

Assessment of Occupational Accidents Among Employees in Building Construction Sites in Nairobi County, Kenya

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ABSTRACT

Construction building accidents occur unexpectedly and can cause injuries and even deaths to workers or even damage property (Yao et al., 2022). The construction sector experiences a high level of occupational accidents and fatal and lost-time injuries when compared to several other industries (Chan et al., 2023). However, due to inadequate recording of construction accidents, there is a lack of knowledge on the occurrence of such accidents as well as occupational safety and health (OSH) risks. This research aimed at determining the level of occurrence of occupational accidents and their relationship to OSH risks in building construction sites in Nairobi County.

The sample size for this study consisted of 387 purposively selected workers from various construction sites using stratified and random sampling techniques. Structured questionnaires and observation guides were employed in the collection of quantitative data. Site documentation was also considered to eliminate memory recall bias. SPSS software was used to analyse the quantitative data gathered, and association between variables was assessed using Pearson's chi-square test. Out of the 387 participants, 289 (74.7%) were males and 96 (24.8%) females. The prevalence of construction-site accidents in the 12 months preceding the study period was 41.0% (n = 158). Falls or slipping constituted 31.0%, equipment-related accidents 22.8%, accidents involving falling objects 15.2%, and building collapse 13.3% of the total accidents. In general, 62.3% did not receive any PPE from employers, while 70.4% did not have any first-aid facilities at the sites. Gender ($\chi^2 = 16.973$, df = 1, p < 0.001) and satisfaction with OSH measures ($\chi^2 = 58.65$, df = 2, p < 0.001) were found to be significant predictors of accident occurrence.

Keywords: Building construction, occupational accidents, occupational safety and health, safety hazards, health hazards, construction workers.

INTRODUCTION

Building construction accidents are unplanned events that occur during construction activities and may result in injuries, fatalities, and property damage (Yao et al., 2022). The construction industry is one of the most hazardous industrial sectors, with workers exposed to a wide range of occupational safety and health (OSH) risks (Bulat et al., 2018). These risks arise from activities such as working at heights, operating machinery, handling construction materials, and working in changing site conditions.

Construction accidents are associated with both unsafe worker behaviour and unsafe working conditions. Liu et al. (2021) reported that a large proportion of construction accidents are associated with unsafe behaviour, while others result from unsafe conditions in the work environment. Unsafe behaviour refers to actions that contravene established safety procedures, organizational rules, or prescribed methods of work. Unsafe conditions refer to physical or environmental conditions that increase the likelihood of accidents. These

include unsafe equipment, inadequate protective measures, and hazardous working environments (Liu et al., 2021).

Workers' safety awareness, training, and competence are also important in preventing construction accidents. Qi et al. (2018) found that accidents may occur when workers undertake tasks for which they lack the required training or certification. Construction projects may also operate under pressure to control costs and meet completion deadlines. Oswald et al. (2020) observed that safety measures may receive less attention when safety requirements compete with project costs and production demands. This may affect the provision of personal protective equipment (PPE), safety training, supervision, and other preventive measures.

Construction workers in developing countries face additional challenges associated with weak safety systems, informal employment, inadequate training, and limited enforcement of occupational safety requirements. Fosu (2019) identifies construction as a sector with high exposure to occupational accidents, particularly in developing countries. Fauzania et al. (2019) similarly report that construction workers are exposed to conditions that can result in serious and fatal injuries. These conditions make occupational safety and health an important concern in the construction sector.

In Kenya, construction is an important source of employment, particularly in urban areas. However, the sector also exposes workers to various occupational hazards. The Kenya National Bureau of Statistics (KNBS, 2020) identifies construction as a major employment sector in Nairobi and one associated with significant occupational health risks. Employment in the sector is characterised by a high proportion of short-term and casual workers. Workers may be employed on a daily, weekly, or monthly basis, with relatively few maintaining stable employment with one employer for extended periods. This pattern of employment contributes to informality in the sector and may affect access to employment benefits and workplace protections (Mitullah, 2021).

High labour turnover presents another challenge to workplace safety. Nyabioge et al. (2022) note that frequent changes in the construction workforce make it difficult to provide continuous training and maintain consistent safety practices. Workers who frequently move between sites may have different levels of experience, training, and familiarity with site-specific safety procedures. This can increase the difficulty of maintaining effective safety supervision and compliance.

Despite the occupational risks associated with construction work in Kenya, empirical evidence on the relationship between specific workplace hazards and construction accident patterns remains limited. Gathecha et al. (2018) reported that industrial workers in Kenya are exposed to various occupational risks, but evidence linking predominant hazards to specific types of accidents remains inadequate. This limitation affects the availability of evidence needed to design targeted occupational safety and health interventions.

The purpose of this study was to assess accident occurrence at building construction sites in Nairobi County by identifying the common occupational safety and health hazards encountered by workers and examining their association with reported accidents. The study also assessed workers' awareness of OSH hazards and their safety practices. Chi-square analysis was used to examine the association between selected hazards and reported accidents. The findings were intended to provide evidence on the relationship between workplace hazards and accidents and inform measures for improving occupational safety and reducing construction-related injuries.

Statement of the problem

The construction industry in Kenya is characterised by a transient workforce, with workers frequently moving from one construction site to another as projects are completed. This nature of employment can make it difficult to maintain consistent safety training, supervision, and compliance with occupational safety and health (OSH) requirements. In Nairobi County, various measures have been introduced to improve safety in the construction sector, including the Occupational Safety and Health Act, 2007, regulatory requirements, safety

training, and investment in workplace safety measures. However, construction-site accidents continue to occur, exposing workers to injuries and other occupational risks.

Although existing studies have documented occupational hazards in the construction sector, there is limited empirical evidence on the relationship between specific workplace hazards and the types of accidents experienced by construction workers in Nairobi County. This limitation makes it difficult to determine which hazards are most closely associated with reported accidents and whether existing safety practices adequately address the risks encountered at construction sites. The problem is further compounded by variations in workers' awareness of OSH hazards and the implementation of safety measures across construction sites.

The limited evidence on the hazard accident relationship creates a gap in the information available for developing targeted occupational safety and health interventions in Nairobi County. This study therefore assessed accident occurrence at building construction sites by identifying the common hazards encountered by workers and examining their association with reported accidents. It also assessed workers' awareness of OSH hazards and their safety practices. The findings provide empirical evidence that can support the improvement of safety practices and the development of targeted measures to reduce construction-related accidents and injuries.

CONCEPTUAL FRAMEWORK

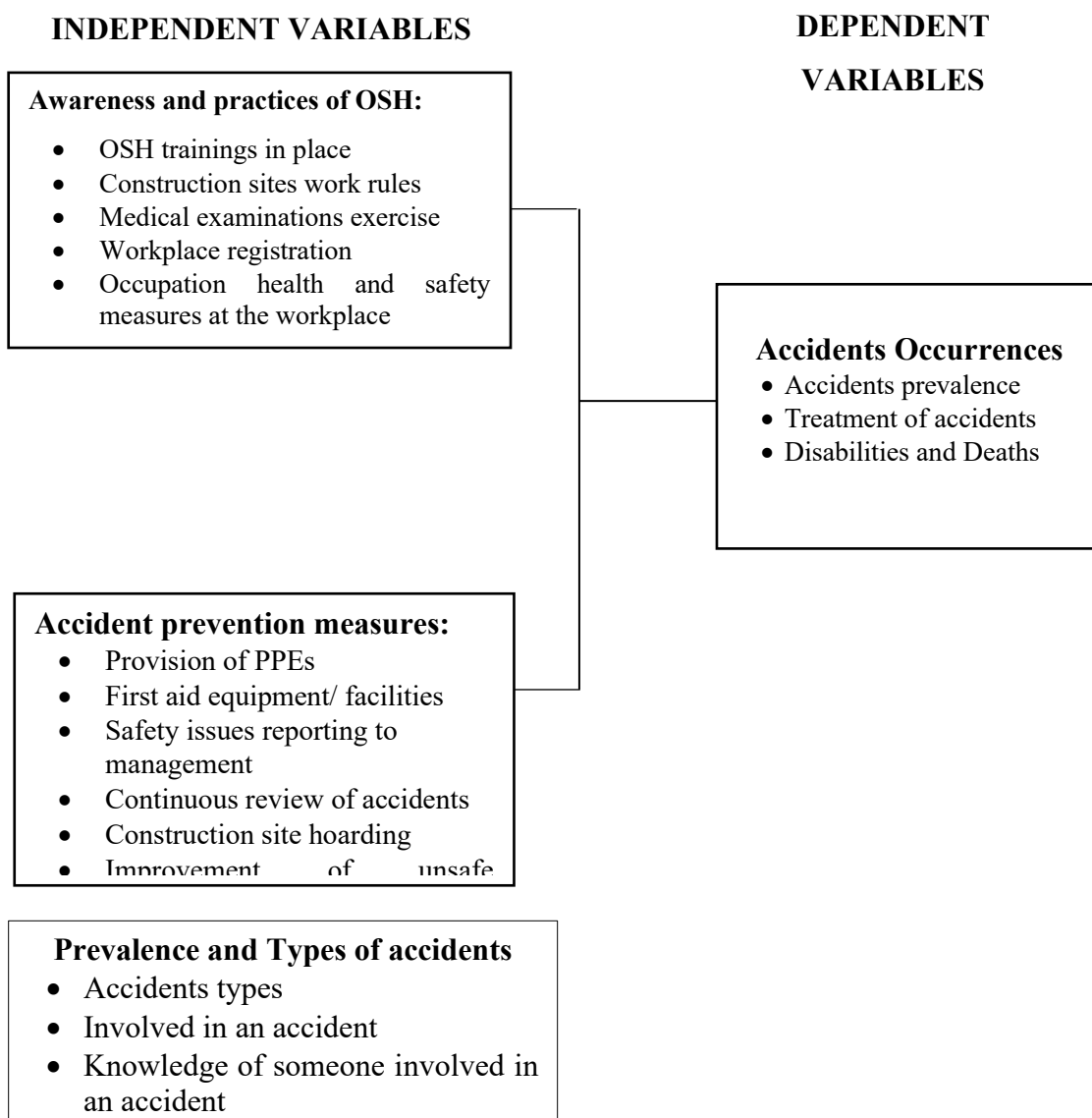


Figure 1 Conceptual framework

MATERIALS AND METHODS

Operational Definitions

Occupational Accident	In this study, an occupational accident refers to any unplanned or unexpected event occurring at a building construction site within the 12 months preceding the survey that resulted in worker injuries (e.g., falls or equipment-related trauma), fatalities, or lost workdays.
Construction Workers (Employees)	This term encompasses all personnel directly engaged in on-site building activities, including skilled workers (e.g., masons, carpenters, and electricians), casual labourers, machine operators, and site supervisors.

Research Design

The study employed a quantitative, non-experimental cross-sectional research design. A cross-sectional design was appropriate because data on occupational safety and health (OSH) hazards, accident occurrence, and safety practices were collected from construction workers at a specific period without manipulating the study variables. Non-experimental research involves the observation and measurement of variables as they occur naturally (Patten & Newhart, 2018). The study involved 385 construction workers drawn from selected building construction sites in Nairobi County.

Data Collection

Primary data were collected using structured questionnaires, semi-structured interviews, and non-participant observation. The questionnaire collected information on workers' awareness of OSH hazards, experience and types of construction-site accidents, and satisfaction with existing OSH measures. Semi-structured interviews were used to obtain additional information from selected participants on occupational safety practices and experiences at construction sites.

Non-participant observation was conducted at selected construction sites using an observation guide. The researcher observed site conditions, safety practices, availability and use of personal protective equipment, and other relevant occupational hazards without participating in construction activities. Observations were recorded through systematic note-taking.

Secondary data were obtained from published journals, reports, and relevant annual publications, including materials from the National Construction Authority and the Directorate of Occupational Safety and Health Services. These sources were used to provide contextual information on construction activities and occupational safety and health in Kenya.

Sampling of Construction Sites and Workers

Construction sites that participated in the research were selected using purposive sampling. This was done in order to ensure that both the large commercial sites and the small residential sites were included in the research so as to have representation across all the areas in Nairobi County. In addition, snowball sampling was used to identify more construction sites especially those which had not been registered by the appropriate authorities.

Stratified random sampling was used at the identified sites so as to ensure representation of all the worker types. Stratification of the target population was done according to the type of workers and the groups considered were skilled workers, casual workers, and supervisors and contractors.

Sample Size Determination

The target population comprised construction workers engaged at building construction sites in Nairobi County, including registered contractors, engineers, architects, skilled workers, casual workers, artisans, and workers associated with small-scale construction activities. The study targeted an estimated population of

600,000 construction workers. Since the target population exceeded 10,000, the sample size was determined using the formula proposed by Fisher et al. (1998):

$$n = \frac{Z^2 PQ}{\varepsilon^2}$$

Where **n** = desired sample size if the target population is greater than 10,000

Z = Standard Normal deviation usually set at 1.96 which corresponds to 95% confidence level.

P = proportion in the target population estimated to have characteristics being measured

$$Q = 1 - P$$

ε = Random error estimated to be 5%

$$\text{Therefore, } n = \frac{1.96^2 \times 0.5 (1-0.5)}{0.05^2} = 384.16$$

The calculated sample size was rounded to 385 respondents. The respondents were drawn from construction sites located within the 22 administrative zones selected in Nairobi County.

Data Analysis

Quantitative data were coded, entered, and analysed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including frequencies and percentages, were used to summarise the study variables. Pearson's chi-square test was used to examine associations between selected occupational safety and health variables and reported construction-site accidents. The findings were presented using tables, bar charts, and figures.

Ethical Consideration

An introductory letter regarding the researcher from The Institute of Energy and Environmental Technology (IET) at Jomo Kenyatta University of Agriculture and Technology was obtained. Research authorization was obtained from National Commission for Science and Technology and Innovation (NACOSTI) under License Number: NACOSTI/P/23/31353. A Consent form introducing the researcher to the respondents was also given informing them of the confidentiality of the data collected.

RESULTS AND DISCUSSION

Table 1: Socio-demographics characteristics

Characteristics	Category	Frequency (n=385)	Proportion (100%)
Sex	Male	289	75.1
	Female	96	24.9
Age	18-24 years	8	2
	25-29 years	159	41.3
	30-34 years	114	29.6
	35-39 years	31	8.1
	40-44 years	68	17.7
	45 years - above	5	1.3
Highest Education level			
	Did not attend school	75	19.5
	Primary	120	31.2
	Secondary	117	30.4
	TVET/College	62	16.1
	University	11	2.8

Religion	Christian	170	44.2
	Muslim	99	25.7
	Traditionalist	95	24.7
	Others	21	5.5
Job experience			
	1-5 years	207	53.8
	6-10 years	168	43.6
	11-15 years	7	1.8
	16 years – above	3	0.8
Marital Status			
	Single	96	24.9
	Married	177	46.0
	Divorced/separated	98	25.5
	Widowed	14	3.6

There were 385 participants in the study out of which 75.1% of the respondents were males (n=289) and 24.9%, (n=96) were females. The main OSH hazards identified included; Dust (30.4%), noise (25.4%), manual handling (17.7%), working at height (14.3%), other factors (12.2%).

Level of Awareness of OSH Hazards Among Employees

Figure 2 shows that 57.4% (n=221) noted that the contractor was responsible for OSH on site while 29.4% (n=113) answered the foreman and 13.2% (n=51) responded that it was the duty of the line supervisor. Moyo (2021) notes that construction workers are rarely involved by the management in the decision making of the running of construction safety because of the management’s fear of losing authority or control over their mandate.

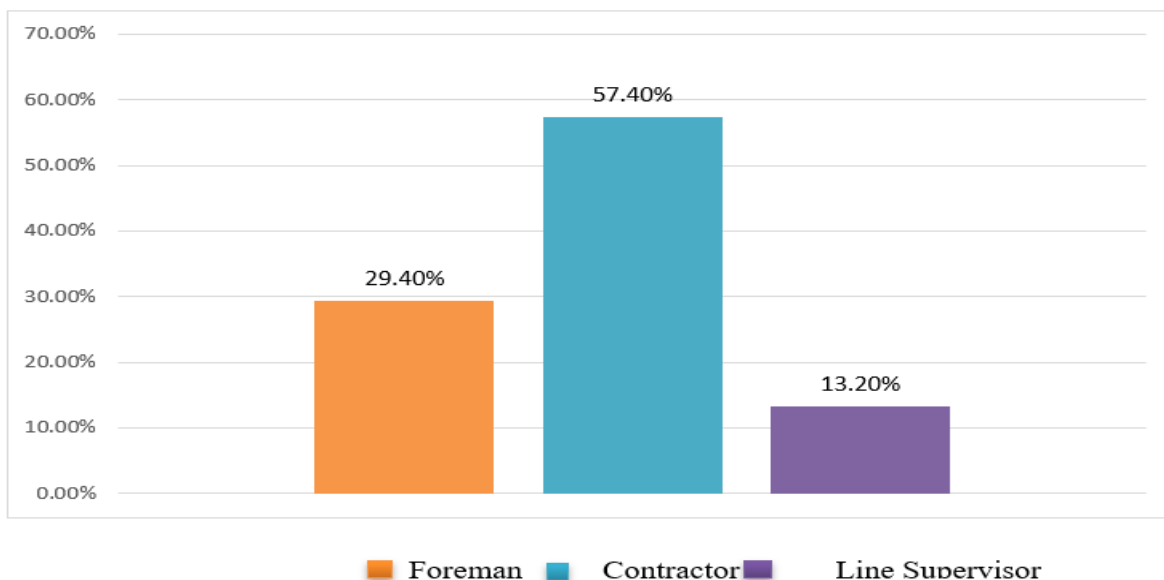


Figure 2 Responsibility of OSH on site

OSH Hazards at Construction Sites

Dust was noted to be the most prevalent OSH hazard at 30.40% (n=117), whereas 25.40% (n =98) alluded to noise, others at 17.70% (n =68) indicated manual handling whereas 14.30% (n =55) stated working at height and the rest 12.20% (n= 47) indicated other factors. Akcay and Arditi, (2022) note that the construction industry is one of the most hazardous industries with a poor safety record all over the world.

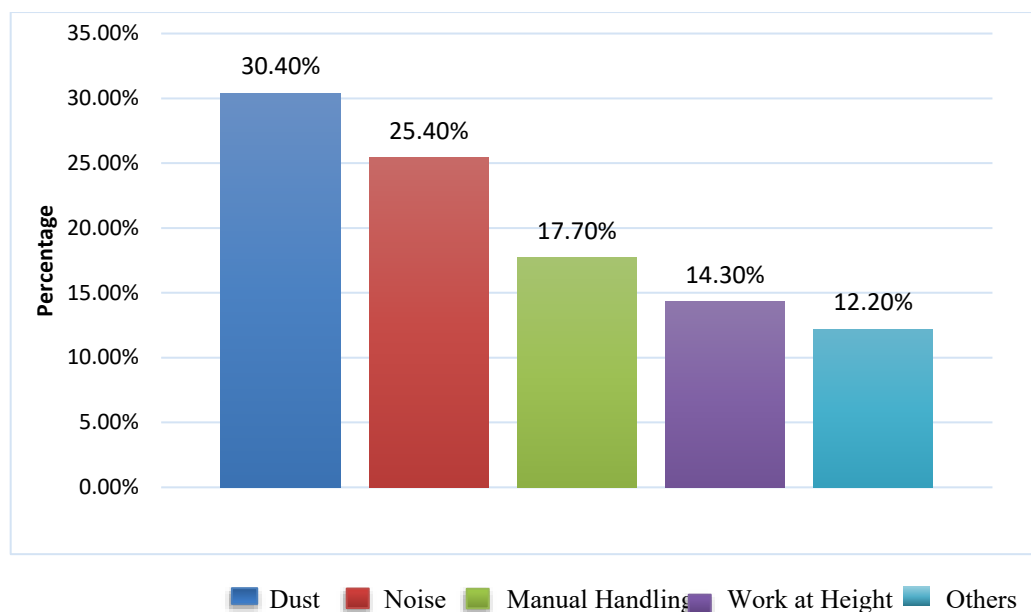


Figure 3 Rating construction site hazards

Table 2: Noise level measurements in a select construction sites

Site	Measurement point	Leq dB(A)	OEL	Remarks
Embakasi				
	Security office	47.7	60	Below OEL
	Entrance to the site	54.1	90	Below OEL
	Where Lifting operations takes place	69.1	90	Below OEL
Riverside Drive	Hoist	79.5	90	Below OEL
	Welding	72.3	90	Below OEL
	Grinder	98.4	90	Above OEL
	Plastering works	76.3	90	Below OEL
	Office	55.0	60	Below OEL
Thika Road	Site office	61.4	60	Above OEL
	Entrance to site	67.1	90	Below OEL
	Centre of site	63.0	90	Below OEL
	Poker vibrator	77.0	90	Below OEL
Imara Daima	Concrete mixing machine (Operator)	91.2	90	Above OEL
	Concrete mixing machine (Helper)	81.5	90	Below OEL
	Welding	72.3	90	Below OEL
	Grinder	99.5	90	Above OEL
	Store	69.4	90	Below OEL
Mombasa Road	Site office	41.5	60	Below OEL
	Near excavation	72.9	90	Below OEL
	Grinding Operations	96.3	90	Above OEL
Karen	Office	49.5	90	Below OEL
	Grinder (Blue small)	108.2	90	Above OEL
	Grinder big	108.9	90	Above OEL
	Welding	69.1	90	Below OEL
	Metal rod cutting machine	84.9	90	Below OEL
	Cross cutter	98.6	90	Above OEL
	Table cutting saw i(carpentry)	113.8	90	Above OEL
Karen 2	Vibrating Concrete Poker	98.8	90	Above OEL
	Concrete Mixer	82.5	90	Below OEL

Grinder	92.0	90	Above OEL
Dumper	84.4	90	Below OEL
Drum Roller	75.8	90	Below OEL
At the edge of Site	58.8	90	Below OEL
Site Office	64	60	Above OEL
Terex backhoe	82.5	90	Below OEL

Workers' Knowledge of OSH Hazards

Asfahl and Rieske (2023) distinguish safety hazards from health hazards based on their effects and timing. Safety hazards are generally associated with acute events that may cause physical injury, accidents, or property damage, while health hazards tend to have chronic effects that may result in illness or other health problems over time.

In this study, 227 (59.0%) respondents reported that they did not have knowledge or awareness of occupational safety and health (OSH) hazards related to their work. A further 108 (28.1%) reported that they had such knowledge, while 50 (13.0%) indicated that they did not know. These findings indicate a considerable gap in workers' awareness of occupational hazards at construction sites.

The finding is consistent with Samanta and Gochhayat (2023), who reported that 83% of construction workers in their study lacked awareness of occupational health and safety hazards. Nyabioge et al. (2022) similarly observed that inadequate and outdated safety training may leave construction workers to acquire safety knowledge through personal experience and informal practices.

The limited awareness observed in the present study therefore highlights the importance of regular and site-specific OSH training to improve workers' ability to identify hazards and follow appropriate safety practices.

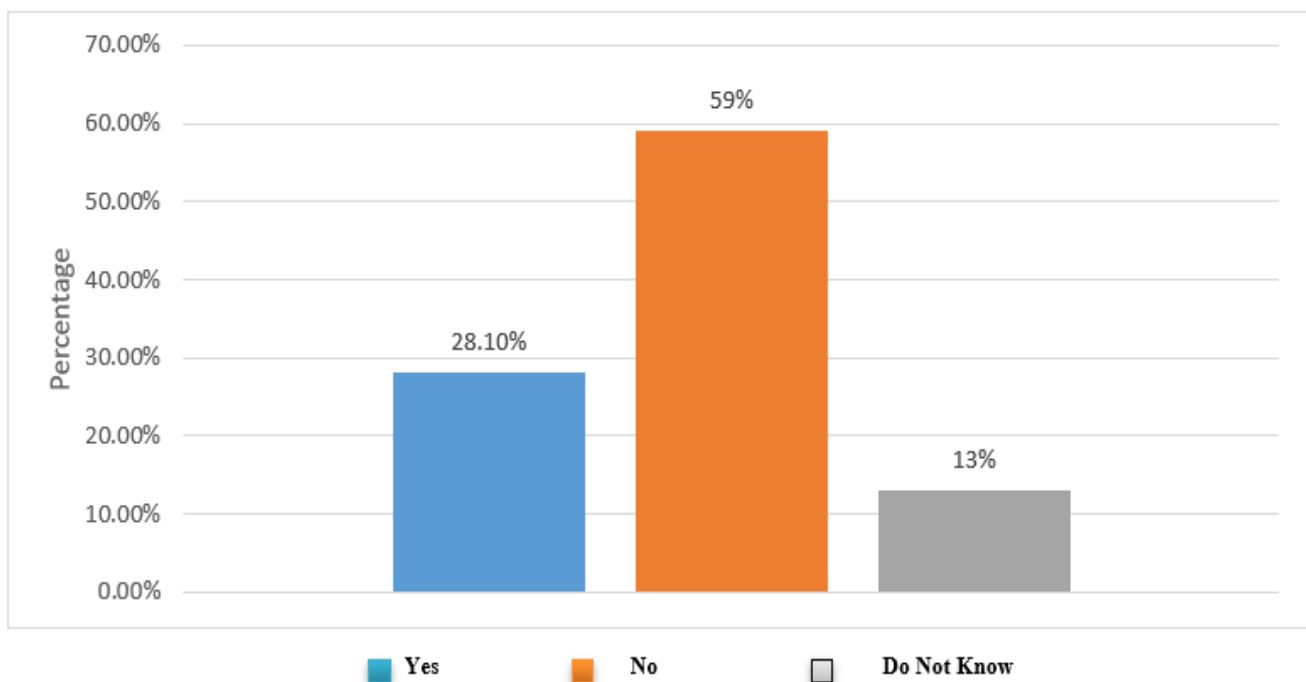


Figure 4 Awareness on OSH Hazards

Prevalence and Types of Accidents At Construction Sites

Majority of the construction workers at 59.0% (n=227) stated that they had not been involved in an accident while the rest (41.0%, n=158) responded to having been involved in an accident.

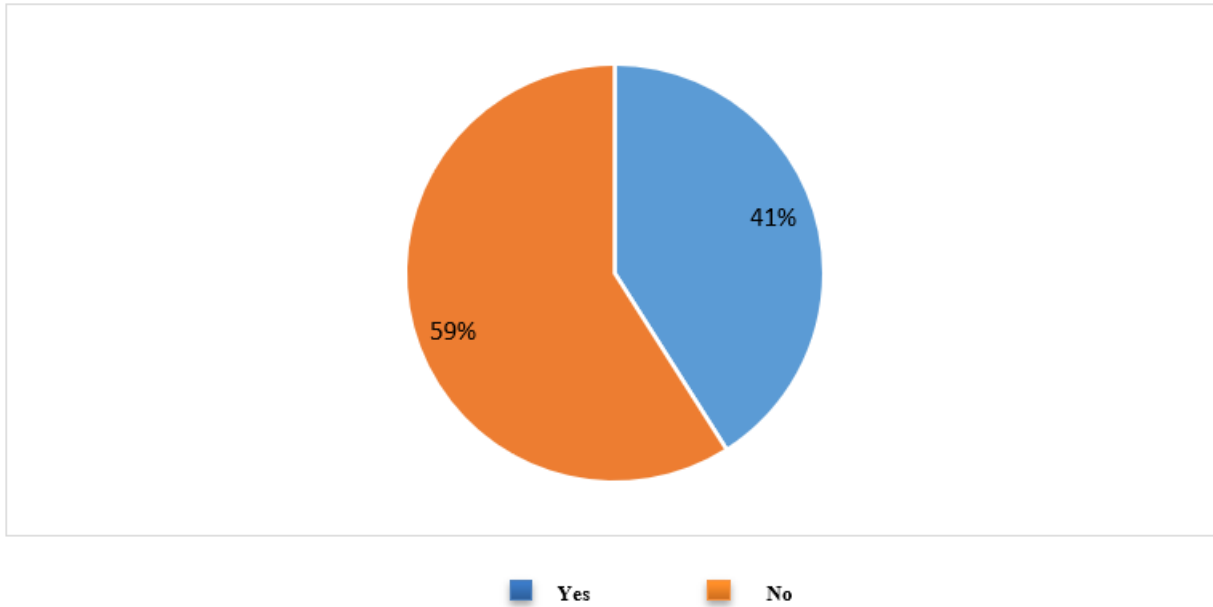


Figure 5 Workers involved in an accident

Regarding the types of accidents reported, falls and slips were the most common, accounting for 31.0% of reported accidents. These were followed by equipment-related injuries (22.8%), being struck by objects (15.2%), building or structural collapse (13.3%), injuries involving sharp objects (8.9%), and electrocution (8.9%). The predominance of falls and slips is consistent with findings by Cheng et al. (2024) and Winge and Albrechtsen (2018), who identified falls as a common type of accident in construction workplaces. Hamid et al. (2019) also reported a high proportion of both fatal and non-fatal construction accidents associated with falls, accounting for 56% of the cases examined. The findings indicate that falls and other physical hazards remain important sources of occupational injury among construction workers and require sustained attention through appropriate safety measures, worker training, and site supervision.

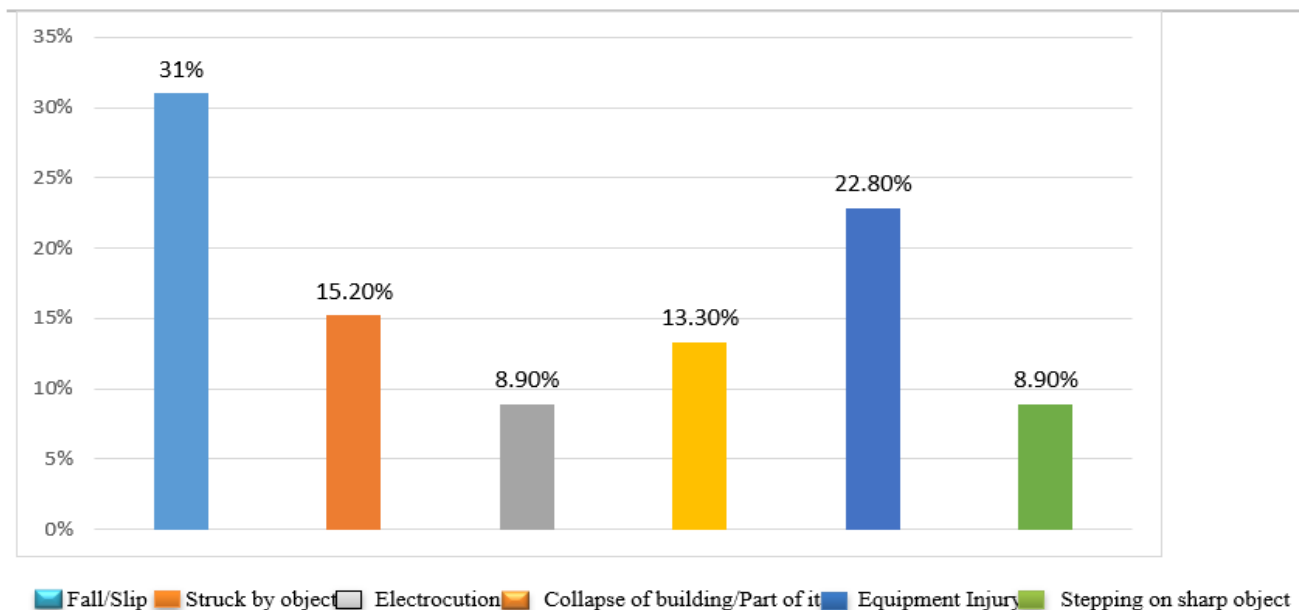


Figure 6 Types of accidents

Treatment for Injury Sustained at a Construction Site

Among the 158 respondents (41.0%) who reported having experienced a construction-site accident, 94 (59.5%) indicated that they had not received treatment for an injury sustained while working at a construction site,

while 64 (40.5%) reported that they had received treatment. The findings indicate that although a substantial proportion of workers received treatment following construction-related injuries, the majority reported that they did not seek or receive treatment.

Relationship between Identified OSH Hazards and Reported Accidents

The findings showed an association between several occupational safety hazards and the types of accidents reported by construction workers. Manual handling and working at height were particularly relevant to accidents such as falls, slips, equipment-related injuries, and structural collapse. These hazards expose workers to immediate physical risks, particularly where appropriate safety procedures, supervision, and protective measures are inadequate. In contrast, health hazards such as dust and noise are generally associated with longer-term occupational health effects and may not result in an immediately identifiable accident. Nevertheless, their presence indicates potentially unsafe working conditions that require appropriate preventive measures.

Table 3: Qualitative mapping of identified OSH hazards to reported accidents

Identified OSH Hazard	% (n)	Likely accident types related to OSH hazard	% (n)	Relationship
Dust	30.4% (117)	Respiratory/health issues (not directly related to the accident list identified).	–	Indirect (chronic health hazard, not immediate accident trigger).
Noise	25.4% (98)	Equipment injuries, struck by objects (probably due to distraction of construction workers).	22.8% (36), 15.2% (24)	Indirect (contributes to accidents via reduced situational awareness).
Manual handling	17.7% (68)	Falls/slips, equipment injuries.	31.0% (49), 22.8% (36)	Strong (manual tasks often lead to slips, strains, or equipment accidents).
Working at height	14.3% (55)	Falls/slips, collapse of building/part.	31.0% (49), 13.3% (21)	Strong (direct link to fall/slip and collapse accidents).
Other factors	12.2% (47)	Sharp object injuries, electrocution.	8.9% (14), 8.9% (14)	Moderate (various hazards align with less frequent accident types).

Table 3 shows that the most frequently identified health hazards involving dust and noise do not necessarily lead to an increase in the number of reported accidents i.e falls, equipment injuries. Instead, safety hazards like manual handling and working at height have clearer and direct relationships with accident types reported. Dust and noise remain critical but were seen to present long-term health risks rather than immediate accident causes among the construction workers.

Measures in Place to Prevent Accidents Occurrences

Measures in place to prevent accidents occurrences were considered following the hierarchy of control of accidents that were observed at the sites starting with the top most control; i.e. eliminating the hazard.

Protective Barrier (Site Hoarding)

From the observations made, it became apparent that some of the construction sites had protective barriers and site hoarding like construction nets in place to prevent any falling objects. It was seen that most of the construction sites which were being observed via the observation checklist had protective hoarding on site while few of them did not have any protective hoarding. According to NCA (2022), “A developer shall erect a

hoarding, fence or barricade prior to the start of the construction work whether for the erection, alteration or demolition of a building, and it must be kept and maintained in good condition as long as it is necessary and shall not be removed until the construction work is completed.” From the observations made by the researcher, it could be seen that most of the construction sites present in the commercial areas were protected with protective barriers due to increased frequency of inspections and publicity.

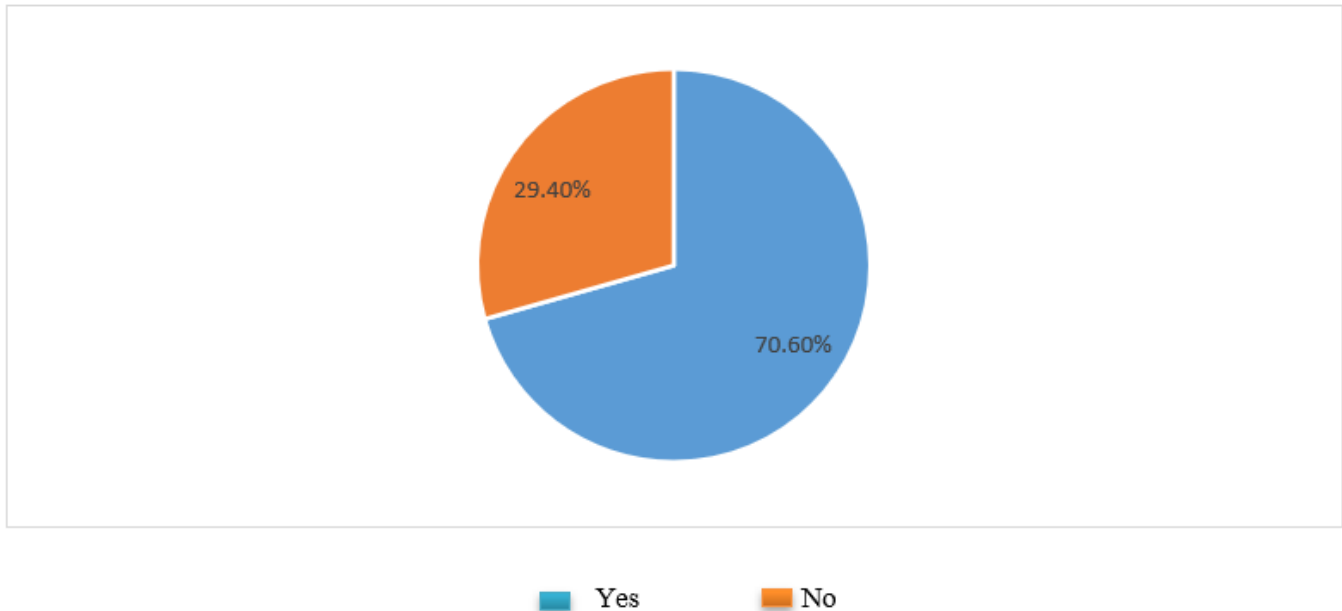


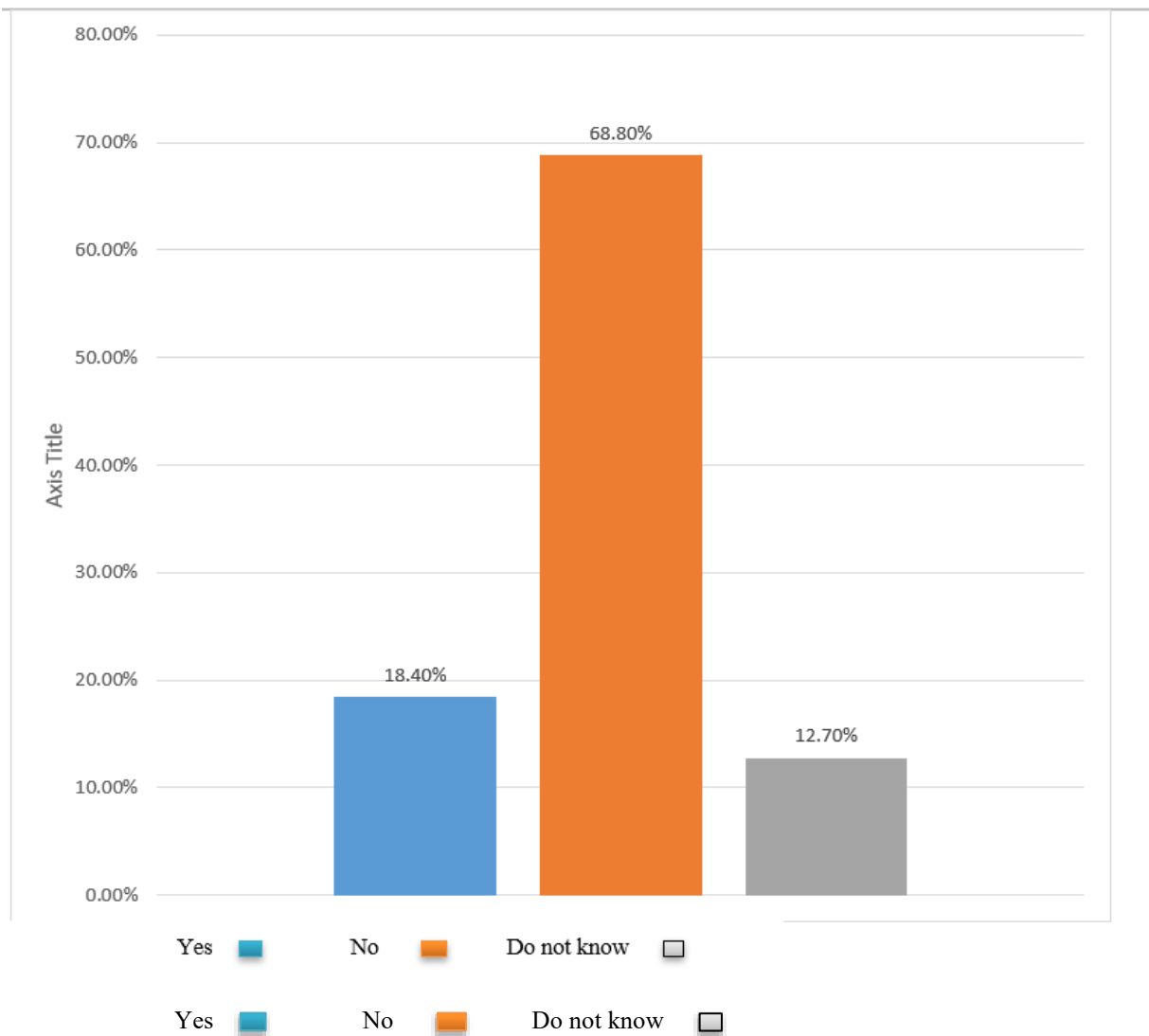
Figure 7 Existence of site hoarding

Provision of Periodic Medical Examinations

On whether, the workers undergo periodic medical checkups; 52.5% (n=202) gave a response of no because they had never undergone any periodic checkup after engagement, 30.4% (n=117) said yes and 17.1% (n=66) gave a response of they did not know. Periodic medical examinations are suggested by OSHA, 2007, especially when workers are predisposed to some risk factors. The study showed that there was more concentration on finishing up projects rather than on the wellbeing of the workers. According to Niciejewska and Kiriliuk (2020), periodic medical checkups are essential in assessing hazards, risk reduction and formulating health policies.

Encouraged to Report Unsafe Conditions to Supervisor

The majority of construction workers, 68.8% (n=265), said No for being encouraged to report unsafe conditions, while 18.4% (n=71) said Yes and 12.7% (n=49) did not know. This is consistent with a study conducted by Moyo (2021) showing that construction workers are usually not engaged in reporting and decision-making processes regarding safety issues. According to Winge & Mostue (2019), when people are always encouraged to report on any unsafe conditions, any possible hazard can be identified and taken care of before an accident happens.



Satisfaction with OSH Measures At The Workplace

Where the construction workers were questioned about their satisfaction with the occupational safety and health, 43.1% (n=166) replied 'Yes' while 42.6% (n=164) replied 'No'. At the same time, 14.3% (n=55) said that they did not know.

Among the factors that made the workers dissatisfied included; high levels of dust and noise at the construction sites (which was not effectively and timely taken care of by the management), poor safety training, lack of safety equipment among others, exclusion of the employees from safety decisions, medical surveillance and frequent accidents that reflected poorly on the effectiveness of the measures and controls taken. However, there are some factors that led some workers being satisfied with the occupational safety in place such as; the safety barriers like construction netting (site hoarding) at the construction site, scaffolding platform as well as daily toolbox talks that show the interest of the management in taking good care of the construction workers. According to Chan et al. (2023), there are many workers in the construction sites that are not satisfied with how the management learns from past experiences to ensure occupational safety in order to reduce the accidents.

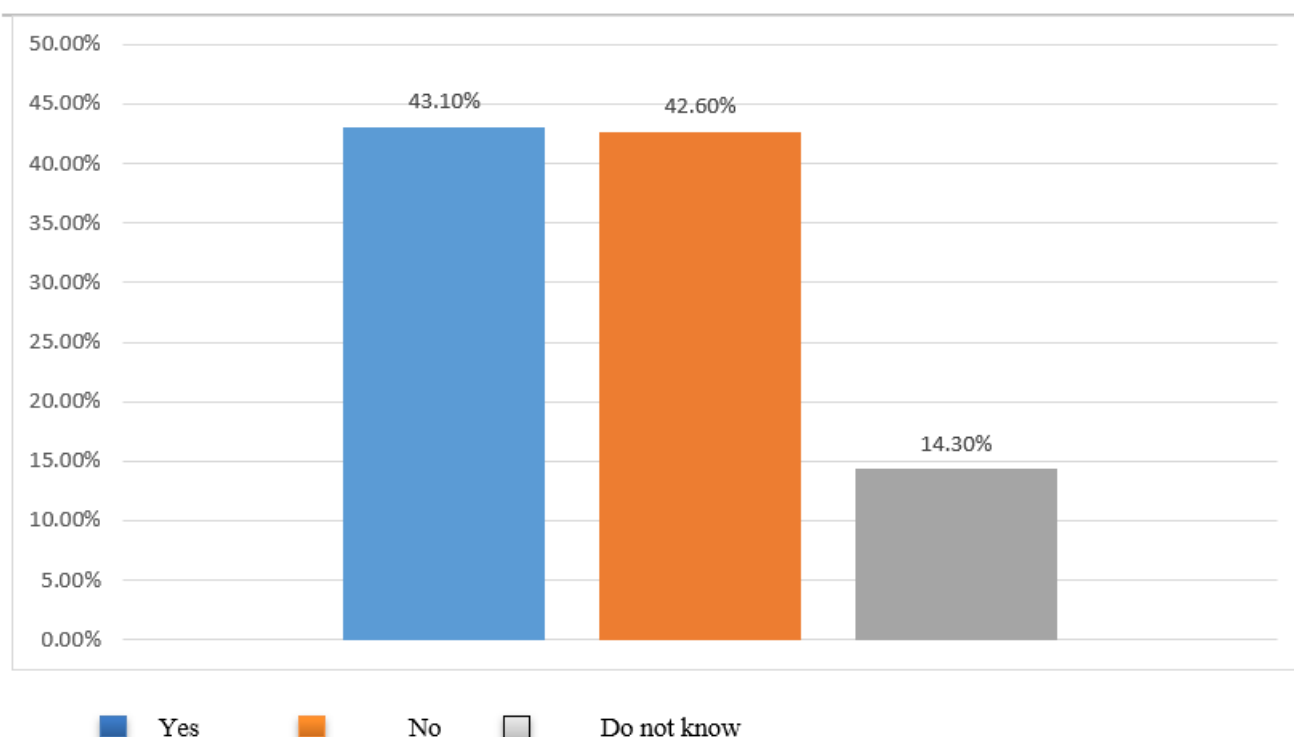


Figure 9 Satisfied with OSH measures

Relationship between Variables

Chi square test was carried out on different variables as follows;

Chi square test indicated that the gender of participants was a significant variable that influenced occupational accidents. There were more males (90.2%) reporting occupational accidents than females (9.8%). The difference between males and females was statistically significant; Sex vs accidents ($\chi^2 = 16.973$, $p < 0.001$).

Regarding OSH Hazards; the leading hazards in the workplace were ranked into five classes as follows; dust (30.4%, $n = 117$), noise (25.4%, $n = 98$). Others included manual handling (17.7%, $n = 68$), working at height (14.3%, $n = 55$) and other factors (12.2%, $n = 47$). Chi square test was done to establish whether there was a statistically significant difference between the distribution of reported hazards and a uniform distribution across five categories. The obtained Chi-square was $\chi^2 = 45.54$ ($df=4$), which was higher than the critical value of 9.49 at $\alpha = 0.05$.

The types of accidents experienced in the construction sites; Respondents who claimed that they have experienced occupational accidents ($n = 158$; 41%) were required to identify the kind of accident experienced. As is seen in Figure 6, fall/slip (31.0%; $n = 49$) was the most common type of accident reported followed by injury from equipment (22.8%, $n = 36$), struck by falling object (15.2%; $n = 24$), collapse of building or part (13.3%; $n = 21$), stepping on sharp object (8.9%; $n = 14$), and electrocution (8.9%; $n = 14$). To see whether there was any difference between the distribution of accident types reported against a uniform distribution (i.e., an equal proportion for all six categories), a chi-square test was conducted. The Chi-square statistic resulted $\chi^2 = 36.06$ ($df=5$), which was higher than the critical value of 11.07 at $\alpha = 0.05$. The p-value associated with the chi-square statistic was < 0.001 . The results show that there were differences in the distribution of accident types experienced by the respondents; Falls/ slips happened more often, whereas electrocution and stepping on sharp objects happened rarely.

Concerning the OSH measures that have been implemented, it was found that there was a strong relationship between the level of satisfaction and the absence of occupational accidents. Those participants who declared that they were satisfied with the OSH measures in place showed low incidence rates of occupational accidents

(3.9%), while those who declared that they were not satisfied with OSH measures in place reported high incidence rates of occupational accidents (83.3%). The difference in occupational accidents in relation to the level of satisfaction was highly significant at $\chi^2=58.647$ (df=2) $P < 0.0001$.

CONCLUSION

The study revealed the existence of a high incidence of accidents, since 41.0% (n=158) of the participants had experienced an accident before. Falls/slips, followed by injuries from being struck by falling objects, and injuries from using equipment, are the leading causes of accidents in construction sites which lead to fatal and non-fatal injuries among workers in the construction industry. The incidence rate of these accidents was caused by an extreme deficiency in basic safety infrastructure and prevention measures, whereby 62.3% of the sites lacked adequate Personal Protective Equipment (PPEs), and 70.4% lacked adequate first aid administration. Also, only 28.10% of the construction workers had adequate knowledge regarding Occupational Safety and Health (OSH) hazards in their working environment, showing a critically low awareness of these issues which affect their health and safety in the presence of numerous hazards. Although there were some structural safety measures such as site hoarding and protective barriers, the lack of basic safety measures like PPEs, first aid administration and awareness of the hazards showed that most of the sites lacked adequate foundations for safety.

RECOMMENDATIONS

- Structured and consistent awareness campaigns should be held using training sessions and induction for new employees in order to build awareness and capacity regarding specific hazards like working at heights and manual handling.
- The management of the construction sites should emphasize and implement dust and noise controls, alongside the provision of appropriate PPE, since these are the most prevalent hazards contributing to both acute accidents and chronic health issues.
- Encourage employees and workers' participation in safety matters, such as reporting unsafe conditions, as this will foster their sense of responsibility and aid in identifying hazards before accidents occur.

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