



ISSN: 0795-6061

3

ILORIN JOURNAL OF HEALTH, PHYSICAL EDUCATION AND RECREATION (IJOHPER)

**VOLUME 6,
NO.1 (2013)**

A Publication of

**Department of Health Promotion and
Environmental Health Education &
Department of Human Kinetics Education
UNIVERSITY OF ILORIN, ILORIN, NIGERIA.**

Complimentary copy to Mr. Baba Dare A.
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PRIMARY HEALTH CARE PROVIDERS' KNOWLEDGE OF OCCUPATIONAL BLOOD HAZARDS COMMON TO HEALTH CARE PERSONNEL IN OYO EAST LOCAL GOVERNMENT, OYO STATE.

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Abstract

This study examined health care providers' knowledge of occupational blood hazards common to medical personnel in Oyo East local government, Oyo State. A descriptive research design of survey type was adopted for the study. The population of study comprised all medical personnel from Oyo East local government, Oyo state. A multi-stage sampling technique was employed in selecting ninety (90) respondents used for the study. A researcher designed questionnaire that had been validated by experts in medical field was used to collect data for the study. A test-re-test procedure was used to obtain the reliability coefficient of 0.81r. In all, four (4) research hypotheses were formulated and tested with the use of chi-square (χ^2) statistical method at 0.05 alpha level of significance. The result of analysis showed that primary health care providers have sound knowledge of prevailing blood hazards in health industries. However, primary health care providers' knowledge of factors

associated with occupational exposure to blood hazards in health industries is not adequate. Based on these findings, the study recommends that general health care workers in PHC centres should acquire knowledge on factors associated with blood hazards in the health industry and strictly adhere to universal precautions. Also, government should organize in-house training on post-exposure prophylaxis which should be taken seriously and be done on regular basis.

Keywords: Primary Health, knowledge, blood & hazard ...

Introduction

Health and medical workers at all levels (tertiary, secondary and primary) are at risk of various occupational blood and blood diseases which prove deleterious to their health. Despite improved advancement in safety measures, in developing countries like Nigeria, blood- borne diseases (BBDs) remain major threats to the health and safety of health care providers. In primary health care (PHC) settings, due to poor technological working tools and low technical know – how of workers that constitute the work force, they are at greater risk of being infected with blood – borne pathogens (BBPs). BBPs refer to pathogenic micro-organisms, such as viruses and bacteria, which can exist in blood and cause diseases in human being.

According to Tarantola, Abiteboul and Rachline (2006), over 60 pathogenic species are capable of transmitting BBDs. Worldwide, 40 percent of hepatitis B virus (HBV) and hepatitis C virus (HCV) infections, and 2.5 percent of HIV infections among health care workers (HCWs) are attributable to occupational percutaneous exposure, and more than 90 percent of these infections occur in developing countries (World Health Organization, 2002). Monge, Mato, Mariano, Fernandez and Fereres (2001) and Krishnan, Dick and Murphy (2007) opined that PHC workers are at risk of infection with BBPs because of occupational exposure to body and body fluids (BBFs) and have inadequate knowledge of risks to which they are exposed.

Nearly 3 million health – care workers suffer percutaneous exposures each year. Of these, an estimated 66,000 hepatitis B, 16,000 hepatitis C and up to 1,000 Human Immunodeficiency Virus (HIV) infections occur each year (Amita, Shuchi, Jayagowri, Anandini, Anita, Shreepad, Nikhil, Robert and Arjun, 2008). Based on several literatures report, HBV, HCV, and HIV occur as the

commonest occupational blood-borne infections because of their prevalence in the population and the severity of the disease they cause (Tarantola, Abiteboul and Rachline, 2006).

The report of the interview conducted among 15 randomly selected PHC workers in Oyo East local government revealed that non – use of protective barriers like gloves, goggles, masks and improper disposal of sharp needles during suturing and recapping of used needles with poor sterilization technique of used instruments are factors responsible for frequent blood infection. Large number of studies revealed that needles were the instrument most frequently involved in percutaneous exposure (Monge et al, 2001, Dement, Epling, Qstbye, Pompeli and Hunt, 2004; Gillen, McNary & Lewis, 2003). Apart from blood, other potentially infectious materials as revealed by Occupational Safety and Health Administration (OSHA, 2010) include the human fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids.

Injury and exposure to BBPs are further accounted for in specific risk factors. Among the factors influencing the risk of HCW over a life time career include the number and types of blood contact experienced by the worker, the prevalence of BBPs infection among patients treated by the worker, and the risk of transmission of infection after a single blood contact (Elise, Ian, Craig & Mary, 2000). Tokars, Culver, Mendelson, Sloan, Farber, Fligner, Chamberland, Marcus, Mckibben and Bell (1995) reported that of the 99 percutaneous injuries observed during 1,382 operations in five different surgical specialists (general, orthopaedic, gynaecologic, trauma and cardiac); most (73 percent) were related to suturing. An anonymous national survey of certified nurse – midwives cited in Wicker, Cinatt, Berger, Doerr, Gottschalk and Rabenau (2008) revealed that 74 percent had soiled their hands with blood; 51 percent had splashed blood or amniotic fluid in their faces, and 24 percent had sustained one or more needle stick injuries in the preceding 6 months.

Ruben, Norden and Rockwell (1983) documented that 10 – 25 percent injuries occurred while recapping used needles. Although recapping of needle has been prohibited under the OSHA BBPs standard (Occupational Safety and Health Administration, 1991). Shepard, Simard, Finelli, Fiore and Bell (2006) opined that one of the commonest modes of HBV transmission in the health care setting is unintentional injury of an HCW from a needle contaminated with Hepatitis B surface antigen (HBSAg) positive blood from an injected patient.

Occupational exposures that may result in HBV, HCV or HIV transmission include needle stick and other sharps injury, direct inoculation of virus into mucosal surfaces of the eyes; nose or mouth through accidental splashes (Elise, Ian, Craig, and Mary, 2000). Elise, Ian, Craig and Mary, (2000) specifically emphasized that HIV, HBV and HCV do not spontaneously penetrate intact skin, and airborne transmission of these viruses does not occur.

Tokars et al (1995) in their study observed that half of the percutaneous injuries during surgical suturing procedures occurred when fingers, rather than instruments, were used suggesting that the use of instruments or other changes in technique might reduce injuries. Similarly, presence of the HCWs' fingers and a needle or other sharp instrument or object in a poorly visualized or highly confined anatomic site has been cited as an example of exposure prone procedure by Centre for Disease Control and Prevention (2001). Elise, Ian, Craig and Mary (2000) further added that the probability of HBV transmission after an occupational exposure is dependent upon the concentration of infectious virus in the implicated body fluid, the volume of infective material transferred and the route of inoculation like percutaneous or mucosal.

Virtually, all blood and blood related diseases are preventable in nature. The use of universal precautions to prevent the spread of HBV, HIV and other blood – borne infections in health care settings has been recommended by the national Centre for Disease Control and Prevention and the federal agency responsible for monitoring and controlling infectious disease in the United States (United States, Food and Drug Administration, 2010). The basis of universal precautions is the assumption that BBP in all patients may be infectious, and that measures to protect against exposure must be observed at all times. According to Wicker et al (2008), the core elements of standard precautions comprise of hand washing after patient contact, the use of barrier precautions (gloves, masks, and goggles, to prevent mucotaneous contact) and minimal manual manipulation of sharp instruments or devices and disposal of these items in puncture – resistant containers.

Several authors recognized that HCWs in PHC are not adequately informed about occupational hazards and PHC workers are less studied than hospital workers (Krishnan, Dick and Murphy, 2007). In order to strengthen the existing studies and expand the available shallow researches on occupational blood hazards among PHC workers; the study investigated primary health care providers' knowledge of occupational blood hazards in health industry of Oyo East local government, Oyo State.

Research Questions

The following research questions were raised to guide this study:

1. Do the primary health care providers have knowledge of preventing blood hazards common to health care personnel in Oyo East Local Government, Oyo State?
2. Do the primary health care providers have knowledge of factors associated with occupational exposure to blood hazards common to health care personnel in Oyo East Local Government, Oyo State?
3. Do the primary health care providers have knowledge of preventive measures against occupational exposure to blood hazards common to health care personnel in Oyo East Local Government, Oyo State?
4. Do the primary health care providers have knowledge of scientific control practices against occupational exposure to blood hazards common to health care personnel in Oyo East Local Government, Oyo State?

Research Hypotheses

The hypotheses below were set for this study:

1. Primary health care providers in Oyo East Local Government have no significant knowledge of prevailing blood hazards common to health care personnel.
2. Primary health care providers in Oyo East Local Government have no significant knowledge of factors associated with occupational exposure to blood hazards common to health care personnel.
3. Primary health care providers in Oyo East Local Government have no significant knowledge of preventive measures against occupational exposure to blood hazards common to health care personnel.
4. Primary health care providers in Oyo East Local Government have no significant knowledge of scientific control measures against occupational exposure to blood hazards common to health care personnel.

Purpose of the Study

The purpose of the study is stated below.

To determine, ascertain and investigate the knowledge of PHC providers in Oyo East local government of prevailing blood hazards, factors associated with occupational exposure to blood hazards, preventive measures against occupational exposure to blood hazards and scientific infection control practices against occupational exposure to blood hazards common to health care personnel.

Methodology

This study adopted descriptive survey method. The population of study comprised all the public health care personnel who are involved in direct patient care delivery, immunization, HIV counselling and testing (HCT), Tuberculosis (TB) treatment, family planning services (FPS), medical waste disposal. A multi-stage sampling technique was employed to select ninety (90) respondents selected for the study. A researchers' designed questionnaire that had been adequately validated by three experts in the field of medicine was used to collect data used for the study. A reliability coefficient of 0.81r was obtained following a test-re-test pilot test. The data generated were analysed with the use of Chi-square statistical method.

Data Presentation and Analysis

Hypothesis 1: There is no significant knowledge of PHC providers in Oyo East local government on prevailing blood hazards common to health care personnel.

Table 1: Chi – square analysis on knowledge of PHC providers on prevailing blood hazards common to health care personnel.

S/N	ITEM	SA	A	D	SD	D f	X ² Cal	Dec.
1.	HIV can be contracted through blood.	35 (38.9%)	33 (36.7%)	10 (11.1%)	12 (13.3%)	6	25.90	Ho Re- jected
2.	Viral haemorrhagic fever can be as a result of occupational blood hazards.	29 (32.2%)	31 (34.5%)	12 (13.3%)	18 (20.0%)			
3.	Hepatitis B and C are typical examples of blood – borne diseases.	18 (20.0%)	20 (22.2%)	30 (33.3%)	22 (24.5%)			

X^2 Cal=25.90, Df=6, $p < 0.05$ alpha level, Critical value=12.59

The analyzed data in table one revealed the chi-square (X^2) calculated value of 25.90 against the critical value of 12.59 at 0.05 alpha level of significance with the degree of freedom (df) 6. Since the calculated value is greater than the critical table value, the above hypothesis is hereby rejected. This implies that, there is significant knowledge of PHC providers in Oyo East local government on prevailing blood hazards in health industry.

Hypothesis 2: There is no significant knowledge of PHC providers in Oyo East local government on factors associated with occupational exposure to blood hazards common to health personnel

Table 2: Chi – square analysis on knowledge of PHC providers on factors associated with occupational

S/N	ITEM	SA	A	D	SD	Df	X ² Cal	Dec
1.	Non – hand washing after patient contact can spread blood – borne pathogens	22 (24.4%)	24 (26.7%)	24 (26.7%)	20 (22.7%)	9	8.70	Ho Accepted
2.	Use of hands during suturing exposed health care providers to blood related diseases	17 (19.0%)	22 (24.4%)	31 (34.5%)	20 (22.1%)			
3.	Use of sharp instruments in a dark working environment put health care providers at risk of contacting blood – borne diseases	22 (24.4%)	22 (24.4%)	22 (22.4%)	24 (26.8%)			
4.	High frequency exposed to blood and body fluids can endanger health care providers.	19 (21.1%)	16 (17.8%)	23 (25.6%)	32 (35.5%)			

X² cal=8.70; Df= 9; p<0.05 alpha level; Critical value=16.92

The result of analysis of second hypothesis revealed factors associated with occupational exposure to blood hazards. Table two, shows the calculated value of 8.70 against the critical value of 16.92 at 0.05 alpha level of significance with degree of freedom 9. Since the calculated value lesser to the critical value, hypothesis two is hereby accepted. This implies that, there is no

significant knowledge of PHC providers in Oyo East local government on factors associated with occupational exposure to blood hazards common to medical personnel.

Hypothesis 3: There is no significant knowledge of PHC providers in Oyo East local government on skills acquisition helpful against occupational exposure to blood hazards in health industry.

Table 3: Chi – square analysis on knowledge of PHC providers on preventive measures against occupational exposure to blood hazards common to medical personnel.

S/ N	ITEM	SA	A	D	SD	Df	X ² Cal	Dec
1.	Bio – hazard safety seminar is often conducted within my department	18 (20.0 %)	17 (18.9%)	25 (27.8 %)	30 (33.3 %)	9	3.2	Ho Ac- cept ed
2.	Larger proportion of health care providers in my working environment have received training on universal precaution in the last two years	20 (22.2 %)	21 (23.3%)	24 (26.7 %)	25 (27.8 %)			
3.	Everybody in my working place have been trained on management of post – exposure prophylaxis	20 (22.2 %)	18 (20.0%)	29 (32.2 %)	23 (25.6 %)			
4.	Training on injection safety practices are regularly organized in my working place.	21 (23.3 %)	23 (25.6%)	22 (24.4 %)	24 (26.7 %)			

X² cal= 3.20; Df =9; p<0.05 alpha level; critical value=16.92

The third hypothesis tested knowledge of primary health care providers on preventive measures against occupational exposure to blood hazards. The table above shows the calculated value of 3.20 against the critical value of 16.92 at 0.05 alpha level of significance with the degree of freedom 9. Since the calculated value was lesser to the critical value, hypothesis three is hereby accepted. This implies that, there is no significant knowledge of PHC providers in Oyo East local government on skills acquisition helpful against occupational exposure to blood hazards common to medical personnel.

Hypothesis 4: There is no significant knowledge of PHC providers in Oyo East local government on scientific infection control practices against occupational exposure to blood hazards in health industry.

Table 4: Chi – square analysis on knowledge of PHC providers on scientific infection control practices against occupational exposure to blood hazards common to health care personnel.

S/ N	ITEM	SA	A	D	SD	Df	X ² Cal	Dec
1.	I seldom discard medical sharps in a bio – safety hazard box after each procedure	28 (31.1%)	24 (26.7%)	18 (20.0%)	20 (22.2%)	9	13.40	Ho ... Ac- cept ed
2.	The use of glove in handling each patient is routinely done to prevent risk of contacting blood – borne pathogens in my working place.	17 (18.9%)	18 (20.0%)	29 (32.2%)	26 (28.9%)			
3.	Apron is regularly put on against splashes while attending to clients/patients as a protective barrier against blood – borne infections.	16 (17.8%)	19 (21.1%)	26 (28.9%)	29 (32.2%)			
4.	Hand washing as a routine after each patient contact is strictly adhering to, to safeguard occupational exposure of blood – borne diseases.	15 (16.7%)	16 (17.8%)	32 (35.5%)	27 (30.0%)			

$X^2 \text{ cal} = 13.40$; $Df=9$; $p<0.05$ alpha level; Critical value=16.92

The fourth hypothesis tested scientific control practices against occupational exposure to blood hazards common to medical personnel. Table four revealed the calculated value of 13.40 against the critical value of 16.92 at 0.05 alpha level of significance with the degree of freedom 9. Since the calculated value was lesser to the critical value, the hypothesis four is hereby accepted. This means that, there is no significant knowledge of PHC providers

in Oyo East local government on scientific control practices against occupational exposure to blood hazards in health industry.

Discussion of Findings

Table 1 revealed significant knowledge of PHC providers in Oyo East local government on prevailing blood hazards common to medical personnel. The study shows that, a high and significant number of respondents 68(75.6%) and 60(66.7%) respectively agreed that both HIV and hepatitis B and C virus were examples of BBPs while 52 (57.8%) disagreed that viral haemorrhagic fever cannot be as a result of occupational exposure to blood hazards common to medical personnel. The interpretation of this finding gave the clue about the knowledge of these health providers on most dangerous types of BBPs. The PHC providers may have good knowledge of these diseases because, Tarantola, Abiteboul and Rachline (2006) stressed that several literature reported that HBV, HCV and HIV account for most prevalent occupational infections in the population.

Table 2 shows that 46(51.1%) respondents agree that non – hand washing after patient contact can spread BBPs. 51(56.6%), 46(51.2%) and 55 (61.1%) of them respectively disagree that use of hands during suturing exposed health care providers to blood related diseases, use of sharp instruments in a dark working environment put health care providers at risk of contracting blood – borne diseases and high frequency exposed to blood and body fluids can endanger health care providers. The gross implication is that, there is porous understanding of PHC providers in Oyo East local government on factors associated with occupational exposure to blood hazards common to medical personnel. This finding confirmed the saying of Krishnan, Dick and Murphy (2007) that several authors recognized that HCWs in PHC are neglected in education about occupational hazards.

Table 3 shows that 55(61.1%), 49(54.5%), 52(57.8%) and 46(51.1%) of respondents respectively affirmed that seminars on bio – hazard safety is not often, less number of health care providers received training on universal precaution in the last two years and that not everybody have been trained on management of post – exposure prophylaxis. Training on infection safety practices is not regularly organized in working places. This corroborates Monge, Mato, Mariano, Fernandez and Fereres (2009) and Krishnan, Dick and Murphy (2007) studies that PHC workers are at risk of infection with BBPs because of occupational exposure to BBFs and inadequate knowledge of risks to which they are exposed.

Table 4 revealed that 52(57.8%) of respondents admitted that they seldom discard medical sharps in a bio- safety boxes after procedure. Also, 55 (61.1%), 55(61.1%) and 59(65.5%) of them respectively disagree that the use of glove in handling each patient is routinely done and strictly adhered to in their working places. These findings support the recommendation of Do et al 2003) that HCWs need continual education about their risks of acquiring infections, ways to reduce such risks and the benefits of reporting and follow – up of occupational exposure to BBPs. The result was further buttressed by Williams, Perz and Bell (2004) that in the prevention of transmission of BBPs, HCWs must adhere to universal precautions and follow fundamental infection control principles.

Conclusion

Based on the findings of the tested hypotheses, the following conclusions are drawn:

- ◆ PHC providers in Oyo East local government have sound knowledge on prevailing blood hazards in health industry.
- ◆ Knowledge of PHC providers in Oyo East local government on factors associated with occupational exposure to blood hazards in health industry is not keen.
- ◆ Enough training and seminars on preventive measures against occupational exposure to blood hazards in health industry are not well attended to and is not sufficient for PHC providers in Oyo East local government.
- ◆ PHC providers in Oyo East local government do not possess good knowledge of scientific infection control practices against occupational exposure to blood hazards common to health care personnel.

Recommendations

Based on the findings of the study, it was recommended that:

1. General healthcare workers in PHC centres should endeavour to strictly adhere to universal precautions.
2. Authorities in PHC departments of Oyo East local government need to o to give con – current medical education programmes on blood and body fluids diseases.

3. In – house training on post – exposure prophylaxis (PEP) should be taken seriously and be done on regular basis.
4. Health Auxiliaries, Ward Orderlies, Health Attendants and Health Assistants in all PHC centres need to be educated on the use of bio – hazards safety boxes and sanitary disposal of infectious medical wastes. Such as injection needles, surgical blades and blood slides. .

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