ASSESSMENT OF THE LEVEL OF KNOWLEDGE OF OCCUPATIONAL HEALTH HAZARDS AMONG NURSES IN MAKURDI LGA, BENUE STATE

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Abstract
This study was carried out to determine the level of knowledge of occupational health hazards (OHHs) among nurses in Makurdi LGA, Benue State. Two specific objectives and corresponding research questions were posed with one null hypothesis formulated and tested at 0.05 level of significance. The study utilized descriptive survey design. The population for the study comprised 808 registered Nurses in government health facilities in Makurdi LGA, Benue State. A sample of 270 was drawn using Taro Yamane formula. Multi-stage sampling procedure was used to draw the sample from the population. The instrument used for the study was Knowledge of Occupational Health Hazard (KOHH) questionnaire, which was developed by the researcher. Frequency, percentage and Chi-square were used for data analysis. Findings of the study showed that all the nurses were knowledgeable of the hazards associated with their jobs, and most especially biological hazards which scored very high level of knowledge. Considering the age factor, the result showed that higher level of knowledge was recorded among nurses aged between 40 years and above than those aged 30-39 and followed by those within the age of 20-29 years. There was significant difference in the knowledge of OHHs of nurses based on age. The researcher therefore, recommended, among others, that workshops, in-service trainings, and refresher courses be organized for nurses on regular basis by management and attendance made mandatory.

Keywords: Knowledge, occupational health hazards, nurses.

Introduction

Since the dawn of civilization, occupational health hazards have been on the increase, and remain the leading cause of morbidity and mortality among workers across the globe. Eyoya (2014) observed that more than 2.9 billion workers throughout the world are exposed to hazards in their workplace. This exposure according to Eyoya could result into accident and onset of diseases or infections leading to injuries, disabilities and death among workers. Research has shown that in Nigeria as in some other African countries, the situation seems to be the worst. For instance, Puplampu and Quartey (2012) had observed that occupational health and safety (OHS) practices have generally been given little research attention and often overlooked. Other factors such as poor personal and environmental hygiene and

safety culture contribute to high accident and disease infections to workers, working in industries, in Nigeria (Abubakar, 2015). The desire for increased productivity and profitability by employers even at the detriment of workers' health also contributes to high level of occupational accidents and diseases in the country (Phayong & Sathirakorn, 2014). The authors stated that the rates of occupational injury fatalities are estimated to be at least two to five times higher in the developing regions of the world including Nigeria, than in the developed countries.

Based on this background, it is clear that poor attention to issues related to OHHs can take a heavy financial toll on any organization and nation's economy, not to mention the human cost of work-related illness, injury, and fatality. Hence, there is the need for increased research attention on area of occupational health hazards.

The word "health" has been defined byWHO (1948) as a state of complete physical, mental, and social wellbeing of an individual, and not merely the absence of disease or infirmity. Attia, Soroure and Ahmed (2019) argued that for an individual to enjoy an optimal health, other dimensions of health such as spiritual, emotional and occupational health should be encompassed in the definition of health. The authors therefore define health as a state of complete physical, social, mental, spiritual, emotional and occupational well-being of an individual. The WHO (2001) defined occupational health as a multidisciplinary activity aimed at protection and promotion of the health of workers. Occupational health does this according to the WHO, by preventing and controlling occupational hazards and accidents; by eliminating the occupational factors and conditions hazardous to health and safety at work; development and promotion of healthy and safe work, work environments, and work organizations; enhancement of the physical, mental and social wellbeing of the workers; support for the development and maintenance of their working capacity, as well as professional and social development at work. All these factors enable the workers to live a healthy and meaningful life and to contribute positively to the sustainable development of the nation (Rhule, 2012). The health and wellbeing of workers in any occupation can be linked to the specificity of their jobs and attending hazards in the workplace (Faremi, Ogunfowokan, Mbada, Olatubi& Ogungbemi, 2014). However, the authors added that as simple any job may seem there are usually specific hazards associated with it.

Hazards endanger the health and life of workers. Hazards are an inherent property of a substance, agent, and source of energy or situation that has the potential of causing undesirable consequences (Shinde, Sadare & Potdar, 2015). An occupational hazard is any harmful condition associated with work place, which can result in illness, injury, endangerment, jeopardy, or danger with the possibility of injury, and loss or misfortune (Faremi, Ogunfowokan, Mbada, Olatubi & Ogungbemi, 2014). In Nigerian organizational settings, workers are prone to a multiplicity of health hazards, such as biological, chemical, physical, and psychological hazards (Akinwale & Olusanya, 2016). The WHO (1997) had classified industrial hazards into physical

factors, biological agents, mechanical, ergonomically poor working conditions, chemical hazards, reproductive hazards, allergenic agents, social hazards and psychological hazards. Rhule (2012) categorized OHHs of nusing job into biological hazards, physical hazards, chemical hazards, allergenic agents, psychological stress and social factors. This study explored the above categories of hazards as observed by Rhule (2012) with the view to determining the knowledge nurses possess on the hazards as have been associated with their work environment.

Crisp-Bright (2010) defined knowledge as the psychological result of perception, learning and reasoning. Atherton (2013) submitted that knowledge can refer to a theoretical or practical understanding of a subject. It can be implicit (as with practical skills or expertise) or explicit (as with the theoretical understanding of a subject); it can be more or less formal or systematic. The author added that, knowledge acquisition involves complex cognitive processes: perception, communication, and reasoning; while knowledge is also said to be related to the capacity of acknowledgement in human beings. WHO (2001) had earlier asserted that knowledge is a prerequisite for any health action. The report maintained that many of the ailments prevailing in the society are to a large extent caused by anti-health actions because many people are uninformed. This means that, the prevalence of health problems in the society especially in the workplace may be as a result of lack of adequate or correct knowledge. This study sought to determine the level of knowledge of OHHs as it relates to nurses in Makurdi LGA, Benue State.

Nursing is a profession that is highly involved in care giving. Institute of Medicine (1995) defines nursing job as a caring-based practice in which processes of diagnosis and treatment are applied to human experiences of health and illness. A nurse is a person who has completed a program of basic, generalized nursing education and is authorized by the appropriate regulatory authority to practice nursing in his/her country (ICN, 2015).

Healthcare workforce is one of the largest work forces in the world constituting over 12% of the working population in the whole world (Goniewicz, Włoszczak-Szubzda, Niemcewicz, Witt, Marciniak-Niemcewicz& Jarosz, 2012). Nigeria has one of the largest pools of healthcare personnel in Africa (WHO, 2015) and they make up about one third of the total workforce in Nigeria. Health workers perform their duties in an increasing hazardous work environment and occupational settings (Osungbemiro, Adejumo, Akinbodewa & Adelosoye, 2016). Personnel in this workforce are responsible for providing quality health care services, even though their work places (hospitals, clinics and laboratories) are increasingly unsafe (Stonerock, 2004; Attia, Sorour & Ahmed, 2019). Studies have reported that healthcare workers (HCWs) encounter different hazards due to their activities (Manyele, Ngonyani & Eliakimu, 2008; Min, Kim, Lee & Song 2019; Yesmeen, Ali, Tyrrel & Zaheer, 2020; Ajith, Ghosh & Jansz, 2020). This includes, but not limited to, sharp related injuries, direct infections, stress, assault from patients and their

relatives, allergies, back pain, and other musculoskeletal injuries (Ndejjo et al., 2015). In spite of the numerous hazards in their unsafe workplace environment, the authors observed that healthcare occupational settings continue to be neglected by governments, management and regulators. According to Osungbemiro, Adejumo, Akinbodewa and Adelosoye (2016) Occupational health hazards put HCWs including nurses at risk of increased morbidity and mortality. Loss of skilled health personnel will adversely affect healthcare services which are already suboptimal in developing countries such as Nigeria. The multiplying effects of occupational injuries and diseases among healthcare workers include economic loss, physical loss and psychological disorders such as stress and depression. These have an overall negative impact on the workers, their families and the nation at large. Studies have also shown that some demographic factors such as age are related to workers level of knowledge of occupational hazards.

Age is a strong contributory factor related to diseases. Smith et al. (2015) observed that the burden of work injury and illness is not equally distributed across workers of all ages. Studies from Canada and other developed countries, as observed by smith et al, have recorded a higher burden of work injury among younger workers than older workers. Also, in a study conducted by Teshager, Engeda, and Worku (2015) age of nurses was found to be significantly associated with their knowledge of prevention of surgical site infection. The above researchers found that the older workers have more knowledge than the younger workers. On the contrary, Owie and Apanga (2016) and Min, Kim, Lee and Song (2019) observed that younger nurses were more knowledgeable of OHHs than the older workers.

Available literature indicated that most studies on occupational health hazards were conducted in the western countries and few in Nigeria. However, some of the studies conducted in Nigeria, Benue State specifically, put into consideration the general health care workers and specifically in teaching hospitals like BSUTH of which no such studies have so far been conducted in Makurdi LGA on knowledge of OHHs. Besides, the importance of occupational health and safety is often overlooked in this part of the world. As a result, there is a general paucity of data on knowledge of OHHs concerning nurses and employees in Nigeria as a whole. Therefore, considering the fact that knowledge of OHHs is very important for boosting the preventive practices as well as the health and wellbeing of workers, it becomes important that this study be carried out, drawing sample from Makurdi LGA, Benue state.

Purpose of the Study

The purpose of this study was to determine the knowledge of occupational health hazards (OHHs) among nurses in Makurdi LGA of Benue State. Specifically, the study sought to find out:

1. the level of knowledge of OHHs possessed by nurses in Makurdi LGA, Benue State;
2. the level of knowledge of OHHs possessed by nurses based on age.

Research Questions

The following questions were posed to guide the study.

1. What is the level of knowledge of OHHs possessed by nurses in Makurdi LGA, Benue State?
2. What is the level of knowledge of OHHs possessed by nurses based on age?

Hypothesis

The following null hypothesis was formulated and tested at .05 level of significance.

1. There is no significant difference in the level of knowledge of OHHs possessed by nurses based on age.

Methodology

The descriptive survey design was employed for the study. 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 LGA. This work environment is characterized by several hazards which endanger the health and wellbeing of nurses. Hazards associated with nursing job include biological hazard, chemical hazards, physical hazards, allergenic agents, psychological stress and social factors. Nurses' exposure to these hazards forms the bases for the choice of the LGA for the study.

The population for the study comprised 808 registered Nurses (RNs) in government healthcare facilities in Makurdi LGA. These included the General hospital, Benue State University Teaching Hospital (BSUTH), Federal Medical Centre (FMC), Family Support Clinics, Hospitals Management Board (HMB) Clinic and Primary Health Centres (PHCs). The population of RNs in the General hospital is 78, BSUTH is 224, Federal Medical Centre is 442, Family Support Clinic is 20, HMB Clinic is 17 and PHCs is 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. The multi-stage sampling procedure was adopted for the study. Four stages were adopted. In the first stage, the various health care facilities were categorized into Health Clinics (HCs), General Hospital (GH), Teaching Hospital (TH) and Federal Medical Centre (FMC) using stratified random sampling technique. The second stage involved the use of purposive sampling technique to select all the 64 RNs in the health

clinics. All the RNs in the health clinics were purposively selected because they are relatively small in number, and also to ensure adequate representation at the grassroots' level. The third stage involved the use of proportionate sampling technique to draw 22 RNs (10%) from the General Hospital, 62 RNs (30%) from BSUTH, and 122 RNs (59%) from the FMC. The fourth stage involved the administration of questionnaire to the 270 RNs selected for the study.

The instrument for data collection was the researcher-constructed questionnaire called Knowledge of Occupational Health Hazards questionnaire (KOHH). The questionnaire has two sections (A and B). Section A elicited information on demographic variable of age. Section B consisted of multiple choice questions from options A-D for testing the respondents' knowledge of occupational health hazards. It comprised twenty (20) questions that tested nurses' knowledge of the five categories of occupational health hazards (biological, physical, chemical, allergenic reaction, psychological and social health hazards). 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 Department of Human Kinetics and Health Education and one from the Department of Psychology; all from the University of Nigeria, Nsukka. Each expert was given a draft copy of the instrument accompanied by specific objectives, research questions and hypotheses of the study. The observations, corrections and comments of the experts were used to produce the final copies of the KOHH.

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 assistance 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 to assist her in drawing the attention of the selected RNs in their work units to respond to the copies of the instrument. Due to the demanding nature of nursing job, the respondents were allowed to complete the questionnaire copies within two days, after which the instrument 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 data were analysed using Statistical Package for Social Sciences (IBM SPSS) version 21. Frequency and percentages were used to answer the research questions. In determining the level 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; score ranging from 21-39 per cent was considered "low" level knowledge; score ranging from 40-59 per cent was 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

This section is concerned with the presentation and analysis of the data generated from the study.

Research Question One: What is the level of knowledge of OHHs possessed by nurses in Makurdi LGA, Benue State?

Table 1: The Level of Knowledge of OHHs Possessed by Nurses (N=243)

S/n	Items	Correct Responses		Incorrect Responses	
	Biological health hazards	**f**	**%**	**f**	**%**
1	Exposure to biological hazards such as bacteria may lead to tuberculosis	215	88.5	28	11.5
2	Safety device such as face shield is not a mode of transmission of infective agents	229	94.2	14	5.8
3	Contact with infected patients' blood and body fluids may cause HIV/AIDS and hepatitis B & C	229	94.2	14	5.8
	Cluster %		**92.3**		**7.7**
	Physical health hazards				
4	Extreme cold or hot weather is an example of physical health hazards in the hospital environment	87	35.8	156	64.2
5	Forceful exertions, awkward postures, and repeated activities could lead to developing musculoskeletal injuries	195	80.2	48	19.8

6	Radiation hazards may cause genetic changes and malformation	186	76.5	57	23.5
	Cluster %		**64.2**		**35.8**
	Chemical health hazards				
7	Chemical hazards can be in the form of vapour	169	69.5	74	30.5
8	Hazardous chemicals used in hospitals may not include pain relievers	194	79.8	49	20.2
9	Exposure to chemical agents may constitute respiratory tract infections	197	81.1	46	18.9
	Cluster %		**76.8**		**23.2**
	Allergenic reactions				
10	Allergenic reactions can be caused by antineoplastic agents	179	73.7	64	26.3
11	Allergic contact dermatitis has been associated with prolonged use of latex gloves	154	63.4	88	36.2
12	Exposure to toxic substances like sterilant may lead to Skin irritation	206	84.8	37	15.2
	Cluster %		**73.9**		**26.1**
	Psychological health hazards				
13	Team work does not generate stress to nurses in their work environment	199	81.9	44	18.1
14	Excessive work load and organizational setup are major causes of burnout	163	67.1	80	32.9
15	Psychological hazard can cause high blood pressure	204	84.0	39	16.0
	Cluster %		**77.7**		**22.3**
	Social health hazards				
16	Hazards related to difficulties in family relationships, fellow healthcare workers, patients and management are termed social hazards	181	74.5	62	25.5
17	Sexual harassment is an example of social health hazards in the hospital	160	65.8	83	34.2
18	Job satisfaction is not associated with work-family conflict	195	80.2	48	19.8
	Cluster %		**73.5**		**26.5**
	Overall %		**76.4**		**23.6**

Results in Table 1 showed an overall percentage of 76.4% which was within the limit of 60-79% indicating that the nurses were highly knowledgeable of occupational health hazards (OHHs). Specifically, the Table indicated that nurses had very high level of knowledge (92.3%) of biological hazards. While they showed high

level of knowledge of psychological hazards (77.7%); chemical hazards (76.8%); allergenic hazards (73.9%); social hazards (73.5%) and physical hazards (64.2%).

Research Question Two: What is the level of knowledge of OHHs possessed by nurses based on demographic variable of age?

Table 2
The Level of Knowledge of OHHs Possessed by Nurses based on Demographic Variable Age (N =243)

AGE							
S/n	**Items**	**20-29 years (n=69)**		**30-39 years (n=66)**		**40 years & above (n=108)**	
		Correct f(%)	**Incorrect f(%)**	**Correct f(%)**	**Incorrect f(%)**	**Correct f(%)**	**Incorrect f (%)**
	Biological health hazard						
1	Exposure to biological hazards such as bacteria may lead to tuberculosis	58 (84.1)	11(15.9)	58 (87.9)	8 (12.1)	99 (91.7)	9 (8.3)
2	Safety device such as face shield is not a mode of transmission of infective agents	63 (91.3)	6 (8.7)	64 (97.0)	2 (3.0)	102 (94.4)	6 (5.6)
3	Contact with infected patients' blood and body fluids may cause HIV/AIDS and hepatitis B & C	63 (91.3)	6 (8.7)	61 (92.4)	5 (7.6)	105 (97.2)	3 (2.8)
	Cluster %	**88.9**	**11.1**	**92.4**	**7.6**	**94.4**	**5.6**
	Physical health hazard						
4	Extreme cold or hot weather is an example of physical hazards in the hospital environment	21 (30.4)	48(69.6)	19 (28.8)	47 (71.2)	47 (43.5)	61 (56.5)
5	Forceful exertions, awkward postures, and repeated activities could lead to developing musculoskeletal injuries	53 (76.8)	16 (23.2)	52 (78.8)	14 (21.2)	90 (83.3)	18 (16.7)
6	Radiation hazards may cause genetic changes and malformation	42 (60.9)	27 (39.1)	48 (72.7)	18 (27.3)	96 (88.9)	12 (11.1)
	Cluster %	**56.0**	**44.0**	**60.1**	**39.9**	**71.9**	**28.1**
	Chemical health hazards						
7	Chemical hazards can be in the form of vapour	39 (56.5)	30 (43.5)	49 (74.2)	17 (25.8)	81 (75.0)	27 (25.0)
8	Hazardous chemicals used in hospitals may not include pain	52 (75.4)	17 (24.6)	49 (74.2)	17 (25.8)	93 (86.1)	15 (13.9)

	Relievers						
9	Exposure to chemical agents may constitute respiratory tract infections	54 (78.3)	15 (21.7)	50 (75.8)	16 (24.2)	93 (86.1)	15 (13.9)
	Cluster %	**70.1**	**29.9**	**74.7**	**25.3**	**82.4**	**17.6**
	Allergenic reactions						
10	Allergenic reactions can be caused by antineoplastic agents	46 (66.7)	23 (33.3)	46 (69.7)	20 (30.3)	87 (80.6)	21 (19.4)
11	Allergic contact dermatitis has been associated with prolonged use of Latex gloves	40 (58.0)	29 (42.0)	33 (50.0)	33 (50.0)	81 (75.0)	26 (24.1)
12	Exposure to toxic substances like sterilant may lead to skin irritation	57 (82.6)	12 (17.4)	52 (78.8)	14 (21.2)	97 (89.8)	11 (10.2)
	Cluster %	**69.1**	**30.9**	**66.2**	**33.8**	**81.8**	**17.9**
	Psychological health hazard						
13	Team work does not generate stress to nurses in their work environment	62 (89.9)	7 (10.1)	48 (72.7)	18 (27.3)	89 (82.4)	19 (17.6)
14	Excessive work load and organizational setup are major causes of burnout	40 (58.0)	29 (42.0)	43 (65.2)	23 (34.8)	80 (74.1)	28 (25.9)
15	Psychological hazard can cause high blood pressure	59 (85.5)	10 (14.5)	54 (81.8)	12 (18.2)	91 (84.3)	17 (15.7)
	Cluster %	**77.8**	**22.2**	**73.2**	**26.8**	**80.3**	**19.7**
	Social health hazard						
16	Hazards related to difficulties in family relationships, Fellow healthcare workers, patients and management are termed social hazards	52 (75.4)	17 (24.6)	46 (69.7)	20 (30.3)	83 (76.9)	25 (23.1)
17	Sexual harassment is an example of social health hazards in the hospital	36 (52.2)	33 (47.8)	43 (65.2)	23 (34.8)	81 (75.0)	27 (25.0)
18	Job satisfaction is not associated with work-family conflict	52 (75.4)	17 (24.6)	53 (80.3)	13 (19.7)	90 (83.3)	18 (16.7)
	Cluster %	**67.7**	**32.3**	**71.7**	**28.3**	**78.4**	**21.6**
	Overall %	**71.6**	**28.4**	**73.1**	**26.9**	**81.5**	**18.5**

Results in Table 2 showed overall percentages of 81.5 per cent for nurses aged between 40 years and above, 73.1 and 71.6 per cents for nurses aged 30-39 years and 20-29 years respectively. These overall percentages indicated that nurses aged

between 40 years and above had very high knowledge of OHHs, while, those aged 30-39 years and 20-29 years had high knowledge. This implies that the knowledge of OHHs possessed by nurses differed according to age.

Specifically, the cluster percentages revealed that nurses aged between 40 years and above demonstrated very high knowledge in four types of hazards and high knowledge in two namely: biological health hazards (94.4%), chemical health hazards (82.4%), allergenic reactions (81.8%), psychological health hazards (80.3%), social health hazards (78.4%), and physical health hazards (71.9%).

In the same vein, the Table showed that nurses aged 30-39 years had very high level of knowledge of biological health hazards (92.4%), and high level of knowledge of chemical health hazards (74.7%), psychological health hazards (73.2%), social health hazards (71.7%), allergenic reactions (66.2%), and physical health hazards (60.1%).

Furthermore, nurses aged 20-29 years also demonstrated very high level of knowledge of biological health hazards (88.9%), and high level of knowledge of psychological health hazards (77.8%), chemical health hazards (70.1%), allergenic reactions (69.1%), and social health hazards (67.7%). However, they showed moderate knowledge (56.0%) in physical health hazards.

Hypothesis: There is no significant difference in the level of knowledge of OHHs possessed by nurses based on age.

Table 3: Summary of Chi-square Analysis of the Knowledge of OHHs Possessed by Nurses According to Age (N=243)

Variable		Occupational Health Hazards Knowledge				
		Correct Response	Incorrect Response			
Age	**N**	**O (E)**	**O (E)**	**χ^2**	**df**	**P-value**
20-29 years	69	56 (48.8)	13 (20.2)			
30-39 years	66	54 (46.7)	12 (19.3)	16.82	2	.000
40 years and above	108	62 (76.4)	46 (31.6)			

Table 3 showed that there was significant difference (χ^2 =16.82, df=2, p-value=.000) in the knowledge of occupational health hazards possessed by nurses according to age, indicating that nurses who were 40 years and above were more knowledgeable than their counterparts. Thus, the null hypothesis was rejected. This implies that nurses differed in their knowledge of OHHs according to age.

Discussion

Results in Table 1 showed that nurses' level of knowledge of OHHs was high. This finding corroborates the findings of previous studies who reported high level of knowledge of OHHs among nurses (Tuvadimbwa, 2005; Smith & Roy, 2007; Ijachi, Audu & Araoye, 2016). Moreover, findings of similar studies conducted by Amosun (2011) and Aluko et al. (2016) showed that nursing personnel were highly knowledgeable of the health hazards of nursing job. The similarity in findings could be attributed to the professional training which registered nurses undergo and frequent exposures to such hazards. Hence, it is expected that through the training and frequent exposures, nurses must have acquired knowledge of the OHHs inherent in their job. Another plausible explanation could be due to the demanding nature of nursing job with high degree of contacts with different hazardous situations in clinical settings. By implication, staff nurses who are often involved in the care of patients with diverse conditions are more likely to be exposed to hazards and become more knowledgeable of the existence the hazards in their work environments.

Similarly, the findings of the present study showed that nurses had very high level of knowledge of biological health hazards, high level of knowledge of psychological health hazards, chemical health hazards, allergenic hazards, social health hazardsand physical health hazards. This is consistent with the findings of Abidoye et al. (2016) who found that healthcare workers including nurses reported high level of knowledge of physical hazards, chemical hazards and biological hazards. However, this finding contradicts the findings of Branco, Couto, Hamann and Shimizu (2010) that conducted a study among nurses in a Brazilian public hospital and found that nurses were more knowledgeable of physical hazards than other types of hazards. The difference in findings based on the level of knowledge of nurses on the categories of OHHs observed in the present study could be explained by cultural backgrounds, nurses' characteristics and prevailing work environments in Brazil and Nigeria.

Results in Table 2 showed that nurses aged between 40 years and above had very high knowledge of OHHs, while, those aged 30-39 years and 20-29 years had high knowledge. Similarly, the result of the chi-square in table 3 revealed significance difference, indicating that nurses who were 40 years and above were more knowledgeable of hazards in their work environment than their counterparts. The finding was consistent with a study conducted by Teshager, Engeda and Worku (2015) who found that age of nurses was significantly associated with their knowledge of surgical site infections. The above researchers found that the older workers have more knowledge than the younger workers. On the contrary, Owie and Apanga (2016) and Min, im, Lee and Song (2019) observed that younger nurses were more knowledgeable of OHHs than the older workers. The high knowledge among older workers in the present study could be explained on the premise that they have lasted on the job, which may gain them more exposure. Also, older nurses are more learned

and experienced as they may have been attending workshops, seminars and other trainings. Consequently, these may have exposed them to the hazardous nature of their work environment than the younger nurses.

Conclusion

The study explored the level of knowledge of OHHs possessed by nurses; older and younger nurses in Makurdi LGA, Benue State. All the nurses were knowledgeable of the hazards associated with their job, and most especially biological hazards which scored very high level of knowledge. Considering the age factor, a higher level of knowledge was recorded among nurses aged between 40 years and above than those aged 30-39 and 20-29 years. These findings support the fact that age is a strong contributory factor to knowledge and level of exposure to hazards. This implies that, older workers have more knowledge than the younger workers.

Recommendations

It is therefore recommended that:

1. The knowledge on occupational hazard and safety among nurses should be improved through the following means: workshops, in-service training, and refresher courses providing information on occupational hazards and safety should be attended by registered nurses on a regular basis. This information should be revised and kept up to date all the time.
2. The bodies in charge of the health facilities (Federal Ministry of Health, Benue State Hospital Management Board and Primary Health Care Board) should consider it necessary to establish occupational therapy department within hospitals where occupational health and safety experts help health workers to proffer solutions to their health issues within the working environment. Where this is not possible, a well-trained occupational nurse should be appointed in each facility to educate health workers on the prevention and management of occupational hazards.
3. Nursing newsletters, journals and periodicals on occupational hazards and safety should be made available to personnel to keep them abreast of developments in occupational health matters.

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