Knowledge of Occupational Hazard Control among Primary Healthcare Workers in Rivers State

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Abstract
This study assessed the knowledge of occupational hazard control among primary healthcare workers in Rivers State. A descriptive survey research design was adopted with a population which consisted of five thousand and seventy-nine (5,079) primary health care workers in Rivers State. A sample size of four hundred and seven was selected using a multi-stage sampling procedure. The instrument for data collection was a structured questionnaire with a reliability coefficient of 0.79. Data collected where analyzed with the aid of the statistical product for service solution (version 23.0) using some statistical tools such as percentage, and chi-square test at 0.05 level of significance. The result of the study showed that, overall, majority 343(89.6%) had good knowledge of occupational hazard control. The knowledge of occupational hazard control was found more among those who had 5 – 10 years (95.2%) of work experience, those in the department of health information (97.1%) and those aged <30 years (98.4%). The tested hypotheses showed that there was a statistically significant association between knowledge of occupational hazards control and other variables such as age (X^2-value = 24.35, df = 3, p = 0.00) and years of work experience (X^2-value = 7.81, df = 4, p = 0.099).

Keywords: Hazard control, Knowledge, Occupation, PHC workers

Introduction
Occupational hazard control knowledge is a prerequisite to the effectiveness in the control of such hazards which are inherent in one's occupation. Nimbalkar (2018) posited that, health care workers at risk of occupational hazards work in a variety of settings which include intensive care units, operating rooms, emergency rooms, inpatient units, and transport teams, as well as home care. The World Health Organization report showed that, approximately one thousand (1,000) HIV infection, sixteen thousand (16,000) hepatitis C infection, and sixty-six thousand (66,000) hepatitis B infections occur every year worldwide in health care workers from needle-stick injuries. In addition, the Occupational Health and Safety Administration (2013) stated that, the circumstances in which most needle stick injuries occur involve manipulating a needle in a patient (26%), sharp disposal (21%), collision with a worker or sharp (10%), clean-up (9%), and recapping needles (5%). In Nigeria and other parts of the world for all types of healthcare system including the primary health care system, the healthcare workers' general duties involve regular contact with patients, permanent contact with diseases and death, the use of specific procedures and instruments which expose them to several occupational diseases and injuries (Hryhorczuk et al., 2004).

Based on the fore going, a prior knowledge about the control of the inherent hazards is vital to be able to take precaution as one cannot practice what he/she does not know. In the words of Carter and Smith (2006), workers are more likely to be injured on-the-job when hazards control measures remain unknown, and the associated safety risk remains unmitigated. In other words, the likelihood of hazard exposure and injury increases substantially when safety and hazards remain unknown. In the same vein, the National Institute for Occupational Safety and Health (2017) asserted that, safety in the healthcare system can be achieved through improvement in the knowledge of hazard control and hazard control practices that can ultimately improve the health and well-being of the health care worker. Knowledge was defined by Cheung (2017) as the fact or condition of being aware of something or knowing something with familiarity gained through experience or association. Operationally, knowledge is defined in this study as the condition of being aware or familiar with the hazard control measures specifically for the primary healthcare workers.

Hazards are inherent property of a substance, agent, and source of energy or situation that has the potential of causing undesirable consequences (Adib-Hajbaghery & Lotfi, 2013). Hazard exposure among the primary healthcare workers can occur from their contact with blood and other bodily fluid, handling of chemicals, handling and lifting of patients, exposure to pathogens such as bacteria, viruses and handling needle stick among others. The Occupational Health and Safety Administration (2013) stated that, the circumstances in which most needle stick injuries occur involve manipulating a needle in a patient (26%), sharp disposal (21%), collision with a worker or sharp (10%), clean-up (9%), and recapping needles (5%). Healthcare workers are at a high risk of hazards such as needle stick injuries and blood-borne pathogens as they perform their daily duties (Phillips *et al.*, 2012; Iliyasu *et al.*, 2016). According to Gorman (2018), exposure to hazards can occur from psychological and work stressors which include shift work, burnout, chemicals such as sterilants, disinfectants, cleaning compounds, hazardous drugs, mercury, and anesthetic gases; ionizing and non-ionizing radiation, ergonomic injuries from patient lifting and handling, and exposure to blood-borne pathogens such as viruses and bacteria which can cause Hepatitis B, Human Immunodeficiency Virus (HIV, Coronavirus) infections, and tuberculosis among others.

The consequences of occupational illnesses and injuries include physical, economic and psychological damages to the HCWs and their dependents. In Nigeria, HCWs (medical doctors, nurses and nursing assistants) are poorly prepared to handle occupational hazards and therefore sustain injuries/illnesses while performing their duties (Orji et al., 2002). The vulnerability of staff in the HCFs is compounded by the inadequacy of facilities with equipment that could enhance best practice in developing countries.

In Rivers State, with the increased burden of Covid-19, and complains from the health sector about the government's inadequate provision of personal protective equipment and materials needed to safeguard themselves from hazards. Thus, it becomes imperative that the healthcare workers are knowledgeable about how to control the hazards that they are exposed to in the work environment and also make conscious effort to control them if their health will be maintained and their job completed. Therefore, this study carried out an assessment of the knowledge of occupational hazard control among primary healthcare workers in Rivers State.

Research questions
The study provided answers to the following research questions:
1. What is the level of occupational hazard control knowledge among primary healthcare workers in Rivers State?

2. What is the level of occupational hazard control knowledge among primary healthcare workers in Rivers State based on years of work experience?
3. What is the level of occupational hazard control knowledge among primary healthcare workers in Rivers State based on the department?
4. What is the level of occupational hazard control knowledge among primary healthcare workers in Rivers State based on age?

1.5 Hypotheses

The following hypotheses postulated were tested at 0.05 level of significance:

1. There is no significant association between years of work experience and level of occupational hazard control knowledge among primary healthcare workers in Rivers State.
2. There is no significant association between department and the level of occupational hazard control knowledge among primary healthcare workers in Rivers State.
3. There is no significant association between age and level of occupational hazard control knowledge among primary healthcare workers in Rivers State.

Methodology

This study adopted the descriptive survey research design. The descriptive survey research design was adopted in this study because the study was aimed at using a representative sample of the entire population of the primary health care workers to enable the researcher to systematically collect, analyze and interpret data to describe the knowledge and practice of the workers towards occupational hazards control. The population for the study consisted of five thousand and seventy-nine (5,079) primary health care workers in Rivers State. A sample size of 407 was used for the study which was selected using the multi-stage sampling procedure involving three stages. First, stratified random sampling technique was used in which each of the existing three geographical zones formed a stratum. At the second stage, the simple random sampling technique was used to select two Local Government Area each from the three geopolitical zones. At the third stage, the proportionate sampling technique was adopted to select primary health care workers in the selected Local Government Areas. The instrument for data collection was a structured questionnaire developed by the researcher titled: "Knowledge of Occupational Hazard Control Questionnaire (KOHCQ)" with a reliability coefficient of 0.79. Data collection was done by directly delivering the questionnaire to the respondents while data analysis was carried out with the aid of the Statistical Package for Social Sciences (SPSS V-23) using percentage and Chi-square test at 0.05 level of significance.

Table 1: Occupational hazard control knowledge among primary healthcare workers

SN	Items	Responses Correct F(%)	Incorrect F(%)	Remark
1	All working tools/equipment should be treated by sterilization before and after use	328(85.6)	55(14.4)	Good
2	Working tools/equipment should be disinfected before and after use	383(100)	0(0.0)	Good
3	Working tools/equipment should be adequately cleansed before and after use	383(100)	0(0.0)	Good
4	Hand washing should be done after every procedure or contact with patients	328(85.6)	55(14.4)	Good
5	Blood borne diseases can be prevented by using personal protective equipment or wears	383(100)	0(0.0)	Good
6	Recapping used needles after use is very necessary for hazard control	382(99.7)	1(0.3)	Good
7	Giving injection without carefulness can lead to suffered accidental Needle Stick Injuries (NSI)	382(99.7)	1(0.3)	Good
8	Working for long hours without break can result to breakdown in health	327(85.4)	56(14.6)	Good
9	Lifting patients without support are the causes of waist pain and general body weakness	383(100)	0(0.0)	Good
10	It is necessary to put on hand gloves in all clinical procedures	328(85.4)	55(14.4)	Good
11	Safety measures must be put in place in all clinical procedures	383(100)	0(0.0)	Good
12	Improper arrangement of patient beds and clinical equipment can result to injury	383(100)	0(0.0)	Good
13	Prolonged exposure to radioactive equipment like x-ray is dangerous to health	328(85.6)	55(14.4)	Good
14	Hazard control measures are very necessary to protect the PHC workers from infections	383(100)	0(0.0)	Good
15	Precautions for occupational hazard control should be observed	383(100)	0(0.0)	Good
16	It is necessary for PHC workers to use goggles during each procedure to prevent themselves against spillage of any fluid into their eyes	383(100)	0(0.0)	Good
	Overall	**343(89.6)**	**40(10.4)**	**Good**

Guide: <50% is poor, while ≥50% is good knowledge.

Table 1 showed the occupational hazard control knowledge among primary healthcare workers. The result of the study showed that overall, majority 343(89.6%) had good knowledge of occupational hazard control while few 40(10.4%) had poor knowledge of occupational hazards control. Thus, primary health care workers in Rivers State had a good knowledge of occupational hazards control.

Table 2: Occupational hazard control knowledge among primary healthcare workers based on years of work experience

SN	Items	<5yrs Correct F(%)	Incorrect F(%)	5 - 10yrs Correct F(%)	Incorrect F(%)	>10yrs Correct F(%)	Incorrect F(%)
1	All working tools/equipment should be treated by sterilization before and after use	164(100)	0(0.0)	147(100)	0(0.0)	72(100)	0(0.0)
2	Working tools/equipment should be disinfected before and after use	164(100)	0(0.0)	147(100)	0(0.0)	72(100)	0(0.0)
3	Working tools/equipment should be adequately cleansed before and after use	153(93.3)	11(6.7)	118(80.3)	29(19.7)	57(79.2)	15(20.8)
4	Hand washing should be done after every procedure or contact with patients	164(100)	0(0.0)	147(100)	0(0.0)	72(100)	0(0.0)
5	Blood borne diseases can be prevented by using personal protective equipment or wears	164(100)	0(0.0)	146(99.3)	1(0.7)	72(100)	0(0.0)
6	Recapping used needles after use is very necessary for hazard control	164(100)	0(0.0)	146(99.3)	1(0.7)	72(100)	0(0.0)
7	Giving injection without carefulness can lead to suffered accidental Needle Stick Injuries (NSI)	153(93.3)	11(6.7)	117(79.6)	30(20.4)	57(79.2)	15(20.8)
8	Working for long hours without break can result to breakdown in health	164(100)	0(0.0)	147(100)	0(0.0)	72(100)	0(0.0)
9	Lifting patients without support are the causes of waist pain and general body weakness	153(93.3)	11(6.7)	118(80.3)	29(19.7)	57(79.2)	15(20.8)
10	It is necessary to put on hand gloves in all clinical procedures	164(100)	0(0.0)	147(100)	0(0.0)	72(100)	0(0.0)
11	Safety measures must be put in place in all clinical procedures	164(100)	0(0.0)	147(100)	0(0.0)	72(100)	0(0.0)
12	Improper arrangement of patient beds and clinical equipment can result to injury	153(93.3)	11(6.7)	118(80.3)	29(19.7)	57(79.2)	15(20.8)
13	Prolonged exposure to radioactive equipment like x-ray is dangerous to health	164(100)	0(0.0)	147(100)	0(0.0)	72(100)	0(0.0)
14	Hazard control measures are very necessary to protect the PHC workers from infections	164(100)	0(0.0)	147(100)	0(0.0)	72(100)	0(0.0)
15	Precautions for occupational hazard control should be observed	164(100)	0(0.0)	147(100)	0(0.0)	72(100)	0(0.0)
16	It is necessary for PHC workers to use goggles during each procedure to prevent themselves against spillage of any fluid into their eyes	164(100)	0(0.0)	147(100)	0(0.0)	72(100)	0(0.0)
	Overall	**153(93.2)**	**11(6.8)**	**140(95.2)**	**7(4.8)**	**68(94.4)**	**4(5.6)**

Guide: <50% is poor, while ≥50% is good knowledge.

Table 2 showed the occupational hazard control knowledge among primary healthcare workers based on years of work experience. The result showed that, good knowledge was found more among the respondents who had 5 – 10 years (95.2%) of work experience, followed by those who had >10 years (94.4%) and those who had <5 years (93.2%) of work experience. Thus, based on years of work experience, occupation hazard control knowledge was found more among those who had higher years of work experience.

Table 3: Occupational hazard control knowledge among primary healthcare workers based on department

SN	Items	Comm. Health Correct Incorrect F(%)	F(%)	Med. Lab. Correct F(%)	Incorrect F(%)	Pharmacy Correct Incorrect F(%)	F(%)	Health info. Correct Incorrect F(%)	F(%)	Dental technician Correct F(%)	Incorrect F(%)
1	All working tools/equipment should be treated by sterilization before and after use	135(88.8)	17(11.2)	78(86.7)	12(13.3)	47(74.6)	16(25.4)	31(88.6)	4(11.4)	37(86.0)	6(14.0)
2	Working tools/equipment should be disinfected before and after use	152(100)	0(0.0)	90(100)	0(0.0)	63(100)	0(0.0)	35(100)	0(0.0)	43(100)	0(0.0)
3	Working tools/equipment should be adequately cleansed before and after use	152(100)	0(0.0)	90(100)	0(0.0)	63(100)	0(0.0)	35(100)	0(0.0)	43(100)	0(0.0)
4	Hand washing should be done after every procedure or contact with patients	135(88.8)	17(11.2)	78(86.7)	12(13.3)	47(74.6)	16(25.4)	31(88.6)	4(11.4)	37(86.0)	6(14.0)
5	Blood borne diseases can be prevented by using personal protective equipment or wears	152(100)	0(0.0)	90(100)	0(0.0)	63(100)	0(0.0)	35(100)	0(0.0)	43(100)	0(0.0)
6	Recapping used needles after use is very necessary for hazard control	152(100)	0(0.0)	90(100)	0(0.0)	63(100)	0(0.0)	35(100)	0(0.0)	43(100)	0(0.0)
7	Giving injection without carefulness can lead to suffered accidental Needle Stick Injuries (NSI)	152(100)	0(0.0)	89(98.9)	1(1.1)	63(100)	0(0.0)	35(100)	0(0.0)	43(100)	0(0.0)
8	Working for long hours without break can result to breakdown in health	135(88.8)	17(11.2)	77(85.6)	13(14.4)	47(74.6)	16(25.4)	31(88.6)	4(11.4)	37(86.0)	6(14.0)
9	Lifting patients without support are the causes of waist pain and general body weakness	152(100)	0(0.0)	90(100)	0(0.0)	63(100)	0(0.0)	35(100)	0(0.0)	43(100)	0(0.0)
10	It is necessary to put on hand gloves in all clinical procedures	135(88.8)	17(11.2)	78(86.7)	12(13.3)	47(74.6)	16(25.4)	31(88.6)	4(11.4)	37(86.0)	6(14.0)
11	Safety measures must be put in place in all clinical procedures	152(100)	0(0.0)	90(100)	0(0.0)	63(100)	0(0.0)	35(100)	0(0.0)	43(100)	0(0.0)
12	Improper arrangement of patient beds and clinical equipment can result to injury	152(100)	0(0.0)	90(100)	0(0.0)	63(100)	0(0.0)	35(100)	0(0.0)	43(100)	0(0.0)
13	Prolonged exposure to radioactive equipment like x-ray is dangerous to health	135(88.8)	17(11.2)	78(86.7)	12(13.3)	47(74.6)	16(25.4)	31(88.6)	4(11.4)	37(86.0)	6(14.0)
14	Hazard control measures are very necessary to protect the PHC workers from infections	152(100)	0(0.0)	90(100)	0(0.0)	63(100)	0(0.0)	35(100)	0(0.0)	43(100)	0(0.0)
15	Precautions for occupational hazard control should be observed	152(100)	0(0.0)	90(100)	0(0.0)	63(100)	0(0.0)	35(100)	0(0.0)	43(100)	0(0.0)
16	It is necessary for PHC workers to use goggles during each procedure to prevent themselves against spillage of any fluid into their eyes	152(100)	0(0.0)	90(100)	0(0.0)	63(100)	0(0.0)	35(100)	0(0.0)	43(100)	0(0.0)
	Overall	**147(67.1)**	**5(32.9)**	**86(95.6)**	**4(4.4)**	**59(93.7)**	**4(6.3)**	**34(97.1)**	**1(2.9)**	**41(95.3)**	**2(4.7)**

Guide: <50% is poor, while ≥50% is good knowledge

Table 3 showed the occupational hazard control knowledge among primary healthcare workers based on department. The result of the study showed that based on department, occupational hazard control knowledge was found more among those in health information

(97.1%) followed by those in medical laboratory (95.6%), dental technicians (95.3%), pharmacy (93.7%) and those in community health (67.1%). Thus, based on the department, the knowledge of occupational hazards control was found more among those in the department of health information.

Table 4: Knowledge of occupational hazard control among primary healthcare workers based on age

SN	Items	<30yrs Correct F(%)	Incorrect F(%)	30-39yrs Correct F(%)	Incorrect F(%)	40-49yrs Correct Incorrect F(%)	F(%)	50yrs above Correct Incorrect F(%)	F(%)
1	All working tools/equipment should be treated by sterilization before and after use	121(96.0)	5(4.0)	130(85.5)	22(14.5)	57(72.2)	22(27.8)	20(76.9)	6(23.1)
2	Working tools/equipment should be disinfected before and after use	126(100)	0(0.0)	152(100)	0(0.0)	79(100)	0(0.0)	26(100)	0(0.0)
3	Working tools/equipment should be adequately cleansed before and after use	126(100)	0(0.0)	152(100)	0(0.0)	79(100)	0(0.0)	26(100)	0(0.0)
4	Hand washing should be done after every procedure or contact with patients	121(96.0)	5(4.0)	130(85.5)	22(14.5)	57(72.2)	22(27.8)	20(76.9)	6(23.1)
5	Blood borne diseases can be prevented by using personal protective equipment or wears	126(100)	0(0.0)	152(100)	0(0.0)	79(100)	0(0.0)	26(100)	0(0.0)
6	Recapping used needles after use is very necessary for hazard control	126(100)	0(0.0)	151(99.3)	1(0.7)	79(100)	0(0.0)	26(100)	0(0.0)
7	Giving injection without carefulness can lead to suffered accidental Needle Stick Injuries (NSI)	126(100)	0(0.0)	151(99.3)	1(0.7)	79(100)	0(0.0)	26(100)	0(0.0)
8	Working for long hours without break can result to breakdown in health	121(96.0)	5(4.0)	129(84.9)	23(15.1)	57(72.2)	22(27.8)	20(76.9)	6(23.1)
9	Lifting patients without support are the causes of waist pain and general body weakness	126(100)	0(0.0)	152(100)	0(0.0)	79(100)	0(0.0)	26(100)	0(0.0)
10	It is necessary to put on hand gloves in all clinical procedures	121(96.0)	5(4.0)	130(85.5)	22(14.5)	57(72.2)	22(27.8)	20(76.9)	6(23.1)
11	Safety measures must be put in place in all clinical procedures	126(100)	0(0.0)	152(100)	0(0.0)	79(100)	0(0.0)	26(100)	0(0.0)
12	Improper arrangement of patient beds and clinical equipment can result to injury	126(100)	0(0.0)	152(100)	0(0.0)	79(100)	0(0.0)	26(100)	0(0.0)
13	Prolonged exposure to radioactive equipment like x-ray is dangerous to health	121(96.0)	5(4.0)	130(85.5)	22(14.5)	57(72.2)	22(27.8)	20(76.9)	6(23.1)
14	Hazard control measures are very necessary to protect the PHC workers from infections	126(100)	0(0.0)	152(100)	0(0.0)	79(100)	0(0.0)	26(100)	0(0.0)
15	Precautions for occupational hazard control should be observed	126(100)	0(0.0)	152(100)	0(0.0)	79(100)	0(0.0)	26(100)	0(0.0)
16	It is necessary for PHC workers to use goggles during each procedure to prevent themselves against spillage of any fluid into their eyes	126(100)	0(0.0)	152(100)	0(0.0)	79(100)	0(0.0)	26(100)	0(0.0)
	Overall	**124(98.4)**	**2(1.6)**	**145(95.4)**	**7(4.6)**	**72(91.1)**	**7(8.9)**	**24(92.3)**	**2(7.7)**

Guide: <50% is poor, while ≥50% is good knowledge.

Table 4 showed the occupational hazard control knowledge among primary healthcare workers based on age. The result of the study showed that based on age, occupational hazard control knowledge was found more among those aged <30 years (98.4%) followed by those aged 30 – 39 years (95.4%), >50 years (92.3%), and those aged 40 – 49 years (91.1%). Thus, based on age, the knowledge of occupational hazards control was found more among those in the younger primary health care workers.

Table 5: Chi-square test showing association between years of work experience and knowledge of occupational hazard control among primary healthcare workers

Years of experience	Knowledge		Total	df	X^2-value	p-value*	Decision
	Good	Poor					
<5 years	153(93.3)	11(6.7)	164(100)	2	13.71	.00*	Rejected
5-10 years	118(80.3)	29(19.7)	147(100)				
>10 years	57(79.2)	15(20.8)	72(100)				
Total	328(85.6)	55(14.4)	383(100)				

*Significant

Table 5 showed the Chi-square test of association between years of work experience and knowledge of occupational hazard control among primary healthcare workers. The result showed that there was a significant association (X^2-value = 13.71, df = 2, p = 0.001). Thus, the null hypothesis which stated that there is no significant association between years of work experience and knowledge of occupational hazard control among primary health care workers in Rivers State was rejected.

Table 6: Chi-square test showing association between department and level of occupational hazard control knowledge among primary healthcare workers

Years of experience	Knowledge		Total	df	X^2-value	p-value	Decision
	Good	Poor					
Community health	135(88.8)	17(11.2)	152(100)	4	7.81	.09*	Not rejected
Medical lab	78(86.7)	12(13.3)	90(100)				
Pharmacy	47(74.6)	16(25.4)	63(100)				
Health information	31(88.6)	4(11.4)	35(100)				
Dental technician	37(86.0)	6(14.0)	43(100)				
Total	328(85.6)	55(14.4)	383(100)				

*Not Significant

Table 6 showed the Chi-square test of association between department and knowledge of occupational hazard control among primary healthcare workers. The result showed that there was no significant association (X^2-value = 7.81, df = 4, p = 0.099). Thus, the null hypothesis which stated that there is no significant association between department and knowledge of occupational hazard control among primary health care workers in Rivers State was not rejected.

Table 7: Chi-square test showing association between age and knowledge of occupational hazard control among primary healthcare workers

Years of experience	Knowledge Good	Poor	Total	df	X^2-value	p-value	Decision
<30 years	121(96.0)	5(4.00)	126(100)	3	24.35	0.00*	Rejected
30 – 39 years	130(85.5)	22(14.5)	152(100)				
40 -49 years	57(72.2)	22(27.8)	79(100)				
≥50 years	20(76.9)	6(23.1)	26(100)				
Total	328(85.6)	55(14.4)	383(100)				

*Significant

Table 7 showed the Chi-square test of association between age and knowledge of occupational hazard control among primary healthcare workers. The result showed that there was a significant association (X^2-value = 24.35, df = 3, p = 0.00). Thus, the null hypothesis which stated that there is no significant association between age and knowledge of occupational hazard control among primary health care workers in Rivers State was rejected.

Discussion of findings
The findings of the study are discussed below:
The finding of the study showed that majority 343(89.6%) of the respondents had good knowledge of occupational hazard control. This finding is encouraging because health care workers are expected to be the custodian of health knowledge which they have expressed from the findings of this study. The finding of this study is in agreement with that of Aluko et al. (2016) whose study was also carried out among Nigerian healthcare workers that majority of the respondents were knowledgeable about occupational hazards control as eighty-nine percent of respondents had knowledge on the possible hazards in the HCFs while 70 % respondents had knowledge that recapping used needles after use negates the recommendation in the standard precaution guidelines and all respondents knew that hand washing is essential to preventing cross infection after clinical procedures. The finding of this study is also similar to that of Shamsul (2011) which showed that overall the level of knowledge on occupational health and safety above average (67.8%) and that the respondents were more knowledgeable about PPE. The finding of this study also corroborates that of the National Institute for Occupational Safety and Health (2017) which noted that, safety in the healthcare system can be achieved through improvement in knowledge of safety practice and compliance that can ultimately improve a patient's outcome and also the health and well-being of the health care worker. This study gives credence to that of Carter and Smith (2006) which showed that, when safety and hazards remain unknown, the likelihood of hazard exposure and injury increases substantially. In other words, workers are more likely to be injured on-the-job when safety hazards remain unknown, and the associated safety risk remains unmitigated and because knowledge of hazard is fundamental to the safety management process, several methods are adopted to improve hazard recognition in the healthcare systems. The finding of this study also supports the assertion of Perlman et al. (2014) that, knowledge of hazard control measures is often referred to as the first step in the safety management process. This similarity could be due to the homogeneity of the study respondents; this would have been implicated for the similarities found.
The findings of this study in Table 2 showed that, good knowledge was found more among the respondents who had 5 – 10 years (95.2%) of work experience, followed by those who had >10

years (94.4%) and those who had <5 years (93.2%) of work experience. Thus, based on years of work experience, occupation hazard control knowledge was found more among those who had higher years of work experience. The result showed that there was a significant association (X^2-value = 13.71, df = 2, p = 0.001). The findings of this study is similar to that of Ogunnaike and Akinwaare (2019) whose study on the occupational hazard and preventive measures among nurses in a Nigerian tertiary health institution showed that, majority have good knowledge among which more than half of them have one to ten years post qualification experience.

The finding of this study in Table 3 showed the occupational hazard control knowledge among primary healthcare workers based on department. The result of the study showed that based on department, occupational hazard control knowledge was found more among those in health information (97.1%) followed by those in medical laboratory (95.6%), dental technicians (95.3%), pharmacy (93.7%) and those in community health (67.1%). Thus, based on the department, the knowledge of occupational hazards control was found more among those in the department of health information. The result showed that there was no significant association (X^2-value = 7.81, df = 4, p = 0.099). The findings of this study is not in line with that of Ogunnaike and Akinwaare (2019) whose study on the occupational hazard and preventive measures among nurses in a Nigerian tertiary health institution showed that, majority have good knowledge among which 17.1% worked in maternity and O&G ward, 33.7% worked in medical ward, 26.9% worked in surgical ward while 12.1% worked in accident and emergency ward. The finding of this study is in line with that of Kongtip et al. (2018) whose study on occupational health hazards, health problems encountered and personal protective equipment used in healthcare workers showed that a significant number of registered nurses have knowledge on occupational hazards. indicated that they wash their hands on duty to prevent or reduce cross infections. Ninety-six (96%) of the respondents indicated that they use gloves, aprons, face masks and goggles during surgeries or when performing procedures among which more than half of the inpatient, surgery and anaesthesia, nutrition service department did shift work.

Table 4 showed the occupational hazard control knowledge among primary healthcare workers based on age. The result of the study showed that based on age, occupational hazard control knowledge was found more among those aged <30 years (98.4%) followed by those aged 30 – 39 years (95.4%), >50 years (92.3%), and those aged 40 – 49 years (91.1%). Thus, based on age, the knowledge of occupational hazards control was found more among those in the younger primary health care workers. The result showed that there was a significant association (X^2-value = 24.35, df = 3, p = 0.00). The findings of this study is not in line with that of Ogunnaike and Akinwaare (2019) whose study on the occupational hazard and preventive measures among nurses in a Nigerian tertiary health institution showed that, majority have good knowledge among which the mean age of the respondents was 34.8±9.5years. Gajida et al. (2019) whose study on knowledge of occupational hazards, and safety practices among butchers in Kano metropolis, Kano State, Nigeria showed that, overall, the respondents had good knowledge of occupational hazards among which the mean age of the respondents was 37.7±10.5 years. More than a third (35.8%) of the respondents were between the age ranges of 30 to 39 years.

Conclusion
Based on the findings of the study, was concluded that primary healthcare workers in Rivers State have good knowledge of occupational hazards control. The good knowledge found has statistically significant association with years of work experience and the age of the respondents.

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

1. The health care management board should incorporate safety professionals to the health care system who will be engaged in organizing seminars and workshops on occupational hazards control among the health care workers.
2. Health educators should also work in conjunction with the primary health care management board for the continuous education, training and monitoring of the hazard control practices of the healthcare workers.
3. The ministry of health should constitute a safety team or committee whose duty will be to constantly organize training for the health care worker on work safety and also to visit such facilities for safety inspection from time to time.

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