰c where as annual average maximum temperature is 38⁰c as indicated by 2013 Gambella region meteorology agency semiannual report.

Saudi Star Agriculture Development Plc, owned by Saudi-Ethiopian billionaire Mohammed Al- Amoudi, acquired 10,000 hectares of land along the Alwero River in the Gambella region of Ethiopia, mainly producing rice (16).

The study was conducted from April 01 to May 01/ 2014.

4.2. Study design

Institution-based cross-sectional study design was conducted with qualitative and quantitative methods of data collection.

4.3. Population

4.3.1. Source Population

For quantitative data, all workers other than head of administration and head of the five work category in Saudi Star Agriculture Development Plc were taken as source population.

For qualitative data, the six selected individuals were selected as source population

4.3.2. Study population

All sampled workers, for the respective data collection methods, in Saudi Star Agriculture Development Plc were taken as study population.

4.3.3. Study unit

The study unit was individual.

4.4. Inclusion and exclusion criteria

4.4.1. Inclusion criteria

All workers who were registered on monthly salary payment sheet other than head of administration and head of each work category were included in quantitative method of data collection.

The selected six individuals (head of administration and head of each work category) were included for the qualitative method of data collection.

4.5. Sample size determination

For quantitative data

Sample size was determined by using single population proportion formula. For the calculation, 95% confidence level, 5% marginal error and 50% injury prevalence (since there is no study about prevalence of occupational injuries in the study area) were assumed to get optimum sample size.

$n_0 = \frac{z^2 p(1-p)}{d^2} = 384$ Since, the population size is less than 10,000; we use population correction

formula $n_f = \frac{n_0}{(1 + \frac{n_0}{N})} \Rightarrow$ where, N is total population study area (1,165)

Then, = 288.7 289

By assuming 5% (15) non response rate; the total sample size were **303**

Assumption:

P = occupational injuries prevalence in the study area is 50%, since there is no study done on occupational injuries in the area.

d = Margin of sampling error tolerated, 5% (0.05)

Z /2 = Critical value at 95% confidence interval of certainty (1.96)

For qualitative data 6 individuals were taken purposively.

4.5.1. Sampling procedure and sampling technique

For Quantitative data

First 5 Strata were formed based on their work category of the institution; pesticide sprayer(120)= 31 sample, machine operator(40)=10 sample, office experts(267)=70 sample, Manual technical workers(706)=184 sample and Guard(32)=8 sample; By using proportional allocation of sample, samples were selected by random sampling technique from attendance sheet using computer generated(using Microsoft excel) random numbers(Table 1).

For qualitative data

Purposively six individuals (head of administration and head of each work category) were selected.

Table 1: Work category and Proportional allocation of sample size in Saudi stare workers, Abobo, Gambella, Ethiopia, 2014

Sn.	Stratum	Number	Proportional allocation of Sample to size
1	manual technical worker	706	184
2	office worker	267	70
3	pesticide sprayer	120	31
4	machine operator	40	10
5	Guard	32	8
Total		1165	303

For qualitative data

Purposive sampling was employed; administration head and head of the five work category were interviewed.

4.6. Data collection tools

The questionnaire were include variables related to occupational injury characteristics, socio demographic and economic, organizational, and behavioral characteristics of respondents in relation to incurred injury.

The quantitative data were collected from individual workers using a pre-tested semi-structured interviewer administered questionnaire to assess variables like:

- Occupational injury characteristics
- Training of workers
- Socio demographic and economic
- Work satisfaction
- Sleeping problems
- Smoking habit
- Alcohol use
- Use of personal protective equipment (PPE)
- Length of stay per a week.

Qualitative data were obtained from in-depth interview, observation checklist and document review to assess and support organizational related factors.

4.7. Data collection procedure

Five nurses using semi-structured and pre-tested questionnaire were collect data. One occupational health and safety expert and one environmental health expert supervise the data collection process. Orientation were given for data collectors and supervisors, counter checking of daily filled questionnaire and supervision were undertaken regularly in order to maintain the quality of data.

4.8. Data processing and analysis

Quantitative data were analyzed using SPSS software, version 16. Data cleaning and assumption checking were performed before proceeding to analysis. Then output was presented using narration, tables, charts and graphs. Descriptive analysis such as proportions, means and others were done accordingly. Bivariate analysis was done to see the crude association of socio-demographic and economic related factor, organizational and behavioral related factor variables with occupational injuries with cut of point 0.25. Multivariate analysis was done to identify

major predictor variable for occupational injury. A p value < 0.05 were considered as significant in the final model.

Qualitative data obtained from in-depth interview, observation checklist and document review was done using thematic analysis.

4.9. Data quality assurance

Data quality was ensured during instrument development, data collection, coding, entry and analysis.

Then data collectors were trained about the purpose of the study and how to administer the questionnaire.

The questionnaire was carefully translated to Amharic language by expertise, and then back translated to English to maintain its consistence. The Instrument were pre tested on 5% of the respondents on karatury agricultural development PLC farm workers in Itang district which was nearby the study area prior to the actual study period and modifying the questionnaire were done accordingly. Cronbach's alpha for work satisfaction (*a model of internal consistency, based on the average inter-item correlation*) reliability test were done to check reliability (i.e. 0.72 which is in the range of acceptable internal consistent) of the questionnaire. During data collection, questionnaire was checked for its completeness on daily basis by immediate supervisor. Incorrectly filled or missed questionnaires were sent back to the respective data collector for correction, and the supervisors were submitted the filled questionnaire to the principal investigator after checking its consistency and completeness. The investigator was also rechecked the completed questionnaires to maintain the quality of data.

There were discussion with data collectors and supervisor accordingly when a problem encounter during data collection. Data quality was also ensured during data coding, cleaning, entry to computer and during analysis.

4.10. Study variables

Dependant variable

- Occupational injury

Independent variables

Socio-demography and economic Related Factors

- Age
- Sex
- Work category
- Work experience
- Marital status
- Monthly salary

Behavioral Related Factors

- Work satisfaction,
- Sleep disorders,
- Smoking habit,
- Alcohol use,
- “Chewing ckat”
- Use of PPE

Organizational Related Factors

- Length of hour in a week
- training of workers
- presence of OSH committee
- Presence of Guideline
- Presence of Procedures

4.11. Operational definitions and definition of terms

Occupational injury for the purpose of this study, it was defined as any physical injury resulting from an accident in the course of work in the past one year prior to this study.

Socio economic factor: for the purpose of this study, it was defined as income as a factor in the form of salary.

Accident: an unpleasant event in work place that happens unexpectedly and causes injury or damage.

Chewing “Khat”: Chewing a fresh *Catha-edulis* leave that has a stimulating effect and cause a certain degree of euphoria.

4.12. Ethical consideration

After approval of the proposal, Ethical clearance and formal letter were obtained from Research Ethics Review Committee of Jimma University. The necessary permission was obtained from Regional Health Bureau, Regional Bureau of labor and social affairs and Office of Saudi Star Gambella branch. Written and verbal consent were obtained from the study participants after explaining the purpose of the study. Participants were assured that their name will not be stated, data were kept confidential and anonymous and it was used only for research purpose. They also informed that they will not be forced to answer the entire question and they can withdraw at any time if they don't want to participate.

4.13. Dissemination plan

The findings of this study will be disseminated to college of public health and medical science and department of Health Service Management, Gambella Regional Health Bureau, Regional Bureau of Labor and Social Affairs and Office of Saudi Star Gambella branch after final defiance. The findings will be also disseminated to different stakeholders that have a contribution to decrease occupational injuries in agricultural sector so as to contribute to reduce poverty. Finally effort will be made to present in various seminars, Conferences and workshops and for publication in international journal of Emerging Sciences.

5. Result

5.1. Socio-Demographic and economic characteristics of the study subjects

From a total of 303 Saudi Star agricultural developmental PLC. workers who were identified for the study, 287 were involved in the study while 16 refused to participate in the study, yielding a response rate of 94.71%. The mean age in years of the participant was 29.71 with std. Deviation of 7.43. Two hundred ten (73.2%) of the participants were male. Two hundred fifty one (87.5%) were able to read and write. Majority of the respondents were manual technical workers, which accounts for one hundred seventy five (61%) and guards were the least frequent group of workers. One hundred fifty three (53.3%) of the respondents were married while 9 of the them were widowed (Table 2).

Table 2: Socio-demographic and economic Characteristics of Saudi star workers, Abobo District, Gambella Region, South West Ethiopia, 2014(n=287)

Variables	Frequency	Percent
Educational status		
Unable to read and write	36	13
Able to read and write	251	87
marital status		
never married	101	35
married / living as married	153	53
Divorced	12	4
Separated	12	4
Widowed	9	3
Work category		
Pesticide sprayer	30	10
Machine operator	8	3
Office export	67	23
Manual technical workers	175	61
Guard	7	2
monthly income		
<1681.88	139	48
1681.89-6638.13	141	49
>6638.14	7	2

NB: Income classification as of 1 July 2013, the World Bank income classifications by GNI per capita. \$1 19.5 ETB ([see Annex 3](#))

5.2. Prevalence, frequency, injured body , type and cause of occupational injuries

The prevalence of occupational injury in Saudi stare was 145(50.5%). Out of 145 injured workers, 67 responded that the occurrence of injury was three times per a year. The frequency of injury occurrence were 61(42.1%), 12(8.3%), 67(46.2%) and 5(3.4%) once, twice, three times and more than three times per a year respectively (Table 3). Most injured body part was lower leg which holds 70(48.3%) and toes injuries were the least which is 18(12.4%) (Table 3).

Table 3: prevalence, frequency of injuries, and injured part of the body in Saudi star workers, Abobo district, Gambella region, Ethiopia, 2014.

variable		Frequency	Valid %
Ever injured in work place in the past(n=287)	Yes	145	50.5
	No	142	49.5
frequency of injuries(in the past 12 months)(n=145)			
	Once	61	42.1
	Twice	12	8.3
	three times	67	46.2
	more than three	5	3.4
frequency of injuries(in the past 6 months)(n=141)			
	Once	109	77.3
	more than once	32	22.7
Body part injured in the 12 months(n=145)			
finger/s			
	Yes	63	43.4
	No	82	56.6
lower leg/s			
	Yes	70	48.3
	No	75	51.7
Eyes			
	Yes	51	35.2
	No	94	64.8
Toes			
	Yes	18	12.4
	No	127	87.6
lower arm			
	Yes	21	14.5
	No	124	85.5

In our study, Cut and laceration were reported as the major type of injuries, each accounts 58(40%). The most reported cause of injuries was hand tools which accounts 78(53.8%) (Table 4). Out of the 145 injured cases 133(77.9%) were hospitalized and miss 3480 work hours from work place, an average of 26.17 work hours per injured person per a year (Table 4).

Table 4: Type and Causes of injury in Saudi stare workers, Abobo district, Gambella Region, Ethiopia, 2014.

Variable	Frequency	Valid Percent
1. Type of injury faced(n=145)		
1.1. Laceration		
Yes	58	40
No	87	60
1.2. Cut		
Yes	58	40
No	87	60
1.3. Puncture		
Yes	42	29
No	103	71
1.4. Eye injury		
Yes	52	35.9
No	93	64.1
1.5. Crushing		
Yes	26	17.9
No	119	82.1
1.6. Heat strain		
Yes	4	2.8
No	141	97.2
1.7. Back injury		
Yes	21	14.5
No	124	85.5
2. Causes of the injury?(n=145)		
2.1. Hand tools		
Yes	78	53.8
No	67	46.2
2.2. Splinting/ splashing objects		
Yes	39	26.9
No	106	73.1
2.3. Falling accident		
Yes	33	22.8
No	112	77.2
2.4. Lifting object/load or unload object		
Yes	45	31

	No	100	69
2.5. Being hit by falling object	Yes	12	8.3
	No	133	91.7
3. Action taken after injury occurred? (145)			
3.1. Hospitalized	Yes	113	77.93
	No	32	22.07

5.3. Organizational and Behavioral related factors

One hundred eight (37.6%) of the study participant were working greater than 48 hours per a week. From the total of 287 respondents, 140(48.8%) have trained in occupational health and safety training (Table 5).

One hundred sixty one (56.1%) respondent responded that they experienced alcohol drinking at least once in the past six months (Table 5). Among those who were alcohol drinkers 121(75.2%) drank beer while 33(20.5%) drank “local arekea”. The remaining seven respondents drank Ozo. When we see the time of the respondents drink alcohol, 141(86.5%) of them drank before 5 hours of work hours (Table 5).

Out of the study participant eighty one (28%) had smoke cigarette at least once in the past 6 month and 32(11.1%) of them chew “ckat” (Table 5).

From the study participant 46(16%) had sleeping problem, of which 12(4.2%), 2(0.7%), 16(5.6%), 11(3.8%) and 7(2.4%) can’t sleep unless drug use, sleep after they took bed, awake at mid night, no sleep at dawn and other problems respectively. One hundred forty two (50.2%) respondents use PPE like goggle, glove, garment and butts (Table 5).

Table 5: Training, length of stay, behavioral factors, use of PPE and reason for not use PPE in Saudi stare workers, Abobo district, Gambella Region, Ethiopia, 2014

Variables	Frequency	Percent	Valid Percent
1. occupational health and safety training(n=287)			
Yes	140	48.8	48.8
No	147	51.2	51.2
2. length of stay in work place per a week			
<=48 hours	179	62.4	62.4
>48	108	37.6	37.6
3. alcohol drinking at least once in the past six months(n=287)			
Yes	161	56.1	56.1
No	126	43.9	43.9
4. Most frequently drunken alcohol type(n=161)			
local “arekea”	33	11.5	20.5
Ozo	7	2.4	4.3
Beer	121	42.2	75.2
5. Type of beer drunken (n=121)			
Beadle	74	25.8	61.2
st. George	47	16.4	38.8
6. Time of drinking(161)			
<5 hours before work hours	14	4.9	8.6
>=5 hours before work hours	139	44.4	86.5
During work hours	8	2.8	4.9
7. Smoke cigarettes at least once in the past six months(n=287)			
Yes	81	28.2	28.2
No	206	71.8	71.8
8. Chewing “ckat” at least once in the past six months(n=287)			
Yes	32	11.1	11.1
No	255	88.9	88.9
9. Work time shift(287)			
Day time	252	87.8	87.8
Night time	16	5.6	5.6
evening of mid time shift	19	6.6	6.6
10. sleeping problems(n=287)			
Yes	46	16	16
No	239	83	84
11. Stat of sleeping problems (46)			
can't sleep unless drug use	12	4.2	26.1

	Sleep about 5 minutes after you took bed	2	0.7	4.3
	Awake at mid night	16	5.6	34.8
	No sleep at dawn	11	3.8	23.9
	Others	5	1.7	10.9
12. Use of Personal Protective Equipment (PPE)(n=287)				
	Yes	142	49.5	50.2
	No	145	49.1	49.8
13. Type of PPE(n=142)				
13.1. "goggle				
	Yes	49	17.1	35.3
	No	93	31.4	64.7
13.2. Glove				
	Yes	55	19.2	38.7
	No	87	30.3	61.3
13.3. Garment				
	Yes	50	17.4	35.2
	No	92	32.1	64.8
13.4. Buttes				
	Yes	65	22.6	45.8
	No	77	26.8	54.2
14. The reason for not using full PPE(169)				
	there is no PPE	94	32.8	55.6
	PPE was present but I don't know	35	12.2	20.7
	Carelessness	27	9.4	16
	Others	13	4.5	7.7

NB: PPE= personal protective equipment,

Others in the reason not using PPE include discomfort, can't speed up work are some ...

Work satisfaction of the respondent

Out of the total respondents 146(50.9%), 114(39.7%), 15(5.2%), 12(4.2%) were often, sometimes, seldom and never regarded their work as interesting and stimulating respectively. Ninety one (31.70%) and 20(7.00%) were often and never have too much work to do respectively. Out of the study participants 76(26.5%) and 34(11.8%) were often and never have the opportunity to influence their working condition respectively (Table 6).

Table 6: shows Work satisfaction of Saudi stare workers, Abobo district, Gambella Region, Ethiopia, 2014 (n=287)

Variables	Frequency	Percent
1. Do you have too much work to do?		
Often	91	31.7
Sometimes	148	51.6
Seldom	28	9.8
Never	20	7
2. Do you have an opportunity to influence your working conditions?		
Often	76	26.5
Sometimes	120	41.8
Seldom	57	19.9
Never	34	11.8
3. Do your fellow workers help you with problems you may have in your work?		
Often	100	34.8
Sometimes	111	38.7
Seldom	55	19.2
Never	21	7.3

Findings from qualitative result

A total of 6 in depth interview were conducted. From these 5 respondents, head of each work category and 1 respondent who is head of administration of the company were taken.

1. Is their occupational health and safety expert in your organization?

All of the respondents said that there is no occupational health and safety expert in the company. As most of them responded that the task of such expert covered by other health expert like nurses in the company sometimes on job training were given.

“ . . . We don’t have budget problem, but we didn’t see it as a big-deal. If it is important we will recruit occupational health and safety expert for the coming fiscal year . . . “ (A 47 aged respondent)

2. How the organization allocates money to safety management activities?

Most of the respondents said that our company allocate budget to safety management. Some of the respondent responded that even though budget allocated for safety management activities, it was not fully implemented as planned.

“...the company allocates money like any other activities in every Ethiopian budget year. The money allocated was to purchase PPE, for training and there was insurance to treat the injured

workers and life insurance for those who die of injury for permanent employees...” (A 39 aged respondent)

- **Findings of expert observation and document review**

Expert observation and document review Indicated, Warning signs and health and safety instructions or procedures did not exist. At central level first aid equipment was present. Occupational safety and health committees were not available in the company at the time of the data collection. No regular visits and inspection are made on health and safety conditions of workplaces.

There was no death recorded in the past 12 months.

5.4. Bivariate analysis for socio-demographic and economic, organizational and behavioral factors

5.4.1. Bivariate analysis for socio-demographic and economic variable with occupational injuries

The crude association between socio-demographic and economic variables with occupational injuries was computed. Sex, level of education and work category had a statistically significant association with occupational injury. Level of education was statistically significantly (COR=9.77, 95%CI: 3.36- 28.45) associated with occupational injuries. Work category was another variable that is statistically significantly associated with occupational injury (Table 7).

Table 7: Selected socio-demographic Factors Related to Occupational injuries, Saudi stare workers, Abobo district, Gambella Region, Ethiopia, 2014(n=287)

Variable	Injured		p-value	COR 95% CI
	Yes	No		
Sex				
Male	119	91	0.001	2.57(1.49- 4.43)
Female ^{RC}	26	51		1
educational level				
unable to read and write	32	4	<0.001	9.77(3.36- 28.45)
able to read and write ^{RC}	113	138		1
work category				

pesticide sprayer	24	6	.016	10.00(1.54- 64.75)
machine operator	7	1	.035	17.50(1.22- 250.36)
Guarder ^{RC}	2	5		1

RC = reference category, cutoff point <0.25

5.4.2. Bivariate analysis for organizational factors and occupational injuries

The crude association between organizational variable and occupational injury was also computed. Training of workers was a statistically significant (COR=0.29, 95%CI: 0.18- 0.46) associated with occupational injury (Table 8 below).

Table 8: Selected organizational variable Related to Occupational injury, Saudi stare workers, Abobo district, Gambella Region, Ethiopia, 2014(n=287)

Variable	Injured		p-value	COR 95% CI
	Yes	No		
Training of workers				
Yes	49	91	<0.001	0.29(0.18- 0.47)
No	96	51		1

5.4.3. Bivariate analysis for behavioral factors and occupational injuries

The crude association between behavioral factors and occupational injury was also computed. Sleeping problem was significantly (COR=2.09, 95%CI: 1.08-4.04) association with occupational injury. Cigarette smoking was statistically significant (COR= 8.76, 95%CI: 4.54-16.90) association with occupational injury. Alcohol drinking also another variable which had statistically significant association with occupational injury (COR=3.337, 95%CI: 2.048 -5.438). Chewing “ckat” was statistically significant association with occupational injury (Table 9).

Table 9: Selected behavioral variable related to Occupational injury, Saudi stare workers, Abobo district, Gambella Region, Ethiopia, 2014(n=287)

Variable	Injured		p-value	COR 95% CI
	Yes	No		
sleeping problem				
Yes	30	16	0.028	2.12(1.08 -4.05)
No	113	128		1
cigarette smoking				
Yes	68	13	<0.001	8.76(4.54- 16.90)
No	77	129		1
alcohol drinking				
Yes	102	59	<0.001	3.34(2.05 -5.44)
No	43	83		1
chewing "ckat"				
Yes	29	3	<0.001	11.87(3.44- 38.99)
No	116	139		1
Use of PPE*				
Yes	65	77	0.17	0.73(.45-1.15)
No	78	67		1

* included as a candidate for multivariate analysis since P value < 0.25

5.5. Multivariable analysis

In the first step, the effects of selected socio-demographic and economic variables on occupational injuries were assessed. In the second step of the analysis, organization related variable was added, and their effect was assessed in the presence of socio-demographic variables that had p value < 0.25. Behavioral factors were entered in third step. In this step, the effect of the selected behavioral factors was assessed in the presence of both socio-demographic and organizational variables that had p-value < 0.25.

From all variables entered in all steps of analysis, educational level, work category, Training of workers, cigarette smoking, alcohol drinking and “ckat” chewing were remained significant after adjusting for other socio-demographic, organizational and behavioral factors (Table 10).

As compared to respondents those who able to read and write, odds of injury among workers unable to read and write were 9.62 higher (AOR=9.62, 95%CI: 2.98-31.73). As compared to guard, odds of injury among pesticide sprayer were 3.92 higher (AOR=3.92, 95%CI: 1.08-179.5)(Table 10).

Respondents those who trained were 65% less likely injured than those who did not (AOR=0.35, 95%CI: 0.15-0.80)(Table 10).

As compared to workers who did not smoke cigarette, odds of injury among the counterpart were 7.44 higher (AOR=7.44, 95%CI; 3.25-17-11). As compared to who did not drink alcohol, odds of injury among alcohol drinker were 2.22 higher (AOR= 2.22, 95%CI: 1.09-4.51). Participants those who did not “chew khat”, odds of injury among chewers were 7.35 higher (AOR= 7.35, 95%CI: 1.95-27.69) (Table 10).

Table 10: Summary of Logistic Regression Analysis of the Relative Effect of Socio-demographic, organizational and Behavioral Factors on the Magnitude of Occupational Injuries, Saudi star workers, Abobo district, Gambella Region, Ethiopia, 2014(n=287)

Characteristics	COR 95% CI	AOR (95% CI)		
		model one	model two	final model
Model 1: (socio-demographic variables)				
Sex				
Male	2.57(1.49- 4.43)	2.53(1.37- 4.67)	3.53(1.80 -6.91)	–
Female ^{RC}	1.0			
educational status				
unable to read and write	9.77(3.36- 28.45)	12.32(3.91-38.85)	9.99(3.11- 32.11)	9.62 (2.98 -31.73)*
able to read and write ^{RC}	1.0			
work category				
pesticide sprayer	10.00(1.54- 64.75)	22.54(2.53 -200.12)	9.981(1.181- 84.37)	3.92(1.08- 179.50)*
machine operator	17.50(1.22- 250.36)	44.44(2.47 -798.54)	40.13(2.33 -689.81)	34.60(1.18- 1010.00)*
Guard ^{RC}	1.0			
Model 2: (socio-demographic variables + organizational variable)				
Training of workers				
Yes	0.29(.18- .47)		0.26(0.15-0 .47)	0.35(.15 - .80)*
No ^{RC}	1.0			
Model 3: (Socio-demographic variables + organizational variable + Behavioral variables)				
sleeping problem`				
Yes	2.09(1.08 -4.04)			-
No ^{RC}	1.0			
cigarette smoking				
Yes	8.76(4.54- 16.90)			7.44(3.25- 17.11)*
No ^{RC}	1.0			

<hr/>			
alcohol drinking			
Yes	3.34(2.04 -5.43)		2.22(1.09- 4.51)*
No ^{RC}	1.0		
chewing "ckat"			
Yes	11.87(3.44- 38.99)		7.35(1.95 -27.69)*
No ^{RC}	1.0		
<hr/>			

Note: RC= Reference category, *significant at p value in final model < 0.05,

Model chi-square is 135.18, with p value < 0.001(i.e. our statistical evidence of the presence of relationship between the dependent variable and the combination of the independent variables).

6. Discussion

The overall prevalence rate of work related injury within the past 12 months was 145(50.5%), which is higher as compared to Gonder city construction workers(155(38.7%)) and the difference in the prevalence's are statistically significant given the non-overlapping confidence limits(see [Annex 4](#)). This difference might be due to variation in different sector, in which agricultural sectors are more susceptible to injury than other sectors like construction (15).

This study showed that the frequency of injury occurrence were 61(42.1%), 12(8.3%), 67(46.2%) and 5(3.4%) once, twice, three times and more than three times per a year respectively which is higher than other study 52 (21.4%),101(41.6%) and 90 (37.0%), Once, Twice and More than two times (23). The possible explanation for the difference in the frequency of injury is linked to the difference in the type of work nature in which agricultural sector is more risky.

Most injured body part in this study was lower leg which holds 70(48.3%) which is higher than cotton farm study that is fingers were most injured body part (13). The possible explanation for this difference might be rice farm work were more risky for lower leg (33).

This study indicated: laceration, cuts, punctures, eye injury and crushing were common injury types of the prevailing work place injury. This consistence with other study showed that laceration, cuts, punctures, eye injury, crushing and heat strain was the most common type of injury. The cause of injury in this study also nearly comparable with Tendaho Agricultural Development S.C, Afar Regional State (13).

This study also revealed that hand tools were the most common 78(53.8%) cause of injury which is inconsistent with other studies (14, 27) that showed machinery as the main concern. The difference in the variation of cause of injury is linked to the difference in the type of work forces engaged in urban factory and rural agriculture development.

This study also states that average work hours loss was high (26.17 work hours per injured person per a year due to work place injury) as compared to other study (13) which is 9.70 average work hours lost. The possible explanation for this higher disparity might be rice farm

injury is series than cotton farm. More than half of the respondents didn't train occupational health and safety training. Which is supported by qualitative finding, there is no occupational health and safety expert in the company to cover the task fully.

From socio-demographic and economic factors in this study, educational status and work category were predicting factors in the final model for the occurrence of occupational injury. Other studies (13, 23), which used the same method (Enter hierarchical) like ours, showed that age was predicting factor for the occurrence of injury in the respective cited references.

The absence of occupational health and safety expert, regular workplace supervision and lack of health & safety training from organizational related factors , and behavioral factors like cigarette smoking, chewing "ckat" and drinking alcohol were major predicting factors for the occurrence of injury in our study. This is nearly consistence with other studies (13, 15, and 23) in which behavioral factors were very similar predicting factor for the occurrence of injury.

Ours study tried to reduce recall bias by asking occurrence of occupational injury in the last twelve months and six month prior this data collection. However, it is impossible to avoid recall bias totally. In addition to this, cause and effect relationship might not be established due to the cross sectional nature of the study.

Social desirability bias was reduced by explaining confidentiality; by saying "I would like to assure that all that is said during the interview were strictly confidential and the information collected from you were used only in scientific reports without mentioning of your personal identification including your name. There is no harm to you in participating or no incentive paid but your honest answer to these questions will help us better understand the situation." in the due process of introductory part of the interview.

7. Conclusion

- This study shows, the magnitude of occupational injury was high.
- Lost healthy workdays due to work place related injury was high.
- Most of the body part injured were lower leg, finger/s, eyes and lower arm where as commonest type of injuries were laceration, cut, punctures and eye injury.
- Hand tools and splinting/splashing most common cause of injuries in the study area.
- Training of workers concerning occupational injury and safety was low.
- There was no OSH committees
- There was no OSH expert
- No regular visits and inspection are made on health and safety conditions of workplaces.
- The study also revealed that provisions of personal protective devices were low.
- Behavioral factors like cigarette smoking, drinking of alcohol and chewing khat had significant association to occupational injuries.

8. Recommendation

1. To Gambella Regional Bureau of Labor and Social Affairs and Regional Health Bureau Regulatory Directorate Agency:
Regional Bureau of Labor and Social Affairs in collaboration with the Regional regulatory agency should regularly inspect the institution as per the inspection guideline of the country to reduce the magnitude of occupational injuries.
2. To office of Saudi Star agricultural developmental PLC. Gambella branch should recruit occupational health and safety expert, Avail safety guideline, procedures and instruction, form OSH committee, organize continues on job training on occupational health and safety and provide PPEs as needed. And health education on behavioral factors should be addressed.

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Annex1

Tools

Questionnaire

Jimma university college of public health and medical sciences department of health service planning and management Questionnaire Developed for Study on Occupational injuries among Saudi Star workers in Abobo District, Gambella region, Ethiopia, 2014 April

Introduction: Good morning/afternoon, my name is _____ and I am a nurse working in Itang government health center. I am also part of a team carrying out a study conducted by a Health Service Planning and Management (HSM) postgraduate student in Jimma University. This study is funded by Jimma University.

Aim: the study is to asses Occupational injuries among Saudi Star workers in Abobo District, Gambella region, Ethiopia. We believe that the study findings will help in order to improve occupational health and safety (planning of appropriate interventions and for policy making).

Confidentiality and consent: You have been selected to participate in this study. I am going to ask you some very personal questions. You can refuse to answer any questions or series of questions if you are uncomfortable. Your participation is purely voluntary, and you can withdraw any time after. I would like to assure that all that is said during the interview will be strictly confidential and the information collected from you will be used only in scientific reports without mentioning of your personal identification including your name. There is no harm to you in participating or no incentive paid but your honest answer to these questions will help us better understand the situation. In addition the Information gathered from the study will be used to improve workers health in workplace. So we hope you will give accurate answers! We appreciate your help in responding to these questions. Do you have any questions?

Would you be willing to participate?"

Yes _____ signature _____ (continue)

No _____ (Thank and stop)

Questionnaire code _____

General instruction (for data collectors)

- i. For all questions that have a pre-coded response, it is important to follow the following instructions while you are interviewing the respondents and recording their responses
- ✓ Ask each question exactly as written on the questionnaire
 - ✓ Circle the responses that best match with the answer of the respondent

Do not read the pre coded responses for the respondents, listen only the response of the respondents.

Section 1:- Respondent background information

S.No	Question	Coding categories	Skip to
Q101	How old are you? (E.C)	_____ Years	
Q102	What is your sex?	1. male 2. female	
Q103	What is the highest level of School you completed?	1. Unable to read & write 2. Able to read & write Grade completed _____	
Q104	What is your work category in this institute	1. pesticide sprayer 2. machine operator 3. office experts 4. Manual technical workers 5. Guarder	
Q105	What is your work experience?	-----	
Q106	What is your marital status?	1. Never Married 2. Married/Living as married 3. Divorced 4. Separated 5. Widowed	
Q107	What is Your monthly income (in ETB)?	Cash in birr Other-----	

Q108	You partners income	Cash in birr	
		Other-----	

Section two:-occupational injuries characteristics

S.No	Question	Coding categories	Skip to
Q201	Have you ever had occupational injury in work place in the past 12 months?	1. yes 2.no →	Q301
Q202	How many times you have had injured?(in the past 12 months)	1. once 2. twice 3.three times 4. more than three	
Q203	How many times you have had injured?(in the past 6 months)	1. once 2. more than once	
Q204	Which part of your body was injured? (multiple answer are allowed)	1. finger/s 2. lower leg 3. eyes 4. toes 5. lower arm 6. other part/s specify_____	
Q205	What type of injuries you have faced? (multiple answer are allowed)	1. laceration 2. cut 3. puncture 4. eye injuries 5. crushing 6. heat strain 7. back injury 8. others specify_____	
Q206	What was the cause of the injuries? (multiple answer are allowed)	1. hand tools 2. splinting/ splashing objects 3. falling accident 4. Lifting object/load or unload object/ 5. being hit by falling object	

Q207	What has been done to treat you after injuries occurred? (multiple answer are allowed)	6. others specify _____ 1. hospitalized 2. other specify _____ _____	
Q208	How often you were hospitalized? (in day/s because one day is equal to 8 working hours)	_____	

Section three: - organizational and behavioral related factors

S.No	Question	Coding categories	Skip to
Q301	How many hours do you stay in work place in a week?	_____	
Q302	Have you train in occupational health and safety training?	1. yes 2. no	
Q303	Have you drink alcohol at least once in the past six months?	1. yes 2. no	Q309
Q304	What type of alcohol did you drink most frequently?	1. local "arekea" or" katicala" 2. ozo 3. beer 3. other specify _____	Q307
Q305	What type of beer did you drink?	1. Bedele 2. st. George 3. other specify _____	
Q306	How many bottles of bear do you drink per a day?	-----	
Q307	How many glass of alcohol other than bear do you drink per day?	_____	
Q308	In which do you drink?	1. <5 hours before work hours 2. >= 5 hours before work hours 3. during work hour	
Q309	Have you smoke cigarettes at least once in the past six months?	1. yes 2. no	Q311

Q310	About how many piece of cigarettes do you smoke a day?	_____	
Q311	Have you chew ckat at least once in the past six months?	1. yes	
		2. no	Q314
Q312	How many bundles of “khat” did you chew per day?	_____	
Q313	In what time do you do work? (Multiple answers are allowed)	1. day time 2. night time 3. evening of mid time shift 4. others specify _____	
Q314	Have you had sleeping problems?	1. yes 2. no	Q316
Q315	Stat of sleeping disorder (Multiple answer allowed)	1. can't sleep unless drug use 2. sleep about 5 minute when you 3. awake at mid night 4. no sleep at dawn 5. specify other	
Q316	Have you use Personal Protective Equipment(PPE)	1. yes 2. no	Q318
Q307	What materials did you use to protect your body while you are working?	1. gogle 2. glove 3. garment 4. Buttes 5. others specify _____	
Q318	What was the reason for not using PPE?	1. there is no PPE 2. PPE was present but I don't know how to use it 3. carelessness 4. others specify _____	

Work satisfaction					
s.no	Items	often	sometimes	seldom	Never
Q401	Do you regard your work as interesting and stimulating?				
Q402	Do you have too much work to do?				
Q403	Do you have an opportunity to influence our working conditions?				
Q404	Do your fellow workers help you with problems you may have in your work?				

Thank you for your cooperation for this study.

Amharic version of the questionnaire

መጠይቅ

በጂማ ዩኒቨርሲቲ ሕክምና ፋክሊቲ የሕብረተሰብ ጤና ሳይንስ ክፍል

በሳውዲ ስታር ሰራተኞች ላይ የሚደርስ የስራ ላይ አደጋ እና ተያያዥ ክስተቶችን ለማጥናት የተዘጋጀው መጠይቁ፤ 2006 ዓም

መግቢያ: ደህና አደሩ/ ደህና ዋሉ; ስሜ _____ ይባላል። ኢታንግ ጤና ጣቢያ ውስጥ ሰራተኛ ስሆን፤ በዚህ ጥናት መረጃ ሰብሳቢ ነኝ። ጥናቱ የሚያካሄደው በጂማ ዩኒቨርሲቲ በጤና አገልግሎት ዕቅድና አመራር የሁለተኛ ዲግሪ ተማሪ ተመራቂ ተማሪ ነው። ጂማ ዩኒቨርሲቲ የጥናቱ ሙሉ ወጭ ሸፍኖታል።

አሳሚ: የዚህ ጥናት አላማ አባባል በሚገኘው የሳውዲ ስታር ሰራተኞች ላይ የሚደርስ የስራ ላይ አደጋዎች ለመዳሰስ ነው። ይህ ጥናት የካምፓኒያችሁ የስራ ላይ አደጋ ቅንሳ እገዛ ያደርጋል ብለን እናምናለን።

በፈቃደነት ላይ የተመሰረተ ተሳትፎ: ተሳትፎ በምርምር ጊዜ በፈቃደኝነት ነው። በጥናቱ ለመሳተፍ ከወሰኑ በኋላ ሐሳብዎን ቢቀይሩ፤ በማንኛውም ስዓት መጠይቅ መሙላቱን ማቀረጥና አለመሳተፍ ይችላሉ።

ሚስጥር ጠባቂነት: የሚሰጡን ማናቸውም መልሶችዎ በሚስጥር እንደሚያዙና ስምዎን ወይም የእርስዎን ማንነት የሚገልጽ ማናቸውም ነገር እንደማይጻፍ እንዲረዱልን እንፈልጋለን። መጠይቅ በሚሞላበት ወቅት መመለስ የማይፈልጉትን ማንኛውንም ዓይነት ጥያቄ መተው ይችላሉ። መጠይቁ ላይ ያለው መረጃ ምርምሩን በትክክል መሰራቱን ለሚያረጋግጠው አካል ማለትም ለጂማ ዩኒቨርሲቲ የሕብረተሰብ ጤና እና ህክምና ሳይንስ ኮሌጅ እና በጤና አገልግሎት ዕቅድና አመራር ትምህርት ክፍል ሊቀርብ ይችላል።

በዚህ ጥናት ላይ ለመሳተፍ ፍቃደኛ ናት?"

1. አዎ _____ ፊርማ _____ (እንቀጥል) 2. አይደለሁም _____ (አመሰግናለሁ)

የመጠይቅ ኮድ _____

መመሪያ(ለመረጃ ስብሰባዎች)

- ii. መጠይቁ በምትጠይቁበት ሰዓት የሚከተሉትን መመሪያ ተከተሉ
 - ✓ እንዳንዱ ጥያቄ እንተጻፉ ምንም ሳይቀይሩ ጠይቁቸው
 - ✓ የተመረጡ መልሶች ያክብቡ

ቅድመ ኮድ የሆኑ የጥያቄዎች መልስ ለተሳታፊ መነበብ የለበትም.

ክፍል አንድ:- ማህበራዊና ኢኮኖሚያዊ ሁኔታ

ተቁ	ጥያቄ	ኮድ	ዕለፍ
Q101	ዕድሜ	_____ አመት	
Q102	ፆታ	1. ወንድ 2. ሴት	
Q103	የትምህርት ሁኔታ?	1. መፃፍና ማንበብ የማይችል 2. መፃፍና ማንበብ የሚችል ያጠናቀቀው/ችው ክፍል _____	
Q104	የስራ መደብ	1. ጸረ ተባይ ሚረጭ 2. ማሽን አፕራተር 3. የቢሮ ስራተኛ 4. የዕጅ ሙያ ስራተኛ 5. ዘበኛ	
Q105	የስራ ልምድ	-----	
Q106	የትዳር ሁኔታ?	1. ያላገባ 2. አግብቶ በትዳር የሚኖር 3. በህጋዊ ሁኔታ የፈታች 4. ተለያይቶ የሚኖር 5. ባል የሞትባት	
Q107	ወርሃዊ ገቢ	ቡብር በሌላ----- _____ _____	

Q108	የባለቤቃ ወርሃዊ ገቢ	ቡብር	
		በሌላ-----	

ክፍል ሁለት:- በስራ ምክንያት የሚደርሱ አደጋዎች ሁኔታ

ተቁ	ጥያቄ	ኮድ	ዕለፍ
Q201	ባለፉት 12 ወራት ጊዜ ውስጥ በስራ ምክንያት የሚደርሱ አደጋዎች አጋጥመዎታል	1. አው 2. የለም	Q301
Q202	ስንት ጊዜ አደጋ ደርሶታል?(ባለፉት 12 ወራት ጊዜ ውስጥ)	1. አንድ ጊዜ 2. ሁለት ጊዜ 3. ሶስት ጊዜ 4. ከሶስት ጊዜ በላይ	
Q203	ስንት ጊዜ አደጋ ደርሶታል?(ደርሶታል?(ባለፉት 6 ወራት ጊዜ ውስጥ)	1. አንድ ጊዜ 2. ከአንድ በላይ	
Q204	የተጎዳው የሰውነት ክፍል? (ከአንድ በላይ አማርጭ መመለስ ይቻላል)	1. የእጅ ጣት 2. የታች እግር 3. አይን 4. የእግር ጣት 5. ክንድ 6. ሌላ_____	
Q205	የጉዳቱ አይነት? (ከአንድ በላይ አማርጭ መመለስ ይቻላል)	1. መጋጋጥ 2. መቆርጥ 3. መወጋት 4. የአይን ጉዳት 5. መጨፍለቅ 6. መቃጠል 7. የጀርባ ህመም 8. ሌላ_____	
Q206	የአደጋው መንስኤ? (ከአንድ በላይ አማርጭ መመለስ ይቻላል)	1. የእጅ መሳሪያ 2. መተርተሪያ 3. የመውደቅ አደጋ 4. እቃ መጫንና ማውረድ 5. በሚወድቅ እቃ መመታት 6. ሌላ_____	
Q207	የተወሰደ እምቻ? (ከአንድ በላይ አማርጭ መመለስ ይቻላል)	1. ዘመናዊ ህክምና 2. ሌላ_____	

ክፍል ሶስት: - ከተቁዋሙና ከግል ባህሪ ጋር የተያያዙ ሁኔታዎች

ተቁ	ጥያቄ	ኮድ	ዕለፍ
Q301	በአንድ ሳምንት ውስጥ የስራ ሰዓት ምን ያህል ይሰራሉ?	_____	
Q302	የስራ ደህንነት ስልጠና ሰልጥነው ያውቃሉ?	1. አዎ 2. የለም	
Q303	ባለፉት 6 ወራት ውስጥ መጠጥ ጠጥተው ያውቃሉ?	1. አዎ 2. የለም _____	Q309
Q304	ምን አይነት መጠጥ ያዘወትራሉ?	1. ካቲካላ” _____ 2. አዙ _____ 3. ቢራ _____ 3. ሌላ _____	Q307
Q305	የሚጠጡት ቢራ አይነት?	1. በደሌ 2. ቅ/ጊዮርጊስ 3. ሌላ _____	
Q306	ስንት ጠርሙስ ቢራ ይጠጣሉ?	-----	
Q307	ስንት ብርጭቆ መጠጥ ይጠጣሉ ?	_____	
Q308	መች ይጠጣሉ?	1. <5 ሰዓት ከስራ ሰዓት በፊት 2. >= ሰዓት ከስራ ሰዓት በፊት 3. ስራ እየሰሩ	
Q309	ባለፉት 6 ወራት ውስጥ ሲጋራ አጭሰዋል?	1. አዎ 2. የለም _____	Q311
Q310	በቀን ምን ያህል የሲጋራ እግር ያጨሳሉ?	_____	
Q311	ባለፉት 6 ወራት ጊዜ ጫት ቅመው ያውቃሉ?	1. አዎ 2. የለም _____	Q314
Q312	ስንት እስር ጫት በቀን ይቅማሉ?		

Q313	የስራ ሰዓት? (ከአንድ በላይ አማርጭ መመለስ ይቻላል)	1. ቀን 2. ማታ 3. ከሰዓት በኋላ 4. ሌላ_____	
Q314	የእንቅልፍ ችግር አለቦት?	1. አዎ 2. የለም _____	Q316
Q315	የእንቅልፍ ችግር ሁኔታ (ከአንድ በላይ አማርጭ መመለስ ይቻላል)	1. ያለ መድሃኒት እንቅልፍ አይወስገኝም 2. አልጋ ላይ ከተኙ ከ 5 በኋላ 3. ሌሊት መንቃት 4. ማለዳ ያለመተኛት 5. ሌላ-----	
Q316	የአደጋ መከላከያ ቁሳቁስ ይጠቀማሉ?	1. አዎ 2. የለም _____	Q318
Q307	ምን አይነት የአደጋ መከላከያ ቁሳቁስ ይጠቀማሉ?	1. መነፅር 2. ጓንት 3. ቱታ/ ሽርጥ 4. ቦት 5. ሌላ_____	
Q318	የአደጋ መከላከያ ቁሳቁስ ያለመጠቀም ምክንያት ምንድነው?	1. የአደጋ መከላከያ ቁሳቁስ የለም 2. የአደጋ መከላከያ ቁሳቁስ አለ ግን አጠቃቀሙ ባለማወቅ 3. ንዝህላልነት 4. ሌላ_____	

የስራ ዕርካታ					
ተቁ.	ጥያቄ	ዘወትር	አንድ-አንዴ	አልፎ አልፎ	ምንም
Q401	ስራዎ ተወዳጅና አነቃቂ ነው ብለው ያስባሉ?				
Q402	የስራ ጫና አለቦት?				

Q403	በስራዎች ተፅዕኖ መፍጠር ይችላሉ?				
Q404	የስራ ባልደረባዎ እገዛ የደርግልዎታል?				

በጥናቱ ላይ ዕገዛ ስላደረጉ እናመሰግናለን!!

Qualitative observation checklist

Observation and record review of workplace in the farm of Saudi star agricultural developmental, 2014

(Tick (✓) the appropriate boxes)

Description	yes	No
1. Clinic		
2. First aid equipment		
3. Warning sign		
4. Health and safety instruction		
5. Health and safety procedures		
6. Occupational health and safety committee (see minutes in log-book)		
7. Regular visit and inspection (see record)		
8. Death due to work place injury(see record)		

In-depth interview guide

JIMMA UNIVERSITY COLLEGE OF PUBLIC HEALTH AND MEDICAL SCIENCES
DEPARTMENT OF HEALTH SERVICE PLANNING AND MANAGMENT

In-depth Interview Questionnaire Developed for Study on Occupational injuries among Saudi Star workers in Abobo District, Gambella region, Ethiopia, 2014

Dear respondent

Good morning/afternoon, my name is _____ and I am a Health Service planning and Management (HSM) postgraduate student in Jimma University. I am conducting a research on the topic ‘Occupational injuries among Saudi Star workers in Abobo District, Gambella region, Ethiopia.’ Today, I would like to ask you few questions about occupational injury related issues with respect to your company.

We believe that the study findings will help in order to reduce occupational injury in your company and this will result to improve productivity.

I would like to tape record our discussion with you-this will ensure that we correctly represent your views. May I have your permission to do this? What you say here today is confidential and will be used only for research purpose and help us to incorporate with our finding.

1. Is their occupational health and safety expert in your company?
2. If yes, how the expert and workers know their duties for managing safety at this farm
3. How this company allocate money to safety management activity?

Annex 2

Organization of the Ministry of Labor & Social Affairs (MOLSA), Ethiopia

Minister

**State
Minister for
Labor Affairs**

**State
Minister for
Social Affairs**

**Directorate
of
Harmonious
Industrial
Relations**

**Employment
Services
Promotion
Directorate**

**Labor
Relations
Team**

**OSH
Team**

**Information
&
Capacity
Building
Team**

**Legal and
International
Affairs Case
Team**

Source: Adopted from Jeff W. and Keith G., 2013

Organization of the Regional Inspectorates

Nine (9) State Governments:
Afar, Amhara, Benishangul-Gumuz, **Gambela**, Harari,
Oromia,
Somali, Southern Nations & Tigray

Bureaus of
Labor &
Social
Affairs
(BOI S A)

Zone Office of Labor &
Social
Affairs
(Woredas)

District Office of Labor & Social
Affairs
(Kabele)

Source: Adapted from Jeff W. and Keith G., 2013

Annex 3

Income classification by world bank, 1 July 2013

Each year on July 1, The World Bank revises the classification of the world's economies based on estimates of gross national income (GNI) per capita for the previous year. The updated GNI per capita estimates are also used as input to the Bank's operational classification of economies, which determines their lending eligibility. As of 1 July 2013, the World Bank income classifications by GNI per capita are as follows:

- Low income: \$1,035 or less
- Lower middle income: \$1,036 to \$4,085
- Upper middle income: \$4,086 to \$12,615
- High income: \$12,616 or more

Low and middle-income economies are sometimes referred to as developing economies.

Annex 4

Open EPI software summery output at 95% Confidence Limits for Proportions

CL	Injured/total	Injury prevalence in Saudi star agricultural developmental PLc. (this study) (145/287)	Injury prevalence in Tendaho agricultural developmental PLc, 2010 (634/810)	* Injury prevalence in Addis Ababa solid waste collector, 2014 (383/876)	Injury prevalence in Gonder city construction workers, 2009 (155/401)
CL upper		56.29%	81.01%	47.02%	43.49%
Proportion (percentage)		50.52%	78.27%	43.72%	38.65%
CL lower		44.75%	75.33%	40.46%	33.98%

* Since the confidence intervals in the Addis Ababa solid waste collectors study and ours are over-lapping, there is no statistical difference in prevalence of injury.

Annex 5

Carriculum vitea

Telephone(mobile): +251 917778986 , e-mail:kinfeamdesilassie@gmail.com

Personal Information

Name: TEKILIL AMDESILASSIE

Sex: Male

Date of birth: Jan 1, 1979E.C

Marital status: Single

Nationality: Ethiopian

Education

- *2005-now: Studying MPH in Health Service management specialty*
- *1999- 2001EC: BSc in Environmental health science in WSU*

Language

Amharic and English (fluent in speaking, reading, writing and listening)

Computer skill

- *Microsoft office packages (word, excel, Access, power point and others)*
- *SPSS*
- *EPI-DATA*
- *EPI-INFO*
- *Open EPI*

Professional Experiences

Duties and Responsibilities

- *Facilitating trainings at woreda and regional level in gambella region*
- *HMIS, focal person, HMIS cascading training facilitator itang special woreda*
- *Disease prevention and health promotion core process owner in itang special woreda*
- *Planning, organizing and monitoring; monthly & quarterly activities done at Woreda including Environmental Health, EPI, MCH, FP, ART, PMTCT, TB/HIV, Nutrition etc...*
- *DTTP reporter of Bossa Kitto team with multidiscipline for 2 months in JU*

Reference

Elias Ali Yesuf(MD, MPH), my adviser and lecturer in HSM department of JU

Fikru Tafesse(BSc, MPH), my adviser and lecturer in HSM department of JU

Tadesse Liki(BSc, M&E) ,Federal ministry of health planning directorate officer (0928287389)

Tamiru Tadele(BSc, M&E) , gambella regional health bureau planning core process owner (0911762812)

I Undersigned the above information is true and explains about me.

Tekilil Amdesilassie

(Name and Signature)