

Assessment of the Knowledge, Attitudes and Perception of Potential Occupational Hazards by Healthcare Workers in a Tertiary Healthcare Facility in Lagos, Nigeria

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Abstract

Objective: The objective of this study is to assess the knowledge and perception of healthcare workers on the occupational hazards in their workplaces and to identify their attitudes and safety practices towards protecting themselves from these hazards.

Method: A descriptive cross-sectional design and stratified sampling technique was utilized to identify the health workers/respondents. A structured questionnaire was used for data collection and it covered areas like social demographics, knowledge and perception of potential hazards, attitude and safety practices employed by HCWs to avoid hazards. The data collected was analyzed using SPSS version 20.

Results: Most respondents had high level of knowledge(87%) as well as high perception and safety attitudes to potential occupational hazards but poor (39%) safety practices. Findings showed that there was statistically significant association between level of knowledge and educational status. . Also there was statistically significant association between gender and work experience in relation to safety practice. However, no statistically significant association was observed between socio demographic characteristics and perception of occupational hazards and attitude to safety respectively.

Conclusion: There is need for regular training on safety guidelines and enforcement of standard/universal safety practices by healthcare workers so as to reduce incidences of occupational injuries.

I. INTRODUCTION

1.1 Background

There are over 59 million health workers employed and working in healthcare facilities worldwide, they represent 12% of the working population (WHO, 2006). As these healthcare workers (HCWs) offer services to their patients or clients, they are exposed to numerous occupational hazards on a daily basis which significantly endanger the health and life of the workers (Pruss *et al.*, 1999). Most of these hazards that are often ignored range from biological hazards (blood and body fluids), chemical hazards (e.g. lead, arsenic), physical hazards (e.g. noise, radiation), ergonomic hazards (e.g. lifting heavy objects), psychological hazards (e.g. violence, stress) to

electrical hazards (e.g. sockets, cords).

High rates of morbidity and mortality of exposed healthcare workers have been attributed to occupational injuries and illnesses. An estimated 100,000 people die from occupational injuries while about 400,000 new cases are diagnosed annually (Ajayi *et al.*, 2006). Studies have shown that occupational injuries and illnesses among healthcare workers rank among the highest though these can be reduced drastically or eliminated if safety precautions are engaged. Nurses have the highest risk of exposure to occupational hazards (Bell *et al.*, 2013).

The factors that contribute to occupational injuries and illnesses in healthcare facilities include lack of awareness by HCWs, lack of adequate protective aids and equipment, inadequate number of staff in the different sections of the facility, excessive workload, failure to observe basic safety and hygiene guidelines and inadequate operational knowledge of modern healthcare equipment (Amosun *et al.*, 2013). If these factors are tackled, the number of occupational hazards and illnesses will drastically reduce.

There exists a number of studies discussing the epidemiology of knowledge, attitude and perception of occupational hazards among health care workers in Nigeria. These studies however were carried out outside of Lagos state. Studies in Ogun state revealed high level of knowledge (89%) demonstrated by respondents but lower levels of safety practices (51%) (Aluko *et al.*, 2016) . Another study from the same state showed that recapping of used needles and non-compliance with other standard safety measures is prevalent among health care workers (Sadoh *et al.*, 2006).

Data from south east Nigeria showed that knowledge of universal precautions measures high in both doctors (97%) and nurses (92%). Practice of precautions is however better in nurses (75%) than doctors (15.2%) (Adinma *et al.*, 2009). Health care facilities in Nigeria have increased in magnitude, sophistication and diversity over the last 30 years with challenges on ensuring best practices (Oluwagbemi, 2011). HCWs in these facilities are exposed to numerous occupational hazards that lead to injuries and illnesses. These

cause physical, economic and psychological damages to these individuals and their dependents or immediate families. These injuries significantly impair their health and quality of life. Hospitalization of the HCW requires fund for treatment, the HCW no longer earns wages from the occupation to take care of dependents and in fact one or two dependents may quit school or work to take care of the injured worker. This also impacts on the extended family and community at large and it is a major reason for poverty in developing countries. The psychological impact on the HCW and his immediate family is also significant.

1.2 Statement of the Problem

Numerous occupational hazards abound in healthcare facilities that have been adjudged as hazardous and high risk workplaces. Healthcare workers in health facilities are exposed to so many occupational hazards that some of them are not aware of and so are vulnerable to occupational injuries and illnesses. Even when Healthcare Workers have knowledge of potential occupational hazards in their workplaces, in most cases, provision of personal protective equipment and other safety gadgets to mitigate occupational injuries are not made available. These Healthcare Workers are exposed to patient blood or body fluids during surgeries by doctors; wound dressing by nurses and specimens utilized by laboratory scientists to carry out investigations.

1.3 Justification of the Study

Most occupational injuries occur because the workers were not aware of the potential hazards at their workplaces which cause injuries that lead to debilitating illnesses, impairments, disability and even death. The effect of the disabilities does not only end with the worker, but affects the workers immediate family, extended family and the community on the long run.

Protecting the occupational health of health workers is critical to having an adequate workforce of trained and healthy healthcare workers. This study is to ensure that the healthcare worker is empowered by training to adequately protect himself and reduce occupational injuries and illnesses.

Occupational vulnerability threatens the quality of health care delivery in developing countries. Effective knowledge and practice of universal precautions among HCWs are absolutely necessary to prevent infections in hospitals. Provision of necessary protective equipment for HCWs and regular adequate training will reduce incidences of occupational injuries and illnesses, increasing productivity and impacting positively on the economy

1.4 General Objective

To assess the knowledge, perception and attitude of occupational hazards among healthcare workers and draw their attention to hazards in their workplace that can lead to injuries, illnesses and disabilities.

1.5 Specific Objectives

- To assess the knowledge of occupational hazard among healthcare workers in National Orthopedic Hospital, Igbobi, Lagos.
- To assess perception of occupational hazards among healthcare workers.
- To assess the attitude towards safety practice and level of safety practice of healthcare workers.

1.6 Research Questions

1. Are Health Workers aware of the numerous occupational hazards in their various work places?
2. Do they take precautionary measures to avoid risk?
3. Have they been trained on necessary safety measures to prevent exposure to hazards?
4. Does the employer put in place protective measures to safe guard the employees?

1.7 Statement of Hypothesis

A: Null hypothesis: there is no statistically significant difference in knowledge of occupational hazards and safety practice among HCWs in National Orthopaedic Hospital, Igbobi, Lagos, Nigeria. Any difference is due to chance.

B: Alternate hypothesis: there is a statistically significant difference in knowledge of occupational hazards and safety practice among HCWs in National Orthopedic Hospital, Igbobi, Lagos.

1.8 Significance of Study

An assessment of the knowledge of occupational hazards among health care workers will give an insight into the type of workforce that is responsible for health care delivery in this healthcare facility and the country. This information can assist policy makers and regulatory authorities to proffer solutions that will ensure a healthy workforce that can improve health care delivery and patient satisfaction. Enforcement of the adherence to standard safety guidelines in all health care facilities will go a long way in reducing occupational injuries, illnesses and disabilities.

1.9 Literature Review

1.9.1 Definition of Terms

Health Care Facilities (HCFs) are institutions that provide healthcare services like counseling, clinical surgery/consultation and treatment services for the healthy, sick and the injured. Health Care Facilities provide these services in the following settings: hospitals, clinics, dental offices, out-patient surgery centres, maternity/birth centers, emergency medical care centers, nursing home, etc. The various Health Care Workers (HCWs) who provide these services in health care facilities include: Doctors, Nurses, Nurse Assistants, Pharmacists, Physiotherapists, Radiographers, Laboratory Scientists, Health Record Officers, Social Health Workers, Anaesthetists, Operating Room

Assistants, Dietetics, Accountants, Health administrators, etc. In providing these services, the Health Care Workers are exposed to occupational hazards which could include :- infections, needle injuries, musculoskeletal injuries, allergy – causing substances, violence, stress, etc.

Health Care Facilities are classified as hazardous and high risk work places (Ajayi, *et al.*, 2006), where there is high level of exposure to hazardous agents that significantly endanger the health and quality of life of Health Care Workers(HCWs). Even though healthcare is one of the fastest growing sectors of the United States economy (Ayalu *et al.*, 2011), statistics show that hospitals are one of the most hazardous places to work (OSHA, 2013a).

Hazard is something that has potential to cause harm to people and the environment if not controlled. Occupational hazard is hazard experienced in the workplace or in the course of performing your job (Manyele *et al.*, 2008).

Under the Occupational health and safety Act; occupational illness is defined as a condition that results from exposure in a workplace to a physical, chemical or biological agent to the extent that the normal physiological mechanisms are affected and the health of the worker is impaired (OML, 2015).

1.9.2 Prevalence of occupational injuries

In 2011, United States hospitals recorded 253,700 work related injuries and illnesses even more than the construction and manufacturing industries, two industries that are traditionally thought to be hazardous, according to the Bureau of Labour Statistics (BLS, 2014b). An estimated 100,000 people die from occupational illnesses while about 400,000 are diagnosed every year (Ajayi *et al.*, 2006). From the 2014 reports of employee – reported injuries and illnesses, healthcare and social assistance sector recorded 612,500 injuries with a rate of 4.5 per 100 employees. In this report, the highest cause of injury was identified to be contact with objects (23.8 per 10,000) followed by falls (18.8 per 10,000) and then over-exertion in lifting (11.0 per 10,000). Musculoskeletal injuries accounted for 32% of all employee-reported injuries and illnesses in 2014(BLS 2014a).

In 2010, nursing aides, orderlies, and attendants had the highest rates of musculoskeletal disorders of all occupations, with an incidence rate of 249 per 10,000 workers as compared to an average rate of 34 per 10,000 for all workers in 2010 (OSHA, 2013a).

In 2011, United States hospitals recorded 58,860 work-related injuries and illnesses that caused employees to loss work, also workers in hospitals had incidence rate of 6.8 non- fatal occupation injuries & illnesses per 100 full-time workers in same year, compared to 3.5 per 100 in all United States industries combined. In the hospitals, injuries among nursing aides, orderlies and attendants were four times higher than other healthcare workers. Nearly 50% of reported injuries & illnesses among nurses and nursing support staff in 2011 were musculoskeletal disorders. According to a national survey

with about 1000 hospitals in all 50 states in the United States, patient handling injuries accounted for 25% of all workers compensation claims. Patient handling injuries are among the most expensive type of hospital worker injuries, in terms of wage replacement. An average hospital loses \$0.78 for every \$100 of payroll because workers' compensation must cover lost wages and medical costs. This amounts to about \$2 billion annually.

Healthcare & Social Service workers face a significant risk of job related violence. The National Institute for Occupational Safety and Health (NIOSH) defines workplace violence as “violent acts (including physical assaults & threats of assault) directed toward persons at work or on duty.

According to the Bureau of Labor Statistics (BLS), 27 out of 100 fatalities in healthcare & social settings that occurred in 2013 were assault & violent acts. Between 2011 and 2013, workplace assaults ranged from 23,540 and 25,630 annually , with 70 to 74% occurring in healthcare & social settings.

For healthcare workers, assault comprise 10-11% of workplace injuries involving days away from work, as compared to 3% of injuries of all private sector employees.

The workplace violence rates highlighted by BLS are corroborated by NCVS, which estimates that between 1993 and 2009 healthcare workers had a 20% (6.5 per 1000) overall higher rates of workplace violence than all other workers(5.1 per 1000).(3) Workplace violence in Medical occupations represent 10.2% of all workplace violence incidents. Studies have shown that workplace violence is under reported.

Risk factors that may cause workplace violence to Healthcare Worker include but are not limited to the following according to NIOSH ;

1. Working directly with people who have a history of violence, abuse drugs or alcohol, gang members and relatives of patient.
2. Transporting patients and clients
3. Working alone in a facility
4. Poor environmental design of workplace that blocks escape from a violent incident
5. Poorly lit corridors, rooms, parking lots.
6. Lack of means of emergency communication
7. Prevalence of firearms, knives & other weapons among patients
8. Working in neighborhood with high crime rates
9. Working when understaffed
10. Inadequate security

1.9.3 What is Occupational Health?

Occupational health is recognized by World Health Organization (WHO) and is said to deal with all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards (National Institute of Health, 2007). Occupational health is a multidisciplinary field of health care concerned with enabling individuals to undertake

their occupation in the way that causes least harm to their health (National Institute of Health, 2007). Health, on the other hand is defined as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”(WHO)

Occupational health and safety is an important issue because of the high rates of morbidity and mortality of exposed workers. The International Labour Organization (ILO) celebrates “World Day for Safety and Health” on April 28th every year since 2008 to raise awareness of safety in the workplace.(National Institute of Health, 2007)

According to ILO occupational health should aim at:

- The promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations.
- The prevention amongst workers of their departures from health caused by their working conditions.
- the protection of workers in their employment from risks resulting from factors adverse to health;
- the placing and maintenance of the workers in an occupational environment adapted to his physiological capabilities and
- To summarize the adaptation of work to man and of each man to his job.

1.9.4 Occupational Hazards encountered by HCWs

Health Care Workers in discharging their duties are exposed to occupational hazards of varying degrees that can impair their health and overall quality of life. These hazards are classified by World Health Organization (2002) into physical hazards, biological, chemical, psychosocial and ergonomic hazards.(BLS 2014c)

Physical Workplace hazards – hearing loss is the most common work-related injury in the United States (NIOSH, 2016). Falls are not peculiar to health care workers alone and are common in construction, extraction, transportation, health care, building, cleaning and maintenance jobs (NIOSH, 2012a). Unsafe use of machines can result in cuts, burns, crush, stab and strike, sprains and strains, work place violence (NIOSH, 2012b).

Biological hazards – Infections from microorganisms, mould, virus, toxins such as anthrax are common. Health Care Workers are exposed to blood borne pathogens and disease (CDC, 2015a).

Chemical hazards – Regulatory authorities set occupational exposure limits to mitigate the risk of chemical hazards which include neurotoxins, immune agents, dermatologic agents, carcinogens, reproductive toxins, anaesthetic gas exposures, asthmagens/respiratory hazards, formaldehyde (used for preservation of specimens for pathology), paracetic acid used for sterilization, glutaraldehyde, etc.(CDC, 2015b)

Psychosocial hazards – risk to mental and emotional well-being of workers such as feeling of job insecurity, long work

hours and poor work-life balance (Brun *et al.*, 2007).

Ergonomic hazards – from lifting and repetitive tasks, correct postures for the work, frequency of rest breaks. Hazards associated with radioactive materials and x-ray hazard, laser hazards.

1.9.5 Impact of Occupational Injury

Occupational injury or illness of a health care worker does not only affect the health care worker and his immediate family, it comes at a cost to the health care facility, the patient and the society. When a health care worker is injured, the hospital pays worker’s compensation for lost wages and treatment costs. Others costs include:

- temporary staffing ,backfilling
- overtime when workers miss work or take additional sick days
- turn over costs when injured or workers quit
- decrease in workers quality of life
- decreased productivity and morale as employees become physically and emotionally fatigued
- recruiting and training of replacement workers
- loss of experience (braindrain)

Increase in age (40-50yrs) makes people increasingly vulnerable to certain illnesses and musculoskeletal injuries. Bones begin to weaken, increasing the probability of fractures and cumulative trauma while handling patients or as a result of fall. Beyond age 65 years, half of the United States population suffers from arthritis, a wearing away of the cartilage in joints, resulting in painful movement (NIH, 2007). The immune system also slows with age; this can result in higher susceptibility to illness and prolonged recovery time (Hall *et al.*, 2007). Thus an aging workforce is likely to lead to an increase in the frequency and severity of work- related injuries.

Effect on Patient Safety and Satisfaction

Health care workers occupational injury affects patient safety and satisfaction. Manual lifting of patients can injure the health care worker and also put the patient at risk of falls, fractures, bruises and skin tears. Overtime is associated with worker fatigue, injury and stress that can result in higher medication errors and patient infection (Rogers *et al.*, 2004). It is important to note that patient satisfaction can lead to increased referrals, growth in market share and philanthropic support from satisfied patients or their families.

Effect on Society

When health care worker injuries lead to long term disabilities, society bears most of the cost resulting from long term health care needs and difficulty in working. Even when injured workers can still find another employment, disabilities can permanently lower their income(OSHA, 2013). The immediate family members and extended family members of the injured worker is also adversely affected. It will become

difficult for the Health Care Worker to meet up with basic financial obligations such as paying school fees for dependents, feeding his family as well as paying medical bills. One or two family members may have to drop out of school or job to take care of him. Members of his extended family or community may be called upon to make financial contributions for him to pay medical bills. The injury or illness of a healthcare worker reduces the number of persons contributing to the growth and progress of the society at large.

1.9.6 How to mitigate Injuries to Health Care Workers

Effort must be made to reduce potential injury to healthcare workers so as to improve patient care. Health Care Facilitators can take the following steps to reduce occupational injuries:-

1. Keep records and collect all necessary data as this will help the hospital to understand her strength and weaknesses and then try to develop effective solutions. All private and public hospital must keep record of all work-related injuries or illnesses resulting in death, days away from work, restricted work, transfer to another job, medical treatment beyond first aid, loss of consciousness, exposure to tuberculosis or HIV/AIDS, needle sticks and sharp injuries, occupational hearing loss, adverse reactions to work-related vaccinations and health professionals diagnosed with significant injury or illness.
2. Make customizable posters a flyers to engage patients and their families and educate them about safe patient handling policies and equipment.
3. Develop and implement a comprehensive safe patient handling program. This could include equipment to promote safe lifting like ceiling mounted lifts or slide sheets that facilitate lateral transfer of patients. It will enhance patient safety, reduce risk to healthcare worker and save cost for the hospital.

A safety and health management system is a proactive collaborative process to find and fix workplace hazards that will prevent employee injuries. It can help a hospital build a culture of safety, reduce injuries and save cost. Healthcare facilities that successfully utilized this system like in Tampa General Hospital, United States (Kutash *et al.*, 2009) have six core elements:-

1. Management leadership – Managers demonstrates commitment and show example.
2. Employee participation – employees are made to understand the system, to participate and report every injury or incidence that may lead to injury.
3. Hazard identification and assessment – regular identification of hazard and evaluation of risks is carried out.
4. Hazard prevention and control – processes put in place to eliminate hazard and achieve the goal of safety.
5. Education and training – employees are trained to

recognize hazards and make reports.

6. Program evaluation and improvement–monitorand evaluate performance of the system and take action to improve.

Implementation of a safety and health management system has the following benefits(NIH, 2007):

- Fewer injuries, illnesses and infections to Health Care Workers.
- Reduced costs for workers' compensation claims and lower health insurance premiums.
- Less absenteeism and higher return-to-work rates following injury or illness.
- Improved work practices, leading to increased efficiency and greater patient safety and satisfaction.
- Higher job satisfaction, morale, and employee retention.
- Enhanced reputation of healthcare facility.

All workers have the right to return home each day safe and sound. Preventing work-related illness and injury is a must at every workplace. It is the responsibility of both the employers and the employees.

In the Occupational Health and safety Act, revised December 8, 2016, the duties of employers to prevent work related injuries and illnesses include amongst others:

1. Provide information, instruction and supervision to a worker to protect the health or safety of the worker.
2. In a medical emergency for the purpose of diagnosis or treatment, provide upon request, information in the possession of the employer, including confidential business information, to a legally qualified medical practitioner and to such other persons as may be prescribed.
3. Acquaint a worker or person in authority over a worker with any hazard in the work and in the handling, storage, use, disposal and transport of any article, device, equipment or a biological, chemical or physical agent.
4. Take every precaution reasonable in the circumstances for the protection of a worker.
5. Post at a conspicuous location in the workplace a copy of the occupational health and safety policy.
6. Prepare and review at least annually a written occupational health and safety policy and develop and maintain a program to implement that policy.
7. Keep and maintain accurate records of the handlings, storage, use and disposal of biological, chemical or physical agent in the workplace.
8. Comply with a standard limiting the exposure of a worker to biological, chemical or physical agents as prescribed.
9. Provide for a safety related medical examinations and tests for workers as prescribed.
10. Carry out training programs for workers as may be

prescribed.

Duties of Workers

1. A Worker shall work in compliance with the written instructions.
2. Shall use or wear the equipment protective devices or clothing that the workers employers requires to be worn.
3. Shall report to his/her employer or supervisor the absence of or defect in any equipment or protective device of which the worker is aware and which may endanger himself or another worker.
4. Shall report to his employer the existence of any hazard of which he knows.

He shall not operate any machine, equipment or device in a manner that may endanger himself or any other worker.

A healthy, stable workforce in Health Care Facilities creates an atmosphere conducive to patient confidence and satisfaction (Mettugh *et al.*, 2011). Vulnerability of HealthCare Workers therefore threatens the quality of health care delivery in developing countries. While some of these occupational injuries/illnesses can be linked to Health Care Workers negligence, failure to observe basic safety guidelines and carelessness, Majority can however be attributed to non-provision of appropriate equipment and Personal Protective Equipment(PPE), lack of training, inadequate staffing and excessive workload. Adherence to the standard precautions and safety guidelines have been shown to be effective in curtailing occupational illnesses and injuries among health care workers in health care facilities (NIOSH 2016).

II. METHODS

2.1 Study Design

A descriptive cross sectional research design was utilized and sample frame was selected from the health professionals who are considered to be at higher risk of occupational injuries like the Nurses, Doctors and Laboratory Scientists.

2.2 Study Location

This study was carried out at the National Orthopaedic Hospital, Igbobi, Lagos, Nigeria. This institution is one of the three federal orthopaedic hospitals in Nigeria. It is located in the south- western part of Nigeria.

2.3 Study Population

The health facility where this study was carried out is a tertiary/specialist hospital with the following health care professional in her employment: Doctors, Nurses, Nursing Assistants, Pharmacists, Pharmacy Assistants, Laboratory Scientists, Laboratory technicians/assistants, Radiographers, darkroom assistants, cleaners, occupational therapists and plaster room technicians among others. This facility has a staff strength of about 1300 from which sampling was done targeting the healthcare workers at high risk of occupational

injuries and diseases. The total number of doctors, nurses and laboratory scientists in this hospital is 743. This group of workers form the sample frame because they are at higher risk of contracting diseases from blood and body fluids in the hospital.

2.4 Study Duration

The study was carried from August 2016 to October 2016.

2.5 Sampling and Sample Size Determination

To obtain sample size, n this formula was used ; $n = Z^2 pq/d^2$
Where:

Z = Standard normal deviate of alpha set at 1.96 corresponding to 95% confidence level

p = Prevalence of knowledge of occupational hazard obtained from previous study.

p = 89% =0.89

d =level of precision =5% =0.05

q =1-p =1-0.89=0.11

$n = (1.96)^2 \times 0.89 \times 0.11 / (0.05)^2 = 150$

for population less than 10,000 : $nf = \frac{n}{1+(n/N)}$

nf= sample size when study population is less than 10,000

n = sample size when the study population is greater than 10,000

N = estimate of the population size was about 743 healthcare workers $nf = \frac{150}{1+(150/743)} = 150/1.2 = 125$

nf = 125 this is the minimum sample size for this study.

Making allowance for 10% attrition = $nf = 125 = 138.9$

100% - 10% = 0.9

Total number to be recruited (sample size) for this study will be 140.

The stratified sampling technique will be utilized to calculate the proportion of each group of healthcare worker that will participate in this study.

Target population	Percent	stratified sample
Nurses = 640	86.1%	121
Lab scientist = 48	6.5%	9
Doctors = 55	7.4%	10
Total = 743	100%	140

2.6 Research Instrument (Data Collection)

A structured questionnaire that is divided into sections was administered to the health workers after obtaining consent from respondents. The study instrument/questionnaire contains the following sections:-

1. Social demographics
2. Knowledge and perception of hazards by the HCW
3. Attitudes and Safety practices of HCW on exposure to occupational hazards and measures taken after exposure.

The Instrument was pretested within a small population, and corrections made before administration. Depending on the level of Literacy of the respondents, some of the questionnaires were interviewer –administered.

Data collected was checked for completeness and accuracy before analysis. The internal consistency of data was also tested.

2.7 Data Management and analysis

All returned questionnaires were analyzed in a computer using the Statistical Package for Social Sciences (SPSS) version 20, 95% confidence interval was used and P-value of

0.05 was considered statistically significant. The scoring was done in section B and E based on answer correctly chosen and was rated in percent. The scoring of section C and D was based on the answer ticked and were rated with points as following strongly agree-5, agree-4, not sure-3, disagree-2, strongly disagree-1. The total score in percent was rated good, moderate or poor. A respondent that scored 75% and above were rated good, those that scored between 50%-74% were rated moderate and below 50% were rated poor.

Descriptive statistics such as frequencies and cross tabulations, percentages and mean were used to describe the data. Chi-square test and sample t- test were used to find association between the qualitative variables and continuous variables respectively.

2. 8 Ethical Consideration

Ethical approval was obtained from the health facility’s Research and Ethics Committee before the study commenced. Information about the study was given to each respondent and verbal consent obtained before filling the questionnaires. Respondents were made to understand that participation is voluntary and that refusal to fill the questionnaire does not

attract any penalty. They were assured of confidentiality for all participants.

2.9 Limitation of the Study

The study is a cross-sectional study; hence cause and effect could not be established. Furthermore, as the study took place in aspecialist (Orthopaedic) hospital which limits generalization to general hospitals, teaching hospitals and even smaller private or rural health facilities; It may not be a reflection of the knowledge and practices throughout Nigeria since the study was carried out in Lagos.

III. RESULTS

A total of 140 respondents completely answered their questionnaires. The healthcare workers from whom questionnaires were retrieved included Doctors, Laboratory Scientists, Laboratory Technicians, Nurses, Nursing Assistants and Operating Room Assistants, all working at National Orthopaedic Hospital, Igbobi – Lagos, Nigeria.

The demographic characteristics obtained from the respondent in this study included age, gender, marital status, level of professional qualification, field of healthcare profession and number of years of professional experience. The results show that most of the respondents (82.1%) were females, while the males constitute only 17.9% (Table 1).

A large percentage of respondents (78.6%) were healthcare professionals with a first degree or its equivalent. One fifth of the healthcare workers had more than one degree, while some Healthcare Workers like the nurse assistants did not have a first degree or its equivalent qualification (Table 1).

On the profession of healthcare workers, majority of the respondents were nurses and nurse assistants (86.4%) followed by doctors who formed 7.1% of respondents and laboratory scientist as being the lowest group of respondents (Table 1). The healthcare workers with over 20 years of professional work experience formed a large group of respondents (27.9%). Most respondents had between 6 years of work experience as shown in table 1 and respondents with zero to five years formed the lowest group of respondents

TABLE 1: SHOWING THE SOCIO-DEMOGRAPHIC DATA OF THE RESPONDENTS

VARIABLE	VARIABLECLASS	FREQUENCY (n)	PERCENT(%)
SEX	MALE	25	17.9
	FEMALE	115	82.1
EDUCATION	DEGREE/ DIPLOMA	110	78.6
	2ND DEGREE/MASTERS	30	21.4
OCCUPATION	MEDICAL DOCTOR	10	7.1
	NURSE/ MIDWIFE	121	86.4
	LABORATORY SCIENTIST	9	6.4
WORK EXPERIENCE (YEARS)	0- 5	19	13.6
	6-10	32	22.9
	11-15	28	20.0
	16-20	22	15.7
	>20	39	27.9

About 50 of the respondents fell in the age range of 30 -39 years and formed the largest age group of respondents, 42 respondents were above the age of 50 years and the lowest

age- group of respondents was the group below 20 years (chart I).

CHART 1: SHOWING THE DISTRIBUTION OF AGE OF THE RESPONDENTS

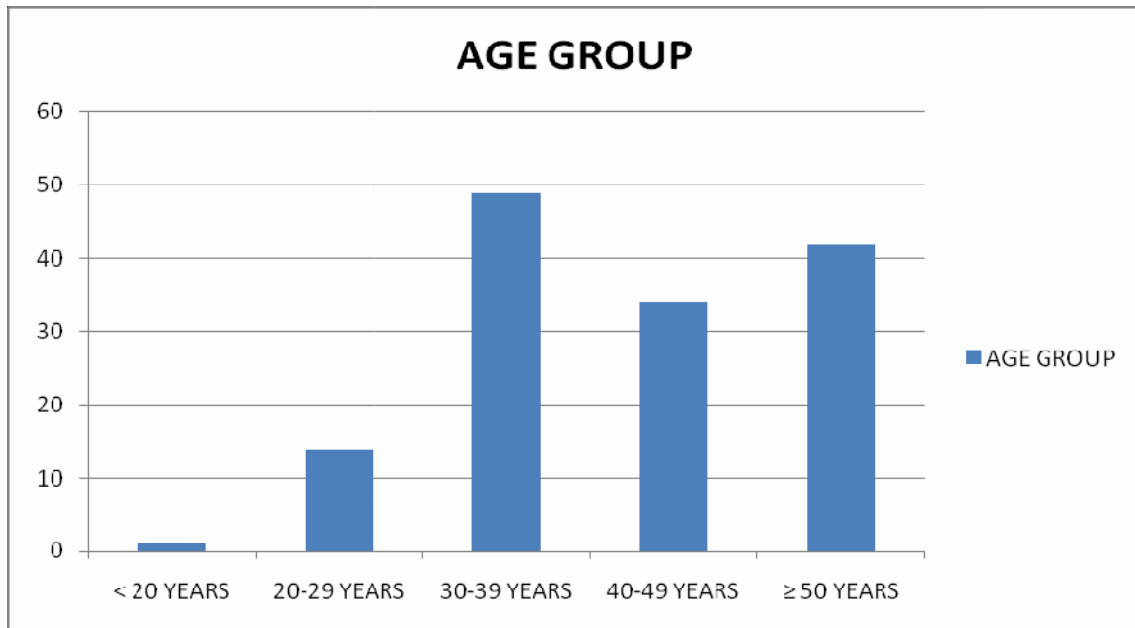


Chart 2 shows that about 85% of the healthcare workers were married and only about 12% of them were still single. There

were more singles than divorced and separated respondents.

CHART 2: SHOWING THE DISTRIBUTION OF MARITAL STATUS OF THE RESPONDENTS

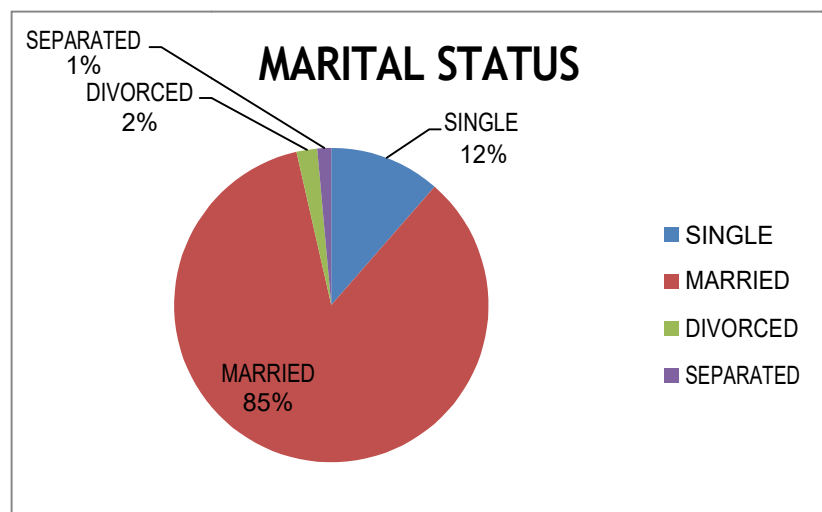


Table 2 results indicate that the knowledge of occupational hazards among Healthcare Workers is generally high. 97.1% of respondents agreed that physical hazards are present at their workplace. 88% recognized chemical hazards while 82% recognized biological hazards while 80% recognized psychological hazards. Almost all respondents (97.9%) agreed that they can contact infectious diseases like Tuberculosis,

hepatitis B, Tetanus, HIV/AIDS, lassa fever, etc while working in the hospital. About 90% of respondents admitted that stress is part of the hazards a workers is exposed to in the hospital. Most healthcare workers (about 80%) (table 2) agreed that verbal and physical assaults are hazards that they are exposed to as workers in health facilities.

TABLE 2: SHOWING ASSESSMENT OF KNOWLEDGE OF OCCUPATIONAL HAZARDS OF THE RESPONDENTS

VARIABLE	FREQUENCY(n)	PERCENT(%)
BEING A HEALTHCARE WORKER COMES WITH ITS OWN RISK	128	91.4
THE RISK/HAZARDS AT THE HEALTHCARE FACILITY CAN BE CHEMICAL	123	87.9
THE RISK/HAZARDS AT THE HEALTHCARE FACILITY CAN BE BIOLOGICAL	115	82.1
THE RISK/HAZARDS AT THE HEALTHCARE FACILITY CAN BE PHYSICAL	136	97.1
THE RISK/HAZARDS AT THE HEALTHCARE FACILITY CAN BE PSYCHOLOGICAL	113	80.7
IT IS POSSIBLE TO BE INFECTED WITH ANY OF THESE DISEASES AS A HEALTHCARE WORKER HIV, TB, HBV, TETANUS	137	97.9
HCW CAN BE INFECTED WITH INFLUENZA, PNEUMONIA, EBOLA OR LASSA FEVER IF ADEQUATE PROTECTION IS NOT IN PLACE	137	97.9
INJURIES, CONTACT WITH CONTAMINATED SPECIMEN ARE POTENTIAL SOURCES OF OCCUP. INFECTION AMONG HEALTHCARE WORKERS	131	98.6
STRESS IS AN EXAMPLE OF OCCUPATIONAL HAZARDS THAT HEALTH WORKERS ARE EXPOSED TO	127	90.7
VERBAL ABUSE IS AN EXAMPLE OF OCCUP. HAZARDS THAT HEALTH WORKERS ARE EXPOSED TO	110	78.6
PHYSICAL ASSAULT IS AN EXAMPLE OF OCCUPATIONAL HAZARDS THAT HEALTH WORKER ARE EXPOSED TO	123	87.9

On attitude to safety, most Healthcare Workers (93.6%) admitted that they wash their hands before carrying out any job and after completing the job. 90% of respondents put on personal protective equipment (PPE) before carrying out their job. About 78% of respondents agreed they will read operating manuals of any medical equipment properly before operating the machine to reduce the hazard that may come with use of the equipment.

Response to the question on whether they consider their working environment as conducive, only of respondents answered yes. Majority perceive that their present non-conducive working environment may pre-dispose them to

occupational hazards.

Most of the Healthcare Workers (98.6%) perceive that contact with patients specimens of blood/body fluids are potential sources of occupational infection and diseases. The result shows that most rooms & wards in the hospital are cleared with disinfectants on a daily basis as confirmed by 77.1% of respondents (Table 3).

About 80% of respondents did not agree that the employer or Management of the hospital makes provision of regular health screening of workers and there are barely measures in place to give immediate treatment to injured workers so as to ensure the availability of a healthy workforce.

TABLE 3: SHOWING ASSESSMENT OF SAFETY PRACTICE AMONG THE RESPONDENTS

VARIABLE	YES FREQUENCY(n)	PERCENT(%)
HAVE YOU GONE THROUGH ANY TRAINING ON INFECTION CONTROL IN THE PAST	103	73.6
DO YOU WASH YOUR HAND BEFORE YOU START WORK IN YOUR WORK PLACE	131	93.6
DO YOU WEAR PERSONAL PROTECTIVE EQUIPMENT BEFORE CARRYING OUT YOUR WORK	126	90.0
DO YOU READ OPERATION MANUAL PROPERLY BEFORE OPERATING MACHINES IN YOUR WORK PLACE	109	77.9
DO YOU HAVE CONDUCTIVE WORKING ENVIRONMENT THAT WILL PREVENT YOU FROM INJURIES/ DISEASES	43	30.7
IS YOUR OFFICE/ WORK PLACE CLEANED WITH ANTISEPTIC/ DISINFECTANT ON A DAILY BASIS	108	77.1
DOES YOUR EMPLOYER ENSURE REGULAR/ QUARTERLY HEALTH CHECKS/ SCREENING FOR HEALTH WORKERS	28	20.0
ARE THERE MEASURES IN PLACE TO ENSURE IMMEDIATE TREATMENT FOR INJURED HEALTH WORKERS	78	55.7
ARE THERE FIRE EXTINGUISHERS IN YOUR UNIT/ SECTION OF WORK PLACE	10	77.9

Table 4 shows that more than half of the respondents have good knowledge of occupational hazards. Only few respondents have poor knowledge of occupational hazards.

The mean score was 88.6+16.9. The difference observed in the knowledge scores of the respondents is statistically significant, p value = 0.000. Significant P. value is <0.05.

TABLE 4: SHOWING KNOWLEDGE SCORE OF THE RESPONDENTS

Variable	N	Percent (%)	Mean	S.D	t	P value
Score	140		88.6	16.9	62.1	0.000
Good ≥75%	122	87.1				
Moderate 50-74%	14	10.0				
Poor <50%	4	2.9				

Table 5 shows safety practice score. Only 39.3% of respondents have good safety practices, while a quarter of the respondents had poor safety practices. The means score was

64.4+21.6. The differences observed in the safety practice scores of the respondents is statistically significant, P value = 0.000.

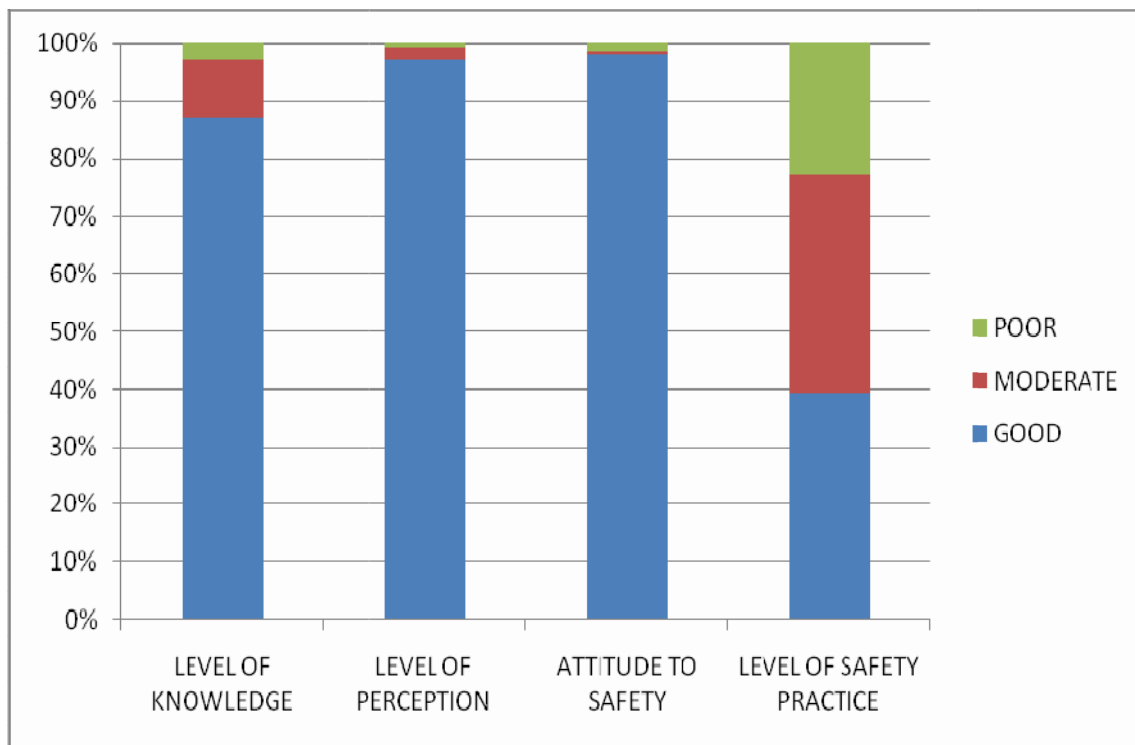
TABLE 5: SHOWING SAFETY PRACTICE SCORE OF THE RESPONDENTS

Variable	N	Percent (%)	Mean	S.D	t	P value
Score	140		64.4	21.6	35.3	0.000
Good ≥75%	55	39.3				
Moderate 50-74%	53	37.9				
Poor <50%	32	22.9				

The attitude to safety of most respondents was good (chart 3). The level of knowledge (96%) high and level of perception

equally high, but the level of safety practice was not so high (about 40%).

CHART 3: SHOWING GRADING OF LEVEL OF KNOWLEDGE, LEVEL OF PERCEPTION, ATTITUDE TO SAFETY PRACTICE AND LEVEL OF SAFETY PRACTICE.



Although there were differences in the distributions of various socio demographic variables in relation to the level of knowledge, there was no statistically significant association between socio-demographic variables except the education

status (Table 6) for the educational status, the null hypothesis is rejected; there is association between level of knowledge and educational status where P value = 0.004. Significant P – value (P< 0.05)

TABLE 6: SHOWING THE ASSOCIATION BETWEEN SOCIO- DEMOGRAPHIC VARIABLES AND LEVEL OF KNOWLEDGE OF OCCUPATIONAL HAZARDS AMONG RESPONDENTS.

VARIABLE	VARIABLECLASS	GOOD	MODERATE	POOR	X ²	P VALUE
SEX	MALE	25	0	0	3.9	0.113
	FEMALE	97	14	4		
EDUCATION	DEGREE/ DIPLOMA	101	6	3	10.3	0.004
	SECOND DEGREE/ MASTERS	21	8	1		
OCCUPATION	MEDICALDOCTOR	10	0	0	1.6	0.757
	NURSE/MIDWIFE	103	14	4		
	LABSCIENTIST	9	0	0		
WORK EXPER IENCE (YEARS)	0-5	17	2	0	7.1	0.441
	6-10	30	1	1		
	11-15	26	2	0		
	16-20	17	3	2		
	>20	32	6	1		

In table 7, results show that there were differences in the distributions of various socio- demographic variables in relation to the level of perception of occupational hazards. There was however no statistically significant association

between socio demographic variables and level of perception of occupational hazards. Significant P value = P<0.05. The Null hypothesis is therefore accepted.

TABLE 7: SHOWING THE ASSOCIATION BETWEEN SOCIO- DEMOGRAPHIC VARIABLES AND LEVEL OF PERCEPTION OF OCCUPATIONAL HAZARDS AMONG RESPONDENTS.

CLASS		GOOD	MODERATE	POOR	X ²	PVALUE
SEX	MALE	24	1	0	1.5	0.549
	FEMALE	112	2	1		
EDUCATION	DEGREE/ DIPLOMA	107	2	1	1.1	0.623
	SECOND DEGREE/ MASTERS	29	1	0		
OCCUPATION	MEDICAL DOCTOR	10	0	0	7.9	0.131
	NURSE/MIDWIFE	118	3	0		
	LAB SCIENTIST	8	0	1		
WORK EXPER IENCE (YEARS)	0-5	18	0	1	7.0	0.572
	6-10	31	1	0		
	11-15	28	0	0		
	16-20	21	1	0		
	>20	38	1	0		

Table 8 shows that there was no statistically significant association between socio demographic variables and attitude

to safety practice, no P value is less than 0.05. The Null hypothesis is therefore accepted.

TABLE 8: SHOWING THE ASSOCIATION BETWEEN SOCIO- DEMOGRAPHIC VARIABLES AND ATTITUDE TO SAFETY PRACTICE AMONG RESPONDENTS.

VARIABLE	VARIABLE CLASS	GOOD	MODERATE	POOR	X ²	PVALUE
SEX	MALE	24	0	1	2.3	0.448
	FEMALE	113	1	1		
EDUCATION	DEGREE/ DIPLOMA	108	0	2	3.2	0.250
	SECOND DEGREE/ MASTERS	29	1	0		
OCCUPATION	MEDICALDOCTOR	9	1	0	8.2	0.151
	NURSE/MIDWIFE	119	0	2		
	LABSCIENTIST	9	0	0		
WORK EXPERIENCE (YEARS)	0-5	19	0	0	5.7	1.000
	6-10	31	0	1		
	11-15	28	0	0		
	16-20	22	0	0		
	>20	37	1	1		

There were differences in the distributions of various socio – demographic variables in relation to the level of Safety Practice (Table 9). There was statistically significant association between level of safety practice and gender P value = 0.033) and work experience (P value =0.012) respectively, P value <0.05. Null hypothesis is therefore

rejected. There was however no statistically significant association between level of safety practice and educational status (P value = 0.075) and occupation/profession (P value = 0.757) respectively. P value >0.05. The Null hypothesis is therefore accepted.

TABLE 9: SHOWING THE ASSOCIATION BETWEEN SOCIO- DEMOGRAPHIC VARIABLES AND LEVEL OF SAFETY PRACTICE AMONG RESPONDENTS.

VARIABLE	VARIABLE CLASS	GOOD	MODERATE	POOR	X ²	PVALUE
SEX	MALE	5	10	10	6.8	0.033
	FEMALE	50	43	22		
EDUCATION	DEGREE/ DIPLOMA	40	47	23	5.2	0.075
	SECOND DEGREE/ MASTERS	15	6	9		
OCCUPATION	MEDICAL DOCTOR	3	3	4	2.0	0.757
	NURSE/MIDWIFE	48	47	26		
	LAB SCIENTIST	4	3	2		
WORK EXPERIENCE (YEARS)	0-5	5	7	7	19.1	0.012
	6-10	9	15	8		
	11-15	17	9	2		
	16-20	5	7	10		
	>20	19	15	5		

IV. DISCUSSION

The result of the study shows that of the 140 respondents, over 80% of them were females, nurses and married (Table 1). This tallies with results of studies earlier done by Manyele *et al.*, 2008 in Tanzania and Aluko *et al.*, 2016 in Abeokuta, Nigeria.

This is because nurses constitute the largest number or

percentage of healthcare workers and most nurses are females. The largest group of respondents (48) respondent were in the age group of 30 – 39 years followed by the age group of 50 years and above (42 respondents). This may likely explain why most of the respondent are married people. This age range also agrees with the mean age of 33 years for respondents in the study at Abeokuta by Aluko *et al.*, 2016.

Over 80% respondents in this study had more than 5 years of

work experience in their different occupations. They have been on the job for more than 5 years and this explains why they have high knowledge of occupational hazards in their work places. This agrees with the study by Adinma *et al.*, 2009 on “knowledge of universal precautions” in South East Nigeria, which reported high level of knowledge of occupational hazards among doctors (97%) and nurses (92%) even with an average work experience of 5 years. The study by Aluko *et al.*, 2016 where knowledge of occupational hazard among healthcare workers was 89%, the median work experience was 5 years. The work experience in the study by Ford & Tetrick on “Relations among occupational hazards, attitude and safety performance” is also less than 5 years for most respondents. This can be attributed to the educational status of the healthcare workers. Majority of them (94%) are graduates with one or more degrees, in their professions and may not necessarily need to be on the job for long to be able to perceive the potential occupational hazards in their workplace.

The high level of knowledge shown by respondents in this study (87%) could be as a result of fear of occupational infections and illnesses which could be fatal and life threatening in some cases. Knowledge according to oxford dictionary is information and skills, acquired through experience and/or education. As shown in table 2, respondents recognized physical hazards (97%), chemical hazards (88%), biological hazards (82%) and psychological hazards (80%). This is in agreement with the study by Keorekile, 2015 in Botswana that nurses in the study experienced physical, chemical, biological and psychological health hazards.

A large percentage of the healthcare workers (91.4) as shown in table 2 knew that their job as Healthcare Workers comes with a risk and that they were at risk of exposure to the various occupational hazards. This tallies with the findings in studies by Fasunloro *et al.*, 2013 in Ile Ife and Amosun *et al.*, 2011 both in Nigeria where majority of the respondents knew that their job predisposes them to occupational hazards.

In this study, the category of healthcare workers chosen as participants: doctors, nurses, nursing assistants and Laboratory scientists are those whose job entails having direct contact with patients blood/body fluids on a daily basis. Also the study by Orji E. O. *et al.*, 2002 reported that in Nigeria, healthcare workers (doctors, nurses and nursing assistants are poorly prepared to handle occupational hazards and therefore sustain injuries while performing their duties. 98.6% of respondents in this study actually knew that contact with patients blood/body fluid was a major source of occupational infection. They agreed that hand washing before and after procedures was a very important in infection control (table 3). The universal health precautions by Dr. T. V. Rao MD states that “Hand washing is the most important method of disease prevention and that these precautions are designed to reduce the risk of transmission of blood borne and other pathogens from both recognized and unrecognized sources to a susceptible host. ”

They agreed that the use of Personal Protective Equipment (PPE) could reduce the risk of occupational injury and illness but their response to the availability of work tools and conducive working environment was low (30.7%). This is because of the non-provision of Personal Protective Equipment in health care facilities in most cases and so health care workers are exposed to the risk even when they know what to do.

Nosocomial infection or hospital acquired infection poses a very serious challenge in healthcare facilities especially in developing countries. Healthcare workers in these facilities have direct contact with patient thus the probability of contacting and spreading infectious diseases is very high. It is expected that the level of safety practice should also be as high as the level of knowledge of occupational hazards. In this study, however less than 40% of respondents (table 5) had good safety practice. This could be attributed partly to the inadequacy of Personal Protection Equipment and appropriate medical equipment in healthcare facilities. The major reason I believe would be non-enforcement of standard safety procedures and/or universal health precautions. The non-implementation of the safety and health management system in health care facilities could be another major reason.

The perception of respondents to verbal abuse and physical assault at workplaces is very high, 78.6% and 87.9% respectively as shown in table 2. Healthcare workers are very vulnerable to assault by anxious and inpatient patients and relatives in health care facilities especially in units with inadequate staff. The study by Orji *et al.*, 2002 and Arasi *et al.*, 2015 actually reported verbal abuse and physical assault of 24.3% and 20.5% respectively. Measures ought to be put in place to protect healthcare workers in public health facilities from these hazards.

The differences observed in the knowledge scores and safety practice scores of respondents (Tables 4 & 5) were statistically significant, P value = 0.00. Thus the null hypothesis is rejected. More than half of the respondents have good knowledge of occupational hazards.

Generally in this study as shown in chart 3, the level of knowledge of occupational hazards by respondents is high, (96%) the level of perception 99% and attitude to safety is high 98%. The high level of perception of occupational hazard by healthcare workers is also reflected in previous studies by Orji *et al.*, 2002, Manyele *et al.*, 2008 and Amosun *et al.*, 2011. This can be attributed the fear of injuries and illness and occasional post-employment trainings that create awareness of occupational hazard in healthcare workers. 73.6% of respondents agreed to receiving training in this study. Table 3.

It is the level of safety practice that is low. Barely 40% of the respondents agreed to carrying out safety procedures according to the universal workers. This calls for concern because it agrees with the study by Aluko *et al* carried out at Abeokuta, Nigeria. The study by Orji *et al* reported that no category of staff (HCW) adopted regular proper disposal of

needle and sharps. The needle stick injuries in that study was as high as 75.6%. Guidelines for disposal of needle and sharps include: do not recap, no bending or reshaping, all used needles/sharps should be discarded into bleach solutions before final disposal among others. This is an indication for regular occupational safety training for healthcare workers and enforcement of the universal safety guidelines and protocols in all healthcare facilities.

On the association between socio-demographic variables and level of knowledge of occupational hazards among respondents, there was no statistically significant association between socio-demographic variables and level of knowledge except for educational status, where P-value is 0.04 (<0.05) Table 6. Thus there is association between the level of knowledge and educational status. Most of the respondents had at least a bachelors degree, that explains why the level of knowledge of occupational hazard is high and influenced by educational status. This is in agreement with earlier studies by Aluko *et al.*, 2016 and Tziaferi *et al.*, 2011 and in accordance with the World Health Organization rational model (2012).

Table 7 shows that there was no statistically significant association between socio – demographic variables and level of perception of occupational hazards by respondents (P value >0.05). Perception however was generally high except for ergonomics where most health workers did not consider standing for long hours or lifting weights as an occupational hazard. The study by Julia, 2005 in Namibia recorded that only 38% of respondents were aware of ergonomic hazards.

The attitude to safety practice was generally high in this study. There was no statistically significant association between socio demographic variables and attitude to safety practice as shown in table 8. The null hypothesis is thus accepted. The high level of knowledge is believed to have translated to positive attitude which should end up with positive behaviour according to the rational model of health promotion World Health Organization (2012). Attitude to safety practice is not affected by gender, age, educational status or profession.

This study however found out that the safety practices of respondents were influenced by educational status and occupational category. The level of safety practice was low. About 60% of respondents had poor to moderate safety practice scores (Table 5). This is in agreement with the findings in the studies by Orji *et al.*, 2002 and Arasi *et al.*, 2015.

From the outcome of this study, we advocate that more of organized regular safety trainings be carried out for healthcare workers. Education and training are key elements of work place safety programs. Training will ensure that all staff are aware of potential hazards and how to prevent injuries. It will help raise safety and health knowledge across the workforce; provide employees with tools needed to identify hazards and help address potential problems before they arise.

V. CONCLUSION

The findings of this study are that healthcare workers have good level of knowledge and good level of perception of occupational hazards. Respondents attitude to safety practice was positive but the actual safe health practice was low among the healthcare workers.

The healthcare workers were aware of the existence of standard safety precautions but because of time constraints or negligence on the part of the healthcare workers and unavailability of personal protective equipment (PPE), standards and protocols are not adhered to. There are no safety and health management systems in place in the healthcare facility, making it difficult to implement/enforce the standard safety precautions or sanction healthcare workers that do not comply.

The welfare and safety of healthcare workers was not given priority by employers to rehabilitate and compensate workers with occupational injuries and impairment. Health and safety trainings to create awareness of occupational hazards among healthcare workers and reduce the prevalence of occupational injuries were not regular.

Recommendation

We recommend that:-

1. Every healthcare facility should be provided with appropriate equipment and materials to enable healthcare workers carry out their jobs with minimum risks.
2. Regular education and training on safety practices at workplaces will lead to an improved workforce and provide better healthcare delivery.
3. Policies to institute and enforce a safety and health management system in healthcare facilities will reduce workplace hazards, prevent employee injuries and save cost in the healthcare systems.
4. Provision of appropriate infrastructure and security for healthcare workers is recommended to reduce violence against healthcare workers.

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APPENDIX A

Study Questionnaire

Assessment of the knowledge, attitude and perception of potential occupational hazards by healthcare workers in Lagos, Southwest Nigeria.

Sir/Madam,

This questionnaire is part of a postgraduate work on assessment of the knowledge, attitudes and perception of potential occupational hazards by health workers in their work places. We encourage you to spare a few minutes to respond to the following questions. Information obtained from this exercise will solely be used for research purposes and making recommendation to relevant authorities for interventions. The information will not be shared without your consent. Please note that you are under no obligation to participate in this research. Where you decide to participate:-

Please tick appropriate box by each question, thank you.

A. Demographic data

1. Gender: Male Female
2. Age:- 19years 20–29years 30-39years 40–49years 50 &above
3. Marital status: Single Married divorced separated
4. Highest Educational qualification:
Primary Sch Cert Secondary Sch.Cert Degree or Diploma 2nd degree/Masters or equivalent
5. Occupation: Medical Doctor Nurse/Midwife Laborat. Scientist Nurse Assistant
6. Years of Working experience in the hospital:- 0–16–20 years
20 years above years 11 – 15yrs

To what extent do you agree/disagree with the following. Tick as appropriate.

B. Knowledge

1. Being a healthcare worker comes with its own risks/hazards
Strongly agree agree Not Sure Disagree Strongly disagree
2. The risk/hazards at the healthcare facility can be chemical
Strongly agree agree Not Sure Disagree Strongly disagree
3. The risk/hazards at the healthcare facility can be biological
Strongly agree agree Not Sure Disagree Strongly disagree

4. The risk/hazards at the healthcare facility can be physical
 Strongly agree agree Not Sure Disagree Strongly disagree
5. The risk/hazards at the healthcare facility can be psychological
 Strongly agree agree Not Sure Disagree Strongly disagree
6. It is possible to be infected with any of these diseases as a healthcare worker HIV, Tuberculosis, Hepatitis B, Tetanus.
 Strongly agree agree Not Sure Disagree Strongly disagree
7. A health worker can get infected with any of these diseases, influenza, pneumonia, Ebola or Lassa fever if adequate protective measures are not put in place.
 Strongly agree agree Not Sure Disagree Strongly disagree
8. Sharp related injuries (needle pricks) or contact with contaminated specimens (blood, saliva, body fluids) are potential sources of occupational infection among healthcare workers
 Strongly agree agree Not Sure Disagree Strongly disagree
9. Stress is an example of occupational hazards that health workers are exposed to: -
 Strongly agree agree Not Sure Disagree Strongly disagree
10. Stress is an example of occupational hazards that health workers are exposed to: -
 Strongly agree agree Not Sure Disagree Strongly disagree
11. Verbal Abuse is an example of occupational hazards that health workers are exposed to:-
 Strongly agree agree Not Sure Disagree Strongly disagree
12. Physical Assault is an example of occupational hazards that health workers are exposed to:-
 Strongly agree agree Not Sure Disagree Strongly disagree

C. Attitudes

1. Prolonged standing by health care workers should be avoided.
 Strongly agree agree Not Sure Disagree Strongly disagree
2. Sitting on convenient/comfortable chairs while working is important.
 Strongly agree agree Not Sure Disagree Strongly disagree
3. It is necessary for hospital management to provide personal protective equipment(PPE) for workers?
 Strongly agree agree Not Sure Disagree Strongly disagree

4. It is important for health workers to use PPE every time they are at work.
- Strongly agree agree Not Sure Disagree Strongly disagree
5. Sharps (surgical blades, needles) can be used more than once.
- Strongly agree agree Not Sure Disagree Strongly disagree
6. Used needles should never be recapped
- Strongly agree agree Not Sure Disagree Strongly disagree
7. Used sharps should be properly disposed of
- Strongly agree agree Not Sure Disagree Strongly disagree
8. Safety bowls should be located close to where required procedures are carried out.
- Strongly agree agree Not Sure Disagree Strongly disagree
9. A health worker needs to wash his hands before starting any procedure/activity, during work and after the procedure
- Strongly agree agree Not Sure Disagree Strongly disagree
- D. Perception Of Risk Of Occupational Hazards*
- a. Needle prick injury poses a serious risk of infection to health care workers.
- Strongly agree agree Not Sure Disagree Strongly disagree
- b. Direct contact with patients' blood/body fluid e.g. saliva, vomitus is an occupational risk to health care workers.
- Strongly agree agree Not Sure Disagree Strongly disagree
- c. Standing or sitting for a long time predisposes a health worker to occupational disease (e.g. low back pain)
- Strongly agree agree Not Sure Disagree Strongly disagree

- d. Pushing/pulling/lifting heavy loads can pre-dispose a worker to have low back pain /shoulder pain
- Strongly agree agree Not Sure Disagree Strongly disagree
- e. Lifting of patients by healthcare workers can predispose them to low back pain.
- Strongly agree agree Not Sure Disagree Strongly disagree
- f. Staying close to patients infected with Tuberculosis for long period scan expose the health worker to contacting the disease.
- Strongly agree agree Not Sure Disagree Strongly disagree
- g. Assaults from patients or patient relatives are risks associated with the healthcare workplace
- Strongly agree agree Not Sure Disagree Strongly disagree
- h. Spillage of chemicals/reagents on a health worker is an occupational hazard.
- Strongly agree agree Not Sure Disagree Strongly disagree
- i. Prevention of exposure to occupational hazard is the responsibility of the health worker.
- Strongly agree agree Not Sure Disagree Strongly disagree

E. Safety Measures (Please Tick Asappropriate)

- a. Have you gone through any training on Infection Control in the past?
- Yes No
- b. Do you wash your hands before starting work in your workplace?
- Yes No
- c. Do you wear personal protective equipment (PPE) e.g. gloves, overall before carrying out your work?
- Yes No
- d. Do you read operation manuals properly before operating machines in your workplace?
- Yes No

e. Do you have conducive working environments that will prevent you from injuries/diseases in your workplace?

Yes No

f. Is your office/workplace cleaned with antiseptic/disinfectant on a daily basis?

Yes No

g. Does your employer encourage regular/quarterly health checks/screening for health workers?

Yes No

h. Are there measures in place to ensure immediate treatment for injured health workers?

Yes No

i. Are there fire extinguishers in your unit/section of workplace?

Yes No

Thank you for your participation.

ABBREVIATIONS

HCF- Healthcare Facility HCW- Healthcare Worker

ILO- International Labor Organization

OSHA- Occupational Safety and Health Administration NIOSH- National Institute of Occupational Safety and Health OML- Ontario Ministry of Labor

BLS- Bureau of Labor Statistics

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ETHICAL CLEARANCE

The proposal of the study title "ASSESSMENT OF THE KNOWLEDGE, ATTITUDES AND PERCEPTION OF POTENTIAL OCCUPATIONAL HAZARDS BY HEALTHCARE WORKERS IN LAGOS, SOUTHWEST NIGERIA" BY MARGARET OKAMA OBONO at the National Orthopaedic Hospital Igbobi Lagos has been reviewed by the Health, Research, and Ethics Committee of the Hospital.

Ethical Clearance is hereby given to proceed with the study from **August to November 2016**.

Dr. O. K Idowu
Chairman, Health, Research, and Ethics Committee