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DETERMINANTS OF OCCUPATIONAL INJURIES AMONG ROAD CONSTRUCTION WORKERS IN RIVERS EAST SENATORIAL DISTRICT

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ABSTRACT: This study investigated the determinants of occupational injuries among road construction workers in Rivers East Senatorial District. This was a descriptive survey design. The study was done among construction workers that are primarily engaged in the construction of roads, bridges, culverts and drainages. The sample size of 500 was selected using the multistage sampling procedure. A self-structured test instrument was used for data collection titled ‘‘Questionnaire on determinants of occupational injuries among road construction workers (QDOIRCW)’’. All analysis was done with the aid of Statistical Product for Service Solution (SPSS V-27). Each completed test instrument was assigned with a unique code. Data were analyzed descriptive statistics of frequency and percentages (%), mean, standard deviation for demographic data and for research questions 1, 2, 3, 4 and 5. Inferential statistics of Point biserial correlation were used to test the null hypotheses at .05 alpha level. The results showed that there was a statistically significant relationship between years of work experience and occupational injuries as $p<0.05$, between safety training and occupational injuries as $p<0.05$,

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between use of PPE and occupational injuries as $p<0.05$, between risk perception and occupational injuries as $p<0.05$, between work condition and occupational injuries as $p<0.05$.Based on the findings of the study, it was concluded that years of work experience, safety training, use of PPE, risk perception and work condition are significant determinants of occupational injuries among road construction workers. It was recommended that the government, through the ministry of labour and productivity, should enforce the bare minimum conditions every construction workplace should have to reduce the occurrence of occupational injuries.

Keywords: *Occupational injuries, Road construction workers, Safety training, Personal protective equipment (PPE), Risk perception*

INTRODUCTION

1.1. Background to the Study

The construction industry is an important driver of urban development and is linked to a high rate of job creation as they develop homes for both public and private owners as well as roads and bridges. However, the nature of activities in the industry places workers at risk of unique set of hazards that can lead to injury among other undesirable outcomes. Occupational injuries in construction site occur from being struck by moving vehicles, electrocution, crush injuries, asphyxiation, fractures, and respiratory issues and falls from heights (Eusebio, 2020). Others are slips/trips, use of tools/equipment and overexertion during lifting.

The common types of injuries encountered were lower and upper back musculoskeletal strains, repetitive strain injuries, lacerations, superficial injuries, and fractures (Yankson et al., 2023). The injury may be classified as light, moderate, or severe, with its severity assessed according to the duration of workdays lost. Minor injuries lead to a maximum of six days of work absence, but moderate and severe injuries result in a loss of one week or more of work time. Yankson et al. (2023) demonstrated that 88% of injuries sustained by road construction workers were mild, whereas 12% were serious.

The ILO estimates that worldwide, occupational injuries cause over 2 million fatalities each year, while up to 374 million individuals experience non-fatal injuries leading to over 4 days of work absence (ILO, 2019). Occupational injuries represent a significant public health challenge, responsible for more than 20% of occupational fatalities (Eusebio, 2020). Kinteh and Bass (2023) asserted that the mortality and morbidity associated with occupational injuries are unevenly distributed, with over 90% happening in low- and middle-income nations. The International Labour Organization (ILO) (2019) demonstrated that the total effect of occupational injuries on global health and development might result in economic losses of up to 6% of the gross domestic product in some countries. Africans endure a substantial burden from the prevalence of occupational injuries. The ILO (2015) highlights that construction workers in underdeveloped countries frequently encounter dangers that are 3 to 6 times greater than those in wealthy nations. Wu et al. (2018) projected that the death rate from injuries is almost 12 times greater in low-income nations than in high-income countries. Research from Uganda and Ghana indicated that the prevalence of occupational injuries among road construction workers was as high as 59% (Kiconco et al., 2019; Amissah et al., 2019). Notwithstanding the significant general frequency of occupational injuries, information about injuries among Nigerian road construction workers is limited. Iloma et al. (2022) found that employees in construction firms in Rivers State were subjected to biological, physical, chemical, and ergonomic dangers. Douglas and Adeloye (2016) indicated that 69.5% of construction workers in Obio-Akpor LGA, Rivers State, reported exposure to occupational accidents. The prevalent causes of these accidents were falls, dust, heat, noise, and puncture wounds.

Key factors of occupational injuries encompass job experience, safety training, utilization of personal protective equipment, risk perception, and working conditions. Work experience reflects a worker's skill level, danger awareness, and knowledge of safe procedures. Novice employees possess restricted expertise and have a higher propensity for errors. Numerous research studies indicate that employees with less than one year of experience possess an elevated likelihood of sustaining occupational injuries (Gonzalez-Delgado et al., 2015; Tadesse & Israel, 2016). Novice employees frequently fail to foresee hazards; nonetheless, research indicates that injury rates

diminish as employment duration increases. Nevertheless, seasoned employees may exhibit complacency, downplay danger, or disregard safety measures owing to habituation, resulting in harm. Ekpenyong and Inyang (2014) showed a correlation between extensive job experience and the incidence of injuries. Kiconco et al. (2019) concluded that there is no significant correlation between extensive expertise in building construction and occupational injuries. This suggests that expertise alone may be inadequate to diminish injury occurrence; additional intervening factors must be taken into account in conjunction with experience.

Safety training is a crucial factor in preventing workplace injuries. It denotes a systematic educational initiative aimed at providing employees with the expertise and competencies to identify, circumvent, and address workplace dangers. Safety training improves emergency response, compliance with safety rules, danger recognition, and the proper utilization of personal protective equipment. A thorough investigation revealed that both computer-based and traditional training markedly decreased dangerous behaviors and injuries, with traditional techniques exhibiting considerable efficacy (Elmoujaddidi & Bachir, 2018). Alemu et al. (2020) indicate that personnel in urban areas such as Addis Ababa, Ethiopia, who were provided with personal protective equipment (PPE) or general safety instruction were around three to five times more inclined to utilize protective gear (AOR = 2.8–4.8). In the absence of proper training, personnel are ill-prepared to identify dangers or implement safe procedures. Training enhances competence by refining skills, altering safety attitudes, and augmenting applicable information (Estudillo et al., 2024). Training must be tailored to align with the real and unique requirements of the firm and its employees.

The utilization of personal protection equipment (PPE) is a crucial factor influencing occupational injuries among road construction workers. Alemu et al. (2020) conducted a study revealing that 62% of employees in Addis Ababa did not utilize personal protective equipment (PPE). The primary reasons for this were discomfort, perceived irrelevance, unavailability (41%), and insufficient orientation (21%). Adequate personal protective equipment (PPE), including gloves, respirators, and safety glasses, mitigates the risk of accidents and injuries by serving as a barrier

against various industrial hazards. Numerous studies have demonstrated a significant association between occupational injuries and the absence of personal protective equipment (PPE). The heightened risk of occupational injuries among construction workers was predominantly attributed to either an aversion to wearing personal protection equipment (PPE), a deficiency in understanding regarding its use, inadequate usage, or complete noncompliance. Vitharana et al. (2015); Mersha et al. (2017); Zerguine et al. (2017).

Risk perception is a crucial factor influencing occupational injury, as it pertains to how workers assess prospective hazards and their willingness to adopt protective measures. Multiple studies indicate that employees' attitudes and behaviors about prevention are shaped by their views of workplace injuries. Safety protocols, including danger identification, utilization of personal protective equipment (PPE), and incident reporting, are sometimes disregarded when injuries are perceived as unlikely or unforeseen. A research by Mastrantonio and Cofini (2024) indicated that underestimating workplace hazards and perilous conditions was associated with the notion that accidents sprang from an unexpected fate. Madaleno and Sousa-Uva (2021) established a significant correlation ($p < 0.001$) between risk perception and the perception of exposure to occupational hazards. Perceived risk is subjective and differs across employees based on their individual and occupational qualities; from a logical perspective, workers are inclined to recognize danger by deliberately evaluating the level of risk. Nonetheless, this rational perspective is typically held only by specialists in a certain domain, whereas non-experts often assess danger via an emotional lens (Xie et al., 2017). When employees' perceptions of danger markedly diverge from actual risk, the incidence of occupational injuries escalates substantially.

Work conditions are a significant predictor of occupational injury, encompassing the environmental factors of the workplace and related dangers, including elevated temperatures, vibration, uneven or slippery surfaces, noise, dust, and chemical agents. Each type of building has a unique array of dangers. In Queensland, Australia, road construction hazards encompassed working on curved and hilly roads with restricted escape routes, erecting signage, operating near traffic flows

(compounded by various factors such as working at dawn or dusk), laboring in inclement weather (which diminished visibility), and navigating slippery road surfaces. Moreover, highway construction was shown to be more hazardous than local street construction (Debnath et al., 2015). Prolonged employment and nocturnal hours may constitute considerable risk factors for occupational injuries.

The prevalence of occupational injuries among road construction workers in the Rivers East senatorial district is significant, attributable to the high volume of developmental projects in the area. These workers are predominantly informal artisans engaged in labor-intensive tasks, many of whom are young and possess minimal safety training or work experience. The study noted the frequent incidence of musculoskeletal strain, fractures, and lacerations among construction workers in the region, which typically remain undetected. It is essential to highlight that although several studies have recorded dangers faced by road construction workers, the literature analysis revealed a lack of documentation about the incidence of occupational injuries or their causes among these workers in the Rivers East senatorial area. In Nigeria, it was observed that data on occupational injuries is limited due to the frequent underreporting of such incidents. It was against this background that the study aimed to investigate the determinants of occupational injuries among road construction workers in Rivers East senatorial district.

Aim of the study

This aim of the study was to investigate determinants of occupational injuries among road construction workers in Rivers East senatorial district. Specifically, the objectives of the study are to**:**

1. examine years of work experience as a determinant of occupational injuries among road construction workers in Rivers East senatorial district.
2. evaluate safety training as a determinant of occupational injuries among road construction workers in Rivers East senatorial district.
3. examine use of personal protective equipment as a determinant of occupational injuries among road construction workers in Rivers East senatorial district.

4. ascertain risk perception as a determinant of occupational injuries among road construction workers in Rivers East senatorial district.
5. investigate work condition as a determinant of occupational injuries among road construction workers in Rivers East senatorial district.

Hypotheses

The following hypotheses were formulated and tested at 0.05 alpha level of significance:

1. There is no significant relationship between years of work experience and occupational injuries among road construction workers in Rivers East senatorial district.
2. There is no significant relationship between safety training and occupational injuries among road construction workers in Rivers East senatorial district.
3. There is no significant relationship between use of personal protective equipment and occupational injuries among road construction workers in Rivers East senatorial district.
4. There is no significant relationship between risk perception and occupational injuries among road construction workers in Rivers East senatorial district.
5. There is no significant relationship between work conditions and occupational injuries among road construction workers in Rivers East senatorial district.

Methodology

The area for this study was Rivers East Senatorial District. Rivers East Senatorial District is one of the three Senatorial Districts in Rivers State of Nigeria. It is made up of Eight Local Government Areas namely: Emohua, Etche, Ikwerre, Obio-Akpor, Ogu-Bolo, Okirika, Omuma and Port Harcourt. A descriptive survey design was adopted for the study as the research design. The population of the study comprised of all construction workers that are primarily engaged in the construction of roads, bridges, culverts and drainages in the district. The sample size of 500 was calculated using the Cochran formula. A multi-stage sampling procedure was adopted for this study.

The instrument for eliciting information for this study was structured questionnaire titled Questionnaire on determinants of occupational injuries among road construction workers. This instrument is in two sections A and B. Section A elucidates information on socio-demographic variables and occurrence of occupational injury while section B collects information on the determinants of occupational injuries among road construction workers. The questionnaire had 43 items.

A letter of introduction was collected from the Head of Department of Health and Safety Education, Ignatius Ajuru University of Education, Port Harcourt to solicit cooperation from the respondents for data collection. The questionnaire titled "determinants of occupational injuries among road construction workers" was self-administered by the researcher with the help of two research assistants. The research assistants were briefed on how to approach respondents, the objectives of the study and how to fill out the questionnaire. The data collection took a period of three months. Instruments were collected at the spot after filling in for analysis.

Data collected were coded using excel spread sheet and was exported to Statistical Products for Service Solution (SPSS) version 27.0 and analysed using the descriptive statistics of frequency and percentages (%), mean, standard deviation for demographic data and for research questions 1, 2, 3, 4 and 5. Inferential statistics of Pearson Correlation were used to test the null hypotheses at .05 alpha level.

Results

The sample size for the study was 500 but the analysis was based on 487 because the researcher was not able to retrieve all copies of the questionnaire.

Research Question One: To what extent is years of work experiencing a determinant of occupational injuries among road construction workers in Rivers East Senatorial District?

Table 1: Years of work experience and occupational injuries among road construction workers in Rivers East Senatorial District

Years of work experience	Occupational injury		Total
	Yes	No	F (%)
	F (%)	F (%)	
1-5years	115(55.6)	92(44.4)	207(100)
6-10years	63(42.9)	84(57.1)	147(100)
11 and above	104(78.2)	29(21.8)	133(100)
Total	282(57.9)	205(42.1)	487(100)

Table 1 presented the years of work experience and occupational injuries among road construction workers. The result showed that among those who had worked for 1-5 years and ≥11 years respectively, 55.6% and 78.2% had occupational injury which is high. Thus, the extent to which years of work experience constituted a determinant of occupational injuries among road construction workers in Rivers East Senatorial District was high.

Research Question Two: To what extent is safety training a determinant of occupational injuries among road construction workers in Rivers East Senatorial District?

Table 2: Weighted mean and standard deviation showing the extent to which Safety training determined occupational injuries

SN	Items	Mean	Std Dev	Remark
1.	Received formal safety training relevant to job.	3.71	0.70	High extent
2.	Safety training happens regularly (e.g., monthly/quarterly).	3.00	1.15	High extent
3.	The training received taught how to use PPE correctly.	3.23	0.76	High extent
4.	Confident in the ability to identify hazards because of training.	3.92	0.34	High extent
5.	Trained on Emergency procedures (first aid, fire, evacuation)	3.70	0.65	High extent
6.	On-the-job mentoring (apprenticeship) contributes to	3.75	0.64	High extent

	safe work practices.			
7.	Language or literacy barriers prevented from benefiting from training.	3.40	1.01	High extent
8.	Training sessions are practical and involve hands-on demonstrations.	3.63	0.85	High extent
9.	Employer/supervisor encourages attendance at safety training.	3.03	1.11	High extent
10.	Would attend more training if it were offered during work hours.	1.66	0.55	Low extent
	Grand mean	**3.30**	**0.77**	**High extent**

Criterion mean = 2.50. Guide: <2.50 is low extent while ≥2.50 is high extent

Table 2 revealed the weighted mean and standard deviation on the extent to which Safety training determined occupational injuries. The result showed that the grand mean of 3.30±0.77 was greater than the criterion mean of 2.50, indicating a high extent. Specifically, respondents received formal safety training relevant to job (3.71±0.70), and safety training happens regularly (3.00±1.15). Thus, the extent to which safety training determined occupational injuries among road construction workers in Rivers East Senatorial District was high.

Research Question Three: To what extent is use of PPE a determinant of occupational injuries among road construction workers in Rivers East Senatorial District?

Table 3: Weighted mean and standard deviation showing the extent to which use of PPE determined occupational injuries

SN	Items	Mean	Std Dev	Remark
1.	Provided with the correct PPE for each tasks	2.62	0.52	High extent
2.	The PPE fits properly and is comfortable to use.	2.64	0.52	High extent
3.	Consistently wear required PPE (helmet, boots, gloves, goggles) while working.	2.64	1.27	High extent
4.	Removes PPE because it is uncomfortable in hot weather.	3.39	0.59	High extent

5.	Supervisors enforce PPE use on this site.	2.60	0.85	High extent
6.	Had to buy my own PPE because the employer did not provide it.	3.49	0.72	High extent
7.	The quality of available PPE is good enough to protect me.	2.76	0.74	High extent
8.	Inspect and care for PPE to keep it effective.	3.52	0.67	High extent
	Grand mean	**2.95**	**0.73**	**High extent**

Criterion mean = 2.50. Guide: <2.50 is low extent while ≥2.50 is high extent

Table 3 revealed the weighted mean and standard deviation on the extent to which use of PPE determined occupational injuries. The result showed that the grand mean of 2.95±0.73 was greater than the criterion mean of 2.50, indicating a high extent. Specifically, respondents provided with the correct PPE for each tasks (2.62±0.52), and PPE fits properly and is comfortable to use (2.64±0.52). Thus, the extent to which use of PPE determined occupational injuriesamong road construction workers in Rivers East Senatorial District was high.

Research Question Four: To what extent is risk perception a determinant of occupational injuries among road construction workers in Rivers East Senatorial District?

Table 4: Weighted mean and standard deviation showing the extent to which risk perception determines occupational injuries

SN	Items	Mean	Std Dev	Remark
1.	Likely to be injured while working on construction site.	2.76	0.62	High extent
2.	Believed the consequences of a work injury would be serious for me and my family.	2.86	0.84	High extent
3.	Accidents at work are mostly caused by bad luck rather than unsafe practices.	2.92	0.77	High extent
4.	Felt personal control over preventing most injuries might have.	3.11	0.75	High extent
5.	Often notice hazards on site before starting a task.	3.12	0.77	High extent

6.	See a risky situation, feel able to speak up and stop the work.	3.01	0.74	High extent
	Grand mean	**2.96**	**0.75**	**High extent**

Criterion mean = 2.50. Guide: <2.50 is low extent while ≥2.50 is high extent

Table 4 revealed the weighted mean and standard deviation on the extent to which risk perception determined occupational injuries. The result showed that the grand mean of 2.96±0.75 was greater than the criterion mean of 2.50, indicating a high extent. Specifically, respondents often notice hazards on site before starting a task (3.12±0.77), and felt personal control over preventing most injuries might have (3.11±0.75). Thus, the extent to which risk perception determined occupational injuries among road construction workers in Rivers East Senatorial District was high.

Research Question Five: To what extent is work condition a determinant of occupational injuries among road construction workers in Rivers East Senatorial District?

Table 5: Weighted mean and standard deviation showing the extent to which work conditions determined occupational injuries

SN	Items	Mean	Std Dev	Remark
1.	Work sites are kept tidy and free from unnecessary debris.	2.94	0.37	High extent
2.	Scaffolds and temporary works are properly constructed and inspected.	2.65	0.92	High extent
3.	Tools and machinery use are well maintained and in good working order.	2.86	0.44	High extent
4.	Lighting at this site is adequate for safe work, including early morning or evening.	2.87	0.34	High extent
5.	Noise at the site makes it hard to hear warnings or signals.	2.93	0.25	High extent
6.	Extreme heat or rain often affects safety while work.	2.74	0.44	High extent
7.	There is easy access to drinking water and shaded rest areas on site.	2.71	0.45	High extent
8.	There is a first-aid kit and trained first-aider available	2.87	0.33	High extent

	at the site.			
9	Work is scheduled in a way that allows adequate rest between shifts.	2.59	0.49	High extent
10	Often pressured to finish tasks quickly, even when it feels unsafe.	2.90	0.31	High extent
11	Night work or poor visibility tasks are common at my site.	2.59	0.49	High extent
12	Supervisors regularly inspect work conditions and correct hazards.	2.85	0.36	High extent
	Grand mean	**2.79**	**0.43**	**High extent**

Criterion means = 2.50. Guide: <2.50 is low extent while ≥2.50 is high extent

Table 5 revealed the weighted mean and standard deviation on the extent to which work conditions determined occupational injuries. The result showed that the grand mean of 2.79±0.43 was greater than the criterion mean of 2.50, indicating a high extent. Specifically, Work sites are kept tidy and free from unnecessary debris (2.94±0.36), and scaffolds and temporary works are properly constructed and inspected (2.64±0.36). Thus, the extent to which work condition determined occupational injuries among road construction workers in Rivers East Senatorial District was high.

Table 6: Relationship between sociodemographic variables and occupational injuries among road construction workers in Rivers East Senatorial District.

Variables	**No of workers**	**Correlation coefficient**	**P-value**	**Decision**
Work experience	487	0.16	0.00	H_o rejected
Safety training	487	0.61	0.00	H_o rejected
Use of PPE	487	0.81	0.00	H_o rejected
Risk perception	487	0.42	0.00	H_o rejected
Work condition	487	0.34	0.00	H_o rejected

Discussion of findings

The findings of the study revealed that years of work experience were shown to be significantly related to occupational injuries. Since more time on the job meant more exposure to danger, this study's conclusion did not come as a surprise. Workers with more years of experience likely had a higher rate of occupational injuries. This confirms what Kinteh and Bass (2023) found among Gambia's construction workers: the highest injury prevalence was among those over the age of 35 and those with more than five years of experience on the job. This analysis lends credence to the findings of Tadesse and Israel (2016) in Addis Abeba, Ethiopia, which showed a correlation between job experience and occupational injuries. The results of this study are consistent with those of Ekpenyong and Inyang (2014), who found that years of experience in a particular job were a predictor of a higher risk of musculoskeletal disorders in the workplace in Nigeria. Since all of the studies included construction workers, the closeness in the results might be because the demographic was rather comparable. The results contradict those of research by Ojo et al. (2025) conducted among Nigerian informal craftsmen, which found that older workers with greater experience had less injuries. This is likely due to the fact that older workers had more supervisory duties, which made them less vulnerable to work-related injuries.

The study's results showed a correlation between safety training and occupational injuries, which was statistically significant. Because safety training increases workers' awareness of the need to avoid harm, this outcome was anticipated. This suggests that safety training has a crucial role in determining the occurrence of injuries in the workplace. Training was significantly associated with an increased risk of occupational injury in Dessie town, North 150 opia, according to research by Gebremeskel and Yimer (2019). Personnel safety training substantially improves employee engagement and participation in workplace safety management, as demonstrated by Olokede et al. (2024), which the study backs up. The results were consistent with those of Min et al. (2024), who studied the Korean workforce and found that a lack of a positive safety culture was linked to a higher rate of workplace injuries. In particular, there was a strong correlation between occupational injuries

and behaviors like "not encouraging employees to follow safety rules when on a tight schedule" and "not helping each other work safely." This study lends credence to the findings of Sehsah et al. (2020), who found that safety training significantly predicted PPE use, which in turn significantly predicted accidents. The results of this study are in agreement with those of Yosef et al. (2023), who found that the absence of safety training was linked to an increase in workplace injuries at the Bure Industrial Park in northwest Ethiopia. Since all of the studies used descriptive designs, similarities in their results may be explained by this. Although this study was a hypothesis test using secondary data only, its findings contradict those of Estudillo et al. (2025) which found that more hours of safety training of any kind are associated with more accidents. This raises questions about the efficacy of the training itself and could be explained by the study's design.

A statistically significant correlation between PPE use and work-related injuries was found in the study. This was expected, given the use of personal protective equipment (PPE) represents a level of hazard prevention or occupational injury prevention. This suggests that PPE is a major factor in predicting work-related accidents. This confirms what Gebremeskel and Yimer (2019) found: a statistically significant correlation between the incidence of occupational injuries and the usage of personal protective equipment. This study is in line with the findings of Kiconco et al. (2019) in Kampala City, Uganda, which likewise found that occupational injuries were substantially linked with the provision of PPE (APR: 1.47, CI: 1.05-2.05, P = 0.02) and the routine usage of PPE (APR: 0.57, CI: 0.34-0.95, P = 0.03). Sehsah et al. (2020) found that PPE use was a major independent predictor of accidents, therefore our finding is in line with that. The adjusted odds ratio is 0.2. Wearing personal protective equipment (PPE) significantly lowers the incidence and severity of injuries sustained on the job, according to research by Yusiana et al. (2025). The study found that personal protective equipment (PPE) may greatly improve workplace safety and decrease occupational health risks when used correctly and consistently, with the help of worker education and access to high-quality gear. It is possible that the consistency in the results is due to the fact that, when worn correctly, PPE minimizes the likelihood of harm since it acts as a physical barrier.

A statistically significant correlation between risk perception and work-related injuries was found in the study. It was anticipated that a worker's perception of danger would impact the degree to which they exercise caution. This highlights the importance of risk perception in predicting work-related accidents. Researchers Mastrantonio et al. (2024) found that construction workers' perceptions of injury risk were linked to a lack of preventive measures and an uncertain outcome, which is supported by this study. Results from this study corroborate those of Mostafa et al. (2019) and Ellaban et al. (2020), which found that construction workers' low risk perception increased the likelihood of injuries. It suggested that a shift in the way employees think about workplace accidents and the importance of safety training might help lower injury rates. The results corroborate those of Dao et al. (2018), who found that people's risk-taking habits differed somewhat depending on whether they perceived a high or low danger of falling. In a similar vein, this result is consistent with that of Monterroso and Romo (2024), the primary authors of which confirmed a statistically significant relationship between accident perception and risk management or injury exposure. Since all of the studies involved construction workers, the closeness in their results might be explained by the similarities in the research populations. The study's results differ from those of Jafari et al. (2019) among Tehran, Iran, foundry workers. In that study, researchers did not find a significant correlation between the risk perception score and the frequency of occupational accidents (Spearman's $r = 0.003$, $p = 0.977$). This discrepancy could be explained by the study population's heterogeneity, as construction work is perceived as more dangerous than foundry work.

Occupational injuries were shown to be statistically related to certain work conditions. This outcome was anticipated since workers' risk management is affected by their work conditions, which in turn increases their vulnerability to occupational injuries. This suggests that the nature of the labor itself is a major factor in the development of occupational injuries. These results are in agreement with those of Howe et al. (2024), who demonstrated that occupational physical injuries are influenced by three domains: the physical environment of the workplace (including factors such as exposure to physical hazards, PPE availability and utilization, company size, and job type), the psychological and social aspects of the workplace

(including factors such as psychosocial stressors, gender-related barriers, educational background, and disparities based on ethnicity and migration), and finally, the individual's physical and mental health, aging, and physical health and wellness. There was an increase in occupational injuries during hot periods, which is supported by this study and Riccò et al. (2020). Yang et al. (2022) found that general work conditions affect the rate of occupational injury among construction workers, which is consistent with our findings. Findings from this study corroborate those of Kiconco et al. (2019), who found that critical work circumstances included working night shifts, being dissatisfied with one's job, experiencing high levels of stress on the job, and working in an unsafe setting were substantially linked to occupational injuries. Since all of the studies involved construction workers, the closeness in their results might be explained by the similarities in the research populations.

Conclusion

Based on the findings of the study, it was concluded that years of work experience, safety training, use of PPE, risk perception and work condition are significant determinants of occupational injuries among road construction workers.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The managers of construction companies should reassign older and more experienced workers to more supervisory roles to reduce their exposure to hazards and occupational injuries.
2. The government through the ministry of labour and productivity should enforce safety training policy for all construction workers inclusive of contract workers to reduce the occurrence of occupational injuries.
3. The managers of construction companies should be saddled with the responsibilities of providing PPE for workers and enforcing the use of the PPE.
4. The Institute of safety professionals of Nigeria should advocate for training as a means of ensuring workers have the right perception of their exposure to risk of occupational injury.

5. The government, through the ministry of labour and productivity should enforce the bare minimum conditions every construction workplace should have to reduce the occurrence of occupational injuries.

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