

A Study of Health and Safety Concerns of Nursing Students in South-South Nigeria

Edet O.B.*

Department of Nursing Science, Faculty of Allied Medical Sciences,
University of Calabar; PMB 1115, Calabar 540242, Cross River State, Nigeria

Edet E. E.

Department of Community Medicine, University of Calabar Teaching Hospital;
PMB 1115, Calabar 540242, Cross River State, Nigeria

Akpan-Idiok P.A.

Department of Nursing Science, Faculty of Allied Medical Sciences,
University of Calabar; PMB 1115, Calabar 540242, Cross River State, Nigeria

Bassey, P.

Department of Public Health, Faculty of Allied Medical Sciences,
University of Calabar; PMB 1115, Calabar 540242, Cross River State, Nigeria

Abstract

Background: Creating a positive practice environment for nursing students, who constitute a critical mass of the requisite health sector workforce in developing countries that are plagued by an acute shortage of health manpower, has been advocated. Very little is known about their safety concerns in South-South Nigeria.

Methods: This descriptive cross sectional survey examined the health and safety concerns of nursing students in Calabar & Uyo, South-South geopolitical zone of Nigeria, as a basis for planning an appropriate safety education programme. A simple random sample of 297 nursing students in their penultimate (second) and final (third) year of study were selected for the study. Data collection tool was a structured validated, 21-item self-reporting questionnaire. Analysis was carried out using the Statistical Package for Social Sciences (SPSS) version 14.

Results: The mean age of the students was 26 + / - 6.6 years, 160 (53.9%) and 137 (46.1%) were in their penultimate and final year respectively. The three topmost concerns of the respondents were contracting HIV/AIDS or Hepatitis B from a needle stick injury 187 (63.0%), infection with tuberculosis or other infectious diseases 180 (61.0%) and acute/chronic effect of stress and overwork 99 (33.0%). The least concerns of the students included, being exposed to radiations from lasers or burns from electrocautery devices 31(10.0%) and sustaining a back injury 31 (10.0%).

Conclusion: Safety education should address the expressed student concerns, namely, occupational transmission of blood borne infections, tuberculosis and stress. Provision of HBV vaccination, BCG vaccination, personal protective equipment, auto-destruct safety needles/syringes and sharp boxes, promotion of good nutrition and personal hygiene; institution of occupational health services in institutional training facilities serving nursing students in training are also recommended to sustain a positive practice environment for the students.

Keywords: Nursing Students, Health Concerns, Safety Concerns, Needlestickinjury

1. Introduction

Optimal work environments require professional staff, adequate human resources, excellent management, onsite training and protection of staff's health and safety (Wang, 2012). Health and Safety should be every health workers' concern because of the likelihood of exposure to different types of concomitant occupational risks such as infections, chemical agents, carcinogens, musculoskeletal disorders, accidents and radiation (Hignett, Fray, Rossi, Tamminen-Peter, Hermann, Lomi, & Johnsson, 2007).

Work-related injuries and illnesses among nurses are well tracked and recorded in developed countries (De Castro, Cabrera, Gee, Fujishiro, & Tagalog, 2009). The most prominent safety issues affecting nurses previously were needlestick injuries, workplace violence and musculoskeletal injuries due to handling of patients (Aiken, Sloane, & Klocinski, 1997; Nelson, 2003; Henderson, 2003; Catlette, 2005; de Castro, Hagan & Nelson, 2006). Other safety matters which later emerged included concerns about workload, work hours, job stress and fatigue (Yip, 2001; Trinkoff, Storr, & Lipscomb, 2001; McNeely, 2005; Scott, Hwang & Rogers, 2006; Trinkoff, Le, Geiger-Brown, Lipscomb, & Lang (2006); Trinkoff, Le, Geiger-Brown & Lipscomb, 2007). These issues have led to millions of nursing hours worldwide being lost to injury and illness resulting in a higher rate of absenteeism for nurses (RNAO, 2008; NSW, 2013). This has in one way or the other resulted in the shortage of nurses occasioned by the attrition of nurses who have left the profession at a time when the nurse human resource capacity of most health care systems are yet to be fully attained (Stone, Clarke, Cimiotti, &

Correa-de-Araujo, 2004).

Observations by International Council of Nursing and Institute Of Medicine earlier established that Nurses work environment is associated with current and future shortage of Nurses (ICN, 2006; IOM, 2004). This gives great concern for the need for action to improve the work environment for nurses which invariably include nursing students who are an integral part of the human resource base of the health care delivery system based on WHO (2006) definition of the Health-care-worker as all the persons involved in activities whose primary resolve is to improve health. CDC (1998) also defined a health-care-worker (HCW) as any person including an employee, student, contractor, attending clinician, public-safety worker or volunteer, whose activities involve contact with patients in a health-care or laboratory setting. Nursing students constitute part of the health workforce, hence safety of nursing students from workplace – induced injuries and illnesses is of paramount importance to the students themselves, the nursing profession and the patients they serve. Enhancing the nursing students work environment may attract increased number of students to nursing and motivate practicing nurses to develop new models of delivering care to patients which hopefully could help retain nurses in the profession (Stone, Hughes & Dailey, 2008). Improving the work environment will ultimately lead to improvement in the quality and safety of patient care.

Most studies on occupational health and safety among nurses were carried out in North America, Europe (Castro et al, 2009). A number of studies focusing on occupational exposures have also been carried out in Africa, the Middle East, Asia and the Phillipines (Ansa, Udoma, Umoh & Anah, 2002; Arafa, Nazel, Ibrahim & Attia, 2003; Celik, Celik, Agirbas & Ugurluoglu, 2007; Hirsanthikul, Tanthitippong & Jiamjarasrangsi, 2006; Ilhan, Durukan, Aras, Turkcuoglu & Aygun, 2006; Nsubuga & Jaakkola, 2005; Okeke, Ladep, Agaba & Malu, 2008; Castro et al, 2009; Johnson, Asuzu, & Adebisi, 2013). In 2001 and 2011, the American Nurses Association (ANA) carried out an online survey of health and workplace safety issues among 4,800 nurse to which 4,614 nurses responded, which provided insight into their awareness and concerns about workplace hazards. When asked to rank their top three health concerns, the respondents reported acute and chronic effects of stress (74.0%) and being overworked, a disabling back injury (62.0%) and contracting infectious diseases (43.0%) (Houle, 2001; Dawson, 2013). Although WHO and ICN have advocated the need to protect international health work force, there has been paucity of occupational health and safety studies about nurses and nursing students in developing countries (ICN, 2000; ICN,2006; Wilburn, 2004). A study similar to the ANA study was carried out in the Philippines. Cross-sectional data were collected from attendees of the Philippine Nurses Association (PNA) 2007 Annual National Convention held in Cagayan de Oro City, Philippines. One thousand survey questionnaires were distributed and only a total of 690 questionnaires returned were completed enough for analysis. The respondents were asked to choose three safety and health concerns from a list provided. The three most frequently chosen concerns were: acute and chronic effects of stress and overwork; infectious respiratory diseases and needle stick injury. Other concerns listed were continuous standing, exposure to environmental tobacco smoke, noise, lack of systems for managing bloody waste, exposure to ultraviolet rays used for environmental disinfection, and travel-related injuries.

There is equally paucity of studies assessing the occupational health and safety concerns of nursing students in Nigeria. Previous published studies found in this area were among registered nurses and carried out in the U.S.A. and the Philippines. Hence the need for this study to determine nursing students' health and safety concerns in Calabar and Uyo, South-South, Nigeria with the aim of improving nurses' and nursing students' workplace conditions.

1.2 Purpose of study

The purpose of the study was to determine nursing students' health and safety concerns, occupational injury and perceived risk of acquiring of HIV/AIDS in Calabar and Uyo.

1.3 Hypotheses

Ho₁: There is no statistically significant difference in exposure to occupational injuries among nursing students in Calabar and Uyo.

Ho₂: There is no statistically significant difference in nursing students' perception about acquiring HIV/AIDS and Hepatitis B during clinical experience in Calabar and Uyo

1.4 Significance of the study

It is expected that clinical nurse managers will apply the findings of the study in counseling nursing students on clinical posting on prevention of percutaneous injuries. The findings of the study can also be used to review the policy on training in safety education for nursing and midwifery students.

1.5 Delimitation of the study

The study respondents were delimited to nursing students who were in the second year and three hundred level

of training upwards in their respective institutions.

2. Methods

2.1 Research design

A descriptive, cross-sectional and comparative design was used.

2.2 Study setting

The sample was drawn from Cross River and Akwa Ibom states in the South-South geopolitical zone of Nigeria which has a tropical climate. The states constitute two of the thirty six states of Nigeria. The study settings are the Cross River State School of Nursing Calabar; School of Nursing, St. Margaret's Hospital, Calabar and the only School of Nursing in Akwa Ibom State, School of Nursing, St. Luke's Hospital, Uyo.

2.3 Study Population

This comprised of target and accessible population. The target population which is the entire population in which the researcher is interested (Polit, Beck and Hungler, 2001) was made up of all nursing students in Cross River and Akwa Ibom states, totaling 1,356 (Personal communication, Ministry of Health, Cross River and Akwa Ibom, states). Table 1 shows the distribution of the target & accessible population and sample by institution and location.

Table 1. Distribution of target and accessible population by Institution and location

Location of study participants	Target population	Accessible	Calculated Sample	1.18 Mark up	Actual Sample
Nursing students, Calabar	700	466	128	158	158
Nursing students, Uyo	656	237	109	139	139
Total	1356	703	237	297	297

2.4 Sample and sampling technique

A total of 297 nursing students made up of 158 from Calabar and 139 from Uyo constituting about 1/5 (22.0%) of the target population (1356), or 1/2(42.3%) of the accessible population (703) were recruited into the study, using simple random sampling technique.

2.5 Instrument for data collection

A 17 item semi-structured questionnaire labeled "Survey on Health and Safety concerns of nursing students" constituted the only instrument for data collection which was divided into sections A and B. Section A elicited information on bio-data of respondents. Section B had questions on health and safety concerns including information on needle stick injury. The questionnaires were administered by the researcher and her assistant in person. The accessible population was assembled in a classroom in each of the institutions, after obtaining administrative permission from the management of the schools. The researcher explained the purpose of the study, sought informed consent of the participants and selected the sample using the "lucky dip" method. Following this the researcher went through the items in the questionnaire with the participants, to ensure that it was understood, the respondents were then allowed to respond without prompting and completed questionnaire were collected on the spot.

2.6 Ethical consideration

The basic ethical principles of the Helsinki Declaration applied in research involving human participants were strictly adhered to in the study. These are respect for persons (autonomy), beneficence (non-maleficence) and justice (CIOMS and WHO, 2002). The participants were informed that they have the right to decide voluntarily, whether to participate in the study or not without the risk of exposure to any penalty or detrimental treatment. The participants were allowed to ask questions, refuse to give information or to terminate their participation; they were not exposed to any form of coercion during the course of the study. Thus eligibility to participate in the study was based on the participants' willingness to take part. As a result of this, informed consent was obtained from participants before taking part in the study.

2.7 Data analysis

All the 297 questionnaires distributed to nursing students in Calabar and Uyo were retrieved, giving a 100.0% response rate. After checking and coding, data entry and analysis was performed using the Statistical Package for the Social Sciences (SPSS) Software version 20 for Windows. The research objectives were determined using percentage analysis while the formulated hypothesis was tested using independent samples two tailed t- test at 0.05 level of significance.

3.0 Results

3.1. Socio-demographic profile of respondents

Table 2 shows the socio-demographic data of respondents. The sample was drawn from Calabar and Uyo as follows: Most 158 (53.2.0%) of the respondents were from Calabar while 139 (46.8%) were from Uyo. Majority 262 (88.0%) of the respondents were females while only 35 (12.0%) were males, giving a male female ratio of 1:8. The mean age of the respondents was 26±6.6. Majority 231 (78.0%) of the respondents were never married, 63 (21.0%) were married, 2 (1.0%) were either widowed/separated. Majority 294 (99.0%) were Christians, 2 (0.7%) were Muslims and 1 (0.3%) was an Eckankar. With regards to educational level, 203 (68.0%) had West African School Certificate, while 94 (32.0%) had diplomas. Most of the respondents 160 (53.1%) were in their penultimate year while 137 (46.1%) were in their final year.

Table 2: Socio-demographic characteristics of respondents (N = 297)

Characteristics	Number	Percent	Mean	SD
Study setting				
Nursing students Calabar	158	53.2		
Nursing Students Uyo	139	46.8		
Gender				
Female	262	88.0		
Male	35	12.0		
Age			26	6.6
Marital status				
Never married	231	78.0		
Married	63	21.0		
Widowed/Separated	3	1.0		
Religion				
Christianity	294	99.0		
Islam	2	0.7		
Eckankar	1	0.3		
Highest educational level attained				
WAEC	203	68.0		
Diploma	94	32.0		
Year of study				
Penultimate year	160	53.9		
Final year	139	46.1		

3.2 Objective 1: To compare nursing students' health and safety concerns in Calabar and Uyo

To determine this objective, percentage analysis was carried out on the responses by the respondents to the ten health and safety concern items on the questionnaire. The respondents were asked to select top three concerns of their choice from the list. The results of the analysis are presented in Table 3. Table 3 shows that most 187 (63.0%) of the respondents were concerned about getting HIV/AIDS and Hepatitis B from a needle stick injury, 180 (61.0%) are concerned about getting infected with tuberculosis or other infectious diseases, while 99 (33.0%) are bordered about the acute/chronic effect of stress and overwork. Significantly, more respondents from Uyo, 101 (73.0%) were concerned about getting HIV/AIDS and Hepatitis from a needle stick injury and also being infected with tuberculosis or other infectious diseases 90 (65.0%), compared with their counterpart from Calabar. The least concerns of the students 31 (10.0%) were sustaining a back injury, or being exposed to radiations from lasers or burns/shock from electrocautery devices.

Table 3. Percentage analysis of nursing students' health and safety concerns in Calabar and Uyo

Health and safety concerns variables	Nursing students in Calabar n = 158				Nursing students in Uyo n = 139				TOTAL N = 297	
	YES F	YES %	NO F	NO %	YES F	YES %	NO F	NO %	YES F	NO F
*Getting HIV/AIDS or Hepatitis from a needle stick injury	86	54	72	46	101	73	38	27	187 63	110 37
Infection with tuberculosis and other infectious diseases	90	57	68	43	90	65	117	40	180 61	117 39
Acute, chronic effect of stress	55	35	103	65	44	32	95	68	99 33	198 67
Toxic effects from exposure to chemicals	32	20	126	80	41	30	98	70	73 25	224 75
Exposure to hazardous drugs like chemotherapy	30	19	128	81	31	22	108	78	61 21	236 80
An on-the-job assault	26	17	132	83	23	17	116	83	49 17	248 83
Fatigue related car accident after a shift	19	12	139	88	27	19	112	81	46 16	251 84
Developing a latex allergy	20	13	138	87	22	16	117	84	42 14	255 86
Sustaining a back injury	17	11	141	89	14	10	125	90	31 10	266 90
Exposure to radiations from lasers or burns from electrocautery devices.	16	10	142	90	15	11	124	89	31 10	266 90

Chi-Square result: * P = 0.001; Calculated (10.540); Table value (3.84) at df (1)

3.2 Hypotheses testing

H₀₁: There is no statistically significant difference in occupational injury among Calabar and Uyo nursing students.

Pearson Chi-square analysis was carried out to test this hypothesis. The dependent variable was occupational injury among nursing students. The results of the analysis presented in Tables 4, shows that prevalence of injury was not significantly different among nursing students in Calabar and Uyo. $\chi^2(1) = 0.548, p = 0.483$.

Table 4: Chi-square statistical analysis of the difference between Calabar and Uyo Nursing students in terms of occupational injury

Location	NEEDLE STICK INJURY				Total		df	X ² Cal	X ² Table	P Value
	Yes N	No %	No N	%	N	%				
Calabar	66 50.8		92	49.2	158	100.0	1	0.548	3.84	0.483*
Uyo	64 49.2		75	50.8	139	100.0				
Total	130 43.8		167	56.2	297	100.0				

Chi-square result: * P > 0.05; Table value (3.84) at df (1)

H₀₂: There is no significant difference in nursing students' perception of risk of acquiring HIV/AIDS and Hepatitis B (HBV) during clinical posting in Calabar and Uyo

To test this hypothesis, the Levene's Test for equality of variance was carried out. Based on the result of the test Unequal variance was assumed for HIV risk perception (p=0.033) while equal variance was assumed

for HBV risk perception ($p=0.085$). An independent t- test analysis was then used to compare the mean responses of the two groups of students. The results of the analyses presented in Table 6 shows that the calculated absolute t-value of 0.386 is lower than the critical t-value of 1.96 at 0.05 level of significance with 274.1 degrees of freedom. With this result, we fail to reject the null hypothesis and conclude that there is no statistically significant difference between the risk perception of acquiring HIV/AIDS among nursing students in Calabar and Uyo. Furthermore Table 6 shows that the calculated absolute t-value of -2.973 is higher than the critical t-value of 1.96 at 0.05 level of significance with 295 degrees of freedom. This means that there is a highly significant difference between the risk perception of acquiring Hepatitis B (HBV) among nursing students in Calabar and Uyo. Uyo respondents ($\bar{x} = 1.76$) perceive greater risk of acquiring Hepatitis B compared to Calabar respondents ($\bar{x} = 1.53$).

Table 5. Summary distribution of respondents by perceived susceptibility to HIV/AIDS/Hepatitis B

Perception Variable	Calabar Nursing students n (%)	Uyo Nursing students n (%)	Total n (%)
Perceived susceptibility to HIV/AIDS	77(48.7)	54(38.8)	131(44.1)
Perceived susceptibility to Hepatitis B	72 (47.1)	81(52.9)	153(51.5)
Total	149(94.3)	135(97.1)	284(95.6)

Table 6. Independent t-test statistical analysis of the difference between, nursing students' perception of risks of acquiring HIV/AIDS and Hepatitis B (HBV) in Calabar and Uyo.

Variable	GROUP	N	Mean	SD	Cal t	Df	Crit t	P value
Perception of risk of acquiring HIV/AIDS	Nursing Students in Calabar	158	1.56	0.63	0.386	274.1	1.96	0.700
	Nursing Students in Uyo	139	1.53	0.73				
Perception of risk of acquiring Hepatitis B (HBV)	Nursing Students in Calabar	158	1.53	0.63	-2.973*	295	1.96	0.003
	Nursing Students in Uyo	139	1.76	0.74				

* Significant at 0.01 level, critical t = 1.96; df = 295

4. Discussion of findings

In this study there was adequate representation from each of the selected training institutions. The positive outcome might be explained by the enthusiasm and co-operation of the school authorities and the respondents. Majority of the students were in the second year of training because, students in second year were proportionately more in number than the other classes. The rationale for selecting only students from second year upwards was to ensure that, the sample included students that have been exposed to clinical posting and more likely to be have been exposed to workplace related injury. Undergraduate nurses included in the study were in 300, 400 and 500 level for similar reasons. The respondents were predominantly females. The finding is consistent with findings in other studies that have branded nursing a female profession (Stone, Clarke, Cimiotti and Correa-de-Araujo, 2004; Parahoo, 1999; Kolade, 1998; Ofi, Sowumi, Edet & Anarado, 2008; Edet, Asuquo, Akpabio, Samson-Akpan, & Ojong, 2015; Edet, Samson-Akpan, Ojong, Akpabio, 2015). The high mean age could be due to inclusion in the study of students who are undertaking the abridged nursing degree programme.

The topmost health and safety concern of the nursing students was getting infected with blood borne pathogens comprising of HIV/AIDS and Hepatitis B through needle stick injury during clinical posting which suggests that they perceive themselves as being susceptible to these infections. This is not surprising, since 66(50.8%) and 64(49.2%) of the nursing students in Calabar and Uyo respectively have previously sustained needle stick injury. Although higher percentage of nursing students in Calabar sustained more injury compared to Uyo nursing students, the difference was not statistically significant, showing that the magnitude of injury was similar among the two groups. The prevalence of injury of 43.8% is high when compared to 99 (27.6%) that was obtained among nursing students in an Ibadan study on knowledge, perception and practice with regards to occupational risks of HIV/AIDS among nursing and midwifery students (Atulomah & Oladepo, 2002). The same study reported 57 (47.5%) prevalence of needle stick injury among midwifery students (Atulomah & Oladepo, 2002) which is similar to the findings in this study.

In contrast, this concern was ranked third by the ANA study respondents while nurses in the Phillipines also did not rank it topmost (Houle, 2001; Dawson, 2013; De Castro, Cabrera, Gee, Fujishiro, & Tagalog, 2009).

In addition, the prevalence rates of HIV/AIDS in the two states which are 6.5% for Akwa Ibom state and 4.4% for Cross River State are higher than the national average of 3.4% from the 2011 sentinel survey (NARHS, 2012). The concern about Hepatitis B can be addressed by updating nursing students' immunization status, through ensuring they receive the required three doses of the Hepatitis B vaccine and a post conversion serological test carried out before they are exposed to the clinical setting. The next prioritized concern which was ranked second by the respondents was getting tuberculosis at work. The respondents concern is understandable because Nigeria has a huge TB burden, for instance in 2013 alone, the total number of TB notifications was 100,401. Out of this number, 88,317 were tested for HIV and 22.0% were found positive for HIV (NACA, 2014). Perhaps one way of dealing with this concern could be by evaluating the BCG immunization status of nursing students on admission to the training programme, the status of those who are tuberculin test negative should be updated and vital information and counseling on other preventive strategies should be provided to the students before posting them to the health facilities for the clinical experience.

The students' third concern was in agreement with the topmost concern expressed by respondents in the two reference studies which was the concern about overwork and stress (Dawson, 2013; De Castro et al., 2009). This may suggest that the students are assigned more duties than they can cope with, a practice which should be curtailed. Students should work under supervision and should not be made to bear the burden of trained/registered professional nursing staff.

The anticipated occupational injuries/illnesses have grave consequences for both the nursing students as well as the workplace. Past studies have reported that 23.0% of nurses miss 2 or more days due to work related injury and 76.0% opined that unsafe working conditions hindered delivery of high quality nursing care to patients (Houle, 2001 as cited in de Castro et al, 2009). Nurses and nursing students practicing in developed countries may have safer working conditions compared to their counterparts in developing nations. This advantage may be premised on greater economic resources and policies supportive of quality occupational health and safety protections.

In the USA for instance, in 1991, the Occupational Safety and Health Administration (OSHA) issued the Bloodborne Pathogens (BBP) Standard (OSHA, 1991). When in spite of the standard, about one million exposures were still taking place yearly, the safe Needles Save Lives campaign was instituted which led to the passage of the 2000 Federal Needlestick Safety Act and Prevention state legislation. The amendment entails demand on employers to: use safer devices and engineering controls, document each needlestick/sharps incident in a separate injury log in addition to the OSHA 300 log and involvement of the leadership of the employees in device evaluation and selection (ANA, 2002).

International Council of Nurses (ICN) in its position statement on occupational health and safety for nurses (ICN, 2006) observed that in certain countries there are no occupational health and safety legislations and advised that nurses working in such countries should be guided by international conventions, such as the International Labour Organization (ILO) Convention. Convention 149 of the International Labour Organization (ILO) concerning Employment and Conditions of Work and Life of Nursing Personnel (ILO, 1977) calls on member states to "improve existing laws and regulations on occupational health and safety by adapting them to the special nature of nursing work and of the environment in which it is carried out". Section IX of the accompanying recommendation (157) (ILO, 1977) further develops the measures considered necessary to guarantee the health and safety of nurses in the workplace. According to the International Labour Organization (ILO) all appropriate measures should be taken to prevent, reduce or eliminate risks to the health of nursing personnel. Such measures include: a comprehensive national policy on occupational health, establishment of occupational health services, access to health surveillance, preferably during working hours and at no cost to the worker concerned, medical confidentiality of health surveillance, financial compensation for those exposed to special risks and participation in all aspects of protection provisions.

Although in Nigeria, there is no specific legal protection for needle stick injury; nurses are guided by the 1999 Constitution of the Federal Republic of Nigeria, which is the highest law of the land with various provisions that governs every aspect of life of her citizens and the Nigerian Labour Act (Chapter 198; Laws of Federal Republic of Nigeria [FRN]). Generally, the employee safety at work is guaranteed by imposition of certain duties on the employer; such duties may be fixed by the contract itself expressly or implied by the statute as the case may be. The general rule at common law is that the employer has the implied duty to take reasonable care of the employer. This duty is concerned with the protections given to guarantee the safety of the worker in the cause of his employment. Part III of the Nigerian Labour Act; Sections 66 and 67 (f) (i) has provisions with regards to the health status of any worker. Section 67 (f) provides that measures should be taken to prevent the introduction or spreading of infections and contagious diseases. The employer should make arrangement for the medical and surgical treatment of their worker (Aturo, 2001; Uvieghara, 2001 & Aturo, 2005).

In compliance with the International Labour Standard, Nigeria in the year 2003 and 2005 respectively had formulated policies which are complimentary to the existing laws (constitution & labour Act). These policies which are with particular reference to HIV/AIDS are the National policy on HIV/AIDS (FGN, 2003) and the

National workplace policy (NWPP) (FGN, 2005). The two policies have categorically highlighted the rights of nurses in their workplace with regards to their protection against HIV/AIDS. Although these policies exist, it is rarely implemented in practice. There is therefore need to enforce the policies in order to improve nurses' working conditions and safeguard the health of nursing students.

In this study, perceived susceptibility of acquiring HIV/AIDS of 77(48.7%) among Calabar nursing students and 54(38.8%) among Uyo nursing students was low when compared to findings from other studies (Atulomah & Oladepo, 2002; Kermode, Holmes, Langkham, Thomas & Gifford, 2005). The Ibadan study reported that 309 (86.0%) of the nursing students and 117 (97.5%) of the Midwifery students perceived themselves vulnerable to HIV/AIDS infection while the Indian study reported high risk perception among respondents. The low risk perception could be due to a prevailing local belief to reject/deny susceptibility to adverse conditions. Although the transmission rate of occupationally acquired HIV after an exposure is 0.3% (1 in 300) which is low. Stated in another manner, 99.7% of needlestick / cut exposures do not lead to infection (Panlilio, Cardo, Grohskopf, Heneine, & Ross, 2005). However, since AIDS is a devastating and in the long run a fatal disease exposure remains a frightening experience. A study carried out among 20 healthcare workers with HIV exposure showed that, 11 (55%) reported acute severe distress, 7 (35%) had persistent moderate distress while 6 (30%) relinquish their jobs because of the exposure (Henry et al., 1990). Studies have shown that workers who perceive a risk of transmission from exposure to blood borne pathogens are more likely to protect themselves (Sofie, 2000; Corser, 1998). Well-designed, sustained training sessions organized through concerted efforts of nurse educators and managers could raise risk perception among nursing students in Calabar and Uyo. It was observed that only one or limited exposure to training session on HIV/AIDS would not bring about significant change in knowledge rather it was advocated that training sessions be organized regularly from the onset of nursing training to its completion (Dunn & Hansford, 1997).

Although perceived susceptibility to HBV was statistically significantly higher 81(58.3%) among the Uyo respondents compared to Calabar respondents 72(45.6%) ($p < 0.05$), it was still low. This could be related to the prevalence of HIV/AIDS which is higher at Uyo compared with Calabar. This finding also suggests that more efforts at supplies of protective equipment should be directed at the nursing students in Uyo while strategies that are in place in Calabar to achieve this result should be sustained.

5.0 Conclusion

The study on health and safety concerns of nursing students in Calabar and Uyo, Nigeria is of tremendous value in view of the fact that the participants constitute the future workforce of the nursing profession. Paying attention to their concerns and safety could lead to job satisfaction and retention within the profession. Furthermore no known study has been carried out focussing on the health concerns of nursing students in the study area. The study revealed that although the students were concerned about all the 10 risk factors, the 3 topmost concerns were getting infected with blood borne pathogens comprising of HIV/AIDS and Hepatitis through needle stick injury, getting tuberculosis at work and overwork and stress. Based on the findings, skill based health education which is an important component of an occupational health programme should be promoted among nursing students (Reith, 2000). Education about infectious disease hazard is expected to improve understanding, encourage fast reporting and treatment of injuries, positively influence behavioural activities and uptake of vaccines (Dille, 1999; Dille, 1997; Cassidy, 1997). Standard precautions should be taught to nursing students before exposure to the clinical setting, while in the clinical setting adequate supervision should be provided for the students by clinical teachers and strengthened by preceptors.

REFERENCES

- Aiken, L. H., Sloane, D. M., & Klocinski, J. L. (1997). Hospital nurses' occupational exposure to blood: prospective, retrospective, and institutional reports. *American Journal of Public Health*, 87(1), 103-107.
- American Nurses Association (ANA). (2002). *Needlestick prevention guide; Safe needles save lives*. [Electronic version]. Retrieved Dec 28, 2016, from <http://www.nursingworld.org/NeedlestickPrevention.aspx>
- Ansa, V.O., Udoma, E. J., Umoh, M.S., Anah, M.U. (2002). Occupational risk of infection by human immunodeficiency and hepatitis B viruses among health workers in South-Eastern Nigeria. *East African Medical Journal*, 79(5):254-256.
- Arafa MA, Nazel MW, Ibrahim NK, Attia A. (2003). Predictors of psychological well-being of nurses in Alexandria, Egypt. *International Journal of Nursing Practice*, 9(5), 313-320.
- Atulomah, N. O., & Oladepo, O. (2002). Knowledge, perception and practice with regards to occupational risks of HIV/AIDS among nursing and midwifery students in Ibadan, Nigeria. *African journal of medicine and medical sciences*, 31(3), 223-227.
- Aturo, B. (2001). *A Handbook of Nigerian Labour Laws: With Commentary by Bamidele Aturo*. Lagos. Frankad Publishers.

- Aturu, B. (2005). *Nigerian Labour Laws: Principles, Cases, Commentaries & Materials*. Lagos. Frankad Publishers.
- Cardo DM, Culver DH, Ciesielski CA, et al (1997). A case-control study of HIV seroconversion in health care workers after percutaneous exposure. *N Engl J Med*,337:1542-3.
- Cardo, D. M., Culver, D. H. and Ciesielski, C.A. (1997). A case-control study of HIV sero-conversion in health care workers after percutaneous exposure. In Markary, M. A., Al-Attar, A., Holzmueller, C. G., Sexton, J. B., Syin, D. B. S., Gilson, M. M., Sulkowski, M.D., and Pronovost, P. J. 2007. Needlestick injuries among surgeons in Training. *N. Engl. J.Med.* 356:26.
- Cassidy, C. A. 1997. Facilitating behaviour change: Use of the transtheoretical model in the occupational health setting. *Am Assoc Occup Health Nurs J.* 45: 239-246.
- Catlette, M. A. (2005). Descriptive study of the perceptions of workplace violence and safety strategies of nurses working in level I trauma centers. *Journal of Emergency Nursing*, 31(6), 519–525.
- Celik SS, Celik Y, Agirbas I, Ugurluoglu O. (2007). Verbal and physical abuse against nurses in Turkey. *International Nursing Review*,54(4):359–366.
- Centers for Disease Control and Prevention (1998). Public Health Service Guidelines for the Management of Health-Care Worker Exposures to HIV and recommendations for Post Exposure Prophylaxis. MMWR, 47(No RR-7. content/2012_06en/28-39.pdf. Retrieved 7/04/15.
- Corser, W. D. (1998). Occupational exposure of healthcare workers to bloodborne pathogens: a proposal for a systematic intervention approach. *Am Assoc Occup Health Nurs J.*, 48: 125-130.
- Dawson, J. (2013). Workplace health and safety concerns of registered nurses. In *141st APHA Annual Meeting (November 2-November 6, 2013)*. APHA.the American Association of Occupational Health Nurses, 57(4), 149.
- De Castro, A. B., Cabrera, S. L., Gee, G. C., Fujishiro, K., & Tagalog, E. A. (2009). Occupational health and safety issues among nurses in the Philippines. *AAOHN journal: official journal of the American Association of Occupational Health Nurses*, 57(4), 149.
- de Castro, A.B., Hagan, P. & Nelson, A. (2006). Prioritizing safe patient handling: The American Nurses Association’s Handle with Care Campaign. *Journal of Nursing Administration*, 36, (7–8), 363–369.
- Dille, J. H. 1997. Worksite influenza immunisation programme: Impact on lost work days, health care utilization and health care spending. *Am Assoc Occup Health Nurs J.*, 47: 301-309.
- Dille, J. H. 1999. Worksite influenza immunisation: Successful programme. *Am Assoc Occup Health Nurs J.* 47: 292-300.
- Dunn, S. V., & Hansford, B. (1997). Undergraduate nursing students' perceptions of their clinical learning environment. *Journal of advanced nursing*, 25(6), 1299-1306.
- Edet, O. B., Asuquo, E. F., Akpabio, I.I., Samson-Akpan, P.E. & Ojong, I.N. (2015). Registered Nurses’ (RNs) perception of the Nursing Profession and health care work environment in tertiary and secondary health facilities in Calabar, Nigeria. *Global Journal of Pure and Applied Sciences*, 21 (2), 197-207. doi: <http://dx.doi.org/10.4314/gjpas.v21i2.12>
- Edet,O. B., Samson-Akpan, P. E., Ojong, I. N., Akpabio, I. I. (2015). Determinants of Job Satisfaction among Nurse / Midwife Educators in Calabar, Cross River State, Nigeria. *Journal of Biology, Agriculture and Healthcare*, 6 (14), 74-82
- Federal Government of Nigeria (2005). *National workplace policy on HIV/AIDS*. Jodez Nig. Ltd. Federal Ministry of Labour and productivity (FML&P).
- Federal Government of Nigeria.(FGN)(2003). *National policy on HIV/AIDS*. Abuja. Jodez Nig. Ltd. Federal Ministry of Labour and productivity (FML&P).
- Federal Ministry of Health.(FMOH). 2005. *Training manual for nurses on the use of antiretroviral drugs in Nigeria*. Nigerian Institute of Medical Research. Abuja. FMOH.
- Henderson, A.D. (2003). Nurses and workplace violence: Nurses’ experiences of verbal and physical abuse at work. *Nursing Leadership* (Toronto, Ont.) 16, (4), 82–98.
- Henry, K., Campbell, S., Jackson, B., Balfour, H., Rhame, F., Sannerud, K., Pollack, S., Sninsky, J. and Kwok, S. (1990). Long-term follow-up of healthcare workers with work-site exposure to Human Immunodeficiency virus [letter to the editor]. *JAMA* 263.13:1765-1766.
- Hignett, S., Fray, M., Rossi, M. A., Tamminen-Peter, L., Hermann, S., Lomi, C., & Johnsson, C. (2007). Implementation of the Manual Handling Directive in the healthcare industry in the European Union for patient handling tasks. *International Journal of Industrial Ergonomics*, 37(5), 415-423.
- Hiransuthikul N, Tanthitippong A, Jiamjarasrangsi W. (2006). Occupational exposures among nurses and housekeeping personnel in King Chulalongkorn Memorial Hospital. *Journal of the Medical Association of Thailand*, 89(Suppl 3):S140–S149.
- Houle J. (2001). American Nurses Association Nursingworld.org health and safety survey. Cornerstone Communications Group; Warwick, RI: Nursingworld.org

- ICN (2000). ICN on Occupational Health and Safety for Nurses. ICN position statement. Retrieved Dec. 13, 2016, from [http:// www.icn.ch/ pshealth safety.htm/](http://www.icn.ch/pshealthsafety.htm/)
- ICN (2006). *Reducing the impact of HIV/AIDS on Nursing and Midwifery Personnel*. Geneva, ICN. Retrieved Dec, 13, 2016, from [http:// www.icn.ch/impact.htm](http://www.icn.ch/impact.htm)
- ICN. (2006). *Reducing the impact of HIV/AIDS on Nursing and Midwifery Personnel*. Geneva, ICN. Retrieved Dec., 28, 2008, from [http:// www.icn.ch/impact.htm](http://www.icn.ch/impact.htm)
- International Council of Nurses (2006). The global nursing shortage: priority areas for intervention Geneva. Switzerland: International Council of Nurses and the Florence Nightingale International Foundation; 2006.
- Ilhan MN, Durukan E, Aras E, Turkcuoglu S, Aygun R. (2006). Long working hours increase the risk of sharp and needlestick injury in nurses: The need for new policy implication. *Journal of Advanced Nursing*, 56(5):563–568.
- Institute Of Medicine (2004). Keeping patients safe: transforming the work environment of nurses. Washing, DC: National Academy Press; 2004.
- International Labour Organization (1977). Convention 149 and recommendation 157 concerning the Employment and Conditions of Work and Life of Nursing Personnel, Geneva, ILO. In: ICN (2000). ICN on Occupational Health and Safety for Nurses. ICN position statement. Retrieved Dec., 28, 2016, from <http://www.icn.ch/pshealthsafety00.htm/>
- Johnson, O. E., Asuzu, M. C., & Adebisi, A. O. (2013). Knowledge and practice of universal precautions among professionals in public and private health facilities in Uyo, Southern Nigeria-a comparative study. *Ibom Med J*, 6, 9-19.
- Kermode, M., Holmes, W., Langkham, B., Thomas, M. S., & Gifford, S. (2005). HIV-related knowledge, attitudes & risk perception amongst nurses, doctors & other healthcare workers in rural India. *Indian Journal of Medical Research*, 122(3), 258.
- Kolade, B. D.(2000). History of nursing education in Nigeria. Paper presentation at the workshop on Nursing Education. Ibadan, Nigeria: Organized by the Nursing Education Unit,UCH, 2000.
- Maes, C. A., & Louis, M. (2003). Knowledge of AIDS, perceived risk of AIDS, and at-risk sexual behaviors among older adults. *Journal of the American Academy of Nurse Practitioners*, 15(11), 509-516.
- McNeely, E. (2005). The consequences of job stress for nurses' health: Time for a check-up. *Nursing Outlook*. 2005;53(6), 291–299.
- National Action Committee on AIDS (NACA). 2014. National HIV/AIDS epidemiology and impact analysis (NHEIA) Report Nigeria: NARHS report 2012.
- Nelson, A.(2003). State of the science in patient care ergonomics: Lessons learned and gaps in knowledge; Paper presented at the Third Annual Safe Patient Handling and Movement Conference; Clearwater Beach, FL.
- New South Wales. (2013). *Work Health and Safety Essentials for Nurses* . NSW Nurses and Midwives. New South Wales: Emerald Press Pty Ltd.
- Nsubuga FM, Jaakkola MS. (2005). Needle stick injuries among nurses in sub-Saharan Africa. *Tropical Medicine & International Health*, 10(8), 773–781.
- Ofi, B., Sowunmi, L., Edet, D and Anarado, N., 2008. Professional nurses' opinion on research and research utilization for promoting quality nursing care in selected teaching hospitals in Nigeria. *International Journal of Nursing Practice*, 14, (3): 243-255.
- Okeke, E. N., Ladepe, N. G., Agaba, E. I., & Malu, A. O. (2008). Hepatitis B vaccination status and needle stick injuries among medical students in a Nigerian university. *Niger J Med*, 17(3), 330-332.
- OSHA (1991). Occupational Safety and Health Administration Bloodborne pathogens. 29C.F.R. 1910.1030.
- Panlilio, A. L., Cardo, D. M., Grohskopf, L. A., Heneine, W., & Ross, C. S. (2005). Updated US Public Health Service guidelines for the management of occupational exposures to HIV and recommendations for postexposure prophylaxis. *MMWR Recomm Rep*, 54(RR-9), 1-17.
- Polit, D. F., Beck, C. T. and Hungler, B. P.2001. *Essentials of nursing research: methods, appraisal, and utilization*. 5th ed. Philadelphia: Lippincott Williams and Wilkins.
- Redcrist. (2014). *General Principles of Health and Safety*. London: Redcrist publications Limited.
- Registered Nurses Association of Ontario (RNAO). (2008). Workplace Health, Safety and Well-being of the Nurse. Toronto, Canada: Registered Nurses' Association of Ontario. Guidelines Program.
- Scott, L.D., Hwang, W.T., & Rogers, A.E.(2006). The impact of multiple care giving roles on fatigue, stress, and work performance among hospital staff nurses. *Journal of Nursing Administration*. 36(2),36–95.
- Sofie, J. K. 2000. Creating a successful occupational health and safety program: using workers' perceptions. *Am Assoc Occup Health Nurs J*. 48: 125-30.
- Stone, P. W., Clarke, P. S., Cimiotti, J. and Correa-de-Araujo, R. 2004. Nurses' Working Conditions: Implications for infectious disease. *Emerging Infectious Diseases*. 10.11.Retrieved Dec 8, 2016, from

- [http:// www.cdc.gov/ ncidod/ EID/ vo11no11/04-0253](http://www.cdc.gov/ncidod/EID/vol11no11/04-0253)
- Trinkoff, A.M., Le, R., Geiger-Brown, J. & Lipscomb, J. (2007). Work schedule, needle use, and needlestick injuries among registered nurses. *Infection Control and Hospital Epidemiology*, 28(2), 156–164.
- Trinkoff, A.M., Le, R., Geiger-Brown, J., Lipscomb, J., & Lang, G. (2006). Longitudinal relationship of work hours, mandatory overtime, and on-call to musculoskeletal problems in nurses. *American Journal of Industrial Medicine*, 49(11), 964–971.
- Trinkoff, A.M., Storr, C.L. & Lipscomb, J. A. (2001). Physically demanding work and inadequate sleep, pain medication use, and absenteeism in registered nurses. *Journal of Occupational and Environmental Medicine*, 43(4), 355–363.
- Uvieghara, E. E. (2001). *Labour law in Nigeria*. Lagos. Malthouse Press.
- Wang, S (2012). An optimal workplace: Building a positive practice environment. *Tzu Chi Nursng Journal*, 6:28-39. Retrieved from [http:// www. tzuchi. com.tw/file/ divintro/nursing/](http://www.tzuchi.com.tw/file/divintro/nursing/)
- WHO. (2003). *Definition of Health*. New York: World Health Organization
- WHO. (2006). *The World Health Report: Working together for health*. Retrieved from [http://www. who.int/whr/2006](http://www.who.int/whr/2006).
- Wilburn, S. Q. 2004. Needlestick and sharps injury prevention. *Online J. of Issues in Nurs*.9:4.Retrieved.Dec.13,2016,from<http://www.nursingworl.org/ojin/topic/tpc25-4.htm>
- Yip, Y.(2001). A study of work stress, patient handling activities and the risk of low back pain among nurses in Hong Kong. *Journal of Advanced Nursing*, 36(6), 794–804.