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Prevalence of Work-Related Injuries and Associated Factors among Small-Scale Industry Workers in Woodworking Enterprises in the Kirkos Sub-City of Addis Ababa, Ethiopia, 2023

Tadesse Bedada*, Bayeh Takele Mengistie and Amana Ogeto

Department of public health, Rift Valley University, Ethiopia

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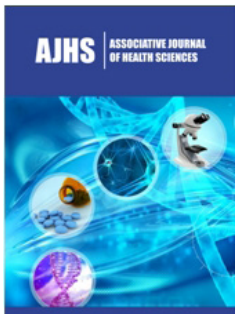

***Corresponding author:** Tadesse Bedada, Department of public health, Rift Valley University, Ethiopia

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Abstract

Introduction: Work-related injuries continue to be a major public health issue, as well as a primary source of disease, disability, and death. It is a severe public health issue with serious social and economic effects that may be avoided if adequate interventions are implemented.

Objective: This study aims to assess work-related injuries and Associated Factors among small-scale industry workers in woodworking enterprises in the Kirkos sub-city of Addis Ababa, Ethiopia.

Methods: An institution-based cross-sectional study was being conducted from February to June 2023. For this study, 248 small-scale woodworking industry workers were included using a simple random sampling method. Data was collected through face-to-face interviews and an observational checklist. The variable with a significant association was identified on the basis of AOR with 95% CI and P<0.05.

Result: The prevalence rate of at least one occupational injury in the last 12 months was 102 (41.6%), 95% CI; (36.9 - 46.4). Among these the highest frequency of occupational injuries were hands 52 (51.8%), lower limbs (Leg) 16 (16.6%), skin burn and irritation 18(17.91) and finger 7 (7.06%) were the predominantly affected parts of the body. The study particiuses who had work experience or service duration less than 2 years [AOR=2.792(1.492, 5.226)], the working hours week more than 48 hours [AOR=2.221(1.414, 3.489)], had no safety training, [AOR=2.536(1.355, 4.748)], did not used PPE [AOR=3.285 (1.851, 5.832)] were more exposed to work-related injury as compared with their counter parts.

Conclusion and recommendation: The occupational injuries among workers in the small-scale woodworking industry were high in the study area compared to other studies. Hence, promoting occupational safety and health through appropriate prevention programs and the provision of comprehensive occupational health and safety services with the provision of personal protective devices and focused interventions for less experienced workers who work for 48 hours or longer is advised.

Keywords: Woodwork; Work-related injuries; Small-scale industry; Addis Ababa

Background

Work related accidents are still a significant public health concern and the main cause of illness, disability, and death. It is a serious public health problem with detrimental social and economic effects that could be avoided with the right measures in place. the environment If not used properly, paints, wood treatments, stains, varnishes, polishes, and adhesives can be dangerous to people. Rapid advancements in industry, science, and society, combined with the irrational use of natural resources, have raised global risks [1].

It ranks among the most important worldwide public health problems right now. It is one of the major global public health problems, affecting 271 million people worldwide. Each year, work-related injuries claim the lives of two million people [2].

The environment and sustainable development had come under the attention of scientists, decision-makers, and strategic planning professionals. As a result, several proposals were made at summits and international conferences with the goal of protecting the environment from the detrimental effects of industrial advancement on human existence [2].

The woodworking sector is one of the most hazardous according to health and safety standards, particularly in underdeveloped nations, wherever reliable registers are accessible. A research in developing nations, especially Africa, demonstrates how woodworkers, who make up a sizeable portion of the workforce's active population and are employed in difficult, occasionally uncomfortable, and unpleasant job for little money [3]. The health of the workers, their levels of working capacity and efficiency, their professional dependability, as well as their safety, were influenced by the working conditions, ergonomic, psychological, social, and lifestyle factors, according to assessments of the woodworking industries in the Eastern Highlands of Zimbabwe [3].

Small-scale industries, particularly woodworking industries, are among the highest ranked industries in terms of risks for occupational injuries [1,4]. Occupational health and safety are crucial for a number of reasons, including the fact that it can save expenses associated with worker injuries and illnesses [4]. It is possible to cut back on the cost of disability and sick leave. Despite the fact that the majority of these expenses might be avoided or much diminished by implementing sound prevention, reporting, and inspection practices, they continue at diverse businesses.

The death rates from occupational accidents are typically 5 to 6 times higher in underdeveloped nations than they are in wealthy nations. A flawed and unreliable registration system makes it impossible to determine the exact number of occupational injuries [4]. Health and safety concerns in the woodworking industries have long been a serious issue in Ethiopia, a developing nation [5].

A study in North Gondar Ethiopia reported that one-year prevalence of occupational injuries among SSI workers was 35.50% [5]. Although attempts have been made to solve this issue, the outcomes have not been satisfactory. The incidence of incidents involving woodwork is still disturbingly high despite various procedures and programs, as well as the presence of responsible government bodies. The findings of this study are of utmost importance to decision-makers in local, national, and international governments as well as non-governmental organizations.

Methods and Materials

An institutional based cross-sectional study design was conducted from February 1 to June,24, 2023 at Kirkos sub-city of Addis Ababa, Ethiopia. The sub city has 10 woredas, 106 small-scale woodworkers, and 424 woodworkers. Among these, 53 small-scale woodworks, or 50% of all woredas, were specifically chosen. 248 small-scale wood workers were chosen as study participants from each woodworking industry's attendance list using a proportional quota sampling method, which involved choosing 4 respondents from 6 workers and 6 respondents from 6-9 workers. These 248 participants were then selected for the study using a simple random sampling method.

Population

All employees working in small-scale woodworking industries in Kirkos sub-city of Addis Ababa.

Sample size determination

The sample size was calculated by using single population porportio formula based on the following assumption, the prevalence of occupational injury among wood working industry by taking 45.2% prevalence per a year which taken from the study of work-related injury in Mizan-aman Town in Bench Maji Zone, Ethiopia [6].

where n = Sample size, Z α/2 = confidence level, =1.96

P= anticipated population proportion= 0.452

Margin of error (d^2) =0.05

$$n = \frac{z^2_{1-\alpha/2} p(1-p)}{E^2}$$

$$n = N\frac{(1.96)^2 \times 0.452 \times (1-0.452)}{0.05^2}, n = 201$$

Nonresponse rate 10% (20) was used then the total sample size for the first objective is n=221.

The maximum calculated sample size is 224; by considering a 10% non-response rate, the sample size is 248. Therefore, the sample size for the second objective (248) is greater than the sample size for the first objective (221), and the second objective sample size was taken (Table 1).

Table 1: Sample size for the determinant factors was made by using EPI Info-version 6.04 statistical packages. OSHT:- Occupational safety and health technology, PPE- Personal protective equipment.

S.No	Factors (16, 31)	CI	Power	AOR	% Outcome Unexposed Group	% Outcome in Exposed Group	10% Non-response Rate	Final Sample Size
1	OSHT	95%	80%	2.5	38.8	61.2	17	187
2	PPE use	95%	80%	3.3	37.5	66.4	11	117
3	Number of hours worked/wk	95%	80%	2.221	48	67.2	22	224

Instrument and measurement

On the basis of prior studies, standard questionnaires were created and then easily modified for this study. Two Environmental health officers who also served as data collectors and one supervisor administered the test. Socio-demographic, injury-characteristic, work-environment and behavioral variables compose the four sections of the questionnaire. It will be written in English,

translated into Amharic, and then translated back into English to ensure accuracy. One day of training was provided for officers who collect data and one supervisor. With 5% [7] of respondents who shared traits with the study subjects in not selected woreda WW, the questionnaire was pretested for its clarity and measurement properties. The questionnaire was also modified statistically, contextually, and terminologically based on the findings of the pretest and given to the whole sample of workers.

Dependent variable: Work-related injuries.

Independent variables

Socio demographic variables: Sex, age, religion, educational level, marital status, monthly salary, working experience, job category, area of residence, ethnicity, number of workers per industry.

Work environment variables: Hours worked per week, workplace supervision, health and safety training.

Behavioral variable: Alcoholic consumption, khat chewing, sleep disorder and use of personal protective equipment.

Operational definition

Work related injury: A condition sustained by a worker in connection with the performance his or her work [8].

Small scale industry: Any industry that uses power driven machine and employ less than 10 workers [9].

Personal protective equipment: Cloth or equipment worn by employees designed to protect parts of the body from hazards generated from work or working environment [9].

Severity of injury: Characterized by death, hospitalization more than 24 hours and absence from work over three days in the last one year [10].

Alcohol drinking: It is the consumption of any kind of alcohol by workers at least two times per week for different purpose (20).

Cigarette Smoking: It is practice of smoking cigarette by workers for at least one sticks of cigarette per day (20).

Data Processing and Analysis

EPI Info version 6.04 and SPSS version 21 were used to examine the data using descriptive statistics. Calculations were made to determine the frequency distribution and percentage of replies in each category. Bivariate and multivariable logistic regression is being used to examine the relationship between the dependent and independent variables. In order to control the potential confounding impact, multiple logistic regressions are also being used to assess variables that are associated with the dependent variable in the bivariate at p <0.02 level. Calculating the odds ratio revealed how strongly the dependent and independent variables are related. AOR with 95% CI and p 0.05 were used to identify the factors with significant relationships. The test's model goodness has been checked by Hosmer-Lemeshow goodness of fit, and the P-value of the model fitness of the test will be >0.05 [11-14].

Ethical consideration

The study was carried out after getting permission from the Addis Ababa public health and emergency management directorate. Then, data was collected after getting written consent from the Kirkos sub-city administration's Micro and Small Enterprise Development Office. Informed verbal consent is obtained from the owners of each small-scale industry and study participant. Confidentiality is granted for the information collected from each industry and study participant. Each respondent was informed of the study's goal, and their privacy was respected during the interview.

Result

A total of 246 employees were questioned, with a 99.2% response rate. 47 (19%) were female and 199 (81%) were male, respectively, of the study's participants. The median age of the respondents, 137 (55.7%), who made up the majority of the sample, was 28 years old, with a range of (18 to 50), and a mean (SD) of 26.0 (6.25). 104 (42.3%) of the respondents have completed elementary school, 94 (38.13%) have completed high school, and 48 (19.5%) have completed technical school or higher. 127 people, or 51.7%, were employed in the woodworking industry, while 147 people, or 59.9%, were not currently married. In terms of employment trends, 128 (57.9%) people had temporary jobs, while 120 (48.5%) had jobs they had held for 3-5 years. Most 205 responders (83.4%) earn between $3001 and $6075 ETB per month (Table 2).

Table 2: Socio demographic characteristics of the respondent's industries in Kirkos sub-city of Addis Ababa. From Feb 1 to June 24/2023.

Variables	Category	Freq.	(%)
Sex	Female	47	(19)
	Male	199	(81)
Age in years	18-29	137	(55.71)
	30- 40	81	(32.69)
	40 & above	28	(11.6)
Educational status	primary school	104	(42.3)
	High school	94	(38.2)
	technical school and above	48	(19.5)
Employment pattern	Permanent	118	(42.1)
	Temporary	128	(57.9)
Marital status	Married	99	(40.1)
	Not married	147	(59.9)
Job category	Wood worker	127	(51.7)
	Wood machine operator	66	(26.8)
	Painter	46	(18.7)
	Other	7	(2.8)
Service duration in year	< 2	49	(20.05)
	3-5	120	(48.6)
	5 & above	77	(31.44)
Household monthly income	≤ 3000 ETB	41	(16.58)
	3001-6075 ETB	205	(83.4)

Occupational injury characteristics

The respondents reported occupational injuries during the last year; among these 102 respondents who were injured, nearly half (47.1%) experienced more than one occupational injury during the last 12 months. According to their report, hands had the highest frequency of occupational injuries. 52 (51.1%), skin burn and irritation 18 (17.91), lower limb (leg) 16 (15.61%) and finger 7 (7.06%) were the predominantly affected parts of the body. Regarding the type of injury, 32 (30.95%) cuts, 22 (22.03%) fractures, and 18 (17.86%) cuts had the highest frequency of types of occupational injuries reported. In this study, the causes of occupational injury were highly varied: 47 (45.8%) were caused by hand tools; 18 (17.9%) were hit by falling objects; 14 (13.71%) were caused by falls and lifting heavy objects; 8 (7.7%) were caused by splinting or splashing objects; and 12 (11.31%) were caused by direct machinery. Among these, 40 (39.29%) experienced serious injuries that required hospitalization, and 69 (68.18%) spent more than 24 hours at hospitals (Table 3) [15-19].

Table 3: Work-related injury characteristics of the respondents in Kirkos sub-city of Addis Ababa, From Feb 1 to June,24 2023 (n=246).

Variables	Category	Freq. (%)
Frequency of incident at job in last 12 months	one time	54 (52.9)
	More than one	48 (47.1)
Part of the body affected	Eye	9 (8.33)
	Hand	52 (51.1)
	skin burn and irritation	18 (17.91)
	Leg	16 (15.6)
	Finger	7 (7.06)
Type of injury	Abrasion	18 (17.86)
	Cut	32 (30.95)
	Burn	8 (8.33)
	Puncture	7 (7.14)
	Fracture	22 (22.03)
	Dislocation	14 (13.7)
What were you doing at the time of injury	operating the machine	38 (36.91)
	lifting the heavy objects	27 (26.19)
	during hammering	16 (16.07)
	Painting	8 (8.33)
	during cutting	13 (12.5)
Causes of injury	Machinery	12 (11.31)
	Hit by falling objects	18 (17.9)
	Electricity	2 (1.79)
	Splintering objects	8 (7.7)
	Hand tools	47 (45.8)
	Falls & Lifting heavy	14 (13.71)
	Collision with objects	2 (1.79)
Time of injury	Morning	38 (37.5)
	Afternoon	30 (29.76)
	Evening	33 (32.74)
Have you hospitalized	Yes	40 (39.29)
	No	62 (60.71)
How long	Less than 24 hours	33 (31.82)
	More than 24 hours	69 (68.18)

Workplace and behavioral characteristics

Out of the 246 respondents in the small-scale woodworking industry, only 34 (13.86%) had any health and safety training in connection with new employment; among these, the majority of 33 (96.49%) had job orientation training. According to the respondents' report, 85 (34.7%) had been supervised regularly at work. Nearly half 110 (44.8%) of the employees worked for more than 48 hours per week. The majority of 198 (80.45%) respondents did not have personal protective equipment. While only 48 (19.55%) had personal protective equipment, 15 (30.38%) had gloves, 9 (17.72%) had helmets, and 7 (15.19%) had Respirators and Face shields, which were the main personal protective equipment frequently used. All of the study participants were interviewed for nonuse of protective equipment and reported the most frequent reasons: 141 (57.43%) claimed to lack personal protective equipment, and 219 (89.11%) said it was not comfortable to use (Table 4).

Table 4: Workplace and behavioral characteristics of the respondents in small-scale wood working industry workers in Kirkos sub-city of Addis Ababa, From Feb to June 2023 G.C (n=246).

Variables	Category	Freq.	(%)
Had any safety training	Yes	34	(13.86)
	No	212	(86.14)
Type of training	first time	1	(3.51)
	on job	33	(96.49)
Ever been supervised at workplace	Yes	85	(34.65)
	No	161	(65.35)
Number of hours worked/ week	≤ 48	136	(55.21)
	> 48	110	(44.79)
Had any workplace PPE	Yes	48	(19.55)
	No	198	(80.45)
Type of PPE	Gloves	15	(30.38)
	Ear plug	1	(2.08)
	Respirators	7	(15.19)
	Helmet	9	(17.72)
	Goggles	5	(11.39)
	Face shield	7	(15.19)
	Boots	4	(8.86)
Lack of PPE	Yes	141	(57.43)
	No	105	(42.57)
Lack of safety and health education	Yes	125	(50.74)
	No	121	(49.62)
Not comfortable to use	Yes	219	(89.11)
	No	27	(10.89)
Create safety and health hazards	Yes	97	(39.36)
	No	149	(60.64)

Had sleeping disorder	Yes	92	(37.41)
	No	154	(62.58)

As the figure below shows, regarding alcohol consumption, 78 (32.43%), among whom 42 (53.3%) were always using alcohol, were among the workers in the small-scale woodworking industry. In addition to this, the prevalence of Khat chewing was 82 (33.42%), and among this, 34 (42.0%) were always chewing Khat among the workers in the small-scale woodworking industry (Figure 1).

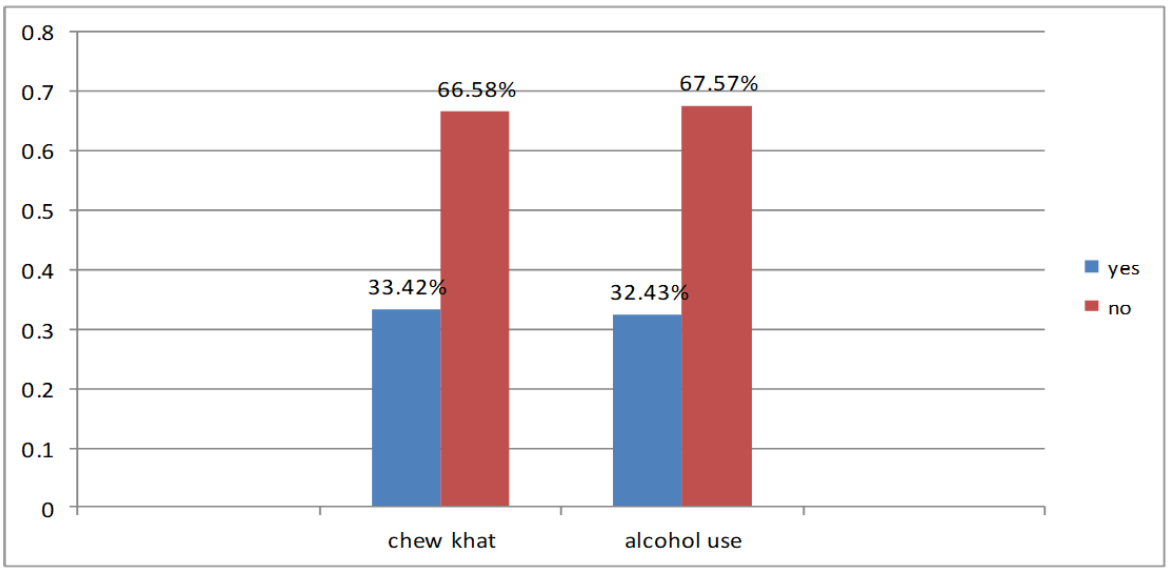

Figure 1: The behavioral characteristics of the respondents in small-scale woodworking industry workers in Kirkos sub-city of Addis Ababa, From Feb to June 2023 (n=246).

The prevalence of work-related injuries

As the figure below shows, the one-year prevalence of at least one occupational injury in the last 12 months among the small-scale woodworking industry in Kirkos sub-city of Addis Ababa was 102 (41.58%), 95% CI: (36.9-46.4). Moreover, a total of 68 (27.52%) respondents experienced occupational injuries in the two-week period prior to data collection (Figure 2).

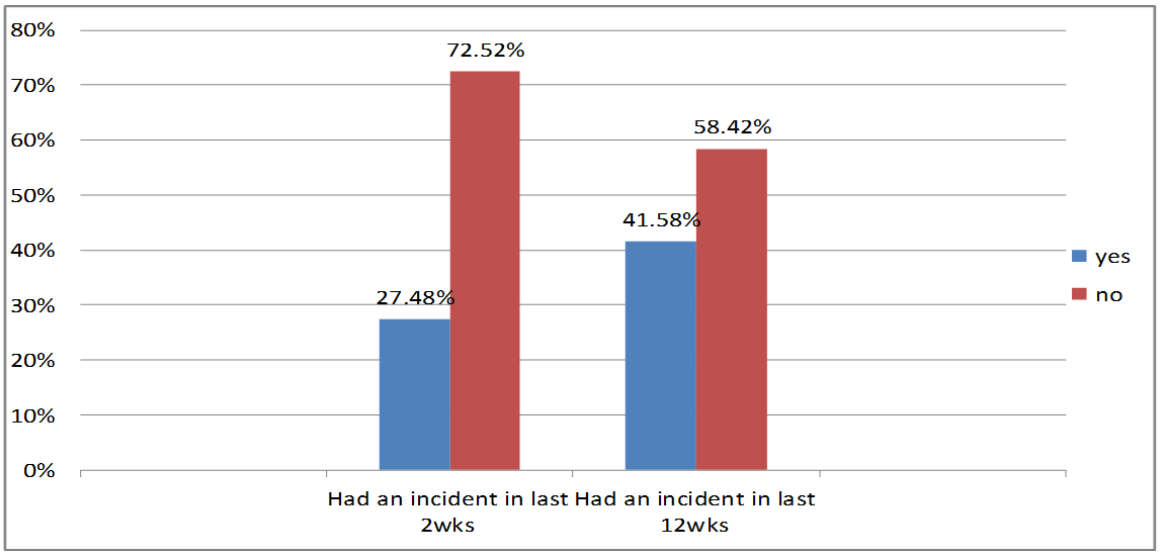

Figure 2: The prevalence of work-related injuries of the work-related injuries of the respondents in small-scale wood working industry workers in Kirkos sub-city of Addis Ababa, From Feb to June 2023.

Factor associated with work-related injury

In the multi-variable logistic regression analysis, after controlling for the control con founder in the multivariate analysis, service duration in years, number of hours worked per week, safety training, workplace supervision, and PPE use remained associated with work-related injuries. The study participants who had work experience or service duration less than 2 years were about 2.8

times [AOR=2.792(1.492, 5.226)] more exposed to work-related injury than respondents who had more work experience. The respondents who worked for more than 48 hours per week were 2.2 times [AOR=2.221(1.414, 3.489) more likely to experience occupational injury than respondents who worked for 48 or fewer hours per week.

Regarding behavioral-related factors, those who had no health and safety training [AOR=2.536 (1.355, 4.748) were more exposed to work-related injuries as compared with their counterparts. The study participants who did not use Personal Protective Equipment were about 3 times [AOR=3.285 (1.851, 5.832) more exposed to work-related injury than respondents who used PPE properly and consistently (Table 5).

Table 5: summary of logistic regression analysis for work-related injuries among workers in small-scale woodworking industry in Kirkos sub-city of Addis Ababa, From Feb to June 2023 G.C (n=246).

*P-value < 0.05 was statistically significant on multivariable, 1= Reference,

The model for logistic regression was found to be fit as indicated by Hosmer-lemeshow test, P.V of 0.24.

	Work Related Injury						
	Yes		NO				
	NO.	(%)	NO.	(%)	COR 95% CI	AOR 95% CI	P-Value
Sex							
Female	15	(32.9)	32	(67.1)	1	1	
Male	87	(43.6)	112	(56.4)	1.577(0.932, 2.668)	1.365(0.761, 2.447)	0.297
Educational status							
Elementary school	46	(44.4)	58	(55.6)	1.728(0.985, 3.031)	1.361(0.726, 2.553)	0.336
High school	41	(43.5)	53	(56.5)	1.663(0.940, 2.945)	1.400(0.736, 2.663)	0.304
College & above	15	(31.6)	33	(68.4)	1	1	
Employment pattern							
Permanent	42	(35.9)	76	(64.1)	1	1	
Temporary	58	(45.7)	70	(54.3)	1.505(1.004, 2.258)	1.537(0.988, 2.391)	0.056
Service duration in year							
1-2	30	(60.5)	19	(39.5)	3.455(1.928, 6.193)	2.792(1.492, 5.226)	0.001*
3-5	49	(40.8)	71	(59.2)	1.556(0.970, 2.496)	1.416(0.848, 2.363)	0.184
5 & above	24	(30.7)	53	(69.3)	1	1	
Number of hours worked/ week							
≤ 48	46	(33.6)	90	(66.4)	1	1	
> 48	57	(51.4)	53	(48.6)	2.085(1.394, 3.119)	2.221(1.414, 3.489)	0.001*
Health & Safety training							
Yes	14	(41.1)	20	(58.9)	1	1	
No	130	(61.2)	82	(38.8)	2.264 (1.275, 4.021)	2.536(1.355, 4.748)	0.004*
Workplace supervision							
Yes	31	(36.4)	54	(63.6)	1	1	
No	71	(44.3)	90	(55.7)	1.389(0.911, 2.117)	1.515 (0.938, 2.447)	0.09
PPE use							
Yes	20	(41.8)	28	(58.2)	1	1	
No	124	(62.5)	74	(37.5)	2.319(1.406, 3.825)	3.285 (1.851, 5.832)	<0.001*
Alcohol use							
No	63	(37.7)	105	(62.3)	1	1	
Yes	37	(49.6)	41	(50.4)	1.625(1.067, 2.476)	1.534(0.956, 2.459)	0.076

Discussion

According to this study, the prevalence of at least one occupational injury among employees in the small-scale woodworking sector in the Kirkos sub-city was 41.6%, with a 95% confidence interval of (36.9-46.4), in the previous year. Risk factors for occupational injury included those with less than two years of work experience, those who worked more than 48 hours per week, those who drank alcohol, those who chewed khat, and those who lacked safety and health training.

The body parts most commonly affected were the hands, which were described as having the highest prevalence of occupational injuries (51.8%), the lower limbs or legs (27.9%), and the fingers (14.3%). This outcome was in line with the findings of the research conducted in Mizan-Aman Town, Bench Maji Zone, and Southwest Ethiopia, which covered 45.2% of the population (35).

This study's findings were higher than those of earlier studies, which found that small- and medium-sized industrial workers in Bahir Dar, northwest Ethiopia (10), Gondar, Ethiopia (8), Akaki, Ethiopia (19), and Daegu, South Korea (14), respectively, reported experiencing 34.2%, 33.5%, 20%, and 12.1% work-related injuries, respectively. These variations could most likely be attributed to the following differences: the absence of personal protective equipment, long workweeks (>48 hours), work experience of at least two years, a lack of safety and health training, chewing khat, and alcohol use may all increase the risk of work-related injuries.

According to the study's findings, cuts, fractures, and abrasions were the most frequent injury types among the most prevalent occupational hazards. It was consistent with many research carried out in Bahir Dare town, north-west Ethiopia (17), and Arba Minch town, south Ethiopia (11).

The study found that hand tools were the most frequent cause of injuries. This outcome is in line with a research done in the Bench Maji area of Mizan Aman town (12). This may be because a majority of the study area's workers engaged in more strenuous, manually executed tasks that exposed them to hand tool injuries rather than those induced by machines. Similarly, it could be attributed to workers behavior and non-use of personal protective equipment, which might expose these workers to such injuries.

Participants in the research with service lengths of less than two years were more susceptible to work-related accidents than those with five or more years of experience. The findings of a research conducted in North Gondar Amahara Regional State, Ethiopia (13) and among small-scale industrial employees in Mekelle City, Northern Ethiopia (10), were in agreement with this result. This might be a result of the participants' inexperience, which might be brought on by a lack of knowledge about the machine's operational steps or an inability to perform the task efficiently, a lack of training when handling high risk situations, a limited application of effective techniques, or the adoption of unsafe working conditions.

The respondents who worked for more than 48 hours per week were more likely to experience work-related injuries than respondents who worked for 48 or fewer hours per week. This result agreed with the report from studies done in Bahir Dar Town, north-west Ethiopia (10), and Arba Minch Town, south Ethiopia (11). This may be due to the fact that small-scale industry workers who worked for more than 48 hours per week became more tired, ignored safety, and became more exposed to occupational injury. In addition to that, it is predictable that when they work more than 48 hours, the number of occupational injuries is higher, and the chance of their occurrence also increases with time.

Regarding behavioral-related factors, those who had no health and safety training were more exposed to work-related injuries as compared with their counterparts. This result was in line with a report from a study done in Afar regional states Ethiopia (10), Malaysia (14) and Serbia (21). This may be because the participants who had no health and safety training were more exposed to work-related injuries because they did not know how and when they should use personal protective equipment.

According to several researches, a worker's health state at work is mostly determined by their behaviors. Those behaviors that are currently of concern to many industries are alcohol consumption and khat chewing in Mizan Aman town, Bench Maji zone, south Ethiopia (12), Addis Abeba (15), and Arba Minch town, south Ethiopia (11).

Similar findings were reported among employees from Egypt (16) and Addis Abeba (15). Alcohol consumption can increase the risk of injury by engaging in risk-taking behaviour or by reducing the perception and response to hazards. In this study, the odds of a work-related injury were higher among those who drank alcohol than their counterparts.

Furthermore, the study participants who did not use Personal Protective Equipment (PPE) were more exposed to work-related injuries than respondents who used PPE properly. This result was consistent with a report from a study done among small-scale industry workers in Mekelle city, Northern Ethiopia (10), Bahir Dar town, north-west Ethiopia (17), Bench Maji zone,Mizan Aman town (12) and Shiraz city, South Iran (18).

Conclusion

This study shows that the prevalence rate of at least one occupational injury in the last 12 months among workers in the small-scale woodworking industry in Kirkos sub city was high in the study area compared to other studies. The study participants who had less than 2 years' experience or service duration, worked more than 48 hours a week, had no safety and health training, and did not use personal protective equipment properly were significantly associated with work-related injuries.

Author's Declaration

We declare that we are the sole authors of this thesis.

To the best of our knowledge this thesis contains no material previously published by any other person. This thesis contains no material which has been accepted as part of the requirements of any other academic degree or non-degree program, in English or in any other language. This is a true copy of the thesis, including final revisions.

Ethical Consideration

The study was carried out after getting permission from the Addis Ababa public health and emergency management directorate. Then, data was collected after getting written consent from the Kirkos sub-city administration's Micro and Small Enterprise Development Office. Informed verbal consent is obtained from the owners of each small-scale industry and study participant. Confidentiality is granted for the information collected from each industry and study participant. Each respondent was informed

of the study's goal, and their privacy was respected during the interview.

Consent for Publication

This manuscript contains original material. Neither the article nor any part of its essential substance, tables, figures, has been or will be published elsewhere. We have submitted it for publication without conflict of interest among authors.

Availability of Data and Materials

The data that support the findings of this study are available on request from the corresponding author.

Competing Interests

I declare that I have no significant competing financial, professional or personal interests that might have influenced the performance or presentation of the work described in this manuscript.

Authors' Contributions

TB, BT and AO conceived the study. TB, BT and AO were involved in the design, field work, data analysis and interpretation, report writing and manuscript preparation. In addition, TB drafted the manuscript. All authors reviewed, read and approved the final version of the manuscript.

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