Safety Practices in Prevention of Hospital Acquired Infections among Health Care Workers in Ikwerre Local Government Area of Rivers State

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ABSTRACT
The study investigated the Safety practices in prevention of hospital acquired infection among health care workers in Ikwerre Local Government Area. Two (2) research questions and corresponding hypotheses guided the study, descriptive research design was used, the study population was 240 hence the sample size. The instrument was self-structured questionnaire titled "Questionnaire on safety practices in prevention of hospital acquired infection" was used for data collection, it was validated by three specialist in the department of Human Kinetics, Health & Safety Education, a reliability index of 0.72 was obtained, data was collected and analyzed using special package for social sciences SPSS, the result of the findings reveals that health care workers in Ikwerre Local Government Area had a fair level of safety practices and fair knowledge of nosocomial diseases. However it was concluded that training and years' experience is related with safety practices among healthcare workers hence it was recommended that government and intervention agencies should organize safety awareness training on nosocomial infections among health care workers.

INTRODUCTION

Health care workers are potentially exposed to pathogens through contact with blood and body fluids while performing their respective clinical procedures. Safety practices is widely recognized and as well promoted to protect the health care workers from exposure to these nosocomial infections. However; there have been reports of suboptimal practices in preventing these exposures, most especially, in resource limited health facilities and settings (Thu , Anh, Chau, & Hung, 2012).

Infections in health care services have been a universal problem and make up one of the major causes of morbidity and mortality linked with clinical, diagnostic and therapeutic processes. The health care workers (HCWs), who are routinely exposed to occupational risks are more prone to contracting infections such as Hepatitis B Virus (HBV), Hepatitis C Virus

(HCV), tuberculosis and Human Immunodeficiency Virus (HIV) (Melo, Silva, Tipple & das Neves Pereira, 2006).

Worldwide, it is rated that about 40% of HBV and HCV infections as well as 2.5% of HIV infections among health care workers are ascribed to occupational sharps exposures. Since health care workers are constantly subject to risky exposures, interventional measures have been proposed to minimize this situation, with the implementation of safety precautions as one of the top most strategies, (Pruss-Ustun, Rapiti , Hutin 2005 ; Boozary & Dugani 2011).

Safety practices constitute the fundamental strategy for nosocomial infection control in the hospital. The use of safety practices is recommended for all patients, irrespective of suspected or confirmed infection status. Safety practices is applicable in any setting in which health care services is delivered based on principle that all blood, body fluids, secretions, excretions, non-intact skin, and mucous membranes may contain transmissible infectious agents, (Sreedharan, Muttappillymyalil & Venkatramana 2009; Siegel, Rhinehart, Jackson, Chiarello, Abduiraheem, Amodu, Saka, Bolarinw & Uthman, 2012).

Safety practice procedures advise health care workers to constantly practice personal nygiene, use personal protective wears depending on the anticipated exposures and safe injection practices. The safety practice measures also includes proper disposal of sharps, body fluids, and other clinical wastes (Reda, Fisseha, Mengistie & Vandeweerd, 2010).

The high levels of morbidity and mortality rates as recorded due to health care related infections in patients and HCWs can be significantly reduced if safety practices are properly applied. Unfortunately, despite the simplicity and clarity of these precautionary measures, the compliance among HCWs in clinical settings have been reported low, thus exposing HCWs to risk of infection (Gammon, Morgan-Samuel & Gould 2008 ; Thu, Anh, Chau & Hung, 2012).

Furthermore, due to the problem of infection in the health care settings, several scholars have recommended that infection control teams and researchers should investigate the reasons for non-compliance and as well ensure the provision of enabling environment that is conducive for the routine application of universal precautions (Gammon, Morgan-Samuel, & Gould, 2008). Very few studies were conducted in Nigeria to assess the status of safety practices among HCWs and factors inhibiting the practice study attempted. Thus, the researcher was moved to carry out this study to assess the safety practices in prevention of hospital acquired infections among HCWs who have direct contact with patients in primary healthcare centres of IKWERRE local Government Area of Rivers State.

Statement of the Problem

Globally, it is estimated that 40% of HBV and HBC infections and 2.5% of HIV infections in healthcare workers are as a result of occupational exposures, such as needle stick injuries, (Reda, Fisseha, Mengistie & Vandeweed, 2010).

According to the World Health Organization (WHO) fact sheet, insufficient application of safety practices is one of the factors that cause health care-associated infection, (WHO, 2017). Infect, the rising prevalence of morbidity and mortality rate arising from hospital related and blood borne infections is due to lack of awareness, wrong attitude towards and non-compliance with the recommendations of safety measures. Compliance with

recommended safety practices has been shown to reduce the risk of exposure to blood and body fluids. (Chau, Hung et al, 2012).

As a result of non-adherence to safety practices, it has been estimated that the prevalence of hospital contracted infections in tertiary hospitals in Nigeria is 2.6 percent (Ige, Adesanmi & Asuzu, 2011). More so, available reports on hospital personnel's becoming infected with HIV or other blood born infections have raised concerns on the urgent need for new and better measures to protect health personnel's from patient transmission of infections (Kermode, 2005). Even the recent incidence related to the Ebola outbreak in parts of West Africa has heightened this fear. Hence, the researcher was motivated to undertake this study to investigate knowledge and safety practices in prevention of hospital acquired infections among health workers in primary healthcare centres in Ikwerre LGA Rivers State.

Research Questions

The following research questions will be used.

1. What is the extent of safety practices amongst health workers in prevention of hospital acquired infections in Ikwerre LGA.?

2. What is the effect of training of health workers on safety practices in prevention of hospital acquired infections.

Concept of Hospital Acquired Infection

A hospital acquired infection (HAT), also known as nosocomial infection, is an infection that has been transmitted to a patient during their hospital stay. HAIs are defined by the World Health Organization (WHO) as "... Infections acquired during hospital care, which are not present or incubating at admission. Infections occurring more than 48 hours after admission are usually considered nosocomial." (WHO, 2002, p. 4).

Nosocomial infections are infections that are a result of treatment in a hospital or a healthcare unit. These infections are identified at least forty-eight to seventy-two hours following admission, so infections incubating, but not clinically apparent, at admission are excluded. It may also be within 30 days after discharge. With recent changes in health care delivery, the concept of nosocomial infections has sometimes been expanded to include other health care associated infections (Weinstein, 1991). These infections are also called hospital-acquired infection. Studies in the past have reported that during hospitalization, at last five percent of patients become infected. Similarly, a study carried out by the Centers for Disease Control and Prevention in the United States estimates that roughly 1.7 million hospital-associated infections, from all types of bacteria combined, cause or contribute to 99,000 deaths each year. In Europe the deaths estimated are 25000 each year. However, the case is more seen in the category of Gram-negative infections, which accounts for an estimated two thirds of the total cases reported.

Nosocomial infections are commonly transmitted as a result of negligence of hygiene by some hospital personnel. Medical officials move from one patient to another. Thus in a situation where they do not maintain high hygiene standards, the officials themselves serve as means for spreading dangerous pathogens. Moreover, body's natural protective barriers of the patients are bypassed by some medical procedures such as surgeries and injections. Hence with such hygienic negligence in our hospitals and other healthcare units, nosocomial

infections become the order of the day and my cause severe cases of pneumonia and infections of the urinary tract, bloodstream or other parts of the body.

HAIs are a significant problem for the healthcare system; they are a leading cause of preventable mess and have adverse effects on both patient outcomes and institutional efficiencies, resulting impacts that include prolonged hospital stays, long-term disability, increased resistance of organisms, significant financial burden (both patient and institution), and excess mortality (Allegranzi et al., 2009). HAIs are a worldwide problem that no one institution or country has been able to solve (WHO, 2009). The WHO (2009) describes HAIs as the most frequent adverse vent in healthcare delivery worldwide. HAIs are insidious and do not discriminate; they are highly prevalent in both developed and developing countries. The WHO (2009) estimates that of every 100 hospitalized patients at any one time, seven will acquire at least one HAI; thus, 1.4 million people in developed and developing countries are affected at any one time, creating a significant healthcare problem.

HAIs lead to strain on both healthcare facility resources and finances (Allegranzi et al., 2009). The WHO (2009) estimate that HAIs in Europe cost seven billion Euros annually, and in the United States of America (US) six and a half billion dollars per annum. Further to cost impact, economic algorithms have been used to predict the effects of HAIs in Australian acute carehospitalals (Graves et al., 2009). Large costs have been attributed to lost bed days from HAIs by identifying 175,153 cases of HAIs annually, which resulted in increased length of hospital stay, accounting for 854,289 lost bed days. These lost bed days result in a significant economic impact ipon the Australian Healthcare System (Graves et al. 2009).

Mortality from HAIs is also a significant problem. The Centers for Disease Control and Prevention (CDC) have estimated that in the US alone, HAIs are responsible for 99,000 deaths annually (Agnes et al., 2010; WHO, 2009). This figure is more than double of that estimated in Europe, where HAIs accounted for 37, 000 attributable deaths annually (WHO, 2009). However, it is possible that mortality figures attributed to HAI may be underestimated. Agnes et al. (2010) conducted a review of medical records of in-hospital patient mortality over a four-year period in the US and highlighted that it may be difficult to distinguish mortality as a result of HAIs, due to inaccurate documentation of "cause of death", with medical staff failing to identify complications from HATs as the primary cause of death over other diagnoses. Thus, global mortality figures could be much higher than previously determined, due to failure to accurately identify HAIs as the cause of death.

Nosocomial infections are caused by various factors. Some of the common ones include improper hygiene. Patients can get infections of diseases such methicillin resistant staphylococcus aurous (MRSA), respiratory illnesses and pneumonia from hospital staff and their visitors (Webster, 1998). Also doctors and nurses who do not practice basic hygienic measures such as washing hands before attending to patients may spread MRSA among them. Other infections are due to injections. There are cases where some hospital staffs do not give injections properly. Infections like KIV and hepatitis B can be as a result of contaminated blood due to sharing syringes and needles between patients when injecting medication into their intravenous lines. Nosocomial infections may also be as a result of torn or improperly bandaged incisions during surgeries. These incisions get contaminated with bacteria frym the skin or the surrounding environment.

These diseases may also affect the community when the patient is discharged leading to more sick people. Businesses are affected in terms of lost working hours. The treatment of these

infections is a huge cost to the patients and the health institution the other common hospital infections are urinary tract infections, lower respiratory infections and infections of surgical wounds. The highest rate of infection is experienced in the intensive care units and the surgical wards. The resources that the hospital would have used for the treatment of serious diseases are used to treat infections that can be prevented. On preventing hospital infections all the people in the health profession need to be involved.

Research Design

A descriptive cross- sectional study design will be used to assess the knowledge, attitude and safety practices among health workers in Ikwerre Local Government Area, because it provides a picture of a situation, person or event, or show how things are related to each other and as it naturally occur (Blumberg, cooper & Schindler, 2005).

Population of the Study

Those involved in the study includes, health care workers who work in the various health facilities located in IKWERRE local government area. The target population includes; Community Health Extension Workers (CHEWs) Junior Community Health Extension workers (JCHWs) and the Community Health Officers (CHOs) Medical Laboratory Scientist, Nurses! Midwives, Doctors, and patent medicine dealers who have direct patient care or specimen contact, currently working across the health care facilities in Ikwerre Local Government Area. Ikwerre LGA.

Research Question 1

Safety practices amongst healthcare workers in Ikwerre LGA

Descriptive Analysis on the extent of safety practices amongst the respondents

	LE		ME		HE		VHE		$\bar{x}$	SD	DEC
	F	%	F	%	F	%	F	%			
I wash my hand to prevent HAIs.	29	13.6	43	20.1	58	27.1	84	39.3	2.92	1.065	ME
I wash my hand to prevent the spread of HALs from patient to health works.	22	10.3	23	10.7	75	35.0	94	43.9	3.13	.983	HE
Hand washing can be don I wash my hand before and after contact with patient and producer.	33	15.4	53	24.8	105	49.1	23	10.7	2.55	.880	ME
I wash my hand properly to prevent and control the spread of HALs.	32	15.0	47	22.0	107	50.0	28	13.1	2.61	.895	ME
I use alcohol based hand rub from effective prevention of HALs.	32	15.0	54	25.2	108	50.5	20	9.3	2.54	.859	ME
I care about the sterilization of a	26	12.1	46	21.	75	35.0	67	31.	2.86	.999	ME

patient and hospital equipment.			5				3				
I minimize the number of days for catheter and other invasive to prevent HALs.	20	9.3	29	13.6	80	37.4	85	39.7	3.07	.951	HE
I attend intervention programme and read regular evaluation reports on the transmission and spread of hospital acquired infections.	26	12.1	57	26.6	98	45.8	33	15.4	15.4	.885	ME

Descriptive Analysis on the extent of safety practices amongst the respondents

	LE		**ME**		**HE**		**VHE**		$\bar{x}$	**SD**	**DEC**
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**			
I adequately sterilize all instrument for operation before and after use.	43	20.1	49	22.9	56	26.2	66	30.8	2.68	1.115	ME
I disinfect patients personal equipment and environment regularly.	35	16.4	42	19.6	90	42.1	47	22.0	2.70	.991	ME
I make guidelines to visitors on infection prevention policies and the enforcement.	36	16.8	52	24.3	94	43.9	32	15.0	2.57	.941	ME
I display of posters related to forms of prevention of infection in the reception, wards and offices of the health institution to create awareness on infection prevention.	38	17.8	51	23.8	94	9.31	31	14.5	2.55	.947	ME
Needles are put into safety boxes after use	42	19.6	58	27.1	78	36.4	36	16.8	2.50	.992	ME
Mean Set									**2.72**	**.435**	**ME**

Research Question 2

Relationship between age and safety practices among healthcare workers

		SAFETY PRACTICE						
		POOR PRACTICE (0-2.49)	FAIR PRACTICE (2.50-3.49)	GOOD PRACTICE (3.50-4.00)	Total	x^2	Df	P-val
AGE GROUP	25-39	54	109	5	168			
	40 Above	12	33	1	46	.768	2	.681
Total		66	142	6	214			

The table above presented the relationship between age and safety practices of healthcare workers. The result showed $X^2(2) = .768$; p= 0.681 indicating that age is not significantly associated with safety practices of healthcare workers hence, the null hypothesis is accepted.

H_{04}: There is no significant relationship between years of experience and safety practices among ire workers

Relationship between years of experience and safety practices among healthcare workers

		SAFETY PRACTICE						
		POOR PRACTICE (0-2.49)	FAIR PRACTICE (2.50-3.49)	GOOD PRACTICE (3.50-4.00)	Total	x^2	Df	P-val
Years of Experience	5-10	58	15	1	74			
	11 & Above	8	127	5	140	119.936**	2	.000
Total		66	142	6	214			

The table above presented the relationship between years of experience and safety practices of healthcare workers. The result showed x^2 (2) = 119.936; p= 0.000 indicating that years of experience is significantly associated with safety practices of healthcare workers hence, the null hypothesis is rejected.

Summary of Findings

From the data presented and analyzed, the findings of the study are summarized as follows: Health care workers in Ikwerre Local Government Area had a fair knowledge of nosocomial infections. It was also found that there is a fair level of safety practice among health care workers in Ikwerre Local Government Area. More so, educational level was not associated with safety practice of health care workers in Ikwerre Local Government Area. On the other hand, safety training is associated with safety practice of health care workers in IKWERRE Local Government Area. While age is not associated with safety practice of health care workers in Ikwerre Local Government Area, Years of experience is associated with safety practice of health care workers in Ikwerre Local Government Area.

Conclusion

The study was carried out among health care workers in IKWERRE Local government Area of Rivers state to ascertain the level of Knowledge and factors associated with nosocomial infections as well as safety practice. Based on its objectives, the study found fair level of knowledge of nosocomial infections and fair level of safety practices among the health care workers. Also, it was found that training and years of experience is associated with safety practice among healthcare workers.

Recommendations

Based on the findings of the study, the following recommendations are put forward:

1. Government and intervention agencies should organize safety awareness training on nosocomial infections among healthcare workers.
2. Posters and sign post that creates awareness on nosocomial infections should be placed in strategic places in all health facilities
3. Standard precautions among healthcare workers should be enforced in the health facility by the head of each unit.
4. Healthcare workers who have longer years of experience should carry the younger professional along in terms of educating them on standard precautions in the practice.

REFERENCES

Abduiraheem, LS., Amodu, M.O., Saka, M.J., Bolarinwa, O.A. & Uthman, M.M.B. (2012). Knowledge, awareness and compliance with universal precautions among health workers in North Easteam Nigeria. *Community Medicine & Health Education* 2(3).

Aisen A O. & Shobowala MO. (2010). Healthcare workers knowledge on HIV and AIDS universal precaution and attitude towards people living with AIDs in Benin city Nigeria. A Journal of Infection Control, 22(3), 46 -51.

Gammon. J., Morgan-Samuel, H. & Gould, D. (2008) A review of the evidence for suboptimal compliance of healthcare practitioners to standard/universal infection control precautions. J Clin Nurs 17: 157-167.

Ige, Adesanmi & Asuzu, (2011). Invasive procedures and Hospital Acquired Infection (HAI) in a large hospital in Northern Uganda.

Kermode, M., Jolley, D., Langkham, B. & Thomas, M.S. (2005). Occupational exposure to blood and risk of blood borne virus infection among health care workers in rural north Indian health care settings. American Journal of Infection Control, 5(3), 34-41.

Melo, D.S., Silva, S.A.C., Tipple, A.F., das Neves, Z.C. & Pereira, M.S. (2006). Nurses' understanding of universal, precautions at a public hospital in Goiania - GO, Brazil. Rev Lat Am Enfermagem 14: 720-727.

Pruss-Ustün, A., Rapiti, E. & Hutin, Y. (2005). Estimation of the global burden of disease attributable to contaminated sharps injuries among health-care workers. Am J md Med 48: 482-490. Publishers Ltd.

Reda, A.A., Fisseha, S., Mengistie, B. & Vandeweerd, J.M. (2010). Universal precautions: occupational exposure and behavior of health care workers in Ethiopia. PLoS One 5:14420.

Sreedharan, J., Muttappillymyalil, J. & Venkatramana, M. (2009). Knowledge about universal precautions among university hospital nurses in the United Arab Emirates. *Eastern Mediterranean Health Journal* 17: 33 1-334.

Thu, T.A., Anh, N.Q., Chau, N.Q. & Hung, N.Y. (2012). Knowledge, Attitude and Practices Regarding Standard and Isolation Precautions among Vietnamese Health Care Workers: A Multicenter Cross-Sectional Survey. Internal Medicine 2(4).

WHO (2004). Reducing risks, promoting healthy life. Geneva, Switzerland World Health Organization.