Knowledge, Attitude and Practice of Standard Precautions of Infection Control in Tertiary Hospitals in Abia State, Nigeria

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Abstract
Study on Knowledge, Attitude and Practice of Standard Precautions(SP)of Infection Control in Tertiary Hospitals in Abia State Nigeria.Descriptive survey research design was adopted. The entire target population (552) was used, instrument wasresearcher-constructed questionnaire. Validities of instrument were done, **r =** 0.81 using test-retest method. Data were analysed descriptively using frequencies, percentages, means and standard deviations. Inferential statistics was used to test the relationship between demographic characteristics and practice of SP, **α** = 0.05.Findings revealed: Good level of knowledge (83.3%), a positive attitude (M = 3.28, SD±0.912) and median level (M=2.3, SD ±1.01) of practice among the respondents revealing inverse proportion between practice of SP and years of experience r = -0.043, p = 0.384 (>0.05) with direct proportion of knowledge and practice r = 0.202, p=0.001 (<0.05); no significant institutional difference in knowledge (p-value for Fisher's test = 0.441) and non in practice (p-value for Fisher's test = 0.474) resulting in medium practice level of SP despite good knowledge and positive attitude of Nurses.It was recommended that all Nurses irrespective of their years of experience should be motivated to practise SP while every institution has an infection control team to monitor and enforce compliance.

Keywords: *Knowledge, Attitude, Practice, Infection control.*

1.0 Introduction

Hospital acquired infection is a major health problem in all societies. According to WHO (2010), 7.1 million cases of this infection occur worldwide every year. One out of every 20 persons suffers from hospital infection (Cardo, Dennehy, Halverson, Fishman, Kohn, Murphy & Whitley, 2010). However in developed countries the burden is already substantial as it affects from 5% to 15% of hospitalized patients in regular wards and as many as 50% or more of patients in Intensive Care Units (ICUs). In developing countries, the magnitude of the problem remains underestimated or even unknown largely because the diagnosis is complex and surveillance activities to guide interventions require expertise and resources (Allegranzi & Pittet, 2009).

However, the prevalence of Hospital Acquired Infection (HAI) over 5-year period in a tertiary hospital in Nigeria reflects 2.6%, surgical and medical wards had the most infections (48.3%) and (20.5%) respectively, Urinary Tract Infection (UTI) and surgical site infection were the most prevalent. UTIs were significantly higher in surgical and medical wards, surgical site infections in obstetrics and gynaecology wards, and soft tissue infections and bacteraemia in paediatric wards (Ige, Adesanmi & Asuzu, 2011). Overall HAI cumulative incidence in surgical wards ranged from 5.7% to 45.8% in other studies conducted in Ethiopia, and Nigeria respectively, and an incidence density equal to 26.8 infections per 1000 patient-days in paediatric surgical patients (WHO,

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Nurses, regardless of specialty, engage in the most direct contact with clients in healthcare settings. Their expertise regarding knowledge, attitudes and practice to control the spread of infections is well evidenced by their success in licensure examinations and relevant assessments over the course of their academic journey (Smith and Lokhorst,2009). But then some existing literature have documented specific examples where nurses are implicated in the transmission of nosocomial infections (Pessoa-Silva, Hugonnet, Pfister, Touveneau, Dharan, Posfay-Barbe, &Pittet2007). The practice of standard precautions is also being widely promoted to protect healthcare workers from occupational exposure to body fluids and consequent risks of infection with blood-borne pathogens because nurses frequently provide care to patients who may be asymptomatic while being infectious.

Compliance to standard precaution practices is reported to be low in many public health facilities, especially in resource-limited settings such as Nigeria, thus exposing healthcare workers and patients to the risk of infection (Ameh et al, 2009). World Health Organisation (WHO 2010) states that, worldwide about 40% of Hepatitis B and C virus infections and 2.5% of HIV infections to nurses are attributable to occupational sharp exposures, which are mainly preventable. In several investigations (Ekiti State Infection Control, 2006; WHO, 2010 &Centre for Disease Control 2011) of nosocomial hepatitis B outbreaks, most infected healthcare workers could not recall an overt percutaneous injury. However, in some studies (Department of Health. Hepatitis Seroprevalence, 2009; Palmore, 2011 Main, 2010), up to one-third of infected healthcare workers recalled caring for a patient who was HBsAg-positive.

Despite the training nurses receive, there are still cases of needle prick injury, neglect to use of personal protective equipment, infections of surgical sites and other forms of infections resulting in prolonged hospitalization of patients observed among Nurses of Abia State University Teaching Hospital (ABSUTH), Aba and Federal Medical Centre (FMC), Umuahia. Based on the foregoing, this study assessed the knowledge, attitude and practice of standard precautions of infection control among Nurses in Abia State University Teaching Hospital (ABSUTH), Aba and Federal Medical Centre (FMC), Umuahia. It also investigated factors facilitating the practice of standard precautions among Nurses.

2.0 Materials and Methods

2.1 Study Design and Sample Size

A descriptive survey research design was used. The study was carried out in two selected tertiary hospitals in Abia State, which were Abia State University Teaching Hospital (ABSUTH), Aba and Federal Medical Centre (FMC) also known as Queen Elizabeth Specialist Hospital, Umuahia, Nigeria. These centres were selected for the study because they are both centres for training nurses and other health professionals and where best practices are expected to be observed. The population of study comprised all the 190 Nurses of Abia State University Teaching Hospital (ABSUTH) Aba, and all the 362 Nurses of Federal Medical Centre (FMC) Umuahia, making the total population of 552. They were all used because it is a manageable size, thus census as a sampling technique was adopted. In the same vein, out of the 552 questionnaires distributed, solely 407 were retrieved; amounting to approximately 74% response/ retrieval rate. This percentage remains an acceptable standard for a study of this nature.

2.2 Study Instrument

A researcher developed questionnaire was used to assess the knowledge, attitude and practice of standard precaution. The questionnaire comprised seventy-six (76) items derived from the reviewed literature and was divided into four sections in line with the objectives of this study. Section 1: comprised seven (7) items on Socio-Demographic characteristics of the respondents; Section 2: comprised four (4) items and twenty four (24) sub items with "yes" or "no" options on knowledge; Section 3: was made up of twelve (12) items reflecting attitude of nurses towards infection control pre-

sented on a 4-point Likert scale; Section 4: was made up of sixteen (16) items reflecting practice of standard precaution which were presented using 4-point response scale and Section 5 were factors facilitating practice with standard precautions which was thirteen (13) items with "yes" or "no" options. A pilot test was conducted using 56 Nurses in Abia state specialist hospital, the reliability of the instrument was computed using the split half technique which yielded a reliability coefficient of 0.81.

2.3 Ethical consideration

Ethics approval was gotten from the Ethical/Legal Clearance Committee of FMC Umuahia.The rights to self-determination, anonymity, confidentiality and informed consent were observed. Respondents' consent were obtained verbally before completion of the questionnaires. The respondents were informed of their rights to voluntary consent or decline to participate, and to withdraw participation at any time without penalty.

2.4 Data collection

With the ethical approval from the Research/Ethical Clearance Committee and evidence of letter of introduction from Head of Department of Nursing Sciences, UNEC, the researcher approached the Heads of Nursing Services Department and the Ward Managers in charge of the wards/units and obtained administrative permit to collect data from the Nurses. The researcher trained four (4) research assistants (from the Education Committee members, two from each hospital) on the purpose of the study, how and when to administer and collect the questionnaire. The respondents were approached when they were less busy with their official/ assigned duties. The approval letter from the Ethical Clearance Committee, verbal discussions and phone contacts were used to gain access to and obtain permission from the Heads of the Units where the respondents work. Data collection lasted for a period of four (4) weeks.

2.5 Data analysis

The data collected were collated, tallied and computed descriptively using frequencies, percentages, mean and standard deviations. Predictive Analytics Software (PASW) version 20.0 was used for the analysis.Knowledge of nurses about standard precaution and infection control was rated thus: A score of 0-6 was regarded as poor knowledge, 7-14 as average knowledge and 15-24 as good knowledge. Regarding attitude of nurses towards standard precaution of infection control: A 4-point Likert scale was used with a mean score of 2.5, above it was regarded as a positive attitude while a mean of less than 2.5 was regarded as a negative attitude. While interpretation of level of practice was done as mean of less than 1.5 was low practice, 1.5-3 was medium practice while above 3 was a high practice level. The results of the analysis were extracted and presented in tables according to the research questions of the study. The inferential statistics, Pearson's correlation was used to test the hypotheses at 0.05 level of significance.

3.0 Results

3.1 Demographic characteristics of participant

Table 1 shows the distribution of demographic variables of Nurses in ABSUTH, Aba and FMC Umuahia, Abia State, Nigeria. It indicates that 361(88.7%) of the total respondents were females while 46(11.3%) were males. It also shows that, of the total population, 82 (20.1%) were within the age of 22-29years, 121 (29.7%) were within age 30-37years, 129 (31.6%) were within age of 38-40years, 73 (17.9) were within the age of 46-61years, 2(0.5) were within age of 54-61years and a mean age of 38.20 with a standard deviation of 9.55. This shows that for the level of education attained, 203(49.9%) were diploma holders, 142 (38.9%) were first degree holders, while 62 (15.2%) had obtained higher degrees. It also reflects that 78(29.2%) of the respondents were registered nurses only, while 286(77.6%) were both nurses and mid-wives, 4(1.0%) were registered nurses, midwives, psychiatric nurses and public health nurses, 5(1.2%) were registered nurses, midwives and public health nurses whereas 4(1.0%) were registered nurses, midwives, and anaesthetic nurses. In

duration of practice, 102(25.1%) had practised for 0-5years, 90(22.1%) for 5-10years while 215 had practised for over 10years. It also showed that 126(31.0) currently practised in maternity ward, 63(21.1) practised in medical unit, 59(14.5) practised in paediatric unit, while the remaining respondents practised in other wards. (The difference 45 (552 - 407) accrued

Note: Target population which also served as Sample Size = 552 i.e. number of nurses in both hospitals: 190 Nurses (ABSUTH) + 362 Nurses (FMC) but

During time of sharing and retrieval of the Questionnaire some Nurses were on Off Duty while some forms were discovered to be Invalid because they were incorrectly filled. These brought the number of assessable forms for analysis to 407 (hence n = 407)

Table 1: Socio-demographic characteristics of Respondents n=407

Socio-demographic characteristics	Frequency		Total
	ABSUTH (142) (34.9%)	FMC (265) (65.1%)	407 (100%)
Gender			
Female	119(29.2)	242(59.5)	361(88.7)
Male	23(5.7)	23(5.7)	46(11.3)
Age			
22-29	14(3.4)	68(16.7)	82(20.1)
30-37	46(11.3)	75(18.4)	121(29.7)
38-45	47(11.5)	82(20.1)	129(31.6)
46-53	34(8.4)	39(9.6)	73(17.9)
54-61	1(0.2)	1(0.2)	2(0.5)
Mean ± SD	**40.87±8.7**	**36.78±9.65**	**38.20±9.55**
Highest educational attainment			
Diploma	46(11.3)	157(38.6)	203(49.9)
First degree	49(12.3)	93(28.9)	142(38.9)
Higher degree	47(11.5)	15(3.7)	62(15.2)
Professional certificate obtained			
RN	10(2.5)	68(16.7)	78(19.2)
RN,RM	126(30.9)	190(46.7)	286(77.6)
RN, RM, Psychiatric PHN	2(0.5)	2(0.5)	4(1.0)
RN, RM, PHN	4(1.0)	1(0.2)	5(1.2)
RN,RM, Anaesthesia	0	4(1.0)	4(1.0)
Duration of practice as a nurse			
0-5years	16(3.9)	86(21.1)	102(25.1)
5years -10years	31(7.6)	59(14.5)	90(22.1)
>10years	95(23.3)	120(29.5)	215(52.8)
Current specialty unit/department			
Nil	5(1.2)	1(0.2)	6(1.4)
Emergency care	19(4.7)	30(7.4)	49(12.1)
Paediatric neonatal unit	21(5.2)	38(9.3)	59(14.5)
Maternity (labour & delivery, post-natal)	39(9.6)	87(21.4)	126(31.0)
Medical unit	20(4.9)	43(16.2)	63(21.1)
Psychiatric unit	2(0.5)	7(1.7)	9(2.2)
Critical care/intensive care/acute care	5(1.2)	21(5.2)	26(6.4)
Oncology	5(1.2)	1(0.2)	6(1.4)
Renal unit	2(0.5)	2(0.5)	4(1.0)
Orthopaedic	6(1.5)	1(0.2)	7(1.7)
Obs&Gynae	1(0.2)	8(2.0)	9(2.2)
Surgical unit	10(2.5)	12(2.9)	22(5.4)
Theatre	2(0.5)	10(2.5)	12(3.0)
OPD	5(1.2)	3(0.7)	8(1.9)
ENT	0	1(0.2)	1(0.2)

Table 2: Knowledge of standard precaution practices

Items	*Frequency (%)*		*Total*
Basic concepts of standard precaution	*ABSUTH*	*FMC*	
Standard precautions are a set of infection control practices used to prevent transmission of infection			
Yes	131(32.2)	256(62.9)	387(95.1)
No	11(2.7)	9(2.2)	20(4.9)
Standard precautions are designed to prevent healthcare workers only from being exposed to potential infection			
Yes	45(11.0)	87(21.4)	132(32.4)
No	97(23.8)	178(43.7)	275(67.6)
standard precautions are designed to prevent patients only from being exposed to potential infections			
Yes	32(1.9)	64(15.7)	96(23.6)
No	110(27.0)	201(49.4)	311(76.4)
standard precautions are designed to protect patients and health workers from being exposed to potential infections			
Yes	132(32.4)	249(61.2)	381(93.6)
No	10(2.6)	16(3.9)	26(6.4)
Standard precautions should apply to all patients and to all body fluids irrespective of the diagnosis			
Yes	118(29.0)	252(61.9)	270(66.3)
	24(5.9)	13(3.2)	37(9.1)
standard precautions should apply to only diagnosed patients			
Yes	25(6.1)	40(9.8)	65(16.0)
No	117(28.7)	225(55.3)	342(84.0)

Table 2: Shows the frequencies and percentages on knowledge of basic concepts of standard precautions. The highest percentage was the concept that standard precautions are a set of infection control practices used to prevent transmission of infection 387(95.1%). This is followed by the concept that standard precautions were designed to protect patients and health workers from being exposed to potential infections 381 (93.6%). While the least accepted concept was that standard precaution should apply to only diagnosed patients 65(16.0%).

Table 3: Shows the frequencies and percentages on knowledge of components of standard precaution. The most known

Table 3: Knowledge of components of standard precautions n=407

	ABSUTH	FMC	TOTAL
Hand hygiene			
Yes	142(34.8)	263(64.6)	405(99.5)
No	0(0.0)	2(0.5)	2(0.5)
Use of personal protective equipment			
Yes	142(34.8)	262(64.6)	404(99.3)
No	0(0.0)	3(0.7)	3(0.7)
Needle stick and sharp injury prevention			
Yes	138(33.9)	258	396(97.3)
No	4(1.0)	7(1.7)	11(2.7)
safe injection practices			
Yes	130(31.9)	256(62.9)	386(94.8)
No	12(2.9)	9(2.2)	21(5.2)
cleaning and disinfection of environment, linens and all equipment			
Yes	140(34.4)	259	399(98.0)
No	2(0.5)	6(0.7)	8(2.0)
Respiratory hygiene			
Yes	132(32.4)	243(59.7)	375(92.1)
No	10(2.5)	22(5.40)	32(7.9)
waste disposal			
Yes	135(33.2)	250(61.4)	385(94.6)
No	7(1.7)	15(3.7)	22(5.4)
Immunization and emergency prophylaxis			
Yes	135(33.2)	229(56.3)	364(89.4)
No	7(1.7)	36(8.8)	43(10.6)
proper disposal of waste			
Yes	138(33.9)	256(62.9)	394(96.8)
No	4(1.0)	9(2.2)	13(3.2)

Table 4: Knowledge of hand hygiene, immunization, and emergency prophylaxis *n=407*

Items	Frequency (%)		
	ABSUTH	FMC	TOTAL
hand hygiene refers to washing with plain or anti-bacterial soap and water or use of alcohol gel to decontaminate hands			
Yes	130(31.9)	255(62.7)	385(95.6)
No	12(3.0)	10((2.5)	22(5.40)
Hand hygiene refers to the use of alcohol gel to decontaminate hands only			
Yes	45(11.0)	95(23.3)	140(34.4)
No	97(23.8)	170(41.8)	267(65.6)
Washing of hands should be performed before and after contact with a client			
Yes	130(31.9)	255(62.7)	385(95.6)
No	12(3.0)	10(2.5)	22(5.40)
washing of hands should be done only if the nurse will not use gloves			
Yes	26(6.4)	32(7.9)	58(14.3)
No	116(28.5)	233(57.2)	349(85.7)
Hand hygiene is not required in forceps procedure			
Yes	21(5.2)	24(5.9)	45(11.1)
No	121(29.7)	241(59.2)	362(88.9)
2 or 3 antiretroviral drugs are used for PEP within			
7days	12(3.0)	44(10.8)	56(13.8)
72hours	35(8.6)	73(17.9)	108(26.5)
48hours	14(3.4)	41(10.1)	55(13.5)
24hours	81(20.0)	107(26.3)	188(46.2)
PEP should be taken for how long?			
1week	22(5.4)	85(20.9)	107(26.3)
2weeks	42(10.3)	33(8.1)	75(18.4)
3weeks	23(5.7)	32(7.9)	55(13.5)
4weeks	55(13.5)	115(28.2)	170(41.7)
Hepatitis immunization should be taken	29(7.1)	105(25.8)	134(32.9)
Yearly	57(14.0)	83(20.4)	140(34.4)
after5years	56(13.8)	77(18.9)	133(32.7)
Hepatitis immunization should be taken in how many doses?	13(3.2)	78(19.2)	91(22.4)
1dose	41(10.1)	57(14.0)	98(24.1)
2doses	77(18.9)	89(21.9)	166(40.8)
3doses	11(2.7)	41(10.1)	52(12.8)

component was hand hygiene 405(99.5%), followed by personal protective equipment 404 (99.3%), then cleaning and disinfection of environment, linens and all equipment 399(98.0%). While the least known component was Immunization and emergency prophylaxis 364(89.4), followed by respiratory hygiene 375(92.1%).

Table 4: Shows the frequencies and percentages on knowledge of hand hygiene, immunization, and emergency prophylaxis. The knowledge that hand hygiene refers to washing with plain or anti-bacterial soap and water or use of alcohol gel to decontaminate hands was 385(95.6%) and that Washing of hands should be performed before and after contact with a client 385(95.6%) were the highest. Only 108 (26.5%) were knowledgeable about the time limit for consumption of antiretroviral drugs, and 170(41.7%) respondents only knew the duration of antiretroviral drugs consumption. It further shows that 133(32.7%) of the Nurses were knowledgeable of the potency period of hepatitis immunization, and 166(40.8%) only know the number of doses to be taken.

Summary of scores on knowledge *n=407*

Category	Frequency (%)		
	ABSUTH	**FMC**	**TOTAL**
Poor knowledge	1	3	4(1.0)
Moderate knowledge (15.7)	22	42	64
Good knowledge (83.3)	119	220	339

Decision rule:
Score ≥17 (≥70%) -- Good knowledge
Score ≥12-16 (50-69%)-- Moderate knowledge
Score <12 (below 50%)-- Poor knowledge

Summary of scores on knowledge showed there was a good knowledge 339 (83.3%) of standard precaution of disease control in both ABSUTH Aba and FMC Umuahia.

Table 5: Attitude of respondents towards standard precautions *n=407*

Items	SD	D	A	SA	Mean ± SD
you do not have to wash your hands before and after patient care	336 (82.6)	43 (10.6)	1(0.2)	27 (6.6)	A-3.6±0.88 F-3.7±0.72 T-3.7±0.78
you do not have to wash hands before and after using gloves	293 (72.0)	92 (22.6)	9(2.2)	13 (3.2)	A-3.7±0.52 F-3.6±0.75 T-3.6±0.68
you don't have to use gloves for bed making	222 (54.5)	136 (33.4)	29 (7.1)	20 (4.9)	A-3.3±0.86 F-3.4±0.79 T-3.4±0.82
you don't need gloves when touching mucous membranes or on-intact skin	337 (82.8)	41 (10.1)	11 (2.7)	18 (4.4)	A-3.8±0.58 F-3.7±0.79 T-3.7±0.72
Goggles should be worn to protect mucous membranes of the eyes	57 (14.0)	38 (9.3)	101 (24.8)	211 (51.8)	A-3.1±1.09 F-3.2±1.10 T-3.1±1.10
you do not have to wash hands with antiseptic after exposure to patients' body fluids, secretions or contaminated items	332 (81.6)	42 (10.3)	11 (2.7)	22 (5.4)	A-3.7±0.69 F-3.7±0.81 T-3.7±0.77
A surgical mask should be worn to protect the nose and mouth from invasive processors and activities	45 (13.3)	26 (6.4)	84 (20.6)	243 (59.7)	A-3.3±1.02 F-3.3±1.07 T-3.3±1.10
you should always bend needles before disposal	230 (56.5)	63 (15.5)	35 (8.6)	79 (19.4)	A-2.7±1.27 F-3.3±1.12 T-3.1±1.19
you can carefully recap needle before disposal without injuring self	189 (46.4)	73 (17.9)	66 (16.2)	79 (19.4)	A-2.7±1.18 F-3.0±1.17 T-2.9±1.18
Gown should be worn when there is a risk of contamination with aggressive processes and activities	69 (17.0)	23 (5.7)	109 (26.8)	206 (50.6)	A-3.2±0.94 F-3.1±1.18 T-3.1±1.10
PEP after exposure to HIV blood or fluid is stigmatizing	128 (31.4)	48 (11.8)	76 (18.7)	128 (31.4)	A-2.6±1.22 F-2.6±1.30 T-2.6±1.27
you don't need to separate hospital waste	237 (58.2)	76 (18.7)	41 (10.1)	53 (13.0)	A-2.9±1.13 F-3.4±1.00 T-3.2±1.08
Grand Mean ± SD = 3.28±0.912					

KEY: A- ABSUTH, F- FMC, T- Total mean
Decision rule:
mean score ≥2.5 – positive attitude
mean score < 2.5 – negative attitude

Summary of scores on Attitude *n=407*

Category	ABSUTH	FMC	TOTAL
Negative Attitude	5	10	15 (3.68%)
Positive Attitude	137	255	392 (96.3%)
Total	142	265	407 (100.0%)

Table 5: Shows the mean and standard deviation of the attitude of ABSUTH, Aba and FMC Umuahia nurses towards standard precaution. In general the nurses had a positive attitude (M=3.28, SD±0.912) towards standard precaution. However the highest mean attitude were in the proposal that you have to wash your hands before and after patient care (M=3.7, SD±0.78), you have to wash hands with disinfectant after exposure to patients' body fluids, secretions or contaminated items (M=3.7, SD±0.77), and you need gloves when touching mucous membranes or unintact skin (M=3.7, SD±0.72). While the lowest mean attitude was do you think to take PEP after exposure to HIV blood or fluid is stigmatizing (M=2.6, SD±1.27) followed by you can carefully recap needle before disposal (M=2.9, SD±1.18).

Table 6: Practice of standard precautions by the respondents *n=407*

Items	Never	Rarely	Often	Always	Mean±SD
washing hands before patient care	44 (10.8)	68 (16.7)	79 (19.4)	216 (53.1)	A-2.3±0.93 F-2.1±1.10 T-2.1±1.05
washing hand after care	10 (2.5)	25 (6.1)	39 (9.6)	333 (81.8)	A-2.8±0.49 F-2.6±0.77 T-2.7±0.69
washing hand before using gloves	70 (17.2)	137 (33.7)	83 (20.4)	117 (28.7)	A-1.5±1.14 F-1.7±1.03 T-1.6±1.07
washing hands after using gloves	6(1.5)	25(6.9)	63 (15.5)	310 (76.2)	A-2.8±0.49 F-2.6±0.74 T-2.7±0.67
nurses wash their hands after accidental contact with blood, body fluids, secretions, contaminated items	6(1.5)	12(2.9)	20 (4.9)	369 (90.7)	A-2.9±0.20 F-2.8±0.62 T-2.8±0.52
wearing of gloves when touching mucous membranes or on- intact	7(1.7)	36(8.8)	36 (8.8)	328 (80.6)	A-2.7±0.62 F-2.7±0.75 T-2.7±0.71
wear goggles to protect the mucous membranes of their eyes during procedures	56 (13.8)	102 (25.1)	81 (19.9)	168 (41.3)	A-1.9±1.09 F-1.9±1.10 T-1.9±1.09
wash their hands with liquid soap after exposure to patients' blood, body fluid, secretions or contaminated items	25 (6.1)	29 (7.1)	44 (10.8)	309 (75.9)	A-2.6±0.845 F-2.6±0.88 T-2.6±0.87
use surgical mask to protect the patients from invasive procedures and activities	72 (17.7)	60 (14.7)	91 (22.4)	184 (45.2)	A-1.8±1.18 F-2.0±1.11 T-1.9±1.14
bend needle before disposal	273 (67.1)	43 (10.6)	38 (9.3)	53 (13.0)	A-2.3±1.04 F-2.3±1.11 T-2.3±1.09
Recap needles before disposal	191 (46.9)	83 (20.4)	43 (10.6)	90 (22.1)	A-1.5±1.22 F-2.1±1.15 T-1.9±1.20
Is a safety sharp box readily available in the unit	23 (5.7)	48 (11.8)	74 (18.2)	262 (64.4)	A-2.3±0.87 F-2.5±0.91 T-2.4±0.91
wear gown when there is risk of contamination with aggressive procedures and activities	31 (7.6)	47 (11.5)	93 (22.9)	236 (58.0)	A-2.3±0.90 F-2.3±0.97 T-2.3±0.95
GRANDMEAN±SD =2.3±1.01					

Decision rule (for Table 6):

Mean score >3.0 --- high practice
Mean score 3.0-1.5 --- median practice
Mean score < 1.5 --- low practice

Summary of scores on Practice *n=407*

Category	ABSUTH	FMC	TOTAL
Low practice	50	21	21(5.2%)
Medium	96	132	228(56.0%)
High practice	46	112	158(38.08)
Total	142	265	407(100.0%)

Table 6: Shows the means of standard precaution practice. The general practice of standard precaution was at median level of practice (M=2.3, SD±1.01). The highest mean was that nurses wash their hands after accidental contact with blood, body fluids, secretions, contaminated items (M=2.8, SD±0.52). Followed by wearing of gloves when touching mucous membranes or non-intact skin (M=2.7, SD±0.71), washing hand after care (M=2.7, SD±0.69), washing hands after using gloves (M=2.7, SD±0.67). While washing hand before using gloves was the lowest (M=1.6, SD±1.07) practice followed by wearing goggles to protect the mucous membranes of their eyes during procedures (M=1.9, SD±1.09), use surgical mask to protect the patients from invasive procedures and activities (M=1.9, SD±1.14), then recap needles before disposal (M=1.9, SD±1.20).

In terms of practice level: The Nurses of ABSUTH and FMC were rated at Median level of practice of standard precautions as 2.3

based on
Decision Rule:
>3.0 = high practice,
3.0-1.5 = median practice and
<1.5 = low practice.

Table 7: Factors facilitating adherence with standard precautions among nurses

n=407

	ABSUTH		FMC		TOTAL	
Items: Which of the following statements were among the factors facilitating adherence with standard precautions?	Yes	No	Yes	No	Yes	No
	f(%)	f(%)	f(%)	f(%)	f(%)	f(%)
The workload in the unit	44	98	83	182	127(31.2)	280(68.8)
Perceived risk of getting infected	116	26	190	75	306(75.2)	101(24.8)
Thought of personal benefits from practice	138	4	225	10	393(96.6)	14(3.4)
The idea that patients will benefit from the practice	137	5	257	8	394(96.8)	13(3.2)
Have previous participation in in-service education workshop	93	49	186	79	279(68.6)	128(31.4)
Workers are encouraged with incentives to participate in	52	90	138	127	190(46.7)	217(53.3)
Workers are mandated to participate in continuing education that addresses prevention	61	81	205	60	266(65.4)	141(34.6)
There is infection control team	55	87	245	20	300(73.7)	107(26.3)
There is improved standard precaution institutional	69	73	204	61	273(671)	134(329)
There is provision of suitable equipment for standard precaution	71	71	206	59	277(681)	130(319)
There are conspicuous flyers/ posers/reminders	63	79	160	105	223(54.8)	130(319)
Negative pressure rooms are used for patients with air-borne and droplet infections	41	101	156	109	197(48.4)	210(51.6
There is provision disposable materials for practice	70	72	215	50	285(70)	122(30.0)

Table 7: Shows the factors that facilitate adherence with standard precautions. The highest factor was that patients will benefit from practicing infection control (96.8%). This was followed by the nurses benefiting from practising infection control (96.6%).

The perceived risk of getting infected when caring for an infected patient (75.2%), and the availability of infection control team (73.7 %) were next amidst other factors.

4.0 Discussion

4.1 Knowledge of Nurses on Standard Precaution in ABSUTH, Aba and FMC, Umuahia

The study revealed that the respondents had good knowledge (83.3%) of standard precautions of infection control because out of a study/sample population of 407 from both ABSUTH and FMC 339 of them had good knowledge. This was in conformity with Kamunge (2013) in United State of America where the participants demonstrated high levels of knowledge (93%) in a study aimed at exploring knowledge, attitudes and practices of registered nurses regarding the spread of nosocomial infections The result was also in line with Ogoina, Pondei, Adetunji, George, Christian and Sanusi, 2012), study which reflectsthat the overall median knowledge scores towards standard precautions was above 90%. Though the populations of the study were healthcare workers, nurses still made up to 50.8% of the respondents. This score was also very close to that obtained in a study conducted in northern Nigeria by Amoran, and Onwube (2009) on infection control and practice of standard precautions among healthcare workers, which states that majority (77.9%) had good knowledge of infection control.

4.2 Attitude of Nurses towards Standard Precautions in ABSUTH, Aba and FMC, Umuahia

The nurses had a positive attitude {M= 3.28, SD±0.912 (Decision rule: ≥2.5=Positive

attitude while <2.5=Negative attitude)} towards standard precautions as supported by Ogoina et al (2012) study on the knowledge, attitude and practice of standard precautions of infection control that showed a positive attitude with the overall attitude scores of above 90%. The result of this study was also in conformity with a foreign study conducted in the United States of America by Kamunge (2013) aimed at exploring the knowledge, attitudes and practices of registered nurses regarding the spread of nosocomial infections, where the participants demonstrated a positive attitude (93%) towards standard precaution. But the study was not in line with another foreign study conducted by Sarani et al (2014) on knowledge, attitude and practice of Nurses about standard precautions for hospital acquired infections in teaching hospitals in Iran Asia, which stated that only 37% of the nurses have a moderate attitude towards standard precaution.

4.3 Practice of Standard Precautions Among Nurses in ABSUTH, Aba and FMC, Umuahia

The general practice of standard precaution among the nurses is medium (M=2.3, SD=1.01). This was in line with Ogoina et al (2012) study on the knowledge, attitude and practice (KAP) of standard precautions of infection control that showed a medium level of practice (50.8%). The study was also in line with another foreign study conducted by Sarani et al (2014) on knowledge, attitude and practice of Nurses about standard precautions for hospital acquired infections in teaching hospitals in Iran Asia, which stated that there was an average practice (42%) of standard precaution.

4.4 Factors Facilitating Practice of Standard Precautions Among Nurses in ABSUTH, Aba and FMC, Umuahia

According to the study, the highest factor facilitating the practice of standard precaution was that patients will benefit from practice of standard precaution. However there were other factors which include availability of materials and facilities needed, which was one of the major factors reported for non-adherence to standard precaution in a study conducted by Okechukwu, and Motshedisi (2011), which implies that availability of materials will facilitate their practice. In a study conducted by Abdulraheem (2012), all the respondents reported very inadequate provision of protective materials as factors inhibiting practice. The same complain of inadequate resources to practise standard precautions was reported in another study conducted by Ogoina et al (2012). Among other factors for enhancing practice are attending seminars on infection control and having infection control team in the hospitals, which the absence of such were stated as factors that bring about non-compliance to practice as stated in Brisibe et (2014) study. The study stated it as 'poor supervision and lack of in-service training affects the practice of standard precaution' at University of Port-Harcourt Teaching Hospital.

5.0 Conclusion

The findings of this study showed that there is a good knowledge 339(83.3%) of standard precaution of disease control among Nursesin both hospitals.The Nurses had a positive attitude towards standard precaution. Also, the general practice of standard precaution among the nurses is median level and it was found that the highest factor facilitating the practice of standard precaution was that patient would benefit from practice of standard precaution.

6.0 Recommendations

Based on the findings from the study, the researcher hereby recommends: that all nurses irrespective of their years of experience/serviceshould be motivated to practise standard precautions by organizing trainings on infection control at regular intervals and that every institution should have an infection control team/unit - to monitor and enforce compliance to standard precaution practices.Policies that foster training of healthcare workers in standard precautions and guarantee regular provision of infection control and prevention materials should be made for health institutions.

Suggestions for Further Study

The following suggestions for further research were made based on the findings of the study:

- Prevalence and prevention of nosocomial infections.
- A comparative study on the cost of management of nosocomial infections and the cost of preventing nosocomial infections.

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