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Knowledge and Practice of Occupational Safety among Healthcare Workers in Rivers State University Teaching Hospital, Port Harcourt

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Abstract: The study set out to ascertain the level of knowledge regarding workplace safety protocols among the medical personnel at the Rivers State University Teaching Hospital in Port Harcourt, Nigeria. Descriptive surveys were employed as the study's research design. Five specific objectives, along with the five related research questions and hypotheses, guided the study. Five hundred and thirteen medical professionals who worked at the Rivers State University Teaching Hospital in Port Harcourt, Nigeria, made up the study's sample. As a guideline, 140 healthcare professionals were chosen for the sample, accounting for 20% of the total number of healthcare professionals at Rivers State University Teaching Hospital Port Harcourt. An additional 10% was set aside for attrition. A self-developed, validated questionnaire with a 'TRUE' or ' FALSE' and 'YES' or 'NO' format was employed. A reliability coefficient for test-retest correlation of 0.87 was attained. To address research issues, the data were subjected to descriptive statistics of frequency and percentage, and the Chi-square statistic was employed to test the hypotheses. The results showed that 83.2 per cent of respondents had a high level of knowledge overall, with statistically significant differences in knowledge levels between occupational categories and gender ($p<0.05$). Men showed a little greater degree of knowledge than women (85.2% vs. 81.8%). Physicians, nurses, medical laboratory scientists, and pharmacists demonstrated exceptionally high levels of knowledge among job categories; radiographers, physiotherapists, and other professionals demonstrated lower levels of knowledge. Based on age, highest qualification, and years of work experience, no statistically significant differences ($p>0.05$) were found. Further evidence of a high degree of practice was provided by the findings, which showed an average percentage of 85%. The extent of practice results was high across a range of demographic characteristics. Men showed a marginally lesser level of practice (80.6% vs. 88.4%) than did women. Compared to other professional groups, radiographers and physiotherapists showed lower levels of practice. The aforementioned discovery underscores the necessity of additional assessment and execution of ergonomic protocols to guarantee the security and welfare of healthcare personnel. It also underscores the significance of focused occupational safety training and education for healthcare practitioners in general, with a particular focus on the demands and obstacles unique to their respective jobs.

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1. INTRODUCTION

Occupational risks are widespread because healthcare staff are exposed to a wide range of work-related dangers and illnesses due to the nature of the job. These dangers pose a major threat to the health and safety of healthcare practitioners (Burgel et al., 2020). Workplace safety procedures, such as risk assessment, the use of personal protective equipment (PPE), and environmental control measures, have been put in place to lessen these risks (Prüss-Üstün, Wolf & Corvalán, 2016).

Occupational causes account for 2.1% of all deaths and 2.7% of diseases globally, with work-related illnesses and injuries contributing significantly

to the disease burden and mortality toll (WHO, 2016; ILO, 2016; WHO, 2018). Occupational safety measures in healthcare settings are often inadequate, especially in developing countries (Zhang et al., 2020). Inadequate knowledge of and observance of workplace safety procedures by healthcare professionals is a major risk to global health and can lead to the spread of infectious diseases (Ekwueme et al., 2019). Sub-Saharan Africa still faces challenges in implementing effective occupational health and safety measures, particularly in countries like Nigeria. Consequently, this region has a high rate of work-related illnesses and injuries; in Nigeria alone, 2.78 million workers pass away from these illnesses and accidents each year (Ngige, 2019).

Inadequate workplace safety practices are common in healthcare settings, particularly in poor nations (Panhwar et al., 2020). Healthcare professionals' ignorance and disregard for safety precautions might contribute to the spread of infectious diseases and pose serious health risks to the world (Singh, 2020). Non-compliance with safety precautions can be caused by a variety of factors, including a lack of knowledge, a lack of resources, inadequate training, and a lack of managerial support (Siddique et al., 2020).

According to Erasmus et al. (2016), healthcare professionals are recommended to adhere to interventional measures like hand hygiene, universal precautions, the use of personal protective equipment (PPE), and appropriate disposal of sharps. Nevertheless, strict adherence to these guidelines may not always be sufficient. Sociodemographic factors like age, gender, years of work experience, job type, and education level might also have an impact on healthcare personnel's understanding and practices regarding occupational safety (Karatela et al., 2020).

Healthcare professionals' occupational safety practices are among the health behaviours that the Health Belief Model has been shown to predict and explain individually (Raghavendra, 2020). According to Prüss-Üstün et al. (2016), reducing morbidity and mortality linked to occupational hazards and infections requires the implementation of comprehensive occupational safety measures and infection control procedures. Healthcare personnel require more guidelines and assistance to maintain worldwide safety, even with the efforts at training they've received (World Health Organization, 2021).

Given the aforementioned concerns, the purpose of this study is to ascertain the degree of occupational safety knowledge and the scope of safety practices among healthcare personnel at the Rivers State University Teaching Hospital in Port Harcourt. The study looked at how healthcare workers' knowledge and application of occupational safety were affected by variables like age, gender, highest level of education, job category, and years of experience.

2. METHOD

Using a descriptive research approach, this study sought to ascertain the knowledge and practices of occupational safety among healthcare personnel at the Rivers State University Teaching Hospital (RSUTH) in Port Harcourt, Nigeria. A group of people or items is researched using the descriptive survey research design, which involves gathering and analysing data from a small number of individuals or items that are thought to be representative of the full group (Nworgu, 2015). A total of 513 health professionals from a variety of backgrounds, including physicians, nurses, pharmacists, physiotherapists, radiographers, dentists, and optometrists, made up the study population. As a general rule, 154 healthcare professionals should be included in the sample size, which accounts for 20% of the population. An extra 10% should be set aside for attrition. A proportionate sampling technique was used for the sampling. Expert judgment was used to assess face validity, and a self-structured questionnaire with a test-retest correlation coefficient of 0.87 demonstrated strong reliability in data collection. 140 of the 154 questionnaires that were cleaned up were eligible for data analysis. Data were coded and analyzed using SPSS version 25 Windows 10, which was used for inferential statistics (chi-square) to test hypotheses and descriptive statistics (frequency and percentages) to address research questions. When it comes to the degree of occupational safety practice and knowledge among healthcare personnel at RSUTH, the proper responses are "Yes" and "True," respectively.

3. RESULTS

The result in Table 1 shows that there was a very high level of knowledge of occupational safety among healthcare workers in RSUTH at the time of this study (83.2%). Most of the healthcare workers gave positive responses. However, most of the respondents (62.1%) disagreed that they employ ergonomically designed equipment and tools at work (item 11).

Table 1: Frequency distribution showing the level of knowledge of occupational safety among healthcare workers in RSUTH (n=140)

S/N	Level of knowledge	True F (%)	False F (%)
1	Universal precaution is important in healthcare	140 (100.0)	0 (0.0)
2	Adherence to appropriate personal protective equipment is an infection control precaution	134 (95.7)	11(4.3)
3	Hospital workers should be immunized against Hepatitis B	128 (91.4)	12 (8.6)
4	Every hospital worker should be trained and retrained in workplace safety	139 (99.3)	1 (0.7)
5	Every chemical should have a Material Safety Data Sheet (MSDS)	79 (56.4)	61 (43.5)
6	Chemicals should be properly labelled and stored	140 (100.0)	0 (0.0)
7	All workers should know where safety equipment such as fire extinguishers, eye-washes are located	139 (99.3)	2 (1.4)
8	Emergency response protocol should be available in the hospital	138 (98.6)	2 (1.4)
9	Report of unsafe acts and unsafe conditions should be prompt	137 (97.9)	3 (2.1)
10	Good posture and body position is needed when lifting objects and performing tasks	96 (68.6)	44 (31.4)
11	Employ ergonomically designed equipment and tools at work	53 (37.9)	87 (62.1)
12	Adherence to defined work procedure mitigates incidence/accidents	86 (61.4)	54 (38.6)
13	Training on psychological hazard and control measures is part of workplace safety	105 (75.0)	35 (25.0)
Average percentage		**83.2**	**17.4**

Interpretation key: less than 40 % (low level of knowledge); **40% - 59% (**average level of knowledge); **60% - 79 % (**high level of knowledge); **80% or more (**very high level of knowledge).

Table 2 indicates that there was a very high level of knowledge (80% or more) of occupational safety among health care workers across all age groups: 84.6%,83.6%,81.9% and 86.8%for less than 20 years, 21-30 years, 31-40 years and 41 to 50 years respectively with p =0.100; gender: 85.2% and 81.8% for males and females respectively with p =0.003; highest qualifications: 87.6 %, 82.7% and 82.5% for diploma/RN/MN, graduate and postgraduate respectively with p=0.690; and years of work experience: 98.9%, 83.7%, 82.5%, 85.6%, 98.5% and 99.2% for below 1 year, 1-4 years, 5-10 years, 11 – 20 years, 21 – 30 years and above 30 years respectively with p =0.820. However, in the job category, doctors (82.6%), nurses (83.7%), medical laboratory scientists (82.5%), and pharmacists (85.6%) all had a very high level of knowledge, physiotherapists had an average level of knowledge (46.2%); radiographers (73.1%) and others (71.8%) both had a high level of knowledge of occupational safety among healthcare workers in RSUTH with p =0.0001. This implies that the observed differences in the level of knowledge of occupational safety among healthcare workers in RSUTH based on gender and job category is statistically significant but age, highest qualification and years of experience are not statistically significant. This shows that the level of knowledge of occupational safety among healthcare workers is dependent on gender and job category but not dependent on age, highest qualification and years of experience.

Table 2: Frequency distribution showing the level of knowledge of occupational safety among health care workers in RSUTH based on the socio-demographics (n=140)

S/N	Variables	True (%)	False (%)	P-value
1.	**Age(years)**			0.100
	Less 20 (n=2)	84.6	15.4	
	21-30(n=60)	83.6	16.4	
	31-40(n=64)	81.9	18.1	
	41-50(n=14)	86.8	13.2	
2.	**Gender**			0.003
	Males(n=50)	85.2	14.8	
	Females (n=90)	81.8	18.2	
3.	**Highest Qualification**			0.690
	Diploma/RN/MN (n=17)	87.6	18.4	
	Graduate (n=75)	82.7	17.3	
	Postgraduate (n=48)	82.5	17.5	
4.	**Job Category**			0.0001
	Doctors (n=54)	82.6	17.4	
	Nurses (n=63)	83.7	16.3	
	Med.Lab Scts.(n= 8)	82.5	17.5	
	Pharmacists(n=9)	85.6	14.4	
	Physiotherapists (n=1)	46.2	53.8	
	Radiographers(n=2)	73.1	26.9	
	Others (n=3)	71.8	28.2	
5	**Years of work experience (years)**			0.820
	Below 1(=3)	98.9	1.1	
	1-4 (n=43)	83.7	16.3	
	5-10(n=69)	82.5	17.5	
	11 -20(n=19)	85.6	14.4	
	21-30(n=5)	98.5	1.5	
	Above 30(n=1)	99.2	0.8	

Interpretation key: less than 40 % (low level of knowledge); **40% - 59% (**average level of knowledge); **60% - 79 % (**high level of knowledge); **80% or more (**very high level of knowledge); $p \leq 0.05$ (statistically significant) and $p > 0.05$ (statistically non-significant)

Data in Table 3 shows that there was a very high extent of practice (85%) of occupational safety among healthcare workers in RSUTH at the time of this study. The respondents gave more positive responses but 68% of them indicated that there was no insurance coverage for the work they do (item 4).

Table 3: Frequency distribution showing the extent of occupational safety practices among healthcare workers in RSUTH (n=140)

S/N	Occupational safety practices	Yes F (%)	No F (%)
1	I have been trained/re-trained in workplace safety	123 (87.9)	8 (5.7)
2	I use the waste management colour codes in my hospital	97 (69.3)	43 (30.8)
3	I have been immunized against work-related diseases such as Hepatitis B	133(95.0)	7 (10.0)
4	I have insurance coverage for the work I do	44 (31.4)	96 (68.6)
5	I strictly adhere to the use of personal protective equipment such as gloves, coats, aprons, safety boots, eye goggles etc	120(85.7)	20 (14.3)
6	I constantly practice hand hygiene after touching anything including patients	140(100.0)	0 (0.0)
7	I decontaminate my working benches with appropriate disinfectant	119 (85.0)	21 (20.0)
8	I know the hazards inherent in my work	140 (100.0	0 (0.0)
9	I discard all sharps immediately after use into a sharp box	139 (99.3)	1 (0.7)
10	I report all incidents/accidents to my supervisor	115 (82.1)	25 (17.8)
11	I ensure there is appropriate lighting and ventilation while performing my work	140 (100.0)	0 (0.0)
	Average percentage	**85.0**	**15.0**

Interpretation key: less than 40 % (low extent of practice); **40% - 59% (**average extent of practice); **60% - 79% (**high extent of practice); **80% or more (v**ery high extent of practice)

Table 4 indicates that there was very high extent of practice (80% or more) of occupational safety among health care workers based on age: 86.3%, 83.6%, 87.9% and 92.8% for less than 20 years, 21-30 years, 31-40 years and 41 to 50 years respectively and P =0.0001; gender also had very high extent of practice for both : 80.6% and 88.4% for males and females respectively with p =0.005; there was very high extent of practice based on highest qualifications: 85.0%, 84.4% and 81.8% for diploma/RN/MN, graduate and postgraduate respectively with p=0.0004**;** and job category: doctors had very high extent of practice (87.2%), nurses had very high extent of practice (87.0%), medical laboratory scientists had very high extent of practice (80.6%),pharmacists (74.7%) had high extent of practice, physiotherapists had very high extent of practice(81.8%); radiographers had high extent of practice (63.0%) and others also had high extent of practice (68.5%) extent of practice of occupational safety among healthcare workers in RSUTH with p =0.0001; for years of work experience, all but those below one year had very high extent of practice of occupational practice: 75.8%, 80.1%, 86.4%, 88.1%, 93.3% and 98.2% for below 1 year, 1-4 years, 5-10 years, 11 – 20 years, 21 – 30 years and above 30 years respectively with p =0.02. This informs that the observed differences in the extent of occupational safety practice among healthcare workers in RSUTH were statistically significant across all demographic variables employed. Therefore, occupational safety practice was dependent on the socio-demographic variables used for this study.

Table 4: Frequency distribution showing the extent of the practice of occupational safety among health care workers in RSUTH based on the socio-demographics (n=140)

S/N	Variables	Yes (%)	No (%)	P-value
1.	**Age(years)**			0.0001
	< 20 (n=2)	86.3	13.7	
	21-30(n=60)	83.6	16.4	
	31-40(n=64)	87.9	12.1	
	41-50(n=14)	92.9	7.1	
2.	**Gender**			0.005
	Males(n=50)	80.6	19.4	
	Females (n=90)	88.4	11.6	
3.	**Highest Qualification**			0.0004
	Diploma/RN/MN (n=17)	85.0	15.0	
	Graduate (n=75)	84.4	15.6	
	Postgraduate (n=48)	81.8	18.2	
4.	**Job Category**			0.0001
	Doctors (n=54)	87.2	12.8	
	Nurses (n=63)	87.0	13.0	
	Med.Lab Scts.(n= 8)	80.6	19.4	
	Pharmacists(n=9)	74.7	25.3	
	Physiotherapists (n=1)	100.0	0.0	
	Radiographers(n=2)	63.0	37.0	
	Others (n=3)	68.5	31.5	
5	**Years of work experience (years)**			0.02
	Below 1(=3)	75.8	24.2	
	1-4 (n=43)	80.1	19.9	
	5-10(n=69)	86.4	13.6	
	11 -20(n=19)	88.1	11.9	
	21-30(n=5)	93.3	6.1	
	Above 30(n=1)	98.2	1.8	

Interpretation key: less than 40 % (low extent of practice); **40% - 59% (**average extent of practice); **60% - 79% (**high extent of practice); **80% or more (v**ery high extent of practice); $p \leq 0.05$ (statistically significant) and $p > 0.05$ (statistically non-significant).

4. DISCUSSION

The findings presented in Tables 1 to 4 provide insights into the level of knowledge and extent of practice of occupational safety among healthcare workers at Rivers State University Teaching Hospital (RSUTH). Table 1 highlights that the overall level of knowledge of occupational safety among healthcare workers at RSUTH was very high, with 83.2% of respondents exhibiting a high level of knowledge. This indicates that the majority of healthcare workers had a good understanding of occupational safety practices. However, it is concerning that 62.1% of respondents disagreed that they employed ergonomically designed equipment and tools at work, suggesting a potential gap in the implementation of ergonomic practices in the healthcare setting. This agrees with the results of Karatela et al., (2020). This finding highlights the need for further evaluation and implementation of ergonomic measures to ensure the safety and well-being of healthcare workers.

Table 2 shows that the level of knowledge of occupational safety among healthcare workers based on different demographic variables found consistently high levels of knowledge across age groups, gender, highest qualifications, and years of work experience. However, the job category showed a statistically significant difference ($p < 0.05$) in the level of knowledge, with physiotherapists demonstrating a lower level of knowledge compared to other healthcare professionals. This is in line with the findings of Ekwueme et al., (2019). This underscores the importance of targeted training and education on occupational safety for all healthcare professionals, with specific attention to job-specific needs and challenges.

Moving to Table 3 reveals that the extent of practice of occupational safety among healthcare workers at RSUTH was very high, with 85% of respondents reporting a high level of practice. This indicates that healthcare workers at RSUTH were generally engaged in safe work practices. However, it is concerning that 68% of respondents indicated the absence of insurance coverage for the work they do. Thus, the result is not in contrast with what Singh et al. (2016). Furthermore, the results of the findings highlight the importance of providing comprehensive insurance coverage to healthcare workers to address any potential risks and injuries they may encounter in their work environment.

Table 4 presents the extent of the practice of occupational safety among healthcare workers based on different demographic variables. The results showed consistently high levels of practice across age groups, gender, highest qualifications, and job categories. The results suggest that the extent of the practice of occupational safety was not significantly influenced by these demographic variables and was in line with the results of Singh et al. (2020), Panhwar (2020), and Raghavendra et al. (2020). However, years of work experience demonstrated a significant difference, with healthcare workers with less than one year of experience exhibiting a lower extent of practice compared to those with more years of experience.

5. CONCLUSION

The finding emphasises the need for targeted training and support for newly employed healthcare workers to ensure the consistent and effective implementation of occupational safety practices. This finding also highlights the need for further evaluation and implementation of ergonomic measures to ensure the safety and well-being of healthcare workers. This underscores the importance of targeted training and education on occupational safety for all healthcare professionals, with specific attention to job-specific needs and challenges. The results of the findings highlight the importance of providing comprehensive insurance coverage to healthcare workers to address any potential risks and injuries they may encounter in their work environment. The study has shown that years of work experience demonstrated a significant difference, with healthcare workers with less than one year of experience exhibiting a lower extent of practice compared to those with more years of experience.

Based on the findings above, the following suggestions are imminent.

1. Further evaluation and implementation of ergonomic measures to ensure the safety and well-being of healthcare workers.
2. Targeted training and education on occupational safety for all healthcare professionals, with specific attention to job-specific needs and challenges
3. Provision of insurance coverage

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