



PHYSICAL HAZARDS AMONG NON-HEALTHCARE WORKERS IN TERTIARY HOSPITALS IN RIVERS STATE

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ABSTRACT

Non-healthcare workers in tertiary hospitals in Rivers State face a range of physical hazards, including slips, trips, and falls; eye strain; headaches; fatigue; and more severe injuries like cuts, bruises, fractures, electrical shocks, and body pains, particularly in the neck, shoulders, and back. Therefore, it is crucial to identify, assess, and control these hazards to improve workplace safety, reduce absenteeism, and enhance overall productivity. This study adopted a cross-sectional survey design. A self-structured questionnaire titled "Physical Hazards Questionnaire (PHQ)" with a reliability index of 0.89 was used for data collection. The data were collated, coded, and analyzed using the statistical package of social sciences (SPSS) version 25.0. The study's findings reveal that physical hazards among non-health care workers are a wide range of hazards that can compromise their health and safety. Age, gender, and years of work experience do not significantly influence the physical hazards faced by these workers. Age does not significantly predict physical hazards and gender does not create a significant difference in hazard exposure. The findings can guide interventions aimed at mitigating these hazards.

Keywords: non-healthcare workers; physical hazards; tertiary hospitals

INTRODUCTION

Physical hazards are significant occupational risks faced by non-healthcare workers in tertiary hospitals, yet they often receive less attention than healthcare professionals. Workers such as cleaners, security personnel, maintenance staff, administrative workers, and technical support teams are exposed to various hazards, including slips, trips, falls, noise, vibrations, ergonomic risks, temperature extremes, and dangers from machinery and heavy loads. This neglect can result in higher incidences of work-related injuries and long-term health issues. Therefore, it is crucial to identify, assess, and control these hazards to improve workplace safety, reduce absenteeism, and enhance overall productivity among non-healthcare staff.

The physical work environment plays a crucial role in determining the type and severity of occupational hazards. A well-designed workspace can mitigate many risks, while a poorly designed one can exacerbate them (Adiga, 2023; Hamed et al., 2023; Mohezar et al., 2021; Narenthiran et al., 2022; Ulrich et al., 2008). Inadequate ventilation is a common concern in many work environments, especially in hospitals where various chemicals and biological agents are present. Poor ventilation can result in the accumulation of hazardous substances in the air, increasing the risk of respiratory issues and other health problems among workers (Bălă et al., 2021; Islam, 2020; Kumar et al., 2023). For example, maintenance workers

exposed to cleaning agents and other chemicals in poorly ventilated areas may develop chronic respiratory conditions. Therefore, proper ventilation systems are vital to ensure harmful substances are effectively dispersed and removed from the workspace.

Insufficient lighting is another significant environmental factor affecting worker safety. Poor lighting conditions increase the likelihood of slips, trips, and falls, which are common causes of workplace injuries. Adequate lighting is essential for ensuring workers can see potential hazards and navigate their environment safely (Hollnagel, 2018; Zamani et al., 2023). For instance, administrative staff working in poorly lit offices may suffer from eye strain and fatigue, reducing productivity and increasing accident risk.

Excessive noise exposure is another serious physical hazard that can affect non-healthcare workers, particularly those in technical support roles (Dodoo et al., 2025a; Sadatsafavi et al., 2015; Walton & Rogers, 2017). High noise levels can lead to hearing loss, increased stress, and communication difficulties, further contributing to accidents and injuries. Maintenance workers and those responsible for operating and maintaining hospital machinery are particularly at risk. Implementing noise control measures, such as soundproofing and the use of hearing protection, is vital to protect workers from these risks.

Other physical hazards, such as slips, trips, and falls, are widespread and can occur due to wet floors, cluttered walkways, or poorly maintained infrastructure. For instance, maintenance personnel who repair equipment and facilities within hospitals are at a high risk of these accidents. Slips, trips, and falls are leading causes of workplace injuries in hospitals, with non-healthcare workers being especially vulnerable due to their constant movement throughout the facility (Bundy & Morin, 2021; Dodoo et al., 2025b).

Additionally, manual handling tasks are another significant risk factor for non-healthcare workers. Administrative staff may need to move heavy files or office equipment, while maintenance personnel frequently handle tools and materials. Such activities can lead to musculoskeletal disorders, which are prevalent among hospital workers. Manual handling is a key contributor to musculoskeletal problems in hospital settings, highlighting the need for ergonomic interventions to mitigate these risks (Gideon Asuquo et al., 2021; Johnson et al., 2023).

The impact of these hazards is compounded by factors such as demographic differences among workers. Age, gender, and years of experience all play a role in shaping workers' vulnerability to physical hazards. Older workers, for example, may be more prone to workplace injuries due to physiological changes such as decreased muscle strength and slower reflexes (Punnett & Wegman, 2004). Conversely, younger workers, despite being physically more resilient, may face higher risks due to their inexperience and lack of hazard awareness.

Gender differences also influence the types of hazards workers encounter. Male workers are often assigned physically demanding roles, such as security and maintenance, where they are more likely to face heavy lifting, electrical hazards, and exposure to extreme environmental conditions (Pamidimukkala et al., 2022; Patel et al., 2022). Female workers, on the other hand, are frequently employed in administrative and cleaning roles, which,

though seemingly less hazardous, still present risks such as repetitive motion injuries and musculoskeletal disorders (Arachchige et al., 2024).

Finally, the number of years a worker has spent in a particular job or industry affects their exposure to and response to physical hazards. Experienced workers may suffer from the cumulative effects of prolonged exposure to physical hazards, while new workers may be more vulnerable due to unfamiliarity with the risks and safety protocols in place (Cannady et al., 2025).

Non-healthcare workers in tertiary hospitals in Rivers State encounter most of these wide range of physical hazards that can compromise their health and safety. These workers, including cleaners, maintenance staff, security personnel, and administrative teams, face risks such as slips, trips, falls, noise exposure, ergonomic issues, and the handling of heavy loads or machinery. Despite their essential role in hospital operations, these workers often receive insufficient attention in occupational health and safety programs, leading to higher rates of workplace injuries and long-term health complications. The physical work environment, including inadequate ventilation, poor lighting, and excessive noise, further exacerbates these risks. Addressing these hazards through proper risk assessment, control measures, and tailored safety interventions is vital for ensuring the well-being of non-healthcare workers in hospitals.

This study assessed physical hazards among non-healthcare workers in tertiary hospitals in Rivers State. The research contributes to the understanding of workplace safety by identifying and assessing physical hazards faced by non-healthcare workers in tertiary hospitals in Rivers State. This focus on a specific group within the healthcare environment highlights the often-overlooked risks that non-medical staff encounter, informing policy makers and hospital administrators about the need for improved safety protocols. The findings can guide interventions aimed at mitigating these hazards, ultimately enhancing the safety and well-being of non-healthcare workers. Additionally, this study may serve as a foundation for future research on occupational health and safety in similar contexts, fostering a broader discussion on workplace safety standards in healthcare settings.

The novelty of the current research lies in its focused examination of physical hazards specifically faced by non-healthcare workers in tertiary hospitals in Rivers State, an often-overlooked group in occupational health and safety discussions (Bundy & Morin, 2021; Hamed et al., 2023). Unlike previous studies that primarily concentrate on healthcare professionals, this research highlights the diverse risks encountered by cleaners, security personnel, maintenance staff, and administrative workers (Attia et al., 2022; Dodoo et al., 2025a). It employs a robust methodology through a cross-sectional survey and a reliable self-structured questionnaire, providing empirical data on hazards such as slips, trips, falls, and ergonomic risks, while also assessing the influence of demographic factors like age, gender, and work experience (Adiga, 2023; Gideon Asuquo et al., 2021).

Additionally, the study's findings challenge existing assumptions by demonstrating that these demographic factors do not significantly impact the exposure to physical hazards,

suggesting that workplace policies and safety measures may play a more critical role (Punnett & Wegman, 2004; Proserpio et al., 2022). This insight contributes to a broader understanding of workplace safety and emphasizes the need for tailored interventions and comprehensive safety protocols for non-healthcare staff, potentially serving as a foundation for future research in similar contexts (Leung et al., 2024; Taylor & Hignett, 2021). Overall, the research fills a significant gap in the literature by addressing the specific occupational health challenges faced by non-healthcare workers in hospital environments (Islam, 2020; Ulrich et al., 2008).

METHOD

This study adopted a cross-sectional survey design. The sample size for the study was 656 non-healthcare workers drawn from the population of 1811 non-healthcare workers in tertiary hospitals in Rivers State. The sample size was selected using two sampling procedures proportionate stratified random sampling technique and purposive sampling technique.

The instrument for data collection was a self-structured questionnaire titled “Physical Hazards Questionnaire (PHQ)” with a reliability index of 0.89. The instrument was composed of two sections (A, and B). Section A consists of demographic variables which included gender, age and years of experience. Section B consists of items which addressed the Physical hazards the non-healthcare workers are exposed to. These items were structured in a 4-point likert format of “Strongly Agree, Agree, Disagree and Strongly Disagree” respectively. For ethical reasons, an introductory letter was obtained from the Head of Department and was presented to the Director of Administration of each of the tertiary hospital who approved the visiting and ensured the cooperation of the staff. The data for the study were collected through the administration of the instrument on 656 respondents drawn from the tertiary institutions. This was done by the researcher with the help of trained research assistants.

The completed copies of the questionnaire were collated, coded and analyzed using the statistical package of social sciences (SPSS) version 25.0. Descriptive statistics of percentage was used to analyze the demographic variables, Mean and Standard deviation were used to answer the research questions, while inferential statistics of Z-test and ANOVA were used to test the hypotheses at 0.05 alpha level.

RESULTS AND DISCUSSION

Table 1. Summary of Demographic Characteristics of the Respondents

Demography	Cohorts	F	%
Gender	Female	350	54.2
	Male	296	45.8
	Total	646	100.0
Age	Less than 30 years	143	22.1
	30-39 years	302	46.8

	40 years and Above	201	31.1
	Total	646	100.0
Years of Working Experience	Less than 5years	200	31.0
	5-10 years	229	35.4
	11 years and Above	217	33.6
	Total	646	100.0

The results showed that majority 350 (54.2%) of the non-healthcare workers were female, between the age range of 30-39 years (46.8%, representing early to mid-career stages, known for high productivity and active work engagement) and have had 5–10 years of experience (indicating mid-career familiarity with occupational hazards but potential complacency with safety).

Table 2. Mean and Standard Deviation analysis on physical hazards encountered by non-healthcare workers in tertiary hospitals in Rivers State

S/N	Physical Hazards	Mean	St. D	Decision
4	Slips, trips, and falls due to hazards like wet floors, loose carpeting, electrical cords, or cluttered walkways.	3.21	.891	Accepted
5	Eye strain, headaches, fatigue as a result of inadequate or overly bright lighting.	3.07	.866	Accepted
6	Cuts, bruises, or more severe injuries like fractures from working with tools, machinery, or heavy equipment.	3.11	.877	Accepted
7	Injury from confrontations, falls, or other physical altercations while performing security duties	2.18	1.085	Rejected
8	Electrical shocks or burns due to exposure to faulty wiring and malfunctioning equipment.	3.14	.826	Accepted
9	Hearing loss levels generated by machinery, alarms, and other sources.	2.01	1.081	Rejected
10	Neck, shoulder, and back pain due to poor workstation setup and posture	3.12	.955	Accepted
	Aggregate	2.83	0.940	Accepted

The table revealed that with an aggregate mean value of 2.83 ± 0.940 , the non-healthcare workers accepted that they do encounter physical hazards in the course of their work. They identified the physical hazards they do encounter to include: slips, trips and fall (3.21 ± 0.891); eye strain, headaches, fatigue (3.07 ± 0.866); cuts, bruises, or more severe injuries like fractures (3.11 ± 0.877); electrical shocks or burns (3.14 ± 0.826) and body pains (neck shoulder and back pain) (3.12 ± 0.955).

Table 3. ANOVA analysis on the difference in physical hazards encountered by non-healthcare workers in tertiary hospitals in Rivers State based on age

	Sum of Squares	df	Mean Square	F.cal	F.crit	Sig.	Decision
Between Groups	.519	2	.260	1.387	3.01	.250	Not Significant
Within Groups	134.146	643	.187				
Total	134.665	645					

*P.val>.05: F.cal<F.crit (H₀: Accepted)

Table above shows that the calculated F-value ($F_{(2, 643)} = 1.387$) is smaller than the critical value, and the p-value is greater than the alpha level of 0.05. Consequently, the hypothesis was retained, meaning age does not significantly influence the physical hazards faced by these workers.

Table 4. Z-test analysis on difference in physical hazards encountered by non-healthcare workers in tertiary hospitals in Rivers State based on gender

		N	Mean	St. D	z-cal	z-crit	df	Sig.	Decision
Occupational Hazards	Male	296	2.96	.622	-0.768	1.960	644	.443	Not Significant
	Female	350	2.94	.636					

*P.val>.05: Z.cal<Z.crit (H₀: Accepted)

The table showed that the calculated Z-value (Z.cal = -0.768) is less than the critical Z-value (Z.crit = 1.960) and that the p-value (P.val = 0.443) is greater than the alpha level of 0.05. Hence, the hypothesis was retained. This means that there is no significant difference in physical hazards encountered by non-healthcare workers in tertiary hospitals in Rivers State based on gender.

Table 5. ANOVA analysis on difference in physical hazards encountered by non-healthcare workers in tertiary hospitals in Rivers State based on years of work experience

	Sum of Squares	df	Mean Square	F.cal	F.crit	Sig.	Decision
Between Groups	.162	2	.081	0.431	3.01	.650	Not Significant
Within Groups	134.503	643	.188				
Total	134.665	645					

*P.val<.05: F.cal>F.crit (H₀: Accepted)

The data showed that the calculated F-value ($F_{(2, 643)} = 0.431$) is smaller than the critical value, and the p-value is greater than the alpha level of 0.05. Consequently, the hypothesis

was retained, meaning year of work experience does not significantly influence the physical hazards faced by these workers.

Discussion

The analysis of Table 2 highlights the physical hazards faced by non-healthcare workers in tertiary hospitals in Rivers State, with an aggregate mean value of 2.83 ± 0.94 . The findings indicate that these workers experience notable physical hazards in their daily tasks. Specifically, the hazards identified include slips, trips, and falls (3.21 ± 0.891); eye strain, headaches, fatigue (3.07 ± 0.866); cuts, bruises, or more severe injuries like fractures (3.11 ± 0.877); electrical shocks or burns (3.14 ± 0.826) and body pains (neck shoulder and back pain) (3.12 ± 0.955).

These findings reflect the challenging work environments of non-healthcare roles, such as maintenance, cleaning, and administrative duties. For instance, slips, trips, and falls often result from wet or uneven floors, cluttered spaces, and poorly maintained hospital infrastructure. Maintenance and cleaning staff, who frequently navigate these hazardous areas, are particularly vulnerable. Similarly, prolonged physical activities, such as lifting heavy items or standing for extended periods, contribute to musculoskeletal issues, fatigue, and body pain. Electrical shocks and burns may occur due to unsafe handling of tools and equipment, emphasizing the need for proper training and the provision of safety gear.

The findings align with previous research, which highlights the prevalence of physical hazards in hospital settings. For example, slips, trips, and falls are among the most frequent workplace accidents in healthcare facilities, disproportionately affecting non-healthcare workers who traverse these areas regularly. Additionally, manual handling tasks significantly increase the risk of musculoskeletal disorders, consistent with the findings of body pains and fatigue in this study. Attia et al. (2022) conducted a study among housekeeping workers in Zagazig University Hospitals, identifying physical hazards as the most common occupational risks, including injuries and body pain, which mirrors the findings in Rivers State hospitals. Similarly, repetitive physical strain and insufficient hazard awareness among hospital cleaning staff exacerbate vulnerability to injuries.

However, other studies present a slightly different perspective. For instance, a higher level of awareness about physical hazards among non-healthcare workers, suggesting that effective training and awareness programs can mitigate such risks (Leung et al., 2024). Furthermore, in some hospitals, proactive safety measures, such as non-slip flooring and ergonomic adjustments, have significantly reduced incidents of slips and falls (Taylor & Hignett, 2021). These findings underscore the role of safety interventions in minimizing workplace hazards. The results of this study highlight the pressing need for improved safety measures and training programs for non-healthcare workers in tertiary hospitals.

The study also examined whether age, gender, and years of work experience significantly influence the physical hazards faced by non-healthcare workers in tertiary hospitals in Rivers State in Table 3a, b and c. The findings revealed no significant relationships

between these factors and the physical hazards encountered. Specifically, the results showed that age does not significantly predict physical hazards, gender does not create a significant difference in hazard exposure, and years of work experience do not substantially impact the risks faced by these workers. These findings suggest that other factors, such as workplace policies, safety measures, and job-specific roles, may play a more critical role in determining exposure to physical hazards than demographic characteristics.

The study's finding that age does not significantly influence physical hazards contradicts existing research suggesting that older workers may be more prone to workplace injuries due to physiological changes, such as decreased muscle strength and slower reflexes (Punnett & Wegman, 2004). Similarly, younger workers, despite being more physically resilient, have been reported to experience higher risks due to inexperience and a lack of awareness about hazards. However, the present study's findings may be explained by standardized safety regulations in tertiary hospitals that minimize age-related differences in hazard exposure.

The lack of a significant gender difference in physical hazards also contrasts with findings from previous studies. Research indicates that male workers, often assigned to physically demanding roles such as security and maintenance, are more exposed to risks like heavy lifting, electrical hazards, and extreme environmental conditions. In contrast, female workers, who are more frequently employed in administrative and cleaning roles, still face risks related to repetitive motion injuries and musculoskeletal disorders. The current study's findings may suggest that workplace hazard exposure is more dependent on the specific nature of the job rather than gender alone.

Regarding work experience, studies have shown that experienced workers face long-term risks from cumulative exposure to hazards, while newer workers may be more vulnerable due to their unfamiliarity with safety measures and protocols. However, the present study found no significant relationship between years of experience and physical hazards. This may indicate that hospitals in Rivers State implement uniform safety measures that protect workers regardless of their level of experience.

Contrary to the present findings, several studies have found significant relationships between age, gender, and work experience with workplace hazards. For example, older workers in hospital environments face greater risks of musculoskeletal injuries due to declining physical capacity (Fraade-Blanar et al., 2017). Additionally, male workers in non-healthcare hospital roles faced higher exposure to hazardous tasks compared to their female counterparts (Proserpio et al., 2022). Finally, years of work experience significantly influence the ability to navigate workplace hazards, with new employees being more susceptible to injuries due to inadequate safety training (Hofmann et al., 2017). These discrepancies highlight the possibility that regional factors, safety policies, and workplace structures may shape hazard exposure differently in various settings.

The findings of this study are somewhat unexpected, given that existing literature suggests that demographic factors such as age, gender, and work experience typically play a role in workplace hazard exposure. The absence of significant differences in this study may

be attributed to effective institutional safety measures, equal job task distribution, or standardized training programs in tertiary hospitals in Rivers State.

CONCLUSION

The study identifies various physical hazards faced by non-healthcare workers in tertiary hospitals in Rivers State, including slips, trips, falls, eye strain, headaches, fatigue, and severe injuries like cuts and electrical shocks. These hazards do not significantly vary by gender, age, or experience. To address these issues, the study recommends implementing comprehensive safety protocols, such as improved floor maintenance, ergonomic workstations, and wellness programs, along with standardized safety training focusing on hazard identification and the use of personal protective equipment (PPE). Additionally, periodic hazard assessments tailored to specific non-healthcare roles should be conducted to develop targeted interventions. Future research should evaluate the effectiveness of these safety interventions, explore role-specific hazard assessments, and investigate workers' perceptions of safety measures, while also conducting comparative studies to identify best practices across different healthcare settings.

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