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OCCUPATIONAL HAZARDS AND SAFETY PRACTICES AMONG STAFF OF PORT HARCOURT ELECTRICITY DISTRIBUTION COMPANY

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Abstract
This study investigated occupational hazards and safety practices among workers of the Port Harcourt Electricity Distribution Company (PHED) in the Port Harcourt metropolis of Rivers State, Nigeria. The study utilized a descriptive cross-sectional survey approach, involving a population of 1,538 employees working for PHED in the urban area of Port Harcourt. A sample size of 414 was selected using a multi-staged sampling procedure took part in the study. Data was collected using a structured questionnaire with a reliability coefficient of 0.84. The result showed that occupational hazards were experienced by the majority of the workers, with psychosocial hazards (87.9%) being the most common type of occupational hazard. The result also revealed that 73.9% of the staff experienced physical hazards resulting from their jobs. The result showed that 82.1% of the workers of the PHED suffered ergonomic hazards. The result showed that the grand mean of 3.13±0.77 is greater than the criterion mean of 2.5, which implies that good safety practices were found among the workers of the PHED. It was concluded that workers of PHED mainly experienced psychosocial hazards, though other categories of occupational such as physical hazards and ergonomic hazards were also experienced. Good safety practices were found among the workers, and this would reduce the impact of such hazards on the workers. It was recommended that PHED improve the security of their staff, particularly when they are on duty, by attaching security personnel to them to avoid psychosocial hazards like assault.

Keywords: Occupational Hazards, Safety Practices, Hazards, Electricity Distribution Company

Introduction

Over the years, workplace hazards have been identified as a major cause of fatality and injuries in most organisations. The outcome is the harm that results from the uncontrolled hazard. Common workplace hazard groups include environmental agents/hazards, physical agents, chemical agents, biological hazards and psychosocial issues (Joseph, 2017). The immense human suffering caused by inadequate occupational health and safety measures is accompanied by significant economic consequences that could hinder a nation's pursuit of sustainable economic and social development. Enhancing occupational health and safety should be a priority shared by governments, employers, and workers alike. The International Labour Organization constituents should engage in discussions and reach agreements on measures to effect these improvements. Successful practices in health and safety rely on cooperation, goodwill, and the inclusion of the perspectives of those directly affected. This article aims to serve as a foundation for taking action to reduce the substantial number of work-related deaths, accidents, and illnesses, ultimately promoting a safe and dignified work environment for all.

Ensuring the well-being and safety of workers has always been and remains a top priority for the International Labour Organization. Despite significant efforts spanning several decades, the occurrence of occupational accidents and diseases remains unacceptably high. The societal, business, and personal costs associated with these incidents are still far from being deemed acceptable. Each year, there are over 250 million work-related accidents, resulting in more than 160 million workers falling ill annually due to workplace hazards and exposures. Tragically, it has been estimated that over 1.2 million workers lose their lives due to occupational accidents and diseases. These social costs can no longer be considered an inevitable consequence of progress.

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The frequency of encountering workplace risks may differ in the gender of workers in Electricity Distribution Companies in the Port Harcourt metropolis. It is pertinent to note that female workers might be less likely to be exposed to electrical hazards (occupational hazards) as compared with male staff. Studies by Aliyu and Auwal (2015) reported that male workers dominated the workplace (97.8%) and no correlation was observed between the extent of exposure to workplace risks and hazards and gender ($p>0.05$), especially electrical hazards. It may be plausible because a good proportion of workers in PHED in Port Harcourt metropolis are male giving the chances of high occupational risk, unlike the females who are few in the occupation. Most workers who have attained up to tertiary level of education may be aware of hazards associated with the occupation unlikely those who are less educated. Elsayed and Mekhmier (2017) primarily focused on electricity workers and revealed their exposure to a variety of occupational hazards, with a particular emphasis on physical hazards. This is corroborated by Aliyu and Saidu (2011), which confirmed the presence of hazards among workers in the Kaduna Refinery and Petrochemical Company. Furthermore, Aliyu and Auwal (2015) investigated hazard exposure and knowledge of occupational health and safety practices among workers in a Nigerian bottling company.

Levanon et al. (2012) addressed the broader scope of hazards, encompassing physical, chemical, biological, ergonomic, and psychological risks. This study concentrated on computer operators and underscored the importance of ergonomics interventions to mitigate these hazards. Volberg et al. (2017) emphasized the physically demanding nature of the electric power industry, outlining tasks such as lifting heavy objects, climbing ladders, and performing repetitive activities that contribute to musculoskeletal problems. Johnson and Motilewa (2016) focused on the knowledge and use of personal protective equipment (PPE) among auto technicians, underscoring the critical importance of PPE in maintaining worker safety. In contrast, Aluko et al. (2016) delved into the healthcare industry, exploring the knowledge, attitudes, and perceptions of occupational hazards and safety practices among Nigerian healthcare workers. Moreover, Thomée and Jakobsson (2018) study highlighted the exposure of electricians to harsh weather conditions and the electricians' views on electrical accidents, emphasizing the environmental factors that can affect worker safety.

The literature collectively underscores the need for recognizing and addressing occupational hazards in various industries. It emphasizes the importance of implementing occupational health and safety practices, using PPE effectively, and incorporating ergonomic interventions to reduce the risk of musculoskeletal disorders and other health issues. Moreover, the studies demonstrate the relevance of considering specific hazards and challenges within distinct industries and the impact of environmental factors on worker safety. These findings collectively emphasize the significance of prioritizing occupational health and safety measures in Nigerian workplaces to ensure the well-being of workers across diverse industries.

Statement of the problem

Electricity job is one of the most hazardous occupations that contribute to accidents, injuries and even death. Most of the fatal incidents are caused by contact with overhead power lines and are likely to be associated with nonuse of safety and poor careful planning and straightforward precautions. Most workers in the field of electricity and energy distribution have encountered challenges such as health and physical outcomes due to hazards emanating from the job. PHEDC work is regarded as one of the most hazardous occupations that threatens the health and safety of the workers. There is increased exposure and prolonged association with dust, chemicals like earthen substances, and sharp objects such as testers, cable cutters, and working tools which if not properly handled cause great damage to the workers. The related economic costs of accidents and electrocution place a considerable burden on the workers, especially in health and safety management. Workers in power holding companies are exposed to diseases such as musculoskeletal disorders due to falls resulting from the non-use of safety belts, long climbing of poles and bending duration, prolonged handling of working devices; and prolonged carrying of equipment such as ladders and cables among others.

In light of this, the researchers consider it necessary to investigate the occupational hazards and safety practices among workers in Port Harcourt Electricity Distribution Company in the Port Harcourt metropolis of Rivers State, Nigeria Hence, the study aimed to provide answers to the following research questions.

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Research Questions

The following research questions were formulated to guide this study.

1. What are the psychological hazards among workers of the Electricity Distribution Company (PHED) in the Port Harcourt metropolis of Rivers State?
2. What are the physical hazards among workers of Electricity Distribution (PHED) in the Port Harcourt metropolis of Rivers State?
3. What are the ergonomic hazards among workers of the Electricity Distribution Company (PHED) in the Port Harcourt metropolis of Rivers State?
4. What are the safety practices among workers of the Electricity Distribution Company (PHED) in the Port Harcourt metropolis of Rivers State?

Materials and Methods

The area of the study was the Port Harcourt metropolis of Rivers State. The study utilized a descriptive cross-sectional survey approach. The estimated population of workers in Port Harcourt Electricity Distribution Company in Port Harcourt metropolis include Alpha region (500), Beta region (521) and Gamma region (517) totalling one thousand five hundred thirty-eight (1538) workers which were used for the study (Human Resource Management PHEDC, 2022). A sample size of 440 PHED workers was determined using the Taro Yamane method, suitable for a sizable population. A 10% non-response rate was added to 400 to give the sample size (440) for the study which was 440. A multi-stage sampling technique was adopted to select the participants which will be carried out in two stages. The tool employed to gather information was a self-designed questionnaire entitled; "Occupational Hazards and Safety Practices among PHED Workers Questionnaire" (OHSPQ). The split-half method was utilized to assess the reliability of the validated questionnaire. In this regard, 40 copies of the questionnaire were distributed to PHED workers in Ahoada East Local Government Area of Rivers State, a locale similar to the study area. The reliability index, as determined by Cronbach's Alpha, yielded a score of 0.84, signifying the questionnaire's reliability. A total of 440 copies of the instrument was administered and 414 copies of the instrument retrieved were used for data analysis. The data gathered were processed utilizing Statistical Products for Service Solution (SPSS) version 25.0. The analysis was conducted using the data obtained from the fieldwork. Descriptive statistical methods, including mean and standard deviation, were employed to address the research inquiries.

Results

Research Question 1: What are the psychosocial hazards among workers of the Electricity Distribution Company (PHED) in the Port Harcourt metropolis of Rivers State?

Table 1: The frequency and percentage distribution of psychosocial hazards among workers of the Electricity Distribution Company (PHED)

Psychosocial Hazards	**No F (%)**	**Yes F(%)**
Ever been humiliated and ridiculed by your supervisors or superiors during work	53(12.8)	361(87.2)
Been tasked with work that is below your level of competence	43(10.4)	371(89.6)
Been imposed with unreasonable task by employer	41(9.9)	373(90.1)
Carried rumours or gossip about your colleagues or supervisor	64(15.5)	350(84.5)
Pierced by sharp objects while working at a height	48(11.6)	366(88.4)
Overall Total	**50(12.1)**	**364(87.9)**

Table 1 shows the frequency and percentage distribution of psychosocial hazards among workers of the Electricity Distribution Company (PHED). The result showed that 364(87.9%) of the workers of the Electricity Distribution Company suffer from psychosocial hazards. For instance, 361(87.2%) of them have been humiliated and ridiculed by their supervisors or superiors during work

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Research Question 2: What are the physical hazards among workers of the Electricity Distribution Company (PHED) in the Port Harcourt metropolis of Rivers State?

Table 2: The frequency and percentage distribution of physical hazards among workers of the Electricity Distribution Company (PHED)

Physical Hazards	**No**	**Yes**
	F (%)	**F(%)**
Experienced shock as a result of returning to current	10(2.4)	404(97.6)
Experienced ionizing radiation as a result of electric supply	34(8.2)	380(91.8)
Exposed to the vibration of the transformer	38(9.2)	376(90.8)
Got a blunt injury while using a plier	22(5.3)	392(94.7)
Experienced shock due to electrocution	15(3.6)	399(96.4)
Got injured when tensioning cable	11(2.7)	403(97.3)
Overall Total	**108(26.1)**	**306(73.9)**

Table 2 shows the physical hazards among workers of the Electricity Distribution Company (PHED) in the Port Harcourt metropolis of Rivers State. The result revealed that 306(73.9%) of the workers experience physical hazards. For instance, 404(97.6%) of the workers have experienced shock as a result of return current. Also, 97.3% of the workers got injuries while tensioning cable wires.

Research Question 3: What are the ergonomics hazards among workers of the Electricity Distribution Company (PHED) in the Port Harcourt metropolis of Rivers State?

Table 3: The frequency and percentage distribution of ergonomics hazards among workers of the Electricity Distribution Company (PHED)

Ergonomics Hazards	**No**	**Yes**
	F (%)	**F(%)**
Develop back pains daily after work	38(9.2)	376(90.8)
Experienced falls due to poor positioning of legs on the ladder	33(8.0)	381(92.0)
Experienced musculoskeletal pains in the arms due to the prolonged lifting of the ladder	38(9.2)	376(90.8)
Struggle to lift a ladder while working with a tall worker	142(34.3)	272(65.7)
Experienced pain and probably dislocation due to lifting of heavy woody pole	119(28.7)	295(71.3)
Overall Total	**74(17.9)**	**340(82.1)**

Table 3 shows the frequency and percentage distribution of ergonomics hazards among workers of the Electricity Distribution Company (PHED). The result showed that 340(82.1%) of the workers of the Electricity Distribution Company suffered ergonomics hazards. For example, 376(90.8%) of them developed back pains daily after work.

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Research Question 4: What are the safety practices among workers of the Electricity Distribution Company (PHED) in the Port Harcourt metropolis of Rivers State?

Table 4: The mean and standard deviation distribution of safety practices among workers of the Electricity Distribution Company (PHED)

Safety Practices	Mean	S.D	Remark
Use eye goggles to prevent a spark of electric current	2.89	0.60	Good
Use hand gloves when holding naked cables or wires	3.36	0.76	Good
Wear an apron during work	2.89	0.77	Good
Wear a nose mask during the dust period	2.74	0.73	Good
Wear safety boots at the workplace especially when climbing ladders	3.45	0.68	Good
Wear a belt and tie it, when climbing at a height	3.19	0.84	Good
Use reflectors at the workplace	2.87	0.91	Good
Wash hands with soap and water after daily task	3.24	0.80	Good
Check the position of the ladder before climbing	3.34	0.83	Good
Ensure belts are well fixed while working at a height	3.35	0.81	Good
Grand Mean	**3.13**	**0.77**	**Good**

***Criterion Mean = 2.5**

Table 4 shows the mean and standard deviation distribution of safety practices among workers of the Electricity Distribution Company (PHED). The result showed that the grand mean of (3.13±0.77) is greater than the criterion mean of 2.5 which implies that good safety practices were found among the workers of the Electricity Distribution Company. For instance, the workers ensured their belts were well fixed while working at a height of 3.35±0.81.

Discussion

The result showed that occupational hazards were experienced by the majority of the workers with psychosocial hazard (87.9%) being the most suffered type of occupational hazard. The finding of this study is in line with that of Elsayed and Mekhmier (2017) whose study on the awareness of electricity workers regarding occupational health hazards showed that the workers were exposed to different occupational hazards. The finding of the study is in line with that of Levanon et al. (2012) who reported hazards such as physical, chemical biological, ergonomic and psychological. The finding of Aliyu and Saidu (2011) agrees with the present study as it revealed that hazards are noted among the workers. The study of Krause et al. (2010) also confirmed the findings of the present study as it reported that a lot of hazards are found among workers. The similarities between the present and previous studies might be attributed to the fact that all jobs come with various hazards. However, proper job training and placement, use of PPEs and adherence to standard safety precautions will go a long way to prevent some of these hazards.

The result revealed that 73.9% of the workers experience physical hazards. The finding of this study corroborates that of Thomée and Jakobsson (2018) which showed that, workers are exposed to harsh weather conditions which fluctuate during the same day as they work for hours. They experience high exposure to solar ultraviolet radiation because of the nature of their work. On the other hand, they may wear gloves, but they are quickly worn out. The finding of this study is in tandem with that of Volberg et al. (2017) which showed that working in an electricity company is a physically demanding occupation that is characterized by lifting heavy loads, which causes the development of musculoskeletal problems and the job tasks may be characterized by activities of like lifting heavy objects, climbing lather, standing for long periods, reaching far objects and repetitive tasks which contribute to the development of musculoskeletal disorder. The finding of this study is in line with that of Elsayed and Mekhmier (2017) whose study on electricity workers regarding occupational health hazards showed that the workers were exposed to physical hazards.

The result showed that 82.1% of the workers of the Electricity Distribution Company suffered ergonomics hazards. This finding is not different from that of Singerman et al. (2013) where more than half of the respondents were found to be exposed to ergonomic hazards. The result showed that the grand mean of (3.13±0.77) is greater than the criterion mean of 2.5 which implies that good safety practices were found among the workers of the Electricity

Distribution Company. This finding is encouraging because safety practices are vital to ensure the well-being of the workers. The present result is consistent with an earlier finding by Johnson and Motilewa (2016) in Uyo, Nigeria, which showed that the participants exhibited a good level of safety practice. The finding of this study aligns with that of Aluko et al. (2014) which showed that the majority of the respondent complies with safe work practices and a high proportion of the respondents comply with occupational safety procedure. The result of this study also showed other occupational safety practices of respondents which include: the use of personal protective wear. It can be deduced from this result that, occupational safety practices are multi-dimensional.

Conclusion

The study's results led to the conclusion that employees working at the Port Harcourt Electricity Distribution Company (PHED) in the Port Harcourt area of Rivers State primarily encountered psychosocial hazards, although they also encountered various other types of occupational hazards, including physical and ergonomic hazards. It was concluded that good safety practices were found among the workers, this would reduce the impact of such hazards on the workers.

Recommendations

Based on the study's results, the following recommendations were made:

1. The PHED should improved the security of their staff particularly when they are on duty by attaching security personnel to them, to avoid psychosocial hazards like assault.
2. The government should provide more safety equipment for the workers to be more safeguarded during their work.
3. The workers should also ensure they make a conscious effort to reduce their exposure to hazards during work.
4. The PHED should also ensure the workers are not exposed to mechanical hazards by replacing faulty equipment and tools timely.
5. The company should also give better welfare to the workers to ease the hazards facing them at work.

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