INTERNATIONAL JOURNAL OF NATURAL AND APPLIED SCIENCES (IJNAS), VOL. 4, NOS.1& 2 (2009); P. 156– 163, 4 TABLES, 1 FIG.

Knowledge and practice of universal precautions among healthcare workers in a tertiary hospital in Lagos, Nigeria.

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ABSTRACT

A study of the knowledge and practice of Universal Precautions was carried out among the healthcare workers of the Lagos University Teaching Hospital in Nigeria. We surveyed 340 healthcare workers consisting of 147 doctors, 101 nurses, 47 laboratory scientists and 9 ward assistances took part in the study. Of the 340 healthcare workers, 330 (97%) of the respondents were quite familiar with the concept of Universal Precaution. There seems to be higher level of knowledge among the healthcare workers in clinical areas (96%) than those in the laboratory areas (35%). The low level (42%) of awareness and practice of Universal Precautions despite their good knowledge on such an important precautionary measures raises a lot of concern about the level of consciousness of the respondents about personal protection with respect to blood-borne infections especially in a working environment where the prevalence of nosocomial infection seem to be higher than what was recorded in the previous study among similar population. We concluded that safety education which is a component in the training of healthcare workers be strengthened so that while caring for the sick, care providers will not get themselves infected.

INTRODUCTION

The increasing rate of nosocomial infections from various medical settings have been of much concern for some time. The fact that blood and other fluids from patients are becoming increasingly hazardous to those who provide care for them has become of great concern to public health professionals the world over (Wilson et al 2006, Hesse et al.2006, Gurubacharya et al.2003). It has specifically necessitated the need for a preventive approach in protecting healthcare workers from such infections particularly either from their patients or from one patient to another through the healthcare worker (Helfgott et al.1998). Thus the practice of universal precaution as a way of safeguarding possible routine infections in work places has become more and more widely accepted among various healthcare workers as a simple and effective means of controlling transmission of hospital infections (Hesse et al.2006, Gurubacharya et al.2003) .

Universal precautions have been widely promoted in high income and technologically advanced countries since August 1987 when it was published by the Centre for Disease Control in a document entitled: Recommendations for Prevention of HIV Transmission in Healthcare settings. This document recommends that blood and body fluids precautions be consistently used for all patients regardless of their blood borne status. This extension of blood and body fluid precautions to all patients is referred to as "Universal Blood and Body Fluid Precautions "or "Universal Precautions (Helfgott et al.1998, Hesse et al.2006).

Several studies have shown that the average risk of HIV transmission after a percutaneous exposure is approximately 0.3%, the risk of HBV transmission is 6-30% and the risk of HCV transmission is approximately 1.8%. To minimize the risk of transmitting nosocomial infections from patient to a healthcare worker and vise-versa or from a patient to another patient, it is important that all healthcare workers should adhere to universal precautions at all time (Adebamowo et al 2002, Knight and Bodsworth 1998.

Universal precautions are intended to prevent parenteral, mucous membrane and non-intact skin exposures of healthcare workers to blood borne pathogens. Personal hygiene thus becomes a fundamental principle in observing universal precaution. Immunization with HBV vaccine is recommended as an important adjunct to universal precautions for healthcare workers who have exposures to blood. Clinical applications of universal precautions are important for every healthcare professional that provides dental, medical, or other patient care (Bamigboye and Adesanya.2006, Maqbool 2002,).

Although universal precaution guidelines have been in place since 1987, suboptimal adherence to it especially in developing countries has been documented extensively despite evidence that failure to observe universal precautions increase the risk of transmission of nosocomial infections (Janjua et al. 2007).

The most single method of transmitting infections in a hospital setting either from a patient to healthcare worker and vise-versa or from a patient to another patient is through improper hand washing

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although blood-borne pathogens are transmitted to healthcare worker predominantly through percutaneous or mucosal of workers to blood or body fluids of infected patients (Picheanssthian, 1995).

Various factors ranging from personal to organizational were responsible for non-adherence to basic principles of universal precaution among healthcare workers.

Several recent studies have shown that universal precaution awareness education has not been pronounced among healthcare workers in developing countries (Bamigboye and Adesanya. 2006, Suchitra and Lakshmi 2007).

It is therefore very important to educate these healthcare workers about universal precaution not only to ensure their safety but also to improve their quality of service (Suchitra and Lakshmi 2007, Adebamowo et al 2002, Knight and Bodsworth 1998). It is with this context that this study is being conducted with the aim of assessing the level of knowledge of healthcare workers as regards to universal precautions as well as their level of practice

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MATERIALS AND METHODS

We conducted a cross-sectional survey of clinical and non-clinical health-care workers at Lagos University Teaching Hospital, (LUTH) Nigeria, during July through September 2008. A total of 340 health workers working in medical and surgical units as well as in the laboratory, hospital attendants (ward maids), and laundry departments were sampled. Exclusion criteria include healthcare workers in the administrative, accounting, and engineering departments. A questionnaire that is made up of both open ended and close ended questions that covered demographics, duration and job sites of the respondents, knowledge concerning hazards in their environment, the types of personal protective equipment in use was administered.

The sample size which satisfied the study objectives was used. The level of confidence was specified as 95% and the tolerable error margin was 5%.

Data analysis was done using computer programme Epi info 6.0.

RESULTS

During the study period, June to August 2008, a total of 340 healthcare workers (HCWs) were sampled to ascertain their knowledge, attitude and practice on universal precaution (UP). Of these, 260 (76.47%) were from clinical areas. Eighty (23.53%) were from the laboratory. These include theatre/ICU 14 (5.38), surgical 50 (19.23), O & G /Labour 79 (30.38%), medical 82 (31.54%), paediatrics 23 (85%) and 12 for radiology unit (Table 5, Fig. 2). However, of the 80 (23.53%), that were from laboratory unit, 29 (36.25%) were from microbiology, 26 (32.50%) were from haematology, 8 (10.0%) from chemistry while 17 (21.25%) were from morbid (Table 5, Fig.1).

In general, all the HCWs were aware that they can get infection from their patients during work, but 243 (71.5%) were aware on universal precaution guidelines, 76 (22.4%) were not aware while 21 (6.2%) do not know about UP guidelines in the hospital. There is a statistically significant difference between HCWs on clinical areas on their knowledge about UP guidelines than those in laboratory (P<0.0001]. Of these 243, 163 [67.1%] of them knew about infection control committee in the hospital while 35 [14.40%] were not aware and 142[41.76%] of the HCWs did not know whether infection control committee exists in the hospital or not (Table 1).

Concerning the HCWs protective barrier usage, 255 (75%) of them always use gloves while performing any procedure with the patients, 73 (21.5%) usually did so, 10 (2.9%) sometimes while 2 (0.59%) do not use gloves. On the laboratory coat usage, 118 (34.71%) always use coats, 72 (21.18%). Usually, 96 (28.24%), sometimes while 54 (15.88%) never used coats. Wearing of face masks was found that 77 (22.65%) of the HCWs always wore face masks, 86 (25.29%) usually did so while 120 (32.29%) sometimes and 57 (16.77%) do not. It was also found out that 31 (91.12%) always use eye googles, 23 (6.75%) usually, 89 (26.18%) sometimes while 197 (57.94%) do not use eye googles.

The rates of washing hands before and after a contact with the patients, it was found out that 240 (70.59%) HCWs always did so, 83 (24.41%) usually, 4 (4.0%) sometimes while 3 (0.88%) do not wash their hands at all before and after contacts with patients (Table 2).

Also in the rate of antiseptic use while washing, it was found that 109 (32.06%) always use antiseptic while washing their hands, 76 (22.35%) usually do so, 131 (38.53%) sometimes and 24 (7.06%) do not use any form of antiseptic while washing their hands (Table 3) .

About 221 (65%) of HCWs did not recap needles after use while 95 (27.9%) always recaps, 7 (2.1%) usually, 17 (5%) sometimes recap needles after use. There is a statistically significant difference between HCWs in clinical areas than those in the laboratory. More so, 209 (61.47%) of the HCWs discards needle to puncture – proof containers/safety boxes while 21 (6.18%) uses polythene bags, 43 (12.65%) open bin and 67 (19.71%) closed bin containers.

Even though 126 (37.1%) HCWs said there were available labelled/colour coded clinical waste in their units all of them were aware of the meaning while 241 (70.88%) of those HCWs that said there were no availability of labelled /colour coded containers, 27 (11.2%) were not aware of the meaning.

Three hundred and fourteen (92.35%) of HCWs said that UP should be practiced for all patients and 282 (82.94%) said that UP were not usually adhered to due to the fact that the supplies are not readily available (Table 3).

On the improvement of UP adherence, 319 (93.82%) suggested that setting up an effective infection control committee that will monitor,

implement and evaluate the use of UP, 324 (95.29%) felt that pasting posters or written down standard operative procedures at every strategic points in the hospital, 329 (96.77%) said that an increased political will on the part of the management towards workers safety at work while 332 (97.65%) said that regular training and re-training of HCWs on UP compliance will go a long way in strict practicing UP in the hospital.

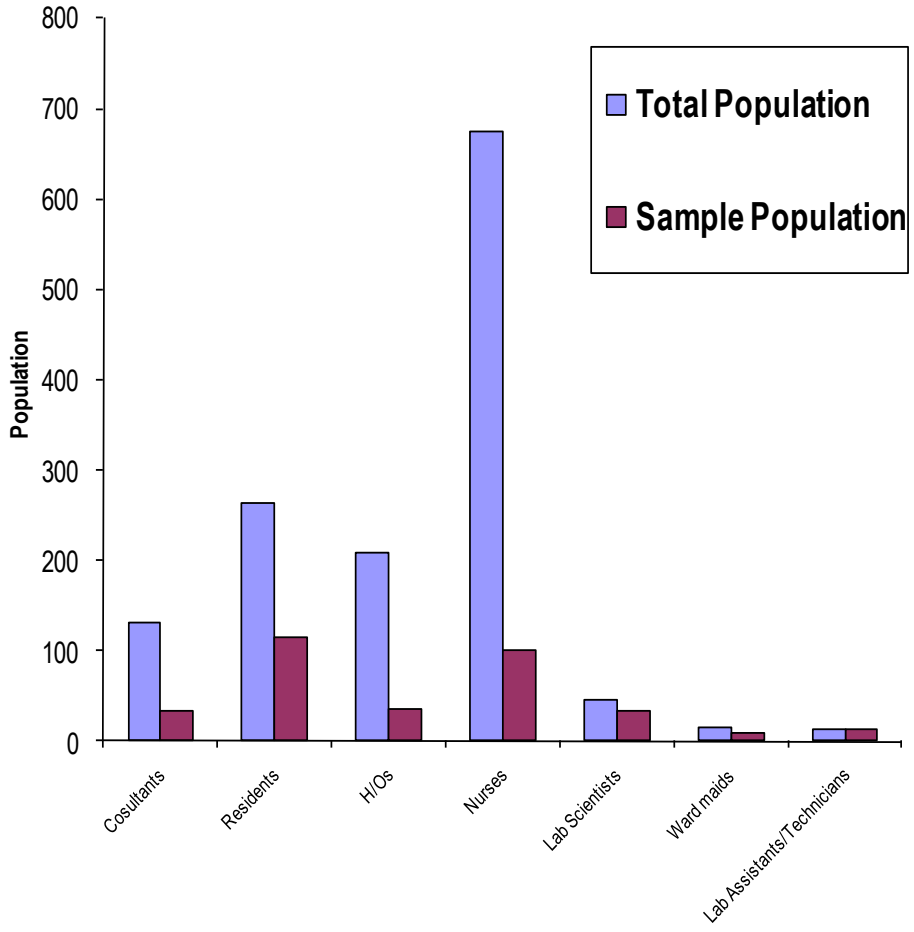

Fig. 1. Proportional distribution of HCWs in LUTH.

Table 1. Distribution of HCWs and their awareness on infection control committee

Occupation	Awareness					
	Yes		No		Don't know	
Doctors	Freq	%	Freq	%	Freq	%
Consultants						
Residents	30	(18.4)	0	(0.0)	3	(2.1)
HOs	45	(27.6)	10	(28.6)	59	(41.5)
	14	(8.6)	7	(20.0)	15	(10.6)
Nurses						
	56	(34.4)	14	(40.0)	31	(21.8)
Lab Scientists						
	14	(8.6)	2	(5.7)	17	(12.0)
Lab Attendants						
	4	(2.5)	1	(2.9)	9	(6.3)
Ward Maids						
	0	(0.0)	1	(2.9)	8	(5.6)
Total	163	(100.0)	35	(100.0)	142	(100.0)

Table 2. Distribution of HCWs on rates of washing hands before and after.

Occupation	Rates of washing hands							
	Always		Usually		Sometimes		Never	
Doctors	Freq	%	Freq	%	Freq	%	Freq	%
Consultants								
Residents	30	(12.5)	3	(3.6)	0	(0.0)	0	(0.0)
HOs	57	(23.8)	51	(61.4)	5	(35.7)	1	(33.3)
	19	(7.9)	12	(14.5)	4	(28.6)	1	(33.3)
Nurses	92	(38.3)	7	(8.4)	2	(14.3)	0	(0.0)
Lab Scientists	25	(10.4)	6	(7.2)	2	(14.3)	0	(0.0)
Lab Attendants	12	(5.0)	1	(1.2)	1	(7.1)	0	(0.0)
Ward Maids	5	(2.1)	3	(3.6)	0	(0.0)	1	(33.3)
Total	240	(100.0)	83	(100.0)	14	(100.0)	3	(100.0)

Table 3. Distribution of HCW on rates of antiseptic use while washing

Occupation	Rates of antiseptic use							
	Always		Usually		Sometimes		Never	
Doctors	Freq	%	Freq	%	Freq	%	Freq	%
Consultants	17	(15.6)	2	(2.6)	13	(9.9)	1	(4.2)
Residents	26	(23.9)	41	(53.9)	41	(31.3)	6	(25.0)
HOs	8	(7.3)	10	(13.2)	17	(13.0)	1	(4.2)
Nurses	33	(30.3)	12	(15.8)	49	(37.4)	7	(29.2)
Lab Scientists	17	(15.6)	2	(2.6)	9	(6.9)	5	(20.8)
Lab Attendants	8	(7.3)	1	(1.3)	1	(0.8)	4	(16.7)
Ward Maids	0	(0.0)	8	(10.5)	1	(0.8)	0	(0.0)
Total	109	(100.0)	76	(100.0)	131	(100.0)	24	(100.0)

Table 4. Knowledge on how UPs can be improved among HCWs.

Occupation	UP not adhered							
	Setting up of Infection Control Committee		Pasting posters and SOPs		Increased political will on the part of management		Regular Training and retraining	
	Yes	No	Yes	No	Yes	No	Yes	No
Doctors	Freq %	Freq %	Freq %	Freq %	Freq %	Freq %	Freq %	Freq %
Consultants	25 (7.8)	8 (38.1)	33 (10.2)	0 (0.0)	33 (10.0)	0 (0.0)	33 (9.9)	0 (0.0)
Residents	112 (35.1)	2 (9.5)	110 (34.0)	4 (25.0)	112 (34.0)	2 (18.2)	109 (32.8)	5 (62.5)
HOs	35 (11.0)	1 (4.8)	35 (10.8)	1 (6.3)	33 (10.0)	0 (0.0)	35 (10.5)	1 (12.5)
Nurses	91 (28.5)	10 (47.6)	92 (28.4)	9 (56.3)	99 (30.1)	2 (18.2)	100 (30.1)	1 (12.5)
Lab Scientists	33 (10.3)	0 (0.0)	31 (9.6)	2 (12.5)	30 (9.1)	3 (27.3)	32 (9.6)	1 (12.5)
Lab Attendants	14 (4.4)	0 (0.0)	14 (4.3)	0 (0.0)	13 (4.0)	1 (9.1)	14 (4.2)	0 (0.0)
Ward Maids	9 (2.8)	0 (0.0)	9 (2.8)	0 (0.0)	9 (2.7)	0 (0.0)	9 (2.7)	0 (0.0)
Total	319 (100.0)	21 (100.0)	324 (100.0)	16 (100.0)	329 (100.0)	11 (100.0)	332 (100.0)	8 (100.0)
%	93.8	6.2	95.3	4.5	96.8	3.2	97.6	2.4

DISSCUSION

The study looked at the Knowledge, Attitude and Practice of UP among HCWs to determine compliance. The knowledge on the hospitals UP guidelines was found to be 71.5%. This figure is similar to what has been reported in another study conducted by Bamgboye *et al* at a University Hospital, Ile-Ife which was 64.3% of the total respondents were quite familiar with UP policy guidelines. In this study, there was a correlation in the length of stay in the hospital and the knowledge of UP policy guidelines even the position of the HCW also counts in the familiarity of the policy concept (Bamigboye and Adesanya 2006).

In this present study, the length of stay in the hospital significantly correlated to increased knowledge, attitudes and practices among the various categories of staff even though it does not translate into good clinical practice in the ward ($p<0.001$). Studies by Gershon *et al 1995* on compliance to Ups among HCWs showed different levels of compliance. The study showed that compliance maximum among nurses, intermediate for laboratory scientists/assistance and least for doctors (Gershon et al 1995). This was in contrast to the study by Picheansalthian W who reported low rate of compliance among nurses(Picheanssthian 1995).

Hospital administrators should strive to create more organisational atmosphere, despite the fact that the infection control committee is still young in the hospital, 41.8% of the HCWs did not know that such committee exists especially the laboratory HCWs and this was similar to the study by Hesse *et al.*2006, the study reported that even though such a committee exists, there was still a low attendance on their training and seminars in other to be informed on the need to be compliance with UPs (Hesse et al.2006, Janjua et al. 2007). Studies by Suchita and Lakshmi 2007 recommended that attending seminars on infection control courses about hospital infection had a positive effect on infection control procedures and compliance with barrier techniques (Suchitra and Lakshmi 2007, Picheanssthian 1995).

At different units, the inability to always use protective barrier, washing of hands before and after touching patients/soiled materials were attributed lack of education, high work had especially when the ward was occupied to its full capacity, understaffing, working in critical care units, lack of encouragement and lack of a role model among senior staff.

In a study by Villarino *et al* 1990, they reported that use gloves were the most complied barrier method used. It was shown gloves were the only protective attire that was worn while carrying out nursing interventions; other protective attire was usually ignored except those who work in critical care units. Also this study showed a statically significant difference in the use of protective barrier among the HCWs in clinical areas than those in laboratory areas ($P < 0.0001$) in spite of the educational programme (Villarino et al 1990) .

In this study, the low compliance on washing hands were seen on the doctors' part and most of them attributes it to lack of water in the wards. Studies by Pruss-Ustun *et al.* 2005 and Haiduven *et al*. 1992 on why universal precautions were not adhered to, are due to the fact that the healthcare workers were always too busy especially in neonatal and theatre/ICU units, inconvenient location of sinks, water and soap not available, lack of knowledge or experience, lack of a role model and lack of rewards. However, the ward maids who were more under direct supervision of nurses complied best.

Recapping of needles were found to be high among the laboratory HCWs in spite their knowledge on the danger of recapping needle, the HCWs attributed it to inability for the hospital management to make non-reusable needle and syringes readily available in the hospital. This group of HCWs said that it is safer and ethically to recap needles since the non-reusable syringes and needles were not available. This study showed a statistically significant difference between the HCWs on clinical areas than those in laboratory units ($p<0.0001$).

This study also reported that in spite of high awareness of the meaning of labelled/colour coded clinical waste containers, the non-availability of these containers made them to resort to the use of puncture proof containers.

In the study, most HCWs felt that Ups should be complied at times (91.4%) because it is protective as compared with 5.9% who perceived that Ups are only for HIV positive patients, 8.8 said Ups should be practiced only when performing invasive procedures while 58.2% were with the opinion that Ups should be practiced whenever a HCW is examining a patient and 58.2% found Ups useful when a HCW has skin lesion or existing wounds.

The UPs were not usually adhered to due to the fact that 82.9% HCWs found that supplies were not readily available, 29.7% found it cumbersome and 34.4% expensive. Among ward maids, a different trend of thought was observed. Most of them found Ups expensive (88.9%) and (79.8%) cumbersome. 100% of ward maids perceived that the supplies were not readily available.

Various ways through which HCWs perceived that Ups could be adhered to includes; setting up an effective infection control committee that will monitor, implement and evaluate the use of UP, 95.3% viewed the opinion that pasting posters or written down standard operative procedure at every strategic points in the hospital, 96.8% felt that increased political will on the past of the management towards workers safely at work, 97.6% that regular training and re-training of HCWs on UPs.

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