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Extent of Exposure to Occupational Hazards Among Mason Workers in Obio/Akpor Local Government Area in Rivers State

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Abstract
This research looked at the risks that masons in Rivers State's Obio/Akpor Local Government Area faced on the job. A descriptive survey study approach was used using 2000 masons as the population. Using a multi-stage sampling technique, 440 people made up the sample size. Three specialists verified the validity. A reliability value of 0.85 was assigned to a questionnaire used as the data-gathering tool. At the 0.05 threshold of significance, the obtained data were analyzed using the mean and linear regression**.** The result showed a high extent of physical hazards (2.60±0.90), biological hazards (2.61±0.95), chemical hazards (3.15±1.42), psychological hazards (2.94±0.92), ergonomic hazards (2.67±1.01), and mechanical hazards (2.72±0.82). It was concluded that masons in Obio/Akpor Local Government Area of Rivers State are exposed to different forms of occupational hazards that affect their health, therefore low extent of safety practice is responsible for the high extent of occupational hazards exposure among masons. It was recommended among others that, the Ministry of Works should upon approval of any construction work, verify and ensure that a stand-by safety personnel is attached to the project and is on the ground every day to enforce safety regulations on site.

Keywords: Hazards, Mason, Occupation, Obio/Akpor, Workers

Introduction

Masonry construction is one of the speciality trades with a high risk of work-related injuries. Building work is a hazardous profession and is typically full of hazards, for example, exposure to unsafe substances such as paint, glues and asbestos, drilling that can cause explosions and fires, the possibility of debris falling, workers falling from heights, motor vehicle collisions, construction accidents, electrocution and structural collapse (Belel & Mahmud, 2012). A mason is a worker in the building industry who constructs and maintains structures, such as foundations, floors, beams, and columns, using stone, blocks, and bricks. They can work in both public and private buildings, carrying out a range of tasks under the direction of building engineers, technicians, or foremen. There are many different risks that these professionals must deal with at work. According to Tunji-Olayeni (2018), the construction business is thought to be among the riskiest, with an estimated 60,000 deaths happening there annually (International Labour Organization, 2006). Although construction sites have been characterized as dangerous workplaces, many of the risks are caused by both site management and personnel. According to Ogundipe, et al. (2018), when workers are under the influence of alcohol or strong narcotics, they create risks on building sites. One of the largest and most vulnerable groups in India's unorganised sector is the construction industry (Sharma & Kumar, 2008). One of the rare professions where one may start at the bottom and work their way up is construction (Fisher vs. LLC. 2007).

According to Anupama and Pratibha (2015), a hazard is any circumstance or state that has the potential to result in danger, harm, an accident, loss of prosperity, or even death. According to Feltner (2016), there are six categories into which dangers may be divided: Radiation, stress from heat and cold, vibration, and noise are examples of physical dangers (Centers for Disease Control, 2015). Employees may find themselves operating at near maximum capacity, which increases their risk of developing musculoskeletal problems or persistent weariness (Kenny, 2008). The most significant alterations in mental processes are associated with a decline in perception and accuracy (Ilimarinen, 2001). One subset of occupational risks is chemical hazards, which are related to hazardous substances. Chemical exposure at work may have negative short- or long-term health impacts. Research indicates that exposure to many job hazards,

including silica dust, engine exhaust, and welding fumes, has been linked to an increased risk of heart disease (Center for Disease Control, 2015). Additionally, exposure to high pressure has been linked to heart disease in other workplaces. Biological agents, such as microorganisms and poisons generated by living things, have the potential to harm employees' health. A large number of workers on constructing construction sites are impacted by an example of a biohazard (Center for Disease Control, 2015). Working outside exposes one to a variety of biological risks, such as bug bites and stings from spiders, snakes, and scorpions. Farmers, foresters, landscapers, groundskeepers, gardeners, painters, roofers, payers, construction workers, labourers, mechanics, and other professionals who spend time outdoors are among the outdoor workers at risk for these dangers, according to NIOSH (Center for Disease Control, 2015). Extreme or abnormal postures, hand/arm vibrations, poorly constructed tools, equipment, or workstations are examples of ergonomic dangers. Both work and non-work environments, such as workshops and construction sites, may provide ergonomic risks (Center for Disease Control, 2015). Guidelines addressing workplace health and safety concerns are produced by the National Institute for Occupational Safety and Health (NIOSH) in the United States via workplace inspections and research (Center for Disease Control, 2016). When it comes to accident frequency and severity, the manufacturing sector is significant.

Safety experts are particularly concerned about the occupational risk that masons face, particularly in developing countries like Nigeria. The requirement to ensure worker and work safety both before and after the work process gave rise to the expression "safety first," which is used in a wide range of extractive, manufacturing, and construction sectors. This is because any hurt or damage caused by a hazard-induced accident to the worker or the job would instantly halt the building process for a significant amount of time. Specifically, occupational accidents have been identified as one of the main contributors to industrial risks, particularly in the building construction sector. Every year, around 400,000 new instances of occupational diseases are reported, while an estimated 100,000 individuals pass away from these illnesses (Alavinia et al., 2009). The word "occupational hazard" refers to both immediate and long-term concerns related to the working environment. It is an area of research within the fields of public health and occupational safety and health (Ramos, 2018).

Physical harm (to the head, back, or eyes, for example) is one kind of short-term danger; long-term hazards include a higher chance of contracting an occupational illness like cancer or heart disease. Generally speaking, long-term hazards have permanent negative health impacts and short-term risks have reversible ones. Certain physical circumstances and related elements, such as humidity, noise, temperature, air pollution, and chemical agents in the form of gases, may be linked to occupational health concerns. Nonetheless, research suggests that the industries with the greatest risk of exposure to high-risk occupational hazards include farming, general contracting, steel, automotive and truck driving, and nursing (Appiah-Brempong & Afriyie-Gyawu, 2013). According to Manoharan et al. (2013), occupational risks have a catastrophic effect on employees, employers, and society at large. Irreversible loss of life might result from illnesses and injuries sustained at work (Aguwa, 2013). Several studies on mason's workers have attempted to find out the causes of accidents and death among building construction workers and remedies for them given safeguarding the life of the workers and the work itself during work processes, but only a few have studied the need for the workers to possess the prerequisite knowledge of the hazard safety measures and the actual practice of these occupational hazard control. On this note, the researcher is however set to assess the occupational hazard and safety practice among mason workers in Obio/Akpor Local Government Area in Rivers State. The following research questions were formulated:

1. What is the extent of exposure to physical hazards among masons in Obio/Akpor LGA Rivers State?
2. What is the extent of exposure to biological hazards among masons in Obio/Akpor LGA Rivers State?
3. What is the extent of exposure to chemical hazards among masons in Obio/Akpor LGA Rivers State?
4. What is the extent of exposure to psychosocial hazards among masons in Obio/Akpor LGA Rivers State?
5. What is the extent of exposure to ergonomic hazards among masons in Obio/Akpor LGA Rivers State?
6. What is the extent of exposure to mechanical hazards among masons in Obio/Akpor LGA Rivers State?

Methodology

Descriptive survey research was used for this study. The actual population of masons in Obio/Akpor local government is unknown; in that case, the estimated population of the study is 2000 masons from the selected communities in Obio/Akpor, which were disproportional excluding the site engineers and architects. The assumed 2000 masons were regarded as the census survey from where the target sample is mapped out. The sample size of this study is 440 masons from the selected communities in the local government area. The multi-stage sampling procedure was adopted in this study. At stage 1, the stratified sampling technique was adopted to select 20 major communities in Obio/Akpor Local

Government area of Rivers State. At stage 2, non-proportionate random sampling was used to select 22 masons from each of the 20 communities selected for this study. At stage 3, the simple random was adopted thus the researcher visited building construction sites in the designed areas and solicited support from masons to respond to questions on their break period. Responses from them were done fast and smartly to enable them to continue with their work. The instrument for data collection was a structured questionnaire titled 'Occupational Hazard and Safety Practices among Mason Questionnaire (OHSPMQ). The reliability coefficient of the instrument was 0.85. Data was collected by delivering the hard copy of the questionnaire to the respondents by hand and retrieving it immediately after it was filled. The collected data were analysed with the aid of the Statistical Product and Service Solution (SPSS 23.0) using descriptive mean and standard deviation.

Results

The results of the study are shown below:

Table 1: Extent of physical hazard exposure among masons in Obio/Akpor LGA

SN	Physical hazards	Mean	SD	Remark
1	Works in a harsh workplace due to exposure to sun causing sunburns, and scald.	3.53	.64	HE
2	Exposure to rain, wind or cold when working on the site	2.38	.97	HE
3	Fallen from height due to a bad scaffold	1.93	.93	LE
4	Exposure to ear injury due to hammers, saws, and drills, during work	2.30	.98	LE
5	Exposure to serious noise at the workplace	2.66	.84	HE
6	Exposure to injury of the eye	2.58	.93	HE
7	Injuries from fallen heavy objects	2.75	1.02	HE
8	Working in confined spaces	2.66	.85	HE
9	Exposure to vibration when excavating with a machine	2.69	.96	HE
	Grand mean	**2.60**	**0.90**	**HE**

Criterion mean = 2.50. Key: HE = high extent, LE = low extent

Table 1 revealed the extent of physical hazard exposure among masons in Obio/Akpor LGA. The results showed that the grand mean = 2.60±0.90 was greater than the criterion mean of 2.50 indicating a high extent. Thus, the extent to which masons in Obio/Akpor LGA were exposed to physical hazards was high.

Table 2: Extent of exposure to biological hazards among masons in Obio/Akpor LGA

SN	Biological hazards	Mean	SD	Remark
1	Exposure to bites from insects such as mosquitoes, and spiders	3.07	1.01	HE
2	Spread of communicable diseases due to overcrowding in the workplace	2.11	1.00	LE
3	Exposure to microorganisms such as fungi, and viruses	2.18	1.01	LE
4	Neglect to wash hands with clean water and soap before eating at the site	2.82	1.06	HE
5	Experienced irritation due to exposure to cement	2.74	0.79	HE
6	Get sick as a result of carrying out the job	2.74	0.81	HE
	Grand mean	**2.61**	**0.95**	**HE**

Criterion mean = 2.50. Key: HE = high extent, LE = low extent

Table 2 revealed the extent of biological hazards exposure among masons in Obio/Akpor LGA. The results showed that the grand mean = 2.61±0.95 was greater than the criterion mean of 2.50 indicating a high extent. Thus, the extent to which masons in Obio/Akpor LGA were exposed to biological hazards was high.

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Table 3: Extent of exposure to chemical hazards among masons in Obio/Akpor LGA

SN	Chemical hazards	Mean	SD	Remark
1	Experienced disease due to the inhalation of cement dust	2.85	0.89	HE
2	There is exposure to toxic substances daily	3.30	0.75	HE
3	Exposed to inhalation of cement, and chipping dust	3.29	0.88	HE
4	Experienced difficulty in breathing when mixing cement	3.17	0.17	HE
5	Cement substances spill on the body	3.14	0.87	HE
	Grand mean	**3.15**	**1.42**	**HE**

Criterion mean = 2.50. Key: HE = high extent, LE = low extent

Table 3 revealed the extent of chemical hazard exposure among masons in Obio/Akpor LGA. The results showed that the grand mean = 3.15±1.42 was greater than the criterion mean of 2.50 indicating a high extent. Thus, the extent to which masons in Obio/Akpor LGA were exposed to chemical hazards was high.

Table 4: Extent of exposure to psychological hazards among masons in Obio/Akpor LGA

SN	Psychological hazards	Mean	SD	Remark
1	Exposure to serious stress due to workload	3.38	0.81	HE
2	Exposure to injuries due to lack of communication and safety rules at the workplace	2.89	1.03	HE
3	Experienced employers' insult at work	2.63	0.98	HE
4	Exposure to conflict and quarrels with other workers at the site	2.73	0.85	HE
5	Ever felt like changing your choice of work	2.94	0.91	HE
6	Mental breakdown due to work stress	2.89	1.00	HE
7	Working under pressure	2.81	0.95	HE
8	Poor payment of temporary workers	3.24	0.79	HE
	Grand mean	**2.94**	**0.92**	**HE**

Criterion mean = 2.50. Key: HE = high extent, LE = low extent

Table 4 revealed the extent of psychological hazard exposure among masons in Obio/Akpor LGA. The results showed that the grand mean = 2.94±0.92 was greater than the criterion mean of 2.50 indicating a high extent. Thus, the extent to which masons in Obio/Akpor LGA were exposed to psychological hazards was high.

Table 5: Extent of exposure to ergonomic hazards among masons in Obio/Akpor LGA

SN	Ergonomic hazards	Mean	SD	Remark
1	Working overtime and high speed results in serious injuries and accident	3.01	0.87	HE
2	Exposure to sexual harassment by same-sex or opposite sex	2.45	1.18	LE
3	Experience any form of pain due to the nature of work	2.67	1.09	HE
4	Exposure to injury due to bad working equipment	2.95	.88	HE
5	Satisfied with salary	2.54	1.05	HE
6	Vibrations affecting specific body organs	2.36	1.00	LE
7	Lifting heavy objects manually	2.68	0.99	HE
	Grand mean	**2.67**	**1.01**	**HE**

Criterion mean = 2.50. Key: HE = high extent, LE = low extent

Table 5 revealed the extent of ergonomic hazard exposure among masons in Obio/Akpor LGA. The results showed that the grand mean = 2.67±1.01 was greater than the criterion mean of 2.50 indicating a high extent. Thus, the extent to which masons in Obio/Akpor LGA were exposed to ergonomic hazards was high.

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Table 6: Extent of mechanical hazard exposure among masons in Obio/Akpor LGA

SN	Mechanical hazards	Mean	SD	Remark
1	Vibration from heavy machine	2.89	0.89	HE
2	There were unguarded machinery in the workplace	2.76	0.78	LE
3	Some of the machines were not in good condition	2.62	0.85	HE
4	Most machines are often difficult to operate	2.75	0.75	HE
5	Accident often occurs from using some of the manual machine	2.61	0.84	HE
	Grand mean	**2.72**	**0.82**	**HE**

Criterion mean = 2.50. Key: HE = high extent, LE = low extent

Table 6 revealed the extent of mechanical hazard exposure among masons in Obio/Akpor LGA. The results showed that the grand mean = 2.72±0.82 was greater than the criterion mean of 2.50 indicating a high extent. Thus, the extent to which masons in Obio/Akpor LGA were exposed to mechanical hazards was high.

Discussion

The findings of this study in Table 1 revealed a high extent of physical hazards among masons in Obio/Akpor LGA (2.60±0.90). The findings of this study may not be disputed because masons work in construction sites surrounded by several physical features capable of exposing them to hazardous conditions. The findings of this study are in concordance with studies of Berhe et al. (2015) in a study on occupational hazards in Northern Etiopa which showed that there was a high extent of exposure to physical hazards among masons. This finding of this study also corroborates that of Smith et al. (2005) whose study in Australia, affirmed that masons are exposed to a high extent of physical hazards. The finding of this study is in line with Boschman et al. (2011) whose study in Uganda revealed a high extent of physical hazards among masons. Amissah (2019) buttressed that the prevalence of physical hazards is at a high rate among masons in Ghana. The finding of this study is also in credence with the result of Johnson and Bassey (2016) whose study in Uyo Nigeria shows a high extent of physical hazards among masons. Oluwafemi et al. (2017) whose study in the Ibeji-Lekki Logos state of Nigeria added that masons are exposed to a high extent of physical hazards daily. However, the finding of this study is at variance with that of Banibrata (2020) whose study in West Bengal India revealed a low extent of physical hazards among masons. Yilaz (2014) whose study in Istanbul-Turkey in agreement revealed a low rate of physical hazards among masons. the finding of this study is at variance with that of Trench (2026) whose study in Athens, Greece affirmed a low extent of physical hazards among masons. The dissimilarity in the previous and present study could be linked to disparity in the sampling method.

The result in Table 2 indicated a high extent of biological hazards among masons in Obio/Akpor LGA (2.61±0.95). This finding could be attributed to the close contact workers have and handle materials with their bare hands which could expose them to biological hazards. The finding of this study is in credence with studies of Tawiah et al. (2022) whose study in Ghana showed a high extent of biological hazards among mason workers. The finding of this study is in keeping with that of Ezeugwu, et al (2017) whose study in Enugu revealed a high extent of biological hazards among masons. The finding of this study is in line with that of Neha (2021) whose study in Uttarakhand buttressed a high rate of biological hazards among mason workers. The finding of this study corroborates with that of Henrietta and Paschal (2016) whose study in Nigeria shows a high extent of biological hazards among masons. The finding of this study is in keeping with that of Spee et al. (2007) whose study in Nether added that masons are exposed to a high extent of biological hazards.

The result in Table 3 showed a high extent of chemical hazards among masons in Obio/Akpor LGA (3.15±1.42). The finding of this study is in keeping with that of Abas (2021) whose study in Selangor and Kaala Lumpur revealed a high extent of chemical hazards. The finding of this study is similar to that of Frank (2008) whose study in the United States showed a high extent of chemical hazards among workers. This finding of this study also corroborates that of Muiruri, and Mulinge, (2014) whose study in Kenya found that high extent of chemical hazards. The finding of this study is in line with Sabha (2018) whose study in Coimbatore City revealed a high extent of chemical hazards. The findings of this study in Table 4 revealed a high extent of psychosocial hazards among masons in Obio/Akpor LGA (2.94±0.92). The finding of this study is similar its study revealed a high extent of psychosocial hazards reported in different studies. This study corroborates that of Boschman et al (2011) who in a study on occupational health hazards experienced by workers in Nigeria showed a high extent of psychosocial hazards due to neglect by the government. The finding of this study is similar to that of Madani et al. (2014) whose study in Kishan Iran showed a high extent of psychosocial hazards among workers. The finding of this study is in keeping with that of Neha (2021) whose study in

Uttarakhand revealed a high extent of psychosocial hazards. The finding of this study is similar to that of Aderaw et al. (2011) whose study in Ethiopia showed a high extent of psychosocial hazards among workers. Thought, there was little contrast whereby the extent of psychosocial hazard exposure was not the same. This contrast in findings could be linked to dissimilarities in sample size. The finding of this study shows Elenwo (2018) whose study in Nigeria revealed a low extent of psychosocial hazards among masons. Aderaw et al. examined a sample size of 200 whereas this study examined a sample size of 440 which is far higher than the previous ones. Based on the premise that a larger sample size makes for a more logical generalization validity than a smaller sample size, the discrepancy in findings was expected since this study involves many more persons than the previous things. The dissimilarity in findings could be linked to disparity in the socio-demographic characteristics of the respondents utilized in the studies.

The result in Table 5 indicated a high extent of ergonomic hazards among masons in Obio/Akpor LGA (2.67±1.01). The finding of this study is similar whose study revealed a high extent of ergonomic hazards reported in different studies. The finding of this study is similar to that of Madani et al. (2014) whose study in Kishan Iran showed a high extent of ergonomic hazards among workers. The finding of this study is similar to that of Elenwo (2018) whose study in Rivers State of Nigeria showed a high extent of ergonomic hazards among workers. The finding of this study is in keeping with that of Neha (2021) whose study in Uttarakhand revealed a high extent of ergonomic hazards. The finding of this study is in keeping with that of Dong et al. (2019) whose study in the United States showed a high extent of ergonomic hazards. This finding of this study also corroborates that of Hesse et al (2010) whose study found that high extent of ergonomic hazards. The finding of this study is in keeping with that of Hoppe (2023) whose study in Nigeria showed a high extent of ergonomic hazards. The finding of this study is in keeping with that of Alghadir and Anwer (2015) whose study in Saudi Arabia showed a high extent of ergonomic hazards. The finding of this study is in line with Anton et al. (2018) whose study revealed a high extent of ergonomic hazards. The finding of this study is in keeping with that of Umer et al (2018) whose study showed a high extent of ergonomic hazards. The finding of this study is in keeping with that of Gonzalez-Galarzo et al. (2014) whose study in Nigeria showed a high extent of ergonomic hazards. The finding of this study is similar to that of Forde et al. (2005) whose study showed a high extent of ergonomic hazards among workers. The finding of this study is similar to that of Oladanete et al. (2015) whose study in Nigeria showed a low extent of ergonomic hazards. Thought, there was little contrast whereby the extent of ergonomic hazard exposure was not the same. This contrast in findings could be linked to dissimilarities in sample size. Forde et al. examined a sample size of 200 whereas this study examined a sample size of 440, which is far higher than the previous ones. Based on the premise that a larger sample size makes for more logical generalization validity than a smaller sample size, the discrepancy in findings was expected since this study involves many more persons than the previous things. The dissimilarity in this finding could be linked to the disparity in the socio-demographic characteristics of the respondents utilized in the studies.

The result in Table 6 showed a high extent of mechanical hazards among masons in Obio/Akpor LGA (2.72±0.82). The findings of this study may not be disputed because masons work in construction sites surrounded by several physical features capable of exposing them to hazardous conditions. This finding of this study also corroborates that of Azuike, et al.(2017) whose study in Nigeria found that high extent of mechanical hazards. The finding of this study is in line with Adriano (2017) whose study in Uganda revealed a high extent of mechanical hazards. The finding of this study also gives credence to that of Abdellah and Morsy (2013), whose study in Ethiopia revealed a high extent of mechanical hazards. However, the finding of this study is at variance with that of Okafoagu et al. (2017) whose study in the Sokoto metropolis revealed that low extent of mechanical hazards. The dissimilarity in the previous and present study could be linked to the disparity in the sampling method. This study utilized a stratified proportionate sampling technique, which is probability-based and offers an equal chance of selection to all members of the target population.

Conclusion

Based on the findings of this study, it was concluded that masons in Obio/Akpor Local Government Area of Rivers State are exposed to different forms of occupational hazards that affect their health, therefore low extent of safety practice is responsible for the high extent of occupational hazards exposure among masons.

Recommendations

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

1. The Ministry of Works should upon approval of any construction work, verify and ensure that a stand-by safety personnel is attached to the project and is on the ground every day to enforce safety regulations on-site.
2. Site supervisors should carry out their duty to ensure that every mason adheres to practices that guide against physical hazard exposure.
3. The Ministry of Labour or environmental agencies should go for an inspection of the construction sites where masons work to ensure adequate safety.
4. The site managers should encourage the workers to comply with safety measures by providing or distributing free personal equipment for the workers to reduce their exposure to occupational hazards.
5. Health educators should carry out an enlightenment campaign for masons by organizing seminars and workshops for them occasionally on how to guide against occupational hazards exposure.
6. The owners of every construction site should provide suitable, adequate and new equipment for every construction work, this will help reduce ergonomic and mechanical hazards among the masons.

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