KNOWLEDGE OF RISK FACTORS FOR OCCUPATIONAL HEALTH HAZARDS AMONG REGISTERED NURSES IN BENUE STATE, NIGERIA

Dorothy I. Ugwu,
Dept. of Human Kinetics and Health Education
University of Nigeria, Nsukka, dorothy.ugwu@unn.edu.ng

Abstract
The issue of occupational health hazards (OHHs) has often been overlooked in developing countries, thereby leaving workers at risk of exposure to their workplace hazards. This study determined the level of knowledge of risk factors for OHHs possessed by nurses in Makurdi Local Government Area of Benue State, Nigeria. Two research questions were formulated for the study. One null hypothesis was also tested at 0.05 level of significance. The descriptive survey design was adopted for the study. The population for the study consisted of 808 Registered Nurses (RN) in government owned health facilities. A sample of 270 nurses was drawn using Taro Yamane formula. Proportionate sampling technique was used to draw sample for the study. The instrument used for the study was the self designed Knowledge of Risk Factors for OHHs (KPFOHHs) questionnaire. The instrument yielded reliability coefficient of 0.70. Frequency, percentage and Chi-square statistics were used for data analysis. The result indicated high knowledge of risk factors for OHHs among nurses who worked in all the five work units studied. There was no significant difference in the levels of knowledge of risk factors for OHHs among nurses who worked in the various work units studied. Following from this, the study recommended, among others, that new workers should be given proper orientation on occupational health risk factors to improve their knowledge of the risk factors.

Key words*:* *Knowledge, Risk factors, Occupational hazards, Nurses, Work units*

Introduction
Occupational health hazard is prevalently on the increase following from the wake of industrialisation in the global world. This has resulted to exposure to workplace hazards among workers working in both developed and developing countries (Owie & Apanga, 2016). The international labour organisation-ILO (2016) estimated that up to 160 million workers working in various organisations across the globe suffered work-related diseases such as musculoskeletal diseases and mental health problems. The ILO also estimated that 270 million fatal and nonfatal work related accidents give rise to over 2 million work related deaths each year. These findings are similar to the report of the WHO (2016) which indicated that occupational diseases worldwide are still on the increase. The

WHO gave an estimate of 217 million cases of occupational accidents and diseases among workers working in different organisations in the world.

The situation appeared to be worse in the developing countries like Nigeria, for, according to Anozie, Lawani, Eze, Mama, Onoh, Ogah,Umezuruike and Anozie (2016), the level of occupational accidents and disease prevalence is higher in Africa compared to those of the developed countries. The authors indicated that in African countries, the many public health concerns which are competing for limited resources have not attracted any attention from both the government and the private sectors. Eyayo (2014) in line with this had earlier asserted that occupational health and safety of workers had remained a neglected public health issue in Nigeria. Eyayo also submitted that man lives in a ''chemical age'' as there is hardly any industry that does not make use of or produce chemicals in the work process. Hence, workers' health and well-being in the world of work remains at risk when little or no attention is given to issues related to occupational health and safety of workers. The author therefore posited that the health and well-being of the workforce of any company, which is their most valuable asset, should not be toyed with by either the government or the management of the various organisations and that there is need to intensify research efforts in the area of occupational health hazards in Nigeria.

Health has been defined differently by health and health related authors. Udo and Ajala (1999) had defined health as the state or quality which enables an individual to face up to crisis, carry out his/her daily responsibilities efficiently and relate to other persons effectively. Deriving from this definition, the ILO (2001) had defined occupational health as the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations. The ILO further stated that occupational health should aim at prevention of departure from health among workers from factors caused by their working conditions; the promotion of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in occupational environment adapted to their physical and psychological well-being; and the adaptation of work to man and man to his work.

Agbana, Joshua, Daikwo and Metiboba (2016) noted that a healthy workforce is vital to sustainable social and economic development of a nation. This is because a healthy workforce promotes high productivity and economic gain which are positive effects of work on health and well being of workers and growth of the nation. Puplampi and Quarley (2012) had earlier observed that the importance of occupational health is often overlooked in the developing countries, contending that managements offer less attention to issues like orientation of new workers, in-service training, and refresher courses meant for improving the knowledge of workers and for creating awareness of the risks

inherent in workers' work environment. This, the author submitted, could result to hazards encounter in the work environment.

Hazards are destructive to workers health. Smith, Saunders, Lifeshen, Black, Lay, Breslin, LaMontagne and Tompa (2015) defined hazard as a source of potential damage to health of workers. An occupational hazard is potential risk to the health of a person emerging from an unhealthy environment (Owie & Apanga, 2016). In Nigeria, workers are prone to diverse health hazards, such as humidity, explosion hazards, physical workload and exposure to patients' blood and fluid (Bedibele & Onakpaya, 2011). WHO (1997) had classified industrial hazards into physical factors, biological agents, mechanical hazards, ergonomically poor working conditions, chemical hazards, reproductive hazards, allergenic agents, social hazards and psychological stress. For the sake of convenience, Rhule (2012) categorised these hazards into biological hazards, physical hazards, chemical hazards, allergenic agents, psychological stress and social factors. This study explored the above categorised risk factors by Rhule (2012) with the view to determine the knowledge of risk factors for occupational hazards possessed by nurses.

Nurses are healthcare workers and a crucial component of the healthcare system. The International Council of Nurses –ICN (2015) described nurses as persons who have completed a programme of basic, generalised nursing education and are authorised by the appropriate regulatory authority to practice nursing in their country. They are prepared and authorised to engage in the general scope of nursing practices including the promotion of health, prevention of illness, and care of physically ill, mentally ill, and disabled people of all ages (European Union-EU, 2005). Nurses work in all healthcare facilities and carry out healthcare teaching; participate fully as members of the healthcare team; supervise and train student nurses and health care auxiliaries; and are also involved in research studies on health matters (Chhabra, 2015). They are made to work in different work units of every healthcare settings and this according to Chhabra (2015) is dependent upon their areas of specialisation. Some of their areas of specialisation include public health, paediatrics, emergency anaesthesia, in patient and out patient sections, midwifery and so on (Eljedi, 2015). According to the author, the hazards encountered by nurses include blood borne agents, infectious agents, toxic substances, back injuries, needle stick/sharp pricks injuries, stress and violence. Mark and Smith (2011) had observed that nurses encounter the most serious risk factors in performing their jobs because of the nature of their jobs as nurses suffer stress and depression as a result of their job demands, extrinsic effort, and over-commitment to job.

Knowledge is a familiarity, awareness, or understanding of something, such as facts, information, description, or learning (Hecht, 2011). The epistemology theory of knowledge by Aristotle (384-322BC) suggested the likely ways people acquire knowledge which help them in adapting to their environments. The theory posits that people know about things and events around them through their senses. All knowledge according to Aristotle is acquired through sense perception or sensation. The theory upholds that knowledge can mean any of the following; to be aware of something; to be certain about it; to learn and remember something; and to understand and be familiar with something. It therefore implies that the nurses will be knowledgeable of the risk factors for OHHs if they are aware, understand and if they are certain and remember that certain conditions pose risk factors for OHHs encounter in their workplace.

Conditions that create connection between exposure and damage (injury/disease) wherever they exist are termed risk factors. WHO (2016) defined risk factors as aspects of personal habits or an environmental exposure, that are associated with increased probability of occurrence of a disease. The risk factors for occupational hazards according to Moustata and Constantinidis (2010) include unsafe work environment, personality disposition, job characteristics, and organisational factors. According to these researchers, unsafe work environment include extremely cold or hot environment, poor ventilation, wet/slippery and sharp floor, pot holes, cracked walls, offensive odour, poor lighting among others. Personality dispositions include personality traits, such as introversion, extraversion, locus of control, internal and external carelessness, attention deficit, hostility (Jacob, 2012), neuroticism and impulsiveness (WHO, 2006). WHO also described job characteristics as work tasks and working hours, increased job demands, conflicting job, job complexity, monotony and ambiguity. Organizational factors include supervisors/co-workers' conflict, poor salary or irregular salary, poor implementation of occupational health policies and organisational competitions (Mark & Smith, 2011). This study determined nurses' knowledge of the above four classes of risk factors.

Some studies have looked at workers' knowledge of the risk factors inherent in their job. Sveinsdottir, Biering and Ramel (2006) studied Icelandic nurses' occupational stress. The study examined knowledge of risk factors for OHHs among nurses. The finding indicated that nurses were not aware of the risk factors for the OHHs they encountered in their workplace. Moustaka and Constantinids (2010) also found that nurses lack knowledge of the risk factors for OHHs and as such they suffered infectious diseases in the course of performing their duties and this was because they encountered biological hazards and use sharp objects like needles as they perform their jobs. The author also noted that

they contact active infections as they handle patient's blood and bodily fluid. Similarly, Mark and Smith (2011) observed that nurses in South England are not aware of the risk factors for the hazards they encounter in performing their jobs. Rhule (2012) reported that more than 53.6% of nurses studied were not aware of the high risks they were exposed to in performing their jobs.

On the other hand Amosun (2011); Jadab (2012) and Saqer (2014) found from their respective studies that nurses had high knowledge of the risk factors for hazards they encountered in their jobs. Supporting these findings, Geuens, Braspenny, Bagaert and Franck (2015) found that majority (96.2%) of the health care workers were knowledgeable of the risk factors for OHHs. Aluko *et al.* (2016) also found in support of the above findings that nurses who worked in various work units of healthcare facilities were highly knowledgeable of the hazards of their nursing job.

Studies have also identified work unit as one of the crucial demographic variables in determining the level of knowledge of risk factors for OHHs among nurses. Monstaka and Constantinidis (2010) studied the four major classes of risk factors for OHHs namely unsafe work environment, personality disposition, job characteristics and organisational factors among nurses working in different work units of hospital setting. The finding indicated that nurses who worked in the surgical and operation unit had higher knowledge of the risk factors followed by those who worked in the intensive care unit, while those in the paediatrics unit, psychiatric unit and general medical ward showed low knowledge of risk factors for OHHs prevalence in their workplace. Similarly, Chhabra (2016) result showed significant difference, indicating that nurses who worked in the surgical and operational units demonstrated higher knowledge of risk factors for OHHs than nurses in other hospital units.

In the same vein, Amosun *et al*. (2011) had earlier found significant difference from a study of nurses in mental health facilities in Abeokuta, Nigeria. The study indicated higher knowledge of risk factors for OHHs among nurses who worked in emergency departments and this was followed by those who worked in the surgical and operation units and then those who worked in the paediatrics units. Conversely, Al-Khatib *et al.* (2015) and Aluko *et al.* (2016) found from their various studies that nurses had adequate knowledge of the risk factors for OHHs prevalent in their hospital work environment irrespective of their work units. Contradicting these findings, Rhule (2012) indicated that up to 63.6% of the nurses who worked in all the hospital units were unaware of the risk factors associated with their job.

The above reviewed studies indicated that studies had been conducted in Nigeria on risk factors for OHHs. However these studies were conducted in other

states of Nigeria and not in Benue state, Nigeria. Furthermore, studies have shown that the importance of occupational health is often given a less attention in this part of the world and Eyayo (2014) had made a clarion call for the need to intensify research effects in this area. Considering also that nurses who are knowledgeable of the risk factors for OHHs of their nursing job will make more effort in averting the hazards or protecting themselves while at work. This study determined the level of knowledge of risk factors for OHHs possessed by nurses.

Purpose of the Study

The purpose of the study was to determine nurses' level of knowledge of risk factors for OHHS in Makurdi Local Government Area of Benue State, Nigeria. Specifically, the study sought to find out:

1. Nurses' level of knowledge of risk factors for OHHs.
2. Nurses' level of knowledge of risk factors for OHHs based on work units.

Research Questions

1. What is the nurses' level of knowledge of risk factors for OHHs?
2. What is the nurses' level of knowledge of risk factors for OHHs based on work units?

Hypothesis

There is no significant difference in the nurses' levels of knowledge of risk factors for OHHs based on work unit.

Methodology

The study adopted survey research of the descriptive type. The study was carried out in Makurdi Local Government Area (LGA) of Benue State. Makurdi has the highest number of registered nurses as well as the largest health care facilities in the state. For instance, the only two tertiary healthcare facilities in the state (Federal Medical Centre and Benue State University Teaching Hospital-BSUTH) are located in Makurdi Local Government Area. This work environment is laden with hazards which could endanger the health and wellbeing of nurses. The hazards include biological hazard, chemical hazards, physical hazards, allergenic agents, psychological stress and social factors. Nurses' exposure to these hazards formed the bases for the choice of the Local Government Area for the study.

The population for the study comprised 808 Registered Nurses (RNs) in government healthcare facilities in Makurdi Local Government Area. These included the General hospital, Benue State University Teaching Hospital (BSUTH), Federal Medical Centre (FMC) Family Support Clinics, (FSC), Hospitals Management Board (HMB) Clinic and Primary Health Centres (PHCs) The population of Registered Nurses (RN) in the General Hospital was 78, BSUTH was 224, FMC was 442, FSC was 20, HMB and Clinic was 17 and PHCs 27.

A sample size of 270 RNs was used for the study. The sample size was determined using Taro Yamane's (1967) sample size determination formula. In selecting sample for the study, the already categorised healthcare facilities were identified. They include the Health Clinic (HCs), General Hospital (GH), Teaching Hospital (TH) and Federal Medical Centre (FMC). In the health clinics, there were 64 RNs and all of them were sampled because they were relatively small in number, and also to ensure adequate representation at the grassroots level. Proportionate sampling technique was thereafter used to draw 22 RNs (10%) from the General Hospital, 62 Rns (30%) from BSUTH, and 122RNs (58%) from the FMC and these gave a total number of 270 RNs selected for the study.

The instrument for data collection was the researcher's constructed questionnaire called Knowledge of Risk Factors for Occupational Health Hazards questionnaire referred to as KRFOHH. The questionnaire consisted of items grouped into two sections (Sections A and B). Section A elicited information on demographic variable of work unit. Section B consisted of multiple choice for testing the respondents' knowledge of risk factors for occupational health hazards. It comprised items that tested nurses' knowledge of the four identified risk factors for occupational health hazards namely; unsafe work environment, personality disposition job characteristics and organizational factors. The respondents were required to place a tick ( ) against the correct answer for each question as it applies to them in the two sections.

The face validity of the instrument was established by five lecturers, four from the Department of Human Kinetics and Health Education and one from the Department of Psychology, all from the University of Nigeria Nsukka. Each of the experts was given a draft copy of the instrument accompanied by specific objectives, and research questions for the study. The observations, corrections and comments of the experts were used to produce the final copies of the KRFOHH.

In order to establish the reliability of the instrument, 30 copies of the instrument were administered to registered nurses in the University of Nigeria Nsukka, Medical Centre. The split half method was used to separate the questionnaire items into even and odd numbers. The reliability coefficient of the instrument was computed using Spearman Brown Correction Formula. This reliability coefficient yielded 0.73 showing the instrument was reliable for the study.

In order to facilitate access into the health facilities, a letter of introduction was obtained by the researcher from the Head, Department of Human Kinetics and Health Education, University of Nigeria, Nsukka. The letter was presented to the Directors in charge of the sampled health centers and clinics. The distribution and collection of the questionnaire were facilitated by the help of three research assistants, who were briefed on the procedures for the administration and collection of questionnaire copies from the respondents. At the work units of the various health facilities the researcher solicited the help of the Chief Nursing Officers (CNOs) in charge of the work units, to assist in drawing the attention of the selected RNs in their work units to respond to the copies of the instrument. Owing to the demanding nature of nursing job, the respondents were allowed to complete the questionnaire copies within two days, after which the data were retrieved. Out of the 270 copies of the questionnaire administered, 243 were correctly filled and returned, which gave a return rate of 90 per cent.

The computed data were analyzed using Statistical Package for Social Science (IBM SPSS) version 21. Frequency and percentages were used to answer the research questions. In determining the levels of knowledge of OHHs and risk factors for OHHs, Ashur's (1977) scale modified by Okafor (1997) was utilized to interpret the research questions. By these criteria, percentage less than 20 per cent was considered "very low" level of knowledge scores ranging from 21-39 percent were considered "low" level knowledge; scores ranging from 40-59 per cent were considered 'average" level of knowledge; score ranging from 60-80 per cent was considered "high" level of knowledge while 80 per cent and above was considered "very high" level of knowledge. The null hypothesis was tested using Chi-Square statistic at .05 level of significance.

Results in Table 2 showed overall percentage of 71.0 percent for nurses assigned to SUG and, 67.6 percent for nurses assigned to Clinics, 64.0 percent for nurses assigned to MED unit, 63.5 per cent for nurses assigned to OPD unit and 61.3 per cent for nurses assigned to A/E unit. These overall percentages indicated that nurses possessed high knowledge of risk factors for OHHs regardless of their work unit.

The Table showed specifically that nurses in SUG unit possessed very high level of knowledge unsafe work environment (80.3%), and high level of knowledge in the rest three components studies namely: job characteristic (69.7%), organizational factors (67.7%) and personality disposition (60.1%).As regards A/E unit, nurses showed high level of knowledge on unsafe work environment (91.0) and job characteristic (69.7%) while indicating moderate level of knowledge an organizational risk factors (57.0%) and personality disposition (55.9).

Results on MED, unit revealed that nurses also had high level of knowledge of unsafe work environment (70.2%), organizational factors (63.6%) and job characteristic (63.2%) . However they showed moderate level of knowledge on personality disposition (58.8%).

Similarly the table showed that nurses who worked under OPD unit possessed high knowledge on unsafe work environment (69.2%), job characteristic (65.4%) and organisational factors (64.1%). While their knowledge on personality disposition was moderate (55.1%). It then means that nurses who worked in all the units under study possessed high level of knowledge of risk factors inherent in their jobs.

Results

This section is concerned with the results of the study.

Research Question 1: What is the level of knowledge of risk factors for OHHs possessed by nurses in Makurdi Local Government Area?

Table 1: Frequencies and percentages of nurses level of knowledge of risk factors for OHHs (n=243)

Items	Correct Responses		Incorrect Responses	
Unsafe work environment	F	%	F	%
Inadequate lighting is a contributory factor to occupational health hazards occurrence in the health facilities	190	78.2	53	21.8
Quality of work spaces and patient areas is positively associated with job commitment and safety of workers	184	75.7	59	24.3
Unsafe work environment is the major reason why nurses are leaving the profession	156	64.2	87	35.8
Cluster %		72.7		27.3
Personality disposition				
Personality traits such as extraversion may result into exposure to Injuries in the hospital	131	53.9	112	46.1
Educational qualification is not a personality factor for job-related hazards	177	72.8	66	27.2
Nurses with Type D personality are more likely to have burnout	128	52.7	115	47.3
Cluster %		59.8		40.2
Job characteristic				
Trainings and workshop make nursing job a non-vulnerable profession	145	59.7	98	40.3
Highly monotonous work is associated with boredom	151	62.1	92	37.9
Contact with infection agents is the most serious nursing job risk factor for hazard's occurrence	188	77.4	55	22.6
Cluster %		66.4		3.6
Organizational factors				
Social support from the organization may reduce the degree of exposures to hazards in the work environment	142	58.4	101	41.6
Poor remuneration may lead to low commitment and absenteeism among workers	185	76.1	58	23.9
Poor workplace securing can lead to patient and family assaults on health care workers	142	58.4	101	41.6
Cluster %		64.3		35.7
Overall %		65.8		34.2

Results in table 1 showed an overall percentage of 65.8% which falls within the limit of 60.79% indicating that nurses had high level of knowledge of risk factors for occupational health hazards (OHHs). The table specifically showed that nurses demonstrated high level of knowledge in all the components of risk factors for OHHs as follows, unsafe work environment (72.7%); job characteristics (66.4%); organizational factors (64.3%) and personality disposition (59.8%). This implies that nurses in Markudi Local Government Area have high level of knowledge of risk factors associated with their nursing jobs.

Research Question 2: What is the knowledge of risk factors for OHHs possessed by nurses based on work unit?

Table 2: Frequencies and percentages on knowledge of risk factors for occupational health hazards possessed by nurses based on work unit (n-243)

S/N	Items	Work unit: A/E unit (n-31) Correct f(%)	A/E unit (n-31) Incorrect f(%)	SUG Unit (n-44) Correct f(%)	SUG Unit (n-44) Incorrect f(%)	MED Unit (n-76) Correct (%)	MED Unit (n-76) Incorrect f(%)	OPD Unit (n-26) Correct f(%)	OPD Unit (n-26) Incorrect f(%)	Clinics (n-66) Correct f(%)	Clinics (n-66) Incorrect f(%)
	Unsafe work environment										
1.	Inadequate lighting is a contributory factor to occupation health hazards occurrence in the health facilities	23(74.2)	8(25.8)	37(84.1)	7(15.9)	57(75.0)	19(25.0)	21(80.8)	5(19.2)	52(78.8)	4(21.2)
2.	Quality of work spaces and patient areas is positively associated with job commitment and safety of workers	22(71.0)	9(29.0)	34(77.3)	10(22.7)	54(71.1)	22(28.9)	20(76.9)	6(23.1)	54(81.8)	12(18.2)
3.	Unsafe work environment is the major reason why nurses are leaving the profession	21(67.7)	10(32.3)	35(79.5)	9(20.5)	49(64.5)	27(35.5)	13(50.0)	13(50.0)	37(57.6)	28(42.4)
	Clusters %	71.0	29.0	80.3 .	19.7	70.2	29.8	69.2	30.8	72.7	27.3
	Personality disposition										
4.	Personality traits such as extraversion may result into exposure to inquiries in the hospital	13(41.9)	18(58.1)	22(50.0)	22(50.0)	43(56.6)	33(43.4)	14(53.8)	12(46.2)	39(59.1)	27(40.9)
5.	Educational qualification is not a personality factor for job-related hazards	24(77.4)	7(22.6)	38(86.4)	6(13.6)	35(72.4)	21(27.6)	18(69.2)	8(30.8)	42(63.6)	24(36.4)
6.	Nurses with Type D personality are more likely to have burnout	15(484)	16(57.6)	28(63.6)	16(36.4)	36(47.4)	40(52.6)	11(42.3)	15(57.7)	38(57.6)	28(42.4)
	Cluster %	55.9	44.1	66.7	33.3	58.8	41.2	55.1	44.9	60.1	39.9
	Job characteristics										
7.	Training and workshops make nursing job a non-vulnerable Profession	18(58.1)	13(41.9)	29(65.9)	15(34.1)	44(57.9)	32(42.1)	13(50.0)	41(50.0)	22(62.1)	25(37.9)
8.	Highly monotonous work is associated with boredom	21(58.1)	13(41.9)	30(68.2)	14(31.8)	43(56.6)	33(43.4)	17(65.4)	9(34.6)	43(65.2)	23(43.8)
9.	Contact with infections agents is the most serious nursing job risk factor for hazards	21(67.7)	10(32.3)	35(79.5)	9(20.5)	57(75.0)	19(25.0)	21(80.8)	5(19.2)	54(81.8)	12(182.)
	Cluster %	61.3	38.7	71.2	28.8	63.2	36.8	34.6	65.8	34.6	69.7 30.3
	Organizational factors										
10.	One of the organizational factors that may influence the hazards nurses experience at work include social support from the organization	15(48.4)	16(57.6)	25(56.8)	19(43.2)	45(59.2)	31(40.8)	15(57.7)	11(42.3)	42(63.6)	24(36.4)
11.	Poor remuneration may lead to low commitment and absenteeism among workers	24(77.4)	7(22.6)	34(77.3)	10(22.7)	53(69.7)	23(30.3)	23(88.5)	3(11.5)	51(77.3)	15(22.7)
12.	Poor workplace security can lead to patient and family assaults on health workers	14(45.2)	17(54.8)	28(63.6)	16(36.4)	47(61.8)	29(38.2)	14(46.2)	14(53.8)	41(62.1)	22(37.9)
	Cluster %	57.0	43.0	65.9	34.1	63.6	36.4	64.1	35.9	67.7	32.3
	Overal %	61.3	38.7	71.0	29.0	64.0	36.0	63.5	36.5	67.6	32.4

Results in table 2 showed overall percentage of 71.0 percent for nurses assigned to SUG and, 67.6 percent for nurses assigned to Clinics, 64.0 percent for nurses assigned to MED unit, 63.5 per cent for nurses assigned to OPD unit and 61.3 per cent for nurses assigned to A/E unit. These overall percentages indicated that nurses possessed high knowledge of risk factors for OHHs regardless of their work unit. The table showed specifically that nurses in SUG unit possessed very high level of knowledge unsafe work environment (80.3%), and high level of knowledge in the rest three components studies namely: job characteristic (69.7%), organizational factors (67.7%) and personality disposition (60.1%).As regards A/E unit, nurses showed high level of knowledge on unsafe work environment (91.0) and job characteristic (69.7%) while indicating moderate level of knowledge an organizational risk factors (57.0%) and personality disposition (55.9).

Results on MED, unit revealed that nurses also had high level of knowledge of unsafe work environment (70.2%), organizational factors (63.6%) and job characteristic (63.2%) . However they showed moderate level of knowledge on personality disposition (58.8%). Similarly the table showed that nurses who worked under OPD unit possessed high knowledge on unsafe work environment (69.2%), job characteristic (65.4%) and organisational factors (64.1%). While their knowledge on personality disposition was moderate (55.1%). It then means that nurses who worked in all the units under study possessed high level of knowledge of risk factors inherent in their jobs.

Table 3: Summary of chi-square analysis of no significant difference in nurses knowledge of risk factors for OHHs based on work unit (n=243)

		Knowledge of Risk Factors for OHHs				
		Correct Responses	Incorrect Responses			
Variable	N	O (E)	O (E)	X^2	df	P-value
Work Units						
A/E unit	31	22(21.4)	9(9.6)			
SUG unit	44	25(30.4)	19(13.6)			
				4.620	4	.329
MED unit	76	57(52.5)	19(23.5)			
OPD unit	26	19(18.0)	7(8.0)			
Clinics unit	66	45 (45.6)	2.(20.4			

*Significant at P<0.05

Table 3 showed the results of Chi-square (X^2) test of no significant difference in the knowledge of risk factors for OHHs possessed by nurses “based

on unit". The Chi-square test showed that no significant difference (X^2=15.517, df=4, p-value = .329) was found in the knowledge of risk factors for OHHs possessed by nurse according to work units. Thus, the null hypothesis was accepted. This implies that nurses did not differ in their knowledge of risk factors for OHHs based on work units.

Discussion

Result in Table 1 showed that in overall, nurses had high level of knowledge (65.8%) of risk factors for hazards inherent in their workplace. The result was in line with the findings of Amosun (2011); Jadab (2012) and Saqer (2014) found from their respective studies that nurses reported high knowledge of risk factors for hazards in their workplace. This is consistent with the findings of Gevens, Braspenny, Bogart and Franck (2015) who found that 96.2% of healthcare workers were knowledgeable of the risk factors for hazards inherent in their work environment. Study by Aluko *et al.* (2016) also supported the finding. The study, however, disagreed with the findings of Sveinsdottir, Biering and Ramel (2006); Moustaka and Constantinids (2010) Mark and Smith (2011) and Rhule (2012), which reported low knowledge of risk factors for OHHs among nurses in their various studies.

Results in Table 2 revealed that in overall, the nurses possessed a high level of knowledge of risk factors for OHHs irrespective of their various work units. Similarly, the result of the Chi-square analysis indicated no significant difference in the nurses' level of knowledge of risk factors for hazards of their jobs. This result differed from the earlier findings. For instance, Moustaka and Constantinidis (2010) and Chabra (2016) various findings showed significant differences indicating that nurses who worked in the surgical and operation units reported higher knowledge of risk factors for OHHs than those who worked in other units. Similarly, Amosun *et al.* (2011) finding disagreed with the present finding. The finding indicated significant difference, showing that nurses who worked in emergency unit had higher knowledge of risk factor for the hazards of their jobs than those in other work units. However, Al-Khalib *et al.* (2015) observed that nurses in all the hospital units had adequate knowledge of the risk factors for hazards inherent in their workplace.

The reason for the present results could be attributed to the fact that the professional training which registered nurses undergo may have intensified, improved and upgraded in the recent times, to bring about required knowledge in all aspects of occupational health related issues. Hence it is expected that it is through such training that the nurses may have acquired high level of knowledge of the risk factors for hazards of their jobs and this may have applied to all the

nurses working in various units of the healthcare settings. Another explanation could be due to nurses' frequent exposure to workplace hazards. The demanding nature of their job, with high degree of contacts with different hazardous situations in clinical settings may have exposed them to workplace hazards. The exposure may have given them the experiences needed for proper acquisition of knowledge of the risk factors inherent in their jobs. This supports the theory of anchor in this study. The Aristotle theory posits that experience, familiarity, and awareness of something/situation brings about knowledge. It therefore implies that the nurses' exposure to hazardous settings and patient's blood and fluid may have made them to gain experience of the hazards, be familiar and aware that contact with patient's blood and fluid and work settings could constitute risk factors for hazards encountered in their jobs. This may have also applied to nurses who worked in various units of the work settings.

Conclusion

The study determined the level of knowledge of the risk factors for occupational health hazards possessed by Registered Nurses (RNs) who worked in government healthcare facilities in Markudi Local Government Area, Benue State, Nigeria. The result showed that the nurses had high level of knowledge of risk factors for OHHS. The finding also indicated high level of knowledge of risk factors for nurses who worked in the five units of the work setting studied. There was no significant difference in the level of knowledge of risk factors for OHHS among nurses who worked in the various work units. It therefore implies that the nurses were aware of the risk factors inherent in their jobs and this is also irrespective of their work units.

Recommendations

The researcher therefore recommended that the management should continue to make effort in improving the knowledge of nurses towards occupational health issues (Risk factors for OHHs) through workshops, in-service training, seminars and refresher courses. New workers should be given proper orientation on occupational health risk factors and this should be done differentially for workers in different units. Furthermore, deployment in work units should be based on nurses' specialisation and this implies that only those who specialise in a particular area should be deployed to the unit addressing their areas of specialisations.

References

Agbana, B.E., Joshua, A.O., Daikwo, M.A., & Metiboba, L.O. (2016). Knowledge of occupational hazards among sawmill workers in Kwara State, Nigeria Niger *Postgraduate Medical Journal, 23., 25-32*

Areqat, T., El Ansari, W., Darkhawaja, R., Khatib, J., Mansour, S., Tucktuck. M. (2015). Occupational safety precautions among nurses at four hospitals, Nablus District, Palestine. *International Journal of Occupational and Environmental Medicine, 6(4)*, 243-246.

Aluko, O.O, Adebayo, A.E., Adebisi, T.F., Ewegbemi, M.K., Abidoye, A.T., & Popoola, B.F. (2016). Knowledge, attitudes and perceptions of occupational hazards and safety practices in Nigerian healthcare workers. *Bio Medical Central* Research , 9(1), 71 DOL:10.1186/s13104-016-1880-2.

Amosun A.M., Degun, A.M., Atulomah, N.O.S., Olanrewin, M.F., & Aderibigbe, K.A. (2011). The level of knowledge regarding occupational hazards among nurses in Abeokuta, Ogun State. *Nigeria Current Research Journal of Biological Sciences, 3*(6), 586-590.

Anozie. O.B. Lawani, L.O., Eze, J.E., Mamah, E.J., Onoh, R.C., Ogah, E.O., Umezurike. D.A., & Anozie, R.O. (2017). Knowledge, attitude and practice of healthcare managers to medical waste management and occupational safety practices. Findings from Southeast Nigeria. *Journal of Clinical and Diagnostic Research,* 11(3). ICO1-1CO4: Doi: 10.7860/JCDR/2017/24230.9527.

Ashur, S.S. (1977). An evaluation plan development and up-dating of nutrition curriculum at the upper elementary and preparatory levels in Jordan IVNS/UNESCO International Conference in Nutrition Education. 10(2), 67-7

Chhabra, S.A. (2016), Health hazards among health care personal, *Journal of Mahatma Gardhi Institute of Medical Science*, 21. 19-24.

Eyayo, F. (2014). Evaluation of occupational health hazards among oil industry workers: A case study of refinery. *Workers Journals of Environmental Science, Toxicology and Food Technology,* 8 (12), 2319-2399.

Geuens, N., Braspenning, M., Bogaert, P.V., & Franck, E. (2015), Individual vulnerability to burrnout in nurses. The role of Type D. personality within different nursing specialty areas *Journal of Occupational Safety,* 2 (2=3), 80-86.

Hecht, S.S. (2011). Tobacco smoke carcinogens and lung cancer: In Penning. T.M. Chemical Careinogenesis. *Totowa North Journal: Springer.* P. 67.

International Labour Organization (2001). The labour statistics database, Laborsta, H.O. Available at http://laborsta.ilo.org/.

International Labour Organization (2016) *International labour standards on occupational safety and health* Geneva II.0

Jadab, K.B. (2012). Occupational health hazards and management for industrial workers *Odisha Review,* 01. 64-99.

Mark, G., & Smith, A.P. (2011). Occupational stress, job characteristics, coping, and the mental health among nurses in school of psychology, Cardiff University, UK. British *Journal of Health Psychology. The British Psychological Society.*

Moustaka, E. & Constantinidis, T.C. (2010). Sources and effects of work-related. *Stress in Nursing Health Science Journal*, 4 (4).

Okafor, R.U. (1997). Sexual knowledge and sources of sexual information on secondary school students in Anambra State. *Journal of Nigerian Health and Movement Education* 1 (1), 9-19.

Owie, H.O. & Apanga, P.A., (2016). Occupational health hazards prevailing among healthcare workers in developing countries. *Journal of AIDS and Clinical Research* 7,596. Doi; 10.4172/2155.6113.1000596.

Puplampu, B.B., & Quartey, S.H. (2012). Key issues on occupational health and safety practices in Ghana: *A Review, International Journal of Business and Social Science,* 3(19).

Rhule, H.K.A. (2012). Health related risks of nursing practice at Effia-Nkwanta regional hospital, Sckondi, Unpublished M.Sc. Thesis Kwame Nkrumah University of Science and Technology.

Smith,P. M., Saunders, R., Lifshen, M., Black, O., Lay, M., Breslin, F. C., LaMantagne, A. D., & Tompa, E. (2015). The development of a conceptual model and self-reported measure of occupational health and safety vulnerability. *Accident Analysis and Prevention, 82,*234-243.

Saqar, A. (2014). Assessment of health and safety risk among health care providers in European Gaza hospital, *Unpublished M.Sc. Thesis. University of Gaza Palestine.*

Sveinsdottir, H., Biering P., & Ramel A. (2006). Occupational risk factors, stress, job satisfaction, and working environment among Icelandic nurses: A cross-sectional questionnaire survey. *International Journal of Nursing Studies. Sept; 43*(7):875-89.

Udoh, C.O., & Ajala, J.A. (1991). *Mental and social health*. Ibadan: Moonlight Publishers Ltd.

WHO I (1997). Definition for occupational health. Available from http://www.in/ occupational-health/en/

World Health Organization (2006). The World Health Report-2006: Working Together for Health. Geneva: Switzerland.

World Health Organization (2016). International statistical classification of diseases and related health problems (ICD-10) in occupational health.