EFFECT OF HEALTH EDUCATION INTERVENTION ON KNOWLEDGE OF UNIVERSAL SAFETY PRECAUTION AMONG PRIMARY HEALTH CARE WORKERS IN RIVERS STATE, NIGERIA

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ABSTRACT
AIMS/OBJECTIVES: *To determine the effect of health education (HE) intervention on knowledge of universal safety precaution (USP) among health care workers (HCW) in primary health care centers (PHCC) in Rivers State, Nigeria.*
Materials/method: *This was a quasi-experimental study which involves assessment of HCW knowledge of USP. Semi structured, self-administered questionnaire was used to collect information from eligible respondents. Data was analyzed using statistical package for social sciences (SPSS) version 17 statistical software. A descriptive analysis of data collected at baseline and six months thereafter were used to determine the effect of the intervention. A bivariate analysis of outcome variables using chi square test for categorical data and students T test for quantitative data was done. The level of statistical significance was set at p value < 0.05.*
Results: *A total of three hundred and sixty six health care workers were enlisted for the study with 183 respondents each for study and control groups respectively. There were 52(28.4%) males and 131(71.6%) female in study group with 56(30.6%) males and 127(69.4%) females in control group respectively. For study group, total composite score for good, fair and poor knowledge were 1088(45.7%), 554(23.3%) and 737(31.0%) respectively before intervention, however Post intervention, total composite score for good, fair and poor knowledge of USP were 1850(78.6%), 321(13.6%) and 183(7.8%) respectively (p<0.05). There was no significant change in knowledge in the control group (p=0.98)*
Conclusion: *Knowledge of USP by HCW in PHCC was poor, intervention by means of HE proved to improve their knowledge.*
Key words*: universal safety precaution, health education, knowledge, primary health care workers, Nigeria.*

INTRODUCTION

Universal safety precaution (USP) a concept introduced in 1985 – 1988[1] aims at protecting health care workers (HCW) from bodily contacts with patients and clients blood and other bodily fluids[2] USP is achieved by wearing garments and gadgets which are non-porous e.g. hand gloves, aprons, face mask, goggles etc.[1] It also involves methods which ensures safer disposal of waste and

design of disposal containers [3] USP should be practiced in health care facilities and environment where health care workers (HCW) come in contact with blood and body fluids (BBF) such as blood, semen, vaginal secretion, synovial fluids, amniotic fluid , cerebro-spinal fluid (CSF), pleural fluid, peritoneal fluid, and sputum in dental setting (as it may be mixed with blood) USP envisages that all BBF should be handled as potentially infections [4]

Health care workers as well as patients accidentally exposed to potentially infectious BBF faces high risk of illness and mortality.[5] These exposures can result from percutaneous injury, mucocutaneous injury or contact with intact skin.[6 7 8] It is estimated that over 600,000 – 800,000 needle stick injury (NSI) and other percutaneous injuries are reported annually among HCW in the US.[7] The risk of HIV infection following percutaneous exposure with a contaminated sharp is estimated to be 0.3%,worldwide, the total number of HIV infection attributable to sharp injury was estimated to be 1,000. [9]There are risk of 15 NSI accidents per month among HCW with surgeons being the most at risk and physicians the least.[10] The most exposed HCW are those involved in invasive procedure such as surgeons and laboratory staff.[11]The medico-social consequences of these exposure are enormous as the HCW could suffer morbidity and death, sometimes psychosocial stress are seen with HCW who survive these infections. [12]The blood borne pathogen (BBP) frequently transmitted to HCW following accidental exposure to infected blood and body secretion include HBV, HCV and HIV.[9, 13]The risk of HIV/AIDS transmission after percutaneous and mucus membrane exposure to HCV infected blood is 0.3% and 0.09%. [8] Risk associated with single parenteral exposure to blood from a source patient who has HBV infection ranges from 2 to 40%[14] about 20-38% of all surgical procedure involve exposure to HIV, HBV, or HCV.[15] The average incidence of sero conversion to HCV positive source ranges from 3 – 7%.[16] Annual estimated population of HCW exposed to blood borne pathogens globally were 2.6% for HCV, 5.9% for HBV and 0.5% for HIV, which constitutes about 16,000 HCV infections and 66,000 HBV infections in HCW worldwide.[17]

A study involving all surgical and emergency medicine residents, reveals that knowledge on USP and mode of acquiring pathogens from BBF was abysmally poor.[18] It was shown that 90% of medical staff and students, 73% of nurses and midwife and up to 85% of nursing and midwifery students had knowledge of USP acquired from training.[4] Results from a Nepalese study reveals that only 27% of respondents, made up of 158 Doctors and 166 Nurses have received infection control training.[19] In Borno state, results from a study conducted reveals that 37% of respondents had fair knowledge of USP, 13% had good knowledge while 67.8% of women and 32% of men had very good knowledge.[20] Another contrasting result from Obafemi Awolowo University Teaching Hospital in Nigeria, reveals that all respondents were aware of the occupational exposure to hazards. [21]

Findings from this study will be used as empirical tool for advocacy to management

of health care facilities on the need for sustainable health education programme on USP. Also, it will serve as an immeasurable tool, to create awareness and arouse interest of HCW on need to acquire knowledge on USP. The rationale for this research is to domesticate study on USP in Rivers State since no such study have been conducted among HCW in the state. The study objective therefore is to determine the effect of HE intervention on knowledge of USP among PHC workers in Rivers State.

MATERIALS AND METHOD

The study was carried out among health care workers (HCW) in PHCC in Rivers State, located in south south geo-political region of Nigeria. The study is a quasi-experimental study which involves an assessment of health care workers knowledge of USP. It included a pre intervention and post intervention periods. Intervention was by means of health education on USP. The study population included primary health care workers randomly selected in PHCC, especially those involved in clinical care of patients notably medical and dental doctors, nurses, midwives, community health extension workers (CHEWS), community health officers (CHO) ward maid/auxiliary and laboratory technicians, all with a combined staff strength of 2,528 and who must be a permanent staff of the facility. However, temporary /casual workers and staff who did not give consent to the study were excluded. A total sample size of 366 was derived for both study and control group including adjustments made for attrition using the formula for conducting experimental study [32]. A multistage sampling technique was used involving drawing up list of all 23 local government area (LGA) which constituted the sampling frame from which by way of ballot, all LGA were assigned into either a study group (12LGA) or control group (11 LGA). All functional PHCC in each group i.e. PHCC in study LGA (study group PHCC) and control LGA (control group PHCC) were used to assign PHCC into study. By sampling proportionate to size, some PHCC were selected from each LGA i.e. if a selected LGA has 6 PHCC and another LGA 12 PHCC, and another LGA 18 PHCC etc. then, the PHCC were then enlisted in the ratio 2:4:6. Systematic sampling technique was used to determine the particular PHCC that was then enlisted from each LGA. The PHCC were then stratified according to staff strength of each PHCC and total sample size was shared among PHCC by proportionate allocation using the formula.

It is important to note that selected PHCC from all LGA were enlisted for this study which eliminates selection bias which may arise conducting this study in PHCC in one LGA. Also, respondents from different cadre of HCW were proportionately enlisted in this study to determine the effect of the intervention in each category.

$$\text{Sample size for each PHCC} = \text{staff strength of } \mathbf{X} \text{ total sample} \times \frac{\text{Selected PHCC size for study}}{\text{Total number of staff in all selected PHCC}}$$

In selected PHCC list of all eligible staff was used as a sampling frame from which the required number of respondents was chosen for each PHCC by ballot. Enrolment of HCW

into study was done with due consideration to cadre of staff and was selected by sampling proportionate to size of staff in each cadre. E.g. if there were 2 Doctors, 4 midwives, 8 nurses, 2 laboratory technicians etc., they were enlisted in the ratio of 1:2:4:1. The study instrument was a semi structured self-administered questionnaire prepared in written English language which was adapted by researcher. The questionnaire elicited information on socio demographic characteristics and knowledge of USP from respondents.

Data Collection Method

This involves a pre intervention data collection which involved issuing study questionnaire to all respondents, health education intervention on USP was administered to intervention group only and a post intervention phase which took place six months after intervention involving all respondents in intervention and control groups. However, after the study, respondents in the control group were offered health education on USP.

The intervention phase involved health education (HE) on USPs given to intervention group by the researcher while the control group did not receive any HE. The HE for HCW (Respondents in intervention group only) was given by the researcher and research assistants at the main Hall of the University of Education, St. John's campus.

The training involved intensive lectures using training modules, questions and answer sessions, role plays, group discussions, demonstrations and counter demonstrations on use of protective equipment such as gloves, goggles, aprons, boots and facemasks. Also the respondents were taught how to make sharp disposal containers. The HE included the use of Pictures, posters, films and videos on USP.

One hundred and eighty three respondents (intervention group respondents) were invited for the training in three batches of 61 respondents.

The training lasted six days (Monday to Saturday) with each batch receiving training for two days. Each training day had two sessions which lasted three hours each with tea break in between the sessions and lunch afterwards. Training held from March 25 to March 30 2013.

Data Management

Weights were attached to each question in the questionnaire to create a composite score of knowledge. Interpretation of score was used on an adapted grading scale. Points were awarded on a discrete basis using a Likert scale of 0-10. Respondents whose score translate to 7 and above were classified as having good knowledge, those whose score were 4 – 6 were classified as having fair knowledge while those whose score were 3 and below were classified as having poor knowledge.

Data Analysis

Analysis of data was done using SPSS version 17 software. Results on outcome variables, dependent and independent variables were presented in simple percentages on frequency distribution table. A bivariate

analysis of outcome variable using Chi-square test for categorical data and students T – test for quantitative data. Level of statistical significance was set a p-value of 0.05 (5%) Ethical clearance was obtained from research and ethics committee of Rivers State Hospital management board. Permission was also obtained from Rivers State primary health care management board with written consent obtained from respondents after explaining study protocol

RESULTS

A total of three hundred and sixty-six HCW were recruited for the study with 183 respondents each for study and control group respectively. Three hundred and sixty-three respondents completed the study with attrition rate of 1%, 181(1.1%) for study and 182 (0.5%) for control group respectively. At baseline there were 52(28.4%) males and 131 (71.6%) female in study group with 56(30.6%) males and 127(69.4%) females in control group respectively. table 1 – socio demographic data of respondents.

Table 1: Socio-demographic data

Characteristics	Study group n=183 Freq. (%)	control group n=183 Freq. (%)	X^2	P value
Sex				
Male	52 (28.4)	56 (30.6)	0.2	0.6
Female	131(71.6)	127(69.4)		
Religion				
Christianity	179(97.8)	181(98.9)	0.2	0.4
Others	4(2.2)	2(1.1)		
Age (years)				
20-29	54(29.5)	50(27.3)		
30-39	64(35.0)	61(33.3)	1.0	0.8
40-49	43(23.5)	44(24.0)		
	22(12.0)	28(24.0)		
Tribe				
Ikwerre	56(30.6)	49(26.8)		
Kalabar	48(26.2)	53(29.0)	1.4	0.8
Ogoni	41(22.4)	47(25.7)		
Etche	21(11.5)	20(10.9)		
Others	17(9.3)	14(7.6)		
Mean years of work experience				
0-4	18(9.8)	12(6.6)		
5-9	61(33.3)	59(32.2)		
10-14	70(38.3	66(36.1)	2.9	0.5
15-19	13(7.1)	20(10.9)		
⩾20	21(11.5)	23(14.2)		
Academic qualification				
FSLC (primary)	15(8.2)	17(9.3)		
WAEC (secondary)	27(14.8)	26(14.2)		
Diploma	92(50.3)	90(49.2)	0.3	0.9
Bachelor	41(22.4)	43(23.5)		
Higher Degree	8(4.3)	7(3.8)		
Cadre of HCW				
Medical officer	23(12.6)	27(14.8)		
Lab. Worker	46(25.1)	48(26.2)		
Nurse/midwives	33(18.0)	27(14.7)	1.0	0.9
Ward maids	23(12.6)	24(13.1)		
CHO/CHEW/JCHEW	33(18.0)	57(31.2)		

2.0 Knowledge of USP For Study Group

For the study group, 44 (24.0%), 56(30.6%) and 83(45.4%) at baseline had good, fair and poor knowledge respectively on awareness of USP while 162(88.5%) 12(6.6%) and 7(4.9%) had good, fair and poor knowledge after intervention respectively ($p<0.01$) table 2 and 3.

Table 2: Knowledge of universal safety precaution for study group

VARIABLES		Study group at baseline (n=183) Freq. (%)	study group after intervention (n=181) Freq. (%)	X^2	P
Awareness of universal safety precaution (USP)	Good Fair Poor	44(24.0) 56(30.6) 83(45.4)	162(88.5) 12(6.6) 7(4.9)	160.2	<0.001*
Correct meaning of USP	Good Fair Poor	39(21.3) 88(40.1) 56(30.6)	122(67.4) 30(16.6) 29(16.0)	79.9	<0.001*
What is policy on USP at place of work	Good Fair Poor	99(54.1) 47(25.7) 37(20.2)	118(65.2) 42(23.2) 21(16.6)	6.3	<0.001*
Common organism that can be transmitted via blood fluid (BBF)	Good Fair Poor	93 (50 .8) 52 (28.4) 38(20.8)	152 (84 .0) 17(9.4) 12(6.6)	45.5	<0.001*
Diseases caused by these organisms		90 (492) 37(20.23) 56(30.6)	158(87.3) 19(10.5) 4(2.2)	69.5	<0.001*

Note: * statistically significant difference

Table 3: Knowledge of USP for study group

VARIABLES		STUDY GROUP AT BASELINE N=183 FREQ. (%)	STUDY GROUP AFTER INTERVENTION N=181 FREQ. (%)	X^2	P
Commonly named diseases that can be acquired from suspected infectious BBF	Good	162(88.5)	174(96.1)	7.8	
	Fair	12(6.6)	5(2.8)		0.02*
Other route of transmission of above disease	Poor	9(4.9)	2(1.1)	33.8	
				12	P<0.001 *
	Good	90(54.1)	149(82.3)		
Application of USP to all patients irrespective of their perceived health status	Fair	60(32.8)	25(13.8)		
	Poor	24(1 3. 1)	7(3.9)		P<0.001 *
				111.1	
	Good	158(86.3)	129(71.3)		
Isolation for all patients with blood borne infection	Fair	16(8.7)	29(16.1)	86.7	
	Poor	9(5.0)	23(12.7)		P<0.001 *
				42.6	
	Good	26(14.2)	123(67.8)	14.6	P<0.001 *
Recapping needle after use	Fair	58(31.7)	29(16.1)	2.6	
	Poor	99(54.1)	29(16.1)		
	Good	69(37.7)	133(73.4)		P<0.001 *
Washing with common detergent is enough to clean instruments	Fair	21(14.5)	36(19.9)		
	Poor	93(50.8)	12(6.7)		
	Good	75(40.9)	124(68.5)		P<0.001 *
Contact with sweat might not require application of USP	Fair	42(22.9)	41(22.7)		
	Poor	66(36.2)	16(8.8)		
	Good	89(48.6)	122(67.0)		P<0.001 *
Self-assessment of USP is adequate	Fair	43(23.5)	35(19.2)		
	Poor	51(27.9)	25(13.8)		
	Good	55(30.1)	137(81.2)		
	Fair	40(21.9)	24(13.3)		
	Poor	88(48.0)	10(5.5)		

Note * statistically significant difference

Table 4: Knowledge of USP for control group

VARIABLES		control group at baseline (n=183) Freq. (%)	control group after intervention (n=181) Freq. (%)	X^2	P
Awareness of universal safety precaution (USP)	Good	50(27.3)	53(29.2)		
	Fair	68(37.2)	67(36.8)	0.2	0.92
	Poor	65(35.5)	62(33.9)		
Correct meaning of USP	Good	45(24.6)	50 (2 7.4)		
	Fair	90(49. 1)	86(4 7.3)	0.4	0.821
	Poor	48(26.3)	46(25.3)		
What is policy on USP at place of work	Good	94(5 1.4)	90(49.5)		
	Fair	33 (18.0)	39(2 1.4)		0.716
	Poor	56 (30. 6)	53(29. 1)	0.7	
Common organism that can be transmitted via blood fluid (BBF)	Good	89(48.6)	92(50.5)		
	Fair	37(20.2)	39(21.4)		0.805
	Poor	57(31. 2)	51(28.1)	0.4	
Diseases caused by these organisms		97 (53.0)	100 (54 .9)		
	Good	41(22.4)	44(24.2)		0.691
	Fair	45(24.6)	38(20.9)	0.7	

Table 5: Knowledge Of USP for control group

VARIABLES		CONTROL GROUP AT BASELINE N=183 FREQ. (%)	CONTROL GROUP AFTER INTERVENTION N=181 FREQ. (%)	X^2	P
Commonly named diseases					
that can be acquired from		159(86.9)	161(88.5)		
suspected infectious BBF	Good	14(7.6)	10(5.5)		
	Fair	10(5.5)	11(6.0)	0.7	0.691
Other route of transmission of above disease	Poor				
		91(49.7)	96(52.7)		
	Good	65(353)	60(33.0)	0.3	0.839
Application of USP to all patients irrespective of their perceived health status	Fair	27(14.7)	26(14.3)		
	Poor				
		141(77.0)	139(76.4)		
Isolation for all patients with blood borne infection	Good	20(11.0)	19(10.4)	0.1	0.939
	Fair	22(12.0)	24(13.2)		
	Poor				
Recapping needle after use					
		29(15.8)	33(18.1)		
	Good	63(34.5)	60(33.0)	0.4	0.839
	Fair	91(49.7)	89(48.9)		
Washing with common detergent is enough to clean instruments	Poor				
		71(38.8)	68(37.4)		
	Good	26(14.2)	30(16.5)	1.6	0.44
	Fair	86(46.9)	84(46.1)		
Contact with sweat might not require application of USP	Poor				
		80(43.8)	78(42.9)		
	Good	45(24.5)	47(25.8)	0.1	0.963
Self-assessment of USP is adequate	Fair	58(31.7)	57(31.3)		

Effect of Health Education on Knowledge of USP

For study group at baseline, the total composite score for good, fair and poor knowledge for respondents were, 1088(45.7%), 554(23.3%) and 737(31.0%) respectively. After intervention, total composite score for good, fair and poor knowledge for respondents were 1850(78.6%) 321(13.6%) and 183(7.8%) respectively (P<0.001). For control group, total composite score for good, fair and poor knowledge respectively were 1098(46.2%), 585(24.6%) and 696(29.2%) respectively. After intervention total composite score for good, fair and poor knowledge were 1119(47.3%), 585(24.7%) and 661(28.0%) respectively (P=0.6) table 6

Table 6: Effect of health education on knowledge of USP

VARIABLE	STUDY GROUP						CONTROL GROUP					
	BASELINE N=183 FREQ. (%)			POST INTERVENTION N=181 FREQ. (%)			BASELINE N=183 FREQ. (%)			POST INTERVENTION N=182 FREQ. (%)		
	good	fair	poor	good	fair	poor	good	fair	poor	good	fair	poor
Awareness of USP	44 (24.0)	56 (30.6)	83 (45.4)	162 (88.5)	12 (6.6)	7 (4.9)	50 (27.3)	68 (37.2)	65 (35.2)	53 (29.2)	67 (36.8)	62 (33.9)
Correct meaning of USP	39 (21.3)	88 (40.1)	56 (30.6)	22 (67.4)	30 (16.6)	29 (16.0)	45 (24.6)	90 (49.1)	48 (26.3)	50 (27.4)	86 (47.3)	45 (25.3)
Written policy at place of work	89 (48.6)	29 (15.9)	65 (35.5)	155 (85.6)	19 (10.5)	7 (3.9)	94 (51.4)	33 (18.0)	56 (30.6)	90 (49.5)	39 21.4)	53 (29.1)
Common org. transmitted via BBF	93 (50.8)	52 (28.0)	38 (20.8)	152 (84.0)	17 (9.4)	12 (6.6)	89 (48.6)	37 (20.2)	57 (31.2)	92 (50.5)	39 (21.4)	51 (28.1)
Diseases caused by these org.	90 (49.2)	37 (20.2)	56 (20.2)	158 (87.3)	19 (10.5)	4 (2.2)	97 (53.0)	41 (2.4)	45 (24.6)	100 (54.9)	44 24.2)	38 (20.9)
Disease acquired from infected BBF	162 (88.5)	12 (6.6)	9 (4.9)	174 (96.1)	5 (12.8)	2 (1.1)	159 (86.9)	14 (7.6)	10 (5.5)	161 (88.5)	10 (5.5)	11 (6.0)
Other routes of transmission	99 (54.1)	60 (32.8)	24 (13.1)	49 (82.3)	25 (13.8)	7 (3.9)	91 (49.7)	65 (35.5)	27 (14.7)	96 (52.7)	60 (33.0)	26 (6.0)
Application of USP to all patients	158 (86.3)	16 (8.7)	9 (5.0)	129 (71.3)	29 (16.0)	23 (12.7)	141 (77.0)	20 (11.0)	22 (12.0)	139 (76.4)	19 (10.4)	24 (13.2)
Isolation for all patients with blood	26 (14.2)	58 (31.7)	99 (84.1)	123 (67.9)	29 (16.1)	29 (16.1)	29 (15.8)	63 (34.5)	91 (49.7)	33 (18.1)	60 (33.0)	89 (48.9)
Recapping needle after use	69 (37.7)	21 (14.5)	93 (50,6)	133 (73.4)	36 (19.9)	12 (6.7)	71 (38.8)	26 (14.2)	86 (46.4)	68 (37.4)	30 (16.5)	84 (46.1)
Washing with detergent is enough	75 (40.9)	42 (22.9)	66 (36.2)	124 (68.5)	41 (22.7)	16 (8.8)	80 (43.8)	45 (24.5)	58 (31.7)	78 (42.9)	47 (25.8)	57 (31.3)
Contact with sweat requires USP	89 (48.6)	43 (23.5)	51 (27.9)	122 (67.0)	35 (19.2)	25 (13.8)	91 (49.7)	46 (25.1)	46 (25.1)	93 (51.1)	44 (24.2)	45 (24.7)
Self-assessment of USP	55 (30.1)	40 (21.9)	88 (48.0)	147 (81.2)	24 (13.3)	10 (5.5)	61 (33.3)	37 (20.2)	85 (46.4)	66 (36.2)	40 (22.0)	76 (41.8)
Total	1,088 (45.7)	554 (23.3)	737 (31.0)	1850 (78.6)	321 (13.6)	183 (7.8)	1098 (46.2)	585 (24.6)	696 (29.2)	1119 (47.3)	585 (24.7)	661 (28.0)

Table 7: Socio demographic data

characteristics	Study group n=183 Freq. (%)	control group n=183 Freq. (%)	X^2	P value
Sex				
Male	52 (28.4)	56 (30.6)	0.2	0.6
Female	131(71.6)	127(69.4)		
Religion				
Christianity				
Others	179(97.8)	181(98.9)	0.2	0.4
	4(2.2)	2(1.1)		
Age (years)				
20-29				
30-39	54(29.5)	50(27.3)		
40-49	64(35.0)	61(33.3)	1.0	0.8
-	43(23.5)	44(24.0)		
	22(12.0)	28(24.0)		
Tribe				
Ikwerre				
Kalabar	56(30.6)	49(26.8)		
Ogoni	48(26.2)	53(29.0)	1.4	0.8
Etche	41(22.4)	47(25.7)		
Others	21(11.5)	20(10.9)		
	17(9.3)	14(7.6)		
Mean years of work experience				
0-4				
5-9	18(9.8)	12(6.6)		
10-14	61(33.3)	59(32.2)		
15-19	70(38.3	66(36.1)	2.9	0.5
⩾20	13(7.1)	20(10.9)		
	21(11.5)	23(14.2)		
Academic qualification				
FSLC (primary)				
WAEC (secondary)	15(8.2)	17(9.3)		
Diploma	27(14.8)	26(14.2)		

DISCUSSION

In this study there was statistically significant difference in knowledge of the meaning and concept of USP in study group following intervention (21.3% to 67.4%). The findings in this study concurs with the result obtained from an Indonesian study where 73% of nurses and 90% of medical staff had good knowledge of USP following training [4] however, contrast in result was seen in a study conducted among nurses in

Benin city Nigeria which reveals fair knowledge (52%) of meaning of USP.[23] The difference could be due to difference in cadre of HCW studied.

In this study, the mean age of respondents was 35 ± 2years. This was dissimilar to the study conducted by K. vas et-al where the mean age of respondents was 25 ± 2years. Also, this study recorded mean years of working experience for respondents as 10 ± 2years which contrasted with similar study by K. vas et-al in which mean years of working experience was 6.8 ± 7years.[22]This variance could be due to government policy and geographical area of study.

Knowledge of concept of USP improved significantly after intervention in this study. This contrasted with an Indonesian study which reveals comparatively good knowledge (85.6%) of concept of USP before intervention. This was mainly due to policy on regular training and retraining of staff on USP by hospital management. [4] An Algerian study showed similarity with this study, which reveals poor knowledge of concept of USP by HCW following lack of training and awareness campaign.[24] Results obtained from this study reveals that most HCW work in centers that do not have a written policy on USP and therefore had poor knowledge of policy on USP.

A contrast was seen in a similar study where 75% of respondents had good knowledge of policy on USP, [3] dissimilarity also was seen in a study conducted in OAUTH Nigeria with HCW expressing good knowledge of policy of USP. [21] Management commitment to ensure awareness of USP in facilities, regular training on USP and placement of written policy on USP in various units and wards was responsible for the impressive knowledge on policy of USP shown in the studies reviewed above.

Other findings from this study before intervention shows that most respondents do not have knowledge of the organisms that can be transmitted via blood and body fluid (BBF), the type of disease that can be transmitted via BBF, and types of body fluid that can transmit infectious diseases. These parameters were greatly improved upon following intervention. Inadequate knowledge on mode and type of body thud fluid that can transmit these infections could explain the high risk of perception among HCW as seen in a study conducted in Benin City Nigeria to determine HCW knowledge on HIV/AIDS. [3]

A major contributory factor identified in this study to lack of knowledge of USP was lack of training and retraining of HCW. However, post intervention knowledge on USP greatly improved. A similar factor was also identified as responsible for poor knowledge of USP in a study conducted in USA from 1993 to 1996, in which following worker education, knowledge on USP significantly improved. [25] Also in Khartoum Sudan, similar result was obtained whereby, health education intervention significantly improved all parameters used in assessing knowledge of USP. [26]Further studies conducted in Nigeria concur with the facts that health education intervention could improve the knowledge of HCW on USP [27] however, no study reviewed have shown a digression from the result obtained from this study.

Workplace policies have shown to improve HCW knowledge of USP in this study. The improvement in knowledge of USP for the study group could be attributed to establishment of written workplace policy on USP which were procured and placed at strategic points in each study PHCC by the researcher and author of this article. The result concurs with survey conducted in a teaching hospital in south eastern part of Nigeria in 2009 in which it was shown that lack of display and placement of guideline on USP [28] poor policy for safety practice, inadequate and poorly developed safety protocol were critical factors which influenced knowledge of USP.[29]

In this study, poor hospital management was identified as factors affecting knowledge of USP. However, post intervention with advent of written policy on USP, framework established for training and retraining of HCW and placement of instructional material on USP, knowledge greatly improved on USP. This observation was in congruence with other studies which implicated poor training and retraining of HCW and poor guideline to implement policies as factors affecting knowledge of USP.[30,31]

Finally, findings from this study have obvious public health importance considering frequent contact with BBF by HCW who apparently have poor knowledge on how these infections are transmitted. It also has huge social and economic implications which could arise from disability, long standing illness with attendant cost which could deplete family income and give rise to social disharmony at home consequent upon HCW demise.

CONCLUSION

This study has shown that HCW's in PHCC have poor knowledge of USP despite the damning consequences of such ignorance to their health and subsequently overall public health interest. Intervention by means of health education showed a significant and remarkable enhancement in knowledge, which implicitly contributed to overall improvement in public health. It was therefore recommended that regular training and retraining of HCW on USP with establishment or workplace policy on USP will to a large extent shore up gap in knowledge of USP.

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