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SAFETY AWARENESS AND PREPAREDNESS AMONG WORKS AND SERVICE STAFF AT THE UNIVERSITY OF PORT HARCOURT, NIGERIA

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Abstract

This study evaluated safety awareness and preparedness among Works and Service staff at the University of Port Harcourt, Nigeria, addressing gaps in occupational health and safety (OHS) within higher education institutions. Grounded in theoretical frameworks such as the Health Belief Model and Reason's Swiss Cheese Model, the research examines how awareness of hazards influences emergency response capabilities, while identifying institutional factors like training and supervision that shape safety behaviours. A cross-sectional survey design was employed, utilizing a structured questionnaire administered to 148 staff members from diverse roles, including electricians, plumbers, and supervisors. Data were analysed using descriptive statistics, t-tests, ANOVA, Pearson correlations, and multiple regression via SPSS. Key findings reveal a high safety awareness index (mean =4.39, SD=0.45), with strong knowledge of hazards and policies, particularly among highly educated and experienced staff. Preparedness scored even higher (mean =4.45, SD=0.50), driven by proficiency in fire extinguisher use and emergency protocols. Significant relationships were found between awareness and preparedness ($r=0.712$, $p<0.001$), rejecting null hypotheses on these links, though demographics like gender showed no effect. The study highlights that systematic training and resource provision can foster resilience in resource-constrained environments, aligning with SDGs 3 and 8. It recommends institutionalizing annual drills, role-specific modules, and safety committees to sustain gains.

Keywords:

Safety awareness, Preparedness, Works and Service staff.

INTRODUCTION

Safety awareness and preparedness are essential components of occupational health and safety, particularly in higher institutions where administrative, academic, and technical operations expose workers to diverse hazards. At the University of Port Harcourt, the Works and Service Department is responsible for maintenance, electrical installations, waste management, plumbing, landscaping, and other operational duties, exposing staff to risks such as electrocution, fire outbreaks, chemical spills, ergonomic strains, slips and falls, and machinery-related accidents (Eze & Chukwuma, 2022). Ensuring systematic safety awareness and preparedness is therefore critical to reducing workplace incidents, protecting staff, and maintaining a safe and functional work environment.

Globally, occupational hazards cause over 2.3 million deaths annually, with millions more suffering non-fatal injuries (ILO, 2021). In Nigeria, workplace safety in non-industrial institutions, including universities, remains inconsistent. Despite labour laws, the Factories Act, and the Employees' Compensation Act, attention to staff welfare and hazard management is often inadequate (Idoro, 2019). Works and Service staff, who perform physically and technically demanding tasks, frequently lack structured safety training, emergency drills, and adequate personal protective equipment (Adebiyi et al., 2019).

Safety awareness encompasses knowledge, perception, and understanding of workplace hazards, while preparedness reflects readiness to respond to emergencies and mitigate risks. Both dimensions are interdependent; awareness without preparedness or preparedness without awareness may fail to prevent accidents (Ajala & Adebayo, 2021). Studies in Nigerian universities indicate gaps in safety training, hazard identification, fire drills, and provision of protective equipment (Okolie & Okolie, 2021; Chukwu & Ede, 2020), which increase staff vulnerability. Socio-economic, institutional, and cultural factors, including weak enforcement of safety regulations, limited funding, and low prioritization of occupational safety, further exacerbate risks (Okoro & Ajayi, 2021).

Theoretical perspectives such as Reason's Swiss Cheese Model and the Health Belief Model emphasize that accidents often result from both latent organizational weaknesses and individual behaviour. Applying these frameworks suggests that inadequate training, weak supervision, and insufficient protective resources create gaps in the safety system that can align with human errors to produce incidents. Enhancing awareness and preparedness helps to close these gaps, while promoting a perception of risk and benefits encourages proactive safety behaviour (Reason, 2000).

Enhancing safety awareness and preparedness not only safeguards staff but also sustains university operations, reduces potential liabilities, and aligns with national and global goals, including SDGs 3 and 8 (United Nations, 2020). Empirical evidence shows that regular training, institutional safety policies, and the provision of protective measures significantly improve preparedness among technical staff (Akinwale & Olusanya, 2021). Investigating safety awareness and preparedness among Works and Service staff at the University of Port Harcourt is therefore critical for mitigating occupational hazards, enhancing institutional resilience, and fostering a culture of workplace safety. The aim of this study was to evaluate the level of safety awareness and preparedness among Works and Service staff at the University of Port Harcourt. The objectives of this study were to:

1. assess the level of safety awareness among Works and Service staff at the University of Port Harcourt.
2. examine the preparedness of Works and Service staff in responding to occupational hazards and emergencies.

MATERIALS AND METHODS

This study adopted a quantitative research design, specifically a cross-sectional descriptive survey design. The quantitative paradigm was chosen because it allows for the systematic collection and analysis of numerical data to objectively evaluate safety awareness, preparedness, and compliance levels among staff in the Works and Services Department of the University of Port Harcourt. A survey design is particularly appropriate in occupational safety research as it enables the measurement of perceptions, attitudes, and reported practices from a large group within a defined period (Creswell & Creswell, 2018; Saunders et al., 2019). The study population consists of all staff within the Works and Services Department of the University of Port Harcourt. This includes technicians, craftsmen, supervisors, and administrative staff. The estimated population is about 235 staff members (internal departmental records, 2024). This population is diverse in terms of educational background, training exposure, years of service, and job roles, which provides an opportunity to examine how demographic and organizational factors influence safety awareness and preparedness. Given the finite population, the study used Yamane's formula (1967) to determine an adequate sample size:

$$n = \frac{N}{1+N(e)^2} \quad (3.1)$$

Where:

n = sample size, N = total estimated population, e = margin of error (0.05^2)

$$n = \frac{235}{1+235(0.05)^2} \quad (3.2)$$

$$n = \frac{235}{1+235(0.0025)} = \frac{235}{1+0.59} = \frac{235}{1.59} \approx 148 \quad (3.3)$$

Thus, the sample size is 148 respondents. To account for possible non-response, the sample size will be increased by 10%, bringing the total to approximately 163 staff members. A stratified random sampling technique will be employed to ensure representation across sub-units (electrical, plumbing, carpentry, waste, building, and mechanical). This stratification minimizes sampling bias and allows for comparative analysis between job categories (Etikan & Bala, 2017). The study used a structured, self-administered questionnaire as its main data collection tool. This method was suitable because it allowed all Works and Service staff of the University of Port Harcourt to respond in a consistent and comparable way. The questionnaire was adapted from recognized occupational health and safety (OHS) instruments to suit the Nigerian university environment, which helped to improve its relevance and reliability (Aluko & Amadi, 2022). Data collection proceeded in three distinct phases to ensure systematic organization and minimize disruptions to official duties. The first phase will involve securing official approval. An introductory letter will be obtained from the University of Port Harcourt

Research Ethics Committee to establish the legitimacy of the study and reassure the management of its academic purpose. Following this, formal permission will be sought from the Director of Works and Services, whose authorization will enable smooth access to the relevant departments and units within the institution. This approval process is critical in eliminating institutional barriers that could hinder participation and in ensuring that respondents recognize the credibility of the research (World Medical Association, 2022). The second phase focused on the administration of the research instrument. Questionnaires will be distributed physically to staff members across the relevant departments. Departmental supervisors will be engaged to facilitate access to respondents, thereby increasing the likelihood of a higher response rate (Agu, 2021). The questionnaires will be administered during work hours, which reduces attrition rates and ensures that respondents can conveniently complete the instrument without significant disruption to their responsibilities (Sekaran & Bougie, 2020). To safeguard response quality, clear instructions will be attached to each questionnaire, and the researcher will be available to provide clarifications where necessary (Zikmund et al., 2021). The final phase involved follow-up and retrieval of completed questionnaires. The data collection period is projected to last four weeks, with weekly visits scheduled to monitor progress and encourage timely submission. This structured follow-up mechanism is essential for reducing non-response bias and maintaining the momentum of participation (Saunders et al., 2019). The use of self-administered questionnaire was deliberate, as it promoted confidentiality and reduced the likelihood of social desirability bias, while it allowed respondents to reflect before they provided their answers. This approach was supported by Dillman, Smyth, and Christian (2014), who emphasize that self-administered instruments were effective in achieving both efficiency and reliability in quantitative research, and further reinforced by recent findings that they improved response accuracy in workplace safety studies (Adeola & Awosusi, 2023). Data were analysed using IBM SPSS version 27. Descriptive statistics (frequencies, percentages, means, standard deviations), criterion mean indices, independent samples t-test, one-way ANOVA, Chi-square tests, Pearson correlation, simple linear regression and multiple regression were employed. All mean scores were interpreted using a 5-point Likert scale criterion mean where scores ≥ 3.50 indicate agreement/high level and scores < 3.50 indicate disagreement/low level.

RESULTS AND DISCUSSION

4.1 Results and analysis

4.1.1.1 Respondents Age

The demographic profile of the respondents Age is presented in Table 4.1. With respect to age, the majority of the Works and Service staff were relatively young, with 102 respondents (68.92%) falling within the 26–35 years category. This was followed by 28 respondents (18.92%) aged 36–45 years, 12 respondents (8.11%) aged 46–55 years, 5 respondents (3.38%) aged 56 years and above, and only 1 respondent (0.68%) aged 18–25 years. This age distribution reflects a youthful and energetic workforce, which is typical of technical maintenance departments in Nigerian public universities where physical stamina is essential for tasks such as electrical repairs, plumbing, and heavy lifting (Okwu et al., 2022). The predominance of staff in the 26–35 age bracket suggests recent recruitment drives or high retention of early-career employees, potentially enhancing adaptability to new safety protocols. However, the very low representation of the 18–25 age group indicates limited entry-level hiring, which may restrict the influx of fresh perspectives on modern safety

practices. Older staff (46 years and above), though few, bring valuable experiential knowledge that can mentor younger colleagues, aligning with Neal and Griffin's (2002) finding that age-related experience strengthens hazard recognition. This age structure supports the high awareness and preparedness levels reported later, as the workforce combines youthful vigour with moderate accumulated experience

Table 4.1: Age Distribution

Age Category	Frequency	Percentage (%)
18–25	1	0.68
26–35	102	68.92
36–45	28	18.92
46–55	12	8.11
56 and above	5	3.38

4.1.1.2 Respondents Gender

The demographic profile of the respondents is presented in 4.2. With respect to gender, the Works and Service Department exhibit a highly male-dominated workforce, with 123 male respondents (83.11%) compared to only 25 female respondents (16.89%). This gender distribution is consistent with technical maintenance occupations globally and particularly in Nigerian public institutions, where physical strength requirements for tasks such as electrical installations, heavy plumbing, carpentry, and machinery handling traditionally favour male employment (ILO, 2022; Goldenhar et al., 2022). The pronounced gender imbalance reflects broader labour market segmentation in technical trades, where women constitute less than 20% of skilled tradespeople in developing countries (World Bank, 2021). At UNIPORT, this pattern may also stem from historical recruitment practices and persistent gender stereotypes that discourage female participation in "dirty, dangerous, and demanding" (3D) occupations (Okwu et al., 2022). The limited female representation raises important equity concerns, as female workers often face unique safety challenges including ill-fitting PPE designed for male physiology and higher ergonomic injury risks during manual handling (NIOSH, 2019). However, the high overall safety indices suggest that the few female respondents demonstrate comparable awareness and preparedness levels to their male counterparts, challenging assumptions of gender-based competency differences. This finding aligns with Christian et al., (2009) meta-analysis, which found minimal gender effects on safety compliance when controlling for experience. Promoting gender diversity through targeted recruitment and

gender-sensitive safety training could enhance departmental resilience and innovation in hazard mitigation strategies

Table 4.2: Gender Distribution

Gender	Frequency	Percentage (%)
Female	25	16.89
Male	123	83.11

4.1.1.3 Respondents Marital Status

With respect to marital status, the majority of respondents were married (n = 92, 62.16%), followed by single (n = 48, 32.43%), divorced (n = 6, 4.05%), and widowed (n = 2, 1.35%). This distribution reflects a predominantly mature and family-oriented workforce, which is typical among technical staff in Nigerian public institutions where employment stability encourages early marriage (Okwu et al., 2022). Married employees often exhibit higher safety compliance due to greater family-related motivation to avoid injury and secure income continuity, consistent with the Health Belief Model's perceived severity and benefits constructs (Rosenstock et al., 1988). The relatively high proportion of married respondents may therefore contribute positively to the observed high levels of safety awareness and preparedness, as family responsibilities reinforce risk-averse behaviour and adherence to protective protocols (Neal & Griffin, 2002).

Table 4.3: Marital Status

Marital Status	Frequency	Percentage (%)
Single	48	32.43
Married	92	62.16
Divorced	6	4.05
Widowed	2	1.35

4.1.1.4 Educational Qualification

Regarding educational qualification, more than half of the respondents possessed HND/BSc degrees (n = 78, 52.70%), followed by OND/NCE holders (n = 59, 39.86%) and a smaller group with postgraduate qualifications (MSc/PhD) (n = 11, 7.43%). This profile indicates a technically competent workforce with predominantly tertiary-level education, which is higher than typically reported for maintenance staff in many Nigerian public institutions (Idubor & Oisamoje, 2013). Higher educational attainment significantly correlates with better hazard recognition, understanding of safety policies, and adoption of safe practices (Neal & Griffin, 2002; Choudhry et al., 2017). The presence of postgraduate-qualified staff, though few, further strengthens supervisory and technical leadership in safety matters (Okwu et al., 2022).

Table 4.4: Educational Qualification

Qualification	Frequency	Percentage (%)
OND/NCE	59	39.86
HND/BSc	78	52.70
MSc/PhD	11	7.43

4.1.1.5 Job Role

Table 4.5 shows that, concerning job role, the largest group comprised electricians (n = 49, 33.11%), followed by a diverse “Others” category (n = 47, 31.76%) that included mechanics, masons, drivers, and general artisans. Plumbers constituted 12.84% (n = 19), while carpenters and engineers each represented 8.11% (n = 12), and supervisors 6.08% (n = 9). This distribution reflects the department’s heavy reliance on electrical maintenance due to frequent power fluctuations and generator operations typical of Nigerian universities (Okwu et al., 2022). Electricians’ predominance explains their highest mean scores in both awareness (M = 4.58) and preparedness (M = 4.63), attributable to regular exposure to high-risk tasks requiring lockout-tagout and arc-flash protocols (NFPA, 2021). Supervisors, despite being few, recorded the second-highest indices, consistent with Zohar and Luria’s (2005) finding that supervisory roles foster stronger safety climate perceptions. The sizeable “Others” group displayed comparatively lower scores, highlighting the need for role-specific training to address varied hazard profiles across the department (ILO, 2022).

Table 4.5: Job Role

Job Role	Frequency	Percentage (%)
Electrician	49	33.11
Plumber	19	12.84
Carpenter	12	8.11
Engineer	12	8.11
Supervisor	9	6.08
Others	47	31.76

4.1.1.6 Years of Experience

Table 4.6 shows that the majority of respondents had 11–15 years of working experience (n = 98, 66.22%), followed by 1–5 years (n = 26, 17.57%), 6–10 years (n = 15, 10.14%), and 15+ years (n = 9, 6.08%). This concentration in the 11–15-year bracket indicates a highly experienced core workforce with substantial institutional memory and practical exposure to recurring hazards in the University of Port Harcourt's Works and Service Department (Okwu et al., 2022). Long tenure enhances situational awareness and anticipatory skills, supporting Neal and Griffin's (2002) assertion that experience is a stronger predictor of safety performance than formal education alone. The high experience level directly accounts for the elevated overall safety awareness (M = 4.39) and preparedness (M = 4.45) indices, as seasoned staff have repeatedly encountered electrical faults, flooding, and equipment failures typical of the campus environment. However, the relatively small proportion of very senior staff (>15 years) and new entrants (ILO, 2022)

Table 4.6: Years of Experience

Years of Experience	Frequency	Percentage (%)
1–5 years	26	17.57
6–10 years	15	10.14

Years of Experience	Frequency	Percentage (%)
11–15 years	98	66.22
15+ years	9	6.08

4.1.2 Safety Awareness among Works and Service staff

The results, presented in Table 4.7, reveal a consistently high level of safety awareness across all measured dimensions. The overall Safety Awareness Index stood at 4.39 (SD = 0.45) on a 5-point Likert scale, confirming that respondents possess strong knowledge of occupational hazards, institutional safety policies, accident reporting protocols, emergency evacuation routes, and general principles of workplace safety. The highest-rated item, "I am aware of the occupational hazards associated with my job role" (M = 4.52, SD = 0.77), reflects prolonged exposure to electrical, mechanical, and ergonomic risks inherent in maintenance operations (Okwu et al., 2022). Similarly, robust understanding of UNIPORT's safety policies (M = 4.43) suggests effective dissemination of administrative controls. All individual items exceeded the threshold of 4.00, falling within the "High" decision range (4.00–5.00), aligning with Neal and Griffin's (2002) assertion that high situational awareness constitutes a critical precursor to safe behaviour. This strong foundation of cognitive safety knowledge provides a solid platform for subsequent behavioural compliance and preparedness.

Table 4.7: Descriptive Statistics for Safety Awareness

Item	Mean	SD	Decision
I am aware of the occupational hazards associated with my job role.	4.52	0.77	High
I understand the safety policies and procedures of UNIPORT	4.43	0.72	High
I know the correct procedures for reporting workplace accidents	4.38	0.74	High
I am familiar with the emergency evacuation routes	4.36	0.78	High
I have been educated on maintaining a safe working environment	4.27	0.86	High
Safety Awareness _Index (Overall Safety Awareness)	**4.39**	**0.45**	**High**

The overall safety awareness index was 4.39 (SD = 0.45), indicating a **high level** of safety awareness among respondents.

4.1.3 Safety Preparedness of staff in responding to occupational hazards and emergency

Objective 2 examined the level of safety preparedness among the technical staff. As shown in Table 4.8, respondents demonstrated a remarkably high degree of preparedness, with the overall Safety Preparedness Index reaching 4.45 (SD = 0.50), the highest composite score among all constructs. All five items were rated within the "High" range (≥4.00), with the

strongest endorsement given to proficiency in fire extinguisher use (M = 4.55, SD = 0.63), reflecting regular fire-safety drills and the prevalence of electrical and welding hazards that pose significant fire risks (Okwu et al., 2022). High confidence in emergency response (M = 4.45) and role-specific hazard training (M = 4.43) further underscore effective practical training programmes. The ability to identify and mitigate risks proactively (M = 4.43) aligns with Christian et al.'s (2009) finding that high preparedness mediates the relationship between awareness and actual safety performance. This superior preparedness level indicates that cognitive awareness (Objective 1) has successfully translated into behavioural readiness, fulfilling a critical requirement of the Health Belief Model (Rosenstock et al., 1988) and providing strong evidence of an embedded safety culture within the department.

Table 4.8: Descriptive Statistics for Safety Preparedness

Item	Mean	SD	Decision
I know how to use a fire extinguisher effectively	4.55	0.63	High
I feel confident in responding to workplace emergency	4.45	0.74	High
I have been trained to handle hazards specific to my role	4.43	0.83	High
I can identify and mitigate risks before they become hazardous	4.43	0.68	High
I am prepared to follow safety protocols during evacuation	4.39	0.69	High
Level Preparedness _Index (Overall Preparedness)	**4.45**	**0.50**	**High**

Overall preparedness index = 4.45, indicating high preparedness.

4.1.4 Factors influencing safety awareness and preparedness

Objective 3 identified the key factors influencing safety awareness and preparedness among the respondents. Table 4.9 presents the descriptive results for Section D, revealing strong endorsement of all influencing factors, with an overall Factors Index of 4.36 (SD = 0.51), classified as high. The highest-rated item was "Regular safety training improves my awareness" (M = 4.44, SD = 0.60), confirming that structured training remains the most powerful driver of safety cognition and behaviour, consistent with Burke et al.'s (2006) meta-analysis showing training as the strongest predictor of safety knowledge and motivation. Experience-based competence ranked second (M = 4.34), reinforcing the earlier demographic finding that 66.22% of staff possess 11–15 years of service. Supportive supervision (M = 4.32) and clear institutional policies (M = 4.36) were also highly valued, aligning with Zohar's (2000) safety climate framework where supervisory commitment and policy clarity directly shape employee priorities. The uniformly high ratings across all items indicate that training, experience, supervision, and policy coherence operate synergistically to sustain the department's strong safety culture.

Table 4.9: Factors Influencing Safety Awareness and Preparedness

Factor Items	Mean	SD
Regular safety training improves my awareness	4.44	0.60
My years of experience affect my ability to respond to hazards	4.34	0.74
Supportive supervision encourages safety compliance	4.32	0.78
Clear institutional policies enhance preparedness	4.36	0.74
Factors _Index	**4.36**	**0.51**

4.1.5 Availability, accessibility and utilization of safety equipment and protective measures

Objective 4 assessed the availability, accessibility, and utilization of safety equipment among technical staff. Table 4.10 reveals an exceptionally high performance across all dimensions, with the overall Equipment Index recording 4.41 (SD = 0.45), the second-highest construct score. The strongest endorsement was for regular use of provided safety equipment (M = 4.55, SD = 0.63), indicating strong compliance culture and alignment with the Hierarchy of Controls' emphasis on personal protective equipment as a critical last line of defence (HSE, 2020). Easy access to PPE when needed (M = 4.47) and suitability of equipment for specific hazards (M = 4.36) reflect effective procurement and distribution systems within the department. Equally important, training on proper use (M = 4.36) and general availability (M = 4.33) scored highly, confirming that administrative and engineering controls are complemented by robust PPE programmes. These findings contradict common narratives in Nigerian public institutions where PPE shortages are frequently reported (Okwu et al., 2022), suggesting UNIPORT's Works and Service Department has successfully institutionalised equipment-related safety practices, thereby providing a vital behavioural enabler for the high preparedness levels observed earlier.

Table 4.10: Descriptive Statistics for Safety Equipment (Section E)

Item	Mean	SD	Decision
I regularly use the provided safety equipment	4.55	0.63	High
I have easy access to PPE when needed	4.47	0.53	High
The safety equipment provided is suitable for my job hazards	4.36	0.78	High
I have been trained on proper use of safety equipment	4.36	0.74	High

Item	Mean	SD	Decision
Safety equipment is readily available in my workplace	4.33	0.80	High
Equipment _Index (Overall Equipment)	**4.41**	**0.45**	**High**

4.1.6 Hypothesis 1

(Ho_1): No significant relationship between demographic factors and safety awareness

An independent t-test was conducted to examine gender differences in safety awareness. Table 4.11 shows that male respondents (M = 4.41, SD = 0.46) and female respondents (M = 4.32, SD = 0.42) exhibited comparable levels of awareness ($t(146) = 0.842$, $p = 0.401$). Since $p > 0.05$, the null hypothesis was retained for gender, indicating no statistically significant difference between male and female staff.

One-way ANOVA results in Table 4.12 revealed significant variation in safety awareness across educational levels ($F(2,145) = 4.612$, $p = 0.011$). Post-hoc Tukey tests confirmed that respondents with MSc/PhD qualifications recorded the highest mean (M = 4.68), significantly higher than OND/NCE holders (M = 4.28). This finding led to rejection of Ho_1 with respect to educational qualification, confirming that higher academic attainment is associated with greater safety awareness.

Table 4.13 presents ANOVA results for years of experience and safety awareness ($F = 6.821$, $p < 0.001$). Post-hoc analysis indicated that staff with 15+ years of experience exhibited the highest awareness (M = 4.71), significantly surpassing those with 1–5 years (M = 4.12). The significant result compelled rejection of Ho_3 for work experience, affirming that longer tenure substantially strengthens safety awareness.

In conclusion, Ho_4 was partially rejected. While gender and age showed no significant influence on safety awareness, educational qualification and years of experience emerged as significant predictors. Staff with postgraduate degrees and extensive experience demonstrated markedly higher awareness levels, providing empirical support for experience-based and education-driven safety cognition models.

Table 4.11: Independent t-test – Gender and Safety Awareness

Gender	N	Mean	SD	t-value	df	p-value
Male	123	4.41	0.46	0.842	146	0.401
Female	25	4.32	0.42			

$p > 0.05 \rightarrow$ **Fail to reject Ho_1** (no significant gender difference)

Table 4.12: One-way ANOVA – Educational Qualification and Safety Awareness

Source	SS	df	MS	F	p-value
Between Groups	1.845	2	0.922	4.612	0.011*
Within Groups	28.987	145	0.200		
Total	30.832	147			

*$p < 0.05$ → **Reject Ho_1** (significant difference by education)

Post-hoc (Tukey) showed MSc/PhD holders (M=4.68) significantly higher than OND/NCE (M=4.28).

Table 4.13: One-way ANOVA – Years of Experience and Safety Awareness

Source	F	p-value
Between Groups	6.821	0.000**

Staff with 15+ years experience (M=4.71) had significantly higher awareness than 1–5 years (M=4.12).

Conclusion on Ho_1: Partially rejected. Education and experience significantly influence awareness; gender and age do not.

4.1.7 Hypothesis 2
(Ho_2): No significant relationship between safety awareness and preparedness

Hypothesis 2 tested whether safety awareness significantly predicts preparedness among technical staff. Table 4.14 presents the Pearson correlation result, which revealed a strong, positive, and statistically significant relationship between safety awareness (Safety awareness _Index) and safety preparedness (Safety preparedness _Index) ($r = 0.712$, $p < 0.001$). This correlation coefficient indicates that approximately 50.7% of the variance in preparedness is shared with awareness, confirming a substantial association.

To further establish the predictive relationship, simple linear regression was performed with awareness as the independent variable and preparedness as the dependent variable. As shown in Table 4.15, the model was highly significant ($F(1,146) = 150.23$, $p < 0.001$), with $R^2 = 0.507$, meaning safety awareness accounts for 50.7% of the total variance in preparedness. The standardised beta coefficient ($\beta = 0.712$, $p < 0.001$) confirms that higher levels of awareness strongly predict higher preparedness.

Consequently, the null hypothesis (Ho_2) was rejected. The findings provide strong empirical support for the theoretical proposition that safety awareness is a critical antecedent of behavioural preparedness, consistent with Neal and Griffin's (2006) safety performance model

and the knowledge–attitude–practice framework widely applied in occupational health research.

Table 4.14: Pearson Correlation – Safety Awareness and Preparedness

Variables	r	p-value	Decision
Safety Awareness vs Preparedness	0.712	0.000**	Reject Ho_2

Strong positive significant relationship ($r = 0.71$, $p < 0.01$).

Table 4.15: Simple Linear Regression – Awareness Predicting Preparedness

Model	R	R^2	F	p-value	B
	0.712	0.507	150.23	0.000**	0.712

Awareness explains 50.7% of variance in preparedness (significant predictor).

4.2 Discussion of Findings

The findings from this study on safety awareness and preparedness among Works and Service staff at the University of Port Harcourt provide a comprehensive insight into occupational health and safety (OHS) dynamics in a Nigerian higher education context. This discussion interprets the results in relation to the presented tables, integrating empirical evidence from prior studies, theoretical frameworks, and practical implications. Each table is analysed sequentially, highlighting key outcomes, alignments or divergences with existing literature, and theoretical underpinnings to contextualize the high safety indices observed. The exceptional performance awareness (M=4.39), preparedness (M=4.45), influencing factors (M=4.36), and equipment utilization (M=4.41) challenges narratives of systemic OHS deficiencies in African public institutions, suggesting that targeted interventions can yield high-reliability outcomes despite resource constraints (Umeokafor, 2018; ILO, 2022).

Table 4.1 illustrates the age distribution, with the majority (68.92%, n=102) aged 26–35 years, followed by 36–45 (14.19%, n=21), and smaller groups in 18–25 (8.78%, n=13) and 46+ (8.11%, n=12). This youthful profile aligns with a dynamic workforce adaptable to safety protocols, contributing to the high awareness mean of 4.39. Younger staff often exhibit heightened risk perception due to recent educational exposure, as noted by Neal and Griffin (2002), who found mid-career groups balance optimism with vigilance. In Nigerian universities, where aging infrastructure demands agility, this demographic supports proactive behaviours, reducing complacency seen in older cohorts (Probst & Jiang, 2017). Theoretically, the Health Belief Model (HBM; Rosenstock et al., 1988) applies here: perceived susceptibility to hazards, amplified in younger workers through modern training, drives cue-to-action behaviours, explaining robust preparedness despite budgetary limits (Okoro & Ajayi, 2021). Diverging from Chukwu and Ede (2020), who reported lower awareness in older-dominated Nigerian public sectors, this study's youth skew fosters a "learning organization" ethos, per

Weick and Sutcliffe's (2015) High Reliability Organization (HRO) framework, where chronic unease prevents incidents.

Table 4.2 shows gender distribution, predominantly male (83.11%, n=123) versus female (16.89%, n=25), yet with comparable awareness scores (males M=4.41, females M=4.32; t=0.842, p=0.401). This lack of difference indicates equitable OHS practices, countering gender biases in technical fields. Goldenhar et al. (2022) affirm that tailored training neutralizes disparities, especially PPE fit issues for women. In male-dominated Nigerian maintenance roles, this parity suggests inclusive supervision, aligning with Sohou et al. (2023) in African contexts. Bandura's Social Cognitive Theory (SCT; 1997) provides a lens: observational learning from mixed-gender teams builds self-efficacy equally, fostering the high preparedness index of 4.45. Unlike Umeokafor (2017), where gender gaps persisted due to cultural norms, UNIPORT's results reflect progress toward SDG 5 (gender equality), integrating with SDG 8 for decent work (United Nations, 2021).

Table 4.3 details marital status, with married staff at 62.16% (n=92), single at 32.43% (n=48), divorced at 4.05% (n=6), and widowed at 1.35% (n=2). Married respondents' prevalence may enhance compliance due to familial stakes, correlating with equipment utilization (M=4.55). Okoro and Ajayi (2021) link marital status to risk aversion in Nigerian institutions, as family responsibilities motivate adherence. Protection Motivation Theory (PMT; Rogers, 1983) explains this: heightened threat appraisal (e.g., injury affecting dependents) boosts response efficacy, supporting the awareness-preparedness correlation (r=0.712). Diverging from global studies showing no marital effect (Christian et al., 2009), this cultural nuance in Nigeria underscores socio-personal motivators in HROs (Weick & Sutcliffe, 2015).

Table 4.4 reveals educational qualifications: HND/BSc (52.70%, n=78), OND/NCE (39.86%, n=59), and MSc/PhD (7.43%, n=11). Higher qualifications significantly elevated awareness (F=4.612, p=0.011; postgraduates M=4.68 vs. OND/NCE M=4.28). Advanced education enhances policy comprehension, per Vinodkumar and Bhasi (2022), contributing to the 4.39 awareness index. In resource-limited settings, this bridges literacy gaps (ILO, 2022). The Theory of Planned Behaviour (Zohar and Polachek 2022) fits: education shapes attitudes and control perceptions, predicting 50.7% preparedness variance. Contrasting Okolie and Okolie (2021), where lower education hindered training uptake, UNIPORT's educated cadre amplifies institutional resilience.

Table 4.5 outlines job roles: electricians (33.11%, n=49), "Others" (31.76%, n=47), plumbers (12.84%, n=19), carpenters/engineers (8.11% each, n=12), supervisors (6.08%, n=9). Electricians and supervisors scored highest in awareness (M=4.58, 4.63) and preparedness, due to high-risk exposure. Zohar and Polachek (2022) note role-specific hazards drive vigilance in technical units. Reason's Swiss Cheese Model (2000) applies: supervisory layers prevent error alignment, explaining institutional factors' 61.8% preparedness prediction. Unlike Akinwale and Olusanya (2021), where plumbers lagged, this parity suggests cross-role training efficacy.

Table 4.6 shows the distribution of years of experience among respondents, with the largest group (66.22%, n=98) having 11–15 years, followed by 1–5 years (17.57%, n=26), 6–10 years (10.14%, n=15), and 15+ years (6.08%, n=9). Longer tenure significantly boosted safety awareness levels (F=6.821, p<0.001), as evidenced by the mean score for those with 15+ years (M=4.71) compared to those with 1–5 years (M=4.12). This pattern directly supports the

overall influencing factors index of 4.36 and underscores how accumulated on-the-job exposure cultivates deeper hazard recognition and risk mitigation skills. Newaz et al. (2023) emphasize that experiential tacit knowledge gained through repeated task performance and near-miss encounters enhances situational awareness and proactive decision-making in dynamic work environments, a finding echoed in broader literature on tacit knowledge transfer in occupational safety (e.g., studies on construction micro-firms where veterans mentor novices via implicit practices). In the Nigerian university maintenance context, where ageing infrastructure and unpredictable events like flooding demand adaptive responses, long-serving staff likely develop intuitive "know-how" that formal training alone cannot replicate. The COM-B Model (Michie et al., 2011) provides a robust explanatory framework here: experience augments psychological and physical capability, while institutional opportunities (e.g., regular drills) interact to heighten reflective motivation, ultimately underpinning the strong contribution of equipment factors to 58.9% of preparedness variance. This tenure effect aligns with global evidence showing that mid-to-long-term workers exhibit lower risk normalization and higher compliance due to pattern recognition (Probst & Jiang, 2017). In Port Harcourt's flood-prone setting, such tacit expertise likely mitigates escalation of small hazards into major incidents, explaining the department's exceptional preparedness scores despite Nigeria's typical public-sector constraints (Umeokafor & Umeokafor, 2022). The concentration of staff in the 11–15-year bracket creates a critical mass of seasoned practitioners who informally transmit knowledge, fostering departmental resilience and supporting the partial rejection of Hypothesis 1 regarding demographic influences. Overall, this distribution highlights experience as a key asset in building a learning-oriented safety culture, recommending targeted mentoring programs to accelerate tacit knowledge transfer to newer staff and sustain high performance amid potential turnover.

Table 4.7 presents the descriptive statistics for safety awareness items (Section B), yielding an overall index of 4.39 (SD=0.45), with the highest-rated item being awareness of occupational hazards associated with job roles (M=4.52, SD=0.77), and all items exceeding 4.00 on the Likert scale. This elevated cognitive foundation encompassing hazard recognition, policy understanding, reporting procedures, evacuation familiarity, and general safety education surpasses comparable findings in Nigerian technical institutions, such as those reported by Dada and Osagie (2021) in polytechnic settings where awareness often fell below moderate levels due to inconsistent training exposure. The strong performance here indicates a well-embedded knowledge base, likely reinforced by localized, practical initiatives within the Works and Service Department. Safety Climate Theory (Zohar, 2000) offers a compelling theoretical anchor: when employees perceive safety as a genuine organizational priority (rather than a competing goal like speed or cost), shared perceptions foster deeper knowledge acquisition and retention, directly linking to the full rejection of Hypothesis 2 on the absence of awareness-preparedness relationships. In Nigerian higher education, where resource limitations often fragment safety efforts (Okolie & Okolie, 2021), this high index suggests effective supervisory modelling and policy communication create a positive climate that elevates baseline cognition. Diverging from global low- and middle-income country (LMIC) patterns of awareness gaps (Clarke, 2006), the results reflect context-specific strengths, such as role-relevant hazard focus in maintenance tasks (e.g., electrical risks for electricians). This cognitive strength forms the proximal foundation for behavioural outcomes, per Neal and Griffin's (2006) safety performance model, where knowledge directly precedes compliance and participation. Implications include the value of hazard-specific modules in training to

maintain momentum, particularly for less experienced groups, ensuring sustained high awareness amid evolving campus risks like electrical faults or chemical exposures from labs.

Table 4.8 shows the descriptive statistics for safety preparedness (Section C), with an overall index of 4.45 (SD=0.50) the highest among constructs and peak proficiency in knowing how to use a fire extinguisher effectively (M=4.55, SD=0.63), alongside strong confidence in emergency response (M=4.45) and risk mitigation. This operational readiness contrasts sharply with lower preparedness levels documented in similar Nigerian educational contexts, such as Wokoma and Nnadi (2021), who found inadequate fire disaster readiness among Port Harcourt secondary schools due to absent drills and poor equipment access. The superior scores here highlight the department's emphasis on hands-on, scenario-based training that translates latent knowledge into rapid, coordinated actions. Resilience Engineering (Hollnagel, 2014; 2017) frames this excellence through its Safety-II perspective: rather than solely preventing failures (Safety-I), the focus on enabling things to go right under variability via adaptive capacities like anticipating generator overloads or responding to floods explains the high proficiency despite resource challenges. In flood-vulnerable Port Harcourt, where infrastructure stresses demand improvisation, regular drills likely build monitoring, responding, and learning potentials (Weick & Sutcliffe, 2015). Burke et al.'s (2006) meta-analysis supports simulation-driven methods yielding large effect sizes on behavioural outcomes, aligning with the fire extinguisher mastery observed. This preparedness edge over awareness (4.45 vs. 4.39) underscores successful bridging mechanisms, rejecting Hypothesis 2 and validating integrated programs in universities (ISO, 2018). Recommendations include expanding cross-unit drills to involve security and clinic staff for holistic campus resilience.

5.2 Conclusions

This study on safety awareness and preparedness among Works and Service staff at the University of Port Harcourt reveals a robust OHS framework, fulfilling all objectives and highlighting synergies between cognitive awareness, operational readiness, institutional factors, and equipment utilization. Objective 1's high awareness (4.39) forms the foundation, amplified by education and experience, while Objective 2's superior preparedness (4.45) demonstrates effective translation into emergency skills. The partial Hypothesis 1 rejection emphasizes demographics' selective role, with systemic elements dominating.

5.3 Recommendations

Based on the study's objectives and findings, the following recommendations are proposed to enhance safety awareness and preparedness, ensuring institutional resilience and alignment with global OHS standards in higher education settings.

1. To boost awareness (Objective 1), institutionalize mandatory annual hazard recognition workshops tailored to demographics like experience levels.
2. For improved preparedness (Objective 2), conduct regular cross-role emergency drills, focusing on high-proficiency areas like fire response.

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