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Prevalence and Types of Work-Related Injuries among Road Construction Workers in Construction Sites in Egor Local Government Area of Edo State

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Abstract

Background: Accidents have serious implications to the construction industry both in financial and humanitarian terms. Construction accidents may cause many problems, such as de-motivation of workers; disruption of site activities; delay of project progress; and adversely affecting the overall cost, productivity and reputation of the construction industry. The human suffering caused by these accidents and ill health is distressing to all concerned, the extent of which is impossible to calculate. Accidents and ill health also have a huge financial cost, which makes for a compelling business case for improving safety and health. *Objectives:* To assess the prevalence and types of work-related injuries among road construction workers in construction sites in Egor Local Government Area of Edo State. *Methods:* A cross-sectional descriptive study was done amongst all construction site workers. and their supervisors involved in road construction that have spent at least 6 months on the job in Egor LGA, Edo State. A one stage cluster sampling technique was used to select the study population. Data were collected using a structure questionnaire and were analyzed using SPSS version 16. *Results:* About 101 (47%) of the workers had experienced work related injuries at their construction sites. Among those respondents who had experienced work-related injuries, 69 (68.3%) reported having experienced work-related injury twice in the last 6 months, while 32 (31.7%) had experienced work- related injury three times or more in the last 6 months. The association between hours worked per week and work-related injury was found to be statistically significant. *Conclusion:* The study revealed that nearly half (47%) of the workers had experienced work-related injuries in the last 6 months preceding the study and the most common type of injury experienced by these workers were cuts. The majority of the workers, who reported work-related injuries, were working for greater than 48hours per week.

Keywords: Prevalence; Work-Related Injuries; Road Construction; Workers.

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Background

Tasks carried out on a construction worksite may vary from construction of a simple driveway, to a large building complex. Similarly, equipment on site may

range from simple wheel barrows and shovels to cranes, trucks and other heavy machinery hauling and hoisting great loads on site. Nonetheless, construction sites can be a safe working environment once workers are aware of the hazards, and use effective safety and precautionary measures [1].

Construction workers are exposed to a wide variety of health hazards at work. The exposure differs from job to job. The hazards for construction workers are typically of four classes:

- Chemical hazards such as dusts, fumes, mists, vapours, or gases
- Physical hazards, including extreme heat or cold, work in windy, rainy, snowy, or foggy weather, non-ionizing ultraviolet radiation usually from exposure to the sun, and electric arc welding.
- Biological hazards; for instance, animal attacks and histoplasmosis (a lung infection caused by a common soil fungus). Workers may also be at risk of malaria or yellow fever if they work in areas where these organisms and their insect vector are prevalent.
- Social hazards; employment is intermittent and constantly changing; many projects require living in work camps away from one's home and family. These features of construction work, as well as heavy workload, limited control, and limited social support are the factors associated with increased stress [2].

Accidents have serious implications to the construction industry both in financial and humanitarian terms. Construction accidents may cause many problems, such as de-motivation of workers; disruption of site activities; delay of project progress; and adversely affecting the overall cost, productivity and reputation of the construction industry [3]. The human suffering caused by these accidents and ill health is distressing to all concerned, the extent of which is impossible to calculate [4].

Accidents and ill health also have a huge financial cost, which makes for a compelling business case for improving safety and health. The financial losses are considerable. Although significant progress has been made in improving the industry's occupational safety and health standards over the years, the number of deaths, construction site injuries and cases of ill health are still unacceptably high. Workers in construction are twice as likely as the average worker in other sectors to suffer from a non-fatal accident. Falling from heights, such as scaffolding, is one of the biggest problems, along with accidents involving transport, both on and off site. Everyone, the clients who procure construction work materials, the architects and engineers involved in planning, as well as the construction companies and workers can all take action to improve the standards of health and safety [5]. For construction work these directives not only require employers to ensure that employees are not harmed by work, but additionally, risks should be prevented by establishing a chain of responsibility linking all the parties involved. This means taking account of health and safety at the project design and planning stages, as well as during the construction phase [6].

The International Labour Organization (ILO) estimates at least 60,000 fatal accidents a year on construction sites around the world, that is one in six of all fatal work-related accidents [7]. The global trade union federation puts the figure much higher at 108,000 with construction responsible for 30% of all work related accidents. While securing a job in construction offers a potential route out of poverty for many of the world's poorest, subsequent inability to work due to injury or ill-health can drive these workers families into destitution. The causes of accidents and injuries that occur in construction are foreseeable and preventable [8]. In the developing world, there is a risk associated with construction work. United State Bureau of Labor Statistics (BLS) data show that, in 2003, construction workers were 7% of the U.S. workforce, but suffered 21% of the nation's 5,575 reported work-related deaths. That same year, nonfatal rates of injury and illness involving days away from construction work were 259.4 per 10,000 fulltime equivalents (FTEs),1 higher than for agriculture, mining, and manufacturing [6]. In Egypt, 18 per cent of occupational injuries were recorded among workers in the construction industry [5]. Apart from the actual costs incurred regarding injuries and fatalities, the national economy of any country suffers enormous cost and loss of productivity as a consequence of occupational injuries and even deaths.

A multi-centre cross-sectional study was conducted under a uniform protocol in rapidly developing municipal areas in eight provinces of Thailand: Bangkok, Chonburi, Chiang Mai, Pisanulok, KhonKaen, Nong Kai, Hat Yai and Phuket. Data was collected by structured questionnaire and inspection from 184 construction sites, 242 subcontractors, 171 workers' camps and 3614 workers. The results shows that males comprised 66% of the workers and 67% of the workers were in the age range of 20-39years. About 86.6% had primary level of education and 47% of the workers had worked 4 or more years in the industry. The majority (78%) had come from an agricultural background. Standards of education were

uniformly low. Companies on small construction sites provided less protection facilities than at large scale construction sites and the injury rate in the former was 1.83 times higher. A nail in the foot was the most common injury (61%), followed by cuts (9.6%), particle in the eye (4.2%) resulting in stopping work. The overall incidence of injuries resulting in stopping work averaged 1.5 per 100 worker-months. Twelve work related deaths were recorded at the construction sites studied. Causes were fall (4), electrocution (4), machinery (2) falling object (1) vehicle (1). The work related death rate was 68 per 100,000 worker-years 95% CI 35-118). This rate is 2–5 times higher than those reported in western countries. The study concluded that construction sites in Thailand have poor safety measures [9].

A related but separate study was conducted by the emergency department surveillance to identify the injuries among construction workers in rural Lowa. The sample consisted of 1843employed patients. The result showed that 20.28 injuries per 100 construction workers per year which is more than 2.5 times that of all other employed people. The work related injury rate was 7.63 per 100 construction workers, more than 4 times that of all other employed people. The injuries of construction workers seen in the emergency department were primarily open wounds, fractures and dislocations, and contusions, injuries similar to those of other workers. The percentage of work-related burns was higher in construction workers than for other workers, particularly because of burns to roofers and laborers from tar or hot fluids and flash burns from welding. The study concluded that the percentage of work-related burns was higher in construction workers than in other workers [10].

A related cross sectional survey was carried out among construction workers in California to evaluate injury severity in this group of workers. The sample consisted of 255 adults who were identified from Doctor's First Reports (DFRS). The result showed that 195 workers fell from heights, the mean height of fall was 9.2 feet (SD= 7.1). The mean number of lost work days was 44.3 days (SD= 58.6) and the median was 10 days. About 17 participants (7%; 95% CI, 4-10%) were deemed permanently disabled. The study concluded that injury severity and permanent disability associated with falls in construction sites are notable, and identifying key target areas helps for intervention and prevention [11].

In a similar study carried out in to determine the injury ratio, causes and duration of temporal work disability from on-duty injuries among firefighters in Poland, taking into account the site and circumstances of their occurrence. The study was performed on a representative sample of 1503 fire fighters from 29 fire stations who were employed between 1994 and 1997. Subject to investigation were data on the number of days and cases of work disability due to on-duty injury, personal data (age, work duration) and data on the circumstances of injury during emergency operations, taking part in compulsory physical training, performing maintenance and repair works, on duty at the fire station, and when commuting to or from work. The analysis of work-related causes and circumstances of injuries among firefighters revealed that the majority of injuries (40%) occurred during compulsory physical training, being responsible for 41% of post-injury absence at work. The workers employed for less than one year were at highest risk of injury. Injuries during emergency operations made 25% of all injuries and accounted for 24% of post-injury absence. The analysis of data showed that the frequency of injuries was not significantly aged-dependent, however, the duration of work disability was found to increase by 20% with increasing age of workers. The results indicated the need for undertaking preventive interventions to minimize occupational hazards to those involved in firefighting [12].

An Institution-based cross-sectional comparative study was conducted to assess the magnitude and factors affecting work-related injury among small and medium-scale industrial workers in North Gondar Zone, Ethiopia. A total of 962 employed workers in small and medium-scale industries were selected randomly. Physical examination and record review were done to ascertain self- reported injuries. The results showed an annual and two weeks prevalence rate of work-related injury was respectively 335 and 120 per 1000exposed workers. Out of the total work-related injuries, 114 (35.5%) and 208 (32.4%) occurred among small and medium-scale industrial workers, respectively. The prevalence and severity of annual rate of injury was not associated with the type of industry. The most significant contributing factors for work-related injuries in such small and medium industries were service duration of 5 years or less in the present job [AOR: 1.53, 95% CI: (1.12-2.08)], working 48hours or less per week [AOR: 0.68, 95% CI: (0.49, 0.94)], workplace supervision [AOR: 0.61, 95% CI: (0.45, 0.83)], sleep disorder [AOR: 1.49, 95% CI: (1.04, 2.14)] and job satisfaction [OR: 0.59, 95% CI: (0.43,0.83)]. Job categories related to mechanic and welding also represented to be factors positively affecting injury: [AOR: 2.09, 95% CI: (1.31,3.33)], and [AOR: 3.23, 95% CI: (1.98, 5.28)], respectively. The above-mentioned factors made a difference in the

outcome of injury by the type of industries. Hours worked per week, work place supervision and job satisfaction acted as protective in medium-scale industry, while being a mechanic, welder and sleeping disorder acted as a risk factor for the same industry. The study concluded that Preventive measures concerning functional occupational health and safety programs are essential to safeguard the health and safety condition of workforce in small and medium scale industries [13].

A cross sectional study was carried out in Peshawar Pakistan, to find out the frequency of injuries and related life style indicators of workers in industrial estate of Peshawar, Pakistan. About 272 workers aged 16-62 yr in Peshawar, Pakistan participated in the study. The participants were selected from the industries based on proportionate allocation. The results showed that occupational injury among the workers was 42.3% and maximum injuries were found in the industry of paper (68%), match (44%), metal (85%), tyre (57.14%), plastic (43.75%), printing (43.75%), and furniture (50%). Injuries were found to be higher in age group 18-25 years (54%) and above 50 years (42%). With respect to education, the highest number of injuries were found in illiterate (48%) and primary level educated 61%, while lesser with high school level (29%) and above school level (22.5%). About 40.5% of the married and 56.7% of the unmarried workers had suffered from an injury at work. About 64% of those with insomnia and 45% of those without insomnia had an injury. Among those with pre-existing disease, 55% had while among those without the disease 38.6% had suffered from an injury. About 33% of those using the protective devices and 45% of those not using the protective devices had an injury. Amongst smokers 54.2% and among non- smokers 23.67% had an injury. As regards to on the job training 204 (75%) of the workers had not received any formal or proper training and among them 127 (62.25%) had suffered from an injury while 27 (39.70%) out of the 68 who had received some training, had an injury. The study concluded that occupational injury is common in manufacturing businesses [14].

In another study carried out in South Africa, among 311 construction workers who had been injured while working on construction sites, 51.8% of the injuries, were among older workers (over 40 years of age) of which the older cohort were made up of unskilled and skilled workers. Findings reported that the highest number of injuries to older workers included 'bony injuries', such as fractures and tumours, followed by strains and torn ligaments. The most frequently injured body parts of older workers that were injured included eyes (17.6%), fingers (17.0%), and the trunk (13.3%) (upper body). Causes of injury to older workers included 'struck by', 'struck against', and as previously mentioned; 'falls onto different levels 'that serious occupational injuries involving disability increase with age, while less serious injuries decrease. The leading cause of injuries to construction workers of 44 years and older, were from falls. More specifically, 60.0% of all injuries among this group were from falls from ladders. These authors further suggest that balance and body weight may have been among the causes for such events. Other causes for the high injury rates are low levels of literacy and possibly the employment of unskilled migrant workers. Older workers are likely to have a lower education and be employed in unskilled positions, and therefore at higher risk of serious injury [15].

In a related but separate study carried out among sawmill workers in southwestern Nigeria to assess body injuries sustained in sawmill industry as a result of mill site activities, the study showed that 70% were male while 30% were female. About 52% of the age group falls within 25-44 years old, while 41% were 45 years and above. The level of education of the respondent showed those with tertiary education having the lowest with 9%, West Africa School Certificate (WASC) holders were 58% while first school leaving certificate (FSLC) holders were 33%.;

The results also indicated that mill workers suffered highest injury rate of 83% while moving logs to mill from log yard or stack while timber stacking accident is the least at 36% other accident cases recorded include; log transport to the mill is 22%, milling operation 41% and maintenance accident 38%. Injuries occurring to body area include upper limb injuries (Neck and head, arm, wrist, hand and shoulder) 68%, back and lower back injuries 58%, and less prominent lower limb (Legs, knees and ankle) injuries at 13%. The study concluded there was need for sawmill workers to have safety training [16].

Methods

The study was conducted in Egor, one of 3 local government areas that make up the metropolitan city of Benin, the capital of Edo state, Nigeria. It is situated in the tropical rain forest belt at 122 metres above sea level, bounded on the north and east by Ovia north-east, on the south by Oredo and Ikpobha-Okha and on the east by Uhunmwodu. The total population of Egor local government area stands at 339,899 (males 168,029 and females 171,870) [17]. Christianity, Islam

and Traditional African religion are the most common religions.

Majority of the dwellers are of Benin tribe, the others are non indigenes. Egor Local Government Area has both public and private health facilities ranging the three tiers of primary, secondary and tertiary health care. It has a number of educational institutions, religious institutions and other social amenities. There is the presence of a number of construction industries particularly involved in road construction. These included: Servetek Construction Company, with its head office at Airport road, and branch office at Ugbowo-Lagos road Benin-city. Setraco Construction Company with its head office at the Government Reservation Area, off Sapele road, Benin-city. Hi-Tech construction company, off Textile mill road, Benin-city, GMAN Construction Company along New Lagos road Benin-city. There was also the presence of various other industries such as agro-allied industries, bottling, woodwork and numerous small scale industries.

The study was a descriptive cross-sectional study amongst all construction site workers and their supervisors involved in road construction that have spent at least 6momths on the job. A duration of at least 6 months from date of employment will allow for the assumption that the worker would have received some safety training and supervision if available in the industry within that period. The minimum sample size for the study was calculated using the Cochran formula for minimum sample size determination in a descriptive, cross-sectional study [18]

$$n = \frac{z^2 pq}{d^2}$$

Where

n = the desired sample size

p = the population in the target population estimated to have a particular characteristic.

q = 1.00 – p.

d = degree of accuracy required, usually set at 5%.

z = the standard normal deviate to be used for the study is set at 1.96 which corresponds to the 95% confidence level.

Therefore, using p=9.6% = 0.096 (prevalence of cuts among construction workers in Thailand [19]) E = 5%,

q = 1-p = 90.4 = 0.904

$$n = \frac{1.96^2(0.096 \times 0.904)}{0.05^2}$$

n = 133.4

Approximately n = 133.4

Allowing for a 10% non response rate = 13.3

Therefore n = 133.4 + 13.3

n = 146.7 =147

However, to enhance validity, total population of the construction workers at the road construction sites was used.

A one stage cluster sampling technique was used to select the study population. A list of on-going road construction sites and the construction companies in - charge was obtained. There were five construction companies viz; Setraco, Servetek, Hi-tech, GMN and RCC and six on-going road construction work at the time of this study. Each construction site was taken as a cluster. A preliminary survey was done to determine the number of construction workers in each construction site. The number of construction clusters needed to yield the sample size was calculated to be 4. However, 5 out of the 6 on-going construction sites were studied. A total population of eligible road construction workers found at these construction sites was studied.

Structured questionnaires which consist of both open and closed ended questions were administered by 2 trained research assistants. The research assistants were trained for three days on the proper use of the research tools. The questionnaire was divided into sections and information was sought on the socio-demographic and occupational characteristics of respondents; and Prevalence and types of work related injuries.

A pre-test of the questionnaire was carried out in 2 construction sites in Sapele, the headquaters of Sapele Local Government, Delta state, with 50 participants to enhance comprehensibility, validity, reliability and sensitivity of questions, and for average duration of administration. Corrections to the questionnaire were effected prior to the commencement of the study.

The distribution of the construction sites were as follows: Site A: Setraco construction company; Site B: Servetek construction company; Site C: Hi –Tech construction company; Site D: GMAN construction company. The filled questionnaires were screened for completeness by the researcher, coded and entered into the Statistical packages for social sciences (SPSS) version 16.0 software for analysis.

The mean, standard deviation and proportion of the variables was calculated. Statistical test of association and test of significance was carried out where applicable. The level of significance is set at $p < 0.050$. The data is presented in statements, frequency distribution tables, cross-tables and figures.

Approval to conduct this research was sought and obtained from the department of Community Health of the University of Benin. Verbal permission was sought from the management of the construction companies. Informed written consent was obtained from each respondent before conducting interviews after adequate information had been given to them by the interviewers. Privacy of the respondents was respected during the interviews. Respondents were informed that they had the right to decline participation or to withdraw from the study at any time they wished. Respondents were also informed that there were no penalties or loss of benefits for refusal to participate in the study or withdraw from it. There were no risks of harm or injury to the participants during and after the conduct of the study.

All data were kept secure and made available only to the researcher. Health education was given on a group basis to the workers at the construction sites on the importance of safety and the need to abide by safety rules.

Results

The mean age (SD) of the respondents was 33 (9) years. About 200 (93%) of the respondents were males while 15 (7%) were females. Majority of the respondents 117 (54.4%) were married, 97 (45.1%) were single and 1 (0.5%) was divorced. About 111 (51.6%) had secondary education, 65 (30.2%) had tertiary education, 31 (14.4%) had primary education while 8(3.7%) had no education. Majority of the respondents were Binis 72 (33.5%) and Esan 36 (16.7) (Table 1).

Figure 1 shows the religion of the respondents. A higher percentage of the respondents (83.3%) were Christians, 15.3% were Muslims and 1.4% African traditional religion.

In table 2, respondents who had spent between 1 and 5 years in employment made up the greater proportion in the study (67.0%), Respondents who had spent more than 5 years in employment made up the smallest proportion: 8 (3.7%). The mean duration of work (SD) was 2.49±(2).

The mean hours worked per week (SD) was 49 ± (13) hours. About 43 (20%) of the respondents were masons, 32 (14.9%) were laborers, 21 (9.3%) were safety officers and 16 (7.4%) were site engineers.

Table 1: Socio-demographic characteristics of respondents

Variable	Frequency	Percentage (%)
Age group (years)		
18 – 27	71	33.0
28 – 37	92	42.8
38 – 47	40	18.6
48 and above	12	5.6
Sex		
Male	200	93.0
Female	15	7.0
Marital status		
Single	97	45.1
Married	117	54.4
Divorced	1	0.5
Level of Education		
None	8	3.7
Primary	31	14.4
Secondary	111	51.6
Tertiary	65	30.2
Ethnicity		
Bini	72	33.5
Esan	36	16.7
Yoruba	33	15.3
Ibo	28	13.0
Urhobo	18	8.4
Hausa	14	6.5
Ibibio	10	4.6
*Others	7	3.3

*Others included Ijaws and Ashanti (Ghana)

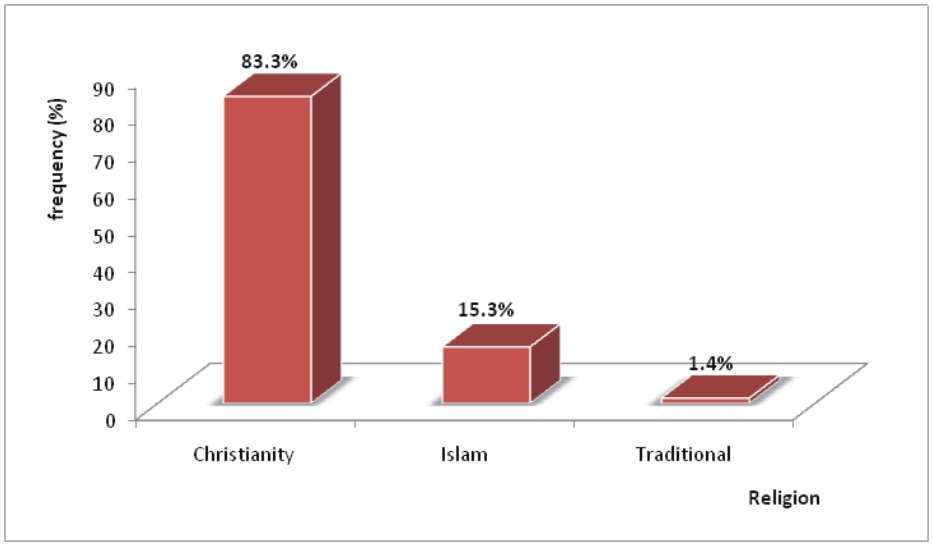

Fig. 1: Religion of respondents

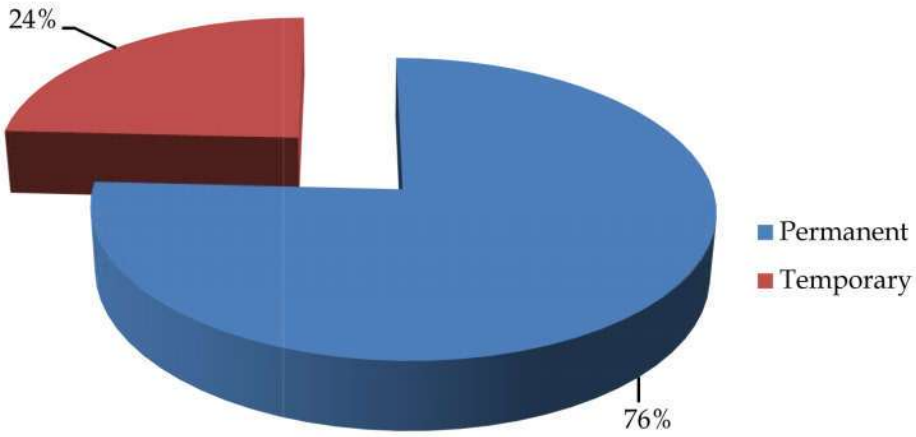

Fig. 2: Type of employment of respondents

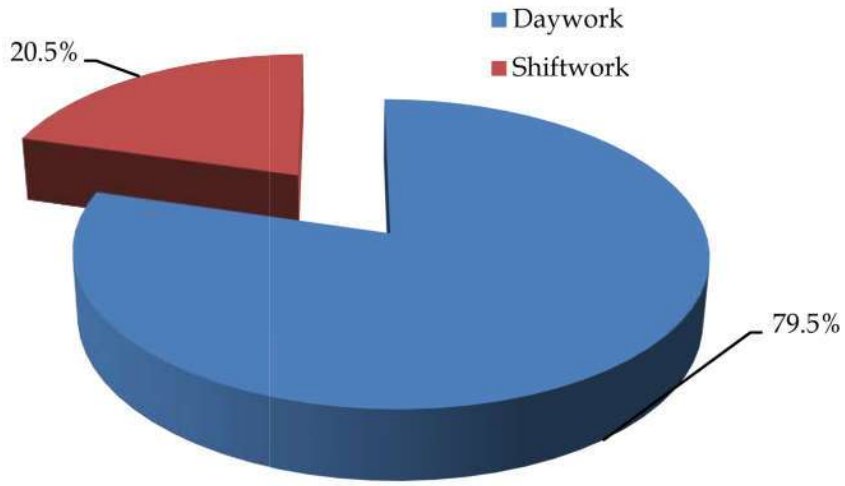

Fig. 3: Work schedule of respondents

About 76% of the respondents were permanent employees while 24% were temporary employees (Figure 2).

About 79.5% of the respondents were on day work (6am-6pm) while 20.5% of the respondents were on shift work (Figure 3).

The table 3 shows the work-related injuries reported by the road construction site workers. About 101 (47%) of the workers had experienced work related injuries at their construction sites.

Among those respondents who had experienced work-related injuries, 69 (68.3%) reported having

Table 2: Occupational characteristics of the respondents

Variable	Frequency	Percentage (%)
Duration of work (years)		
<1	63	29.3
1-5	144	67.0
>5	8	3.7
Mean duration of work ±SD 2.49 ± 1.51		
Hours worked per week		
≤ 24	5	2.3
25 – 48	94	43.7
>48	116	54.0
Mean hours worked ± SD = 49 ±13.29		
Designation		
Masons	43	20.0
Labourers	32	14.9
Iron benders	21	9.3
Safety officers	20	9.3
Excavator officers	20	9.3
Site engineers	16	7.4
Electricians	14	6.5
Mechanics	13	6.0
Carpenters	10	4.7
Flagmen	8	3.7
Quantity surveyors	5	2.3
Site nurse	3	1.4
Driver	5	2.3
Others	6	2.8

**Others included fuel clerk, site security officers and time keepers

Table 3: Work-related injuries experienced by construction site workers (Respondents) in the last six months of work

Work-related Injury	Frequency	Percentages (%)
Yes	101	47.0
No	114	53.0
Total	215	100.0

Table 4: Self report of number of times respondents had experienced work-related injury in the last six months. (n = 101)

Number of times	Respondents	Percentages (%)
1-2	69	68.3
3 and above	32	31.7
Total	101	100.0

experienced work-related injury twice in the last 6 months, while 32 (31.7%) had experienced work-related injury three times or more in the last 6 months (Table 4)

Others include insect bite and physical assault from other road users.

The table 5 shows the types of work- related injuries respondents had experienced in the last six months. Among the respondents who reported work-related injuries, the most frequent type of work-related injury reported was cuts 77 (33.9%), particles in eyes 55 (24.2%), struck by falling objects 24 (10.6%), injury from chemicals 4 (1.8%).

Table 6 shows age of and self report of work related injury. About 42 (41.6%) of respondents who reported work-related injury, were in the 28-37 age group, 35 (34.6%) were in18-27 age group. Respondents with the least report of work-related injury were aged 38 years and above. This was however, was not found to be statistically significant p = 0.891.

About 51 (50.5%) of respondents who reported work- related injury had secondary level of education, 26 (25.7) had tertiary education, 21(20.8%) had primary level of education while 3 (3.0%) had no education. This difference was not statistically significant. p = 0.070 (Table 7).

Table 8 shows duration of employment and self report of work related injury. About 69 (68.3%) of the respondents with work- related injury had

Table 5: Types of work-related injuries respondents experienced in the last six months (n = 101)

Types of injuries	*Frequency	Percentages (%)
Cuts	77	33.9
Particles in the eyes	55	24.2
Struck by falling object	24	10.6
Struck by moving vehicle	22	9.7
Fall from height	11	4.8
Electrical injury	11	4.8
Fall from slips	8	3.5
Injury from chemicals	4	1.8
Others	3	1.3

*Multiple responses

Table 6: Age of respondents and self report of work-related injury in the last six months

Age group (years)	Work-related injury (%)		Total (%)
	Present	Absent	
18 – 27	35 (34.6)	36 (31.6)	71 (33.0)
28 – 37	42 (41.6)	50 (43.9)	92 (42.8)
≥ 38	24 (23.8)	28 (24.5)	52 (24.2)
Total	101 (100.0)	114 (100.0)	215 (100.0)

df = 2; χ^2= 0.23; p = 0.891

Table 7: Level of education of respondents and work related injury

Level of Education	Work-related injury (%)		Total (%)
	Present	Absent	
None	3 (3.0)	5 (4.4)	8 (3.7)
Primary	21 (20.8)	10 (8.8)	31 (14.4)
Secondary	51 (50.5)	60 (52.6)	111 (51.6)
Tertiary	26 (25.7)	39 (34.2)	65 (30.2)
Total	101 (100.0)	114 (100.0)	215 (100.0)

Fisher's exact test p = 0.070

Table 8: Duration of employment and self report of work-related injury

Duration of employment (years)	Work-related injury (%)		Total (%)
	Present	Absent	
< 1	27 (26.7)	36 (31.6)	63 (29.3)
1 – 5	69 (68.3)	75 (65.8)	144 (67.0)
> 5	5 (5.0)	3 (2.6)	8 (3.7)
Total	101 (100.0)	114 (100.0)	215 (100.0)

Fisher's Exact Test p = 0.525

Table 9: Hours worked per week by respondents and work related injury

Hours worked per week	Work-related injury (%)		Total (%)
	Present	Absent	
24 – 48	20 (19.8)	79 (69.3)	99 (46.0)
> 48	81 (80.2)	35 (30.7)	116(54.0)
Total	101 (100.0)	114 (100.0)	215 (100.0)

df = 1; χ^2= 52.810; p = 0.000

worked in the construction industry for between 1 and 5years, 27 (26.7%) had worked for less than a year, while 5 (5.0%) of the respondents who reported work- related injury had worked for more than 5 years. This difference was however not found to be statistically significant p = 0.525.

Table 9 shows the hours worked per week and the prevalence of work-related injury. Majority of the respondents 81 (80.2%) who reported work-related injury, worked for greater than 48 hours per week, while 20 (19.8%) worked for 24-48 hours a week. The association between hours worked per week and work-related injury was found to be statistically significant. p = 0.000.

Discussion

Slightly less than half of the respondents (47%) had experienced non fatal work related injuries and majority of these injuries (68.3%) occurred once or twice in the last6 months. This finding in this study is higher than that found in a previous study among small and medium-scale industrial workers in North Gondar Zone of Ethiopia [13], where 35.5% and 32.4% of work related injury occurred among small and medium-scale industrial workers. This disparity in findings may be attributable to poor supervision of the construction workers by their safety officers, lack of safety trainning and inadequate safety devices. It may also be due to in experience on the job as majority of the construction workers had spent less than 5 years on the job.

Cuts (33.9%), accounted for a higher percentage of non-fatal injuries, particles falling into the eye (24.2%), struck by falling objects (10.6%), struck by moving vehicle (9.7%). This is in contrast with findings from the multi centre study conducted among construction workers in Thailand [19] where a nail in the foot was the most common injury (61%), followed by cuts (9.6%), particle in the eye (4.2%). This difference may possibly be because, non-fatal injuries such cuts, particles in the eye, being struck by a vehicle, electrical injuries were considered potentially more serious and therefore reported more than a nail in the foot.

Hours worked per week were significantly associated with report of work-related injury by the construction workers. A higher percentage of the respondents (80.2%) who reported work related injury, worked for greater than 48 hours per week. This is in keeping with findings in literature where long working hours (>40 hours per week) was associated with increased number of occupational accidents [20,21]. This finding could be attributed to work pressure and fatigue with the resultant increased chances of work-related accidents.

Conclusion

The study revealed that nearly half (47%) of the workers had experienced work-related injuries in the last 6 months preceding the study and the common types of injuries experienced by these workers include cuts, particles falling into the eyes, struck by falling objects and struck by moving vehicles. The majority of the workers, who reported work-related injuries, were working for greater than 48hours per week.

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