

# Knowledge and practice of universal precautions among student nurses in school of nursing, Jos Nigeria

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## To cite this article

Esther Yanayock Jonah, Mercy K. Bewerang, Andy Emmanuel. Knowledge and Practice of Universal Precautions among Student Nurses in School of Nursing, Jos Nigeria. *International Journal of Public Health Research*. Vol. 2, No. 5, 2014, pp. 59-63.

## Abstract

Student nurses are exposed to hazards as they trained in the clinical setting. Little is known about how knowledgeable students are about universal precautions and how this is practiced by students in the clinical area. This study aimed to determine knowledge and practice of universal precautions by students of school of nursing, Jos. A convenience sampling was employed to draw 76 students who voluntarily filled a self administered questionnaire. Findings revealed that the average age of respondents was 23 years and they had attended an average of 4 clinical postings. Further, 63.7% reported that needle recap was not advised, 93.4% supported hand washing before and after procedure, and 90.7% agreed that gloves should be worn when coming in contact with blood and blood products. Findings also show that 48.7% did not recap needle, 52.6% reported the use of gloves, and 73.7% practiced hand washing before and after procedure while 48.6% reported not being able to practice universal precautions due to inadequate supply of barrier equipments. It was concluded that most participants were aware of universal precautions and practice of universal precautions was reasonable. However, a significant proportion were worried that inadequate supply of barrier equipments stops them from practicing universal precautions.

## Keywords

Universal Precautions, Student Nurses, Infection, Knowledge, Practice

## 1. Introduction

Infection is one of the most important problems in health care services worldwide and it constitutes one of the most important causes of morbidity and mortality associated with clinical, diagnostic and therapeutic procedures (Vaz, MCGrowder, Alexander, Lindo Gordon, Brown and Living (2010)

Health workers are at risk of needles stick injuries and blood borne pathogens as they perform clinical activities in the hospital (Vaz et al 2010; Espathion, Papastavron, Raftopoulos and Mertouris 2011).

Adequate knowledge and practice of universal precautions is an effective measure of infection control because it protects both the patient and the care giver. Universal

precautions is a process in which all human blood, certain blood fluids as well as fresh tissue and cells of human origin are treated as if known to be infected with HIV, HBV, HBC and or other blood borne pathogens (McGraw-Hill 2002). Strict observance of the precautions ensures that health workers and patients are protected against infection. Student nurses in the course of their training are exposed to infection and injury; as such need to have adequate knowledge of universal precautions. Awareness about universal precautions will bring about its practice under normal circumstance. There are some factors that may influence the practice of universal precautions and understanding them will be helpful in ensuring that health workers, students and patients are safe in the hospital.

Increase in the incidence of needle stick injury and

infection among health workers makes it necessary to assess student knowledge and practice of universal precautions with a view to establishing a baseline data. Information about knowledge and practice of universal precautions among nursing students in plateau state is scanty. Therefore, this study will provide information and bridge the knowledge gap that exists.

### 1.1. Literature Review

Student nurses are exposed to several infections and injuries during clinical education (Labrague, Rosales and Tizon, 2012). This makes it very important for them to have adequate knowledge about universal precautions. Universal precautions is an interventional measures proposed to minimize exposure of health care workers and patients to infection (Vaz et al, 2010) There are more than 20 blood born diseases (Gurubacharya, Mathura and Karki, 2003) but those of primary significance to health care workers and hepatitis due to either hepatitis B virus or Hepatitis C and HIV. Students during their clinical experience are exposed to the disease just like other health workers, as such, proper adherence to measures of prevention is imperative. Universal precautions was instituted to prevent nosocomial infection and to also prevent the health care workers against infection.

Infection is one of the most important problems health care services worldwide and it constituted of the most importance cause of morbidity and mobility associated with clinical, diagnostic and therapeutic procedure (Vaz et al, 2010)

Vaz et al (2010) further posited that, universal precautions awareness education has not been pronounced among health care workers, particularly in developing countries. This may not be unconnected to the inadequacy of curriculum in schools of training and inadequate training of health workers. MCGraw (2002) asserted that universal precautions is a process in which all human blood certain blood fluids as well as fresh tissue and cells of human origin are treated as if known to be infected with HIV, HBV and or other blood borne pathogens.

Universal precautions include hand washing before and after procedures, use of barriers such as gloves, gown cap and mask, care with devices, equipment and clothing used during care, environmental control, adequate discarding of sharp instrument including needles and patient's accommodation in accord to requirement levels as infection transmission source (Vaz et al, 2010)

In a cross sectional survey of health workers in Enugu by Ibiziako and Ibekwe (2006), it was reported that 50.4% were aware of universal precautions, 35.8% knew the correct definition of universal precautions 13.8% had received the training of universal precautions, 86.6% used gloves, 32.9% did not recap needles and 43.9% practices appropriate hand washing. They concluded that knowledge and practice of universal precautions was low because of the low and unequal training of workers.

In another cross sectional survey of two hundred (200) health workers, Vaz et al (2010) reported an appreciable knowledge and practice of universal precautions among

health workers. Abiodun and Abidemi (2006) reported an awareness rate of 64%, but revealed that level of knowledge of what constitute universal precautions was low (38.8%). They further reported that 53.8% of students nurses practice hand washing and prevalence of needle stick injury was 39.8%. Abiodun and Abidemi, (2006) reported that personal study of book Journals, health workers seminar and posters were the sources of information about universal precautions.

Ofilu, Asuzu and Okojie (2003) after a survey of 155 nurses, opined that nurses and nursing students are faced with professional hazards and that the level of knowledge about universal precautions was low among the study population (34%). They also reported poor practice of universal precautions.

Another study of 433 health workers in Abeokuta by Sadoh, Fawole, Sadoh, Oladimeji and Sotiloye (2006) reported that only 63.8% used protective barriers, 56% have never worn goggles during deliveries or surgeries. Furthermore, Sadoh et al (2006) reported that 94.6% practice hand washing and recapping of needles was prevalent. The poor use of barriers may be attributed to poor knowledge of universal precautions and lack of supply of barrier equipment.

Ensuring that student nurses are well informed about universal precautions as they undertake clinical education is essential in infection control.

## 2. Methodology

A descriptive study was adopted for this study.

The study population constituted students from school of nursing, Jos. Students that participated were those who had attended at least a clinical posting.

Convenience sampling was used to draw participants. The students participated willingly.

A total of 76 students who had attended clinical posting participated. They cut across various classes.

Data was collected using a self administered questionnaire which comprise 3 major sections namely; socio-demographic variables and knowledge of universal precautions. The third section comprised questions about practice of universal precautions. Furthermore, the questionnaire was pilot tested for reliability and also subjected to consideration by the project supervisor. Data collected was analyzed using simple frequency tables and percentages. Measure of central tendency was used to analyze numeric data.

All students who participated in the study willingly and voluntarily did so. Anonymity and confidentiality was assured and maintained. Information supplied by participants was strictly used for the purpose of this study.

## 3. Results

### 3.1. Profile of Participants

Table 1 reveals that 75% of respondents are less than 26 years of age and they constitute the majority of students that participated in this study. Most of the participants (63.2%)

were between 20-25 years. The average age of participants is 23.2 years. More females (73.7%) participated than male (19.7%).

**Table 1.** Age and gender of participants

Variable	Frequency	Percentages
Age (years)		
<20	9	11.8
20- 25	48	63.2
26-30	12	15.8
≥30	3	3.9
No response	4	5.3
Total	76	100
Gender		
Male	15	19.7
Female	56	73.7
No response	5	6.6
Total	76	100

**Table 2.** Level of study and year of entry

Variable	Frequency	Percentages
Class/Level		
First year	25	32.9
Second year	16	21.1
Third year	26	34.2
No response	9	11.8
Total	76	100
Year of entry		
2010	1	1.3
2011	28	36.8
2012	16	21.1
2013	25	32.9
No response	16	21.1

Table 2 shows that 32.9% are in their first year, 21.1% were in their second year while 34.2% are in their final year. About 59% of respondents had spent at least 2 years in the school as students.

**Table 4.** Knowledge of universal precautions

S/N	Statements	Strongly agreed	Agreed	Neutral	Disagree	Strongly disagree	Total
1.	Needle recap is not advised in the hospital	38(50%)	18(23.7%)	2(2.6%)	7(9.2%)	11(14.5%)	76(100%)
2.	All students should wash hands before and after every procedure	57(75%)	14(18.4%)	2(2.6%)	1(1.3%)	2(2.6%)	76(100%)
3.	Gloves should be worn when coming in contact with blood and blood products	60(78.9%)	9(11.8%)	2(2.6%)	4(5.3%)	1(1.3%)	76(100%)
4.	Universal precautions prevents Nurses and health workers from HBV, HIV and other blood borne infection	50(65.8%)	18(23.7%)	4(5.3%)	3(3.9%)	1(1.3%)	76(100%)
5.	Wearing of gown goggles mask and needle recap is part of universal precautions	43(56.6%)	25(32.9%)	1(1.3%)	1(1.3%)	6(7.6%)	76(100%)

Table 4 presents the respondents knowledge of universal precautions where 63.7% reported that needle recap was not advised, 2.6% were undecided while 23.7% believe needles

### 3.2. Information about Universal Precautions and Needle Stick Injury

Table 3 revealed that 63.2% of students reported to have attended at least three (3) clinical postings and 27.6% had attended at least once. The average number of postings attended was 3.8. Most students (96.1%) were aware of universal precautions, only 1-3% was not aware. The sources of information were school (63%), mass media (television and radio) (8.2%), Hospital (24.7%) and others (4.1%) which included Seminar – and combination of school, mass media and hospital. The prevalence of needle stick injury was 22.4%

**Table 3.** Information about universal precautions and needle stick injury.

Variable	Frequency	Percentages
Number of clinical posting attended		
1-2	21	27.6
3-4	17	22.4
≥4	31	40.8
No response	7	9.2
Total	76	100
Awareness of universal precautions		
Aware	73	96.1
Not aware	1	1.3
No response	2	2.6
Total	76	100
Source of information		
School	46	63
Mass media	6	8.2
Hospital	18	24.7
Others	3	4.1
Total	73	100
Needle stick injury		
Yes	17	22.4
No	58	76.3
No response	1	1.3
Total	76	100

### 3.3. Information about Knowledge of Universal Precautions

may be recapped. Further, 93.4% agreed that hands should be washed before and after every procedure, 89.5% agreed that universal precautions prevents health workers from hepatitis

B virus, human immunodeficiency Virus and other blood borne infections. About ninety one percents (90.7%, 69) agreed that gloves should be worn when coming in contact with blood and blood products. Concerning other protective devices, 89.5% agreed that wearing of gown, goggles, mask and cap is part of universal precautions.

### 3.4. Information about Practice of Universal Precautions

Table 5 presents the practice of Universal precautions and revealed that 48.7% do not recap needles, 18.4% were

undecided while 32.9% reported to practice needle recap. Forty (40) Students (52.6%) reported to use gloves and face mask when caring for patients, 19.7% do not use gloves and face mask when caring for patients. 46 students (60.5%) reported the occasional use of goggles, gown and cap when carrying out some procedures, 73.7% wash hands before and after every procedure, 32.9% do not practice universal precautions because of heavy workload while 48.6% cannot practice universal precautions because of inadequate supply of barrier equipments.

Table 5. Practice of universal precautions

S/N	Statements	Strongly agreed	Agreed	Neutral	Disagree	Strongly Disagree	Total
1.	I do not recap needles.	17(22.4%)	20(26.3%)	14(18.4%)	15(19.7%)	10(13.2%)	76(100%)
2.	I use gloves and face mask when caring for patients	14(18.4%)	26(36.2%)	21(27.6)	12(15.3%)	3(3.9%)	76(100%)
3.	I sometimes use gown goggle and cap when carrying out some procedure	14(18.4%)	32(42.1%)	20(26.3%)	6(7.9%)	4(5.3%)	76(100%)
4.	I wash my hands before and after every procedure	27(35.5%)	29(38.29%)	14(18.4%)	2(2.6%)	4(5.3%)	76(100%)
5.	Heavy workload prevents me from observing universal precautions	9(11.8%)	16(21.1%)	12(15.8%)	26(34.2%)	13(17.1%)	76(100%)
6.	Inadequate hospital supply of barrier equipments affects my practice of universal precautions.	22(28.9%)	15(19.7%)	15(19.7%)	16(21.1%)	8(10.5%)	76(100%)

## 4. Discussion

The profile of respondents reveals that respondents cut across various groups. Majority of the respondents are less than 26 years of age with various years of entry and levels. The mean age (23years) indicates that students were beyond the teenage. It was observed that more females participated than males. This may be attributed to the fact that there are more females in the school than males because of the presence of basic midwifery program. The distribution of respondents across various groups will ensure validity of findings because it is coming from variety of groups. The age, level /class, gender and year of entry could be important determinants of knowledge and practice of universal precautions. It is expected that the more year spend in schools, the higher the age, class/level a student will be and knowledge they have about universal precautions. In this study, the background information constitutes the personal perception. The high average number of postings attended better positioned the respondents to provide information about universal precautions in the hospital.

Information about universal precautions (table 3) and knowledge about universal precautions (table 4) are modifying variables. Awareness about universal precautions was almost universal (96.1%) this could be attributed to the number of clinical postings respondents had attended. Majority of respondents reported to have attended at least 3 clinical postings. The major source of information about universal precautions was school (63%). Others were mass media and hospital. Information about universal precautions

could play a very important role in determining the practice of universal precautions. The high level of awareness may translate into high level of observance of universal precautions. This finding is inconsistent with Abiodun and Abidemi (2006) in which source of information were majorly books/journals, seminars and posters.

The prevalence of needle stick injury was high (22.4%) in the study group and may also be attributed to the number of postings attended that increased their exposure to needle stick injury. The prevalence was lower than what Abiodun and Abidemi (2006) reported. The findings is consistent with Vaz et al (2010), Labrague et al (2012) and Efstathion et al (2011) in which they reported that health workers are at risk of needle stick injuries. Further, the high level of awareness about universal precautions is consistent with the findings of Ibeziako and Ibekwe (2006) who reported a high level of awareness. The respondents demonstrated a high knowledge of universal precautions (table 4) because majority of respondents reported that needle recap was not advised (63.7%); hands should be washed before and after every procedure (93.4%); Universal precautions prevents health workers from infection (89.5%); gloves should be used when coming in contact with blood and blood products (90.7%), wearing gown, goggles, mask and cap is part of universal precautions.

This finding is inconsistent with the position of Vaz et al (2010) and Abiodun & Abidemi (2006) who reported. That universal precautions awareness is not pronounced and that knowledge about universal precautions was low respectively further, Ofili et al (2003) also reported a low knowledge of universal precautions. The high knowledge of universal

precautions is the health action. A significant proportion 48.1% do not recap needles this is higher than what Ibeziako and Ibekwe (2006) reported (32.9%) and may be attributed to increased awareness. About 55% of them reported using gloves and face mask when caring for patient and this is consistent with Ibeziako and Ibekwe (2006) and Sadoh *et al* (2006) who reported high prevalence of protective barriers. Use of other barrier such as goggles, gown and caps was used by majority 60.5%. Most students 74% practiced hand washing and this finding is higher than what Abiodun and Abidemi (2006) reported (53.8%). It is believed that increased awareness and education of students may be responsible for the high practice of hand washing. A significant proportion of respondents reported that heavy workload and inadequate supply of barrier equipments negatively affects their practice of universal precautions. On a general note, practice of universal precautions was high as expected earlier and this is because of the high knowledge of universal precautions.

## 5. Conclusion

The knowledge and practice of universal precautions by school of Nursing students was high. However, there was high prevalence of needle recap. A significant proportion of students report not using gloves and the negative influence of workload and inadequate hospital supplies requires urgent attention.

## Recommendations

- 1 Teaching of universal precautions should be sustained and improved upon. The topic should be taught to all students before their first clinical experience.
- 2 Universal precautions should form part of the orientation teaching to students on posting.
- 3 Staff nurses should be directed by the hospital authority to reduce over working students on posting.
- 4 Hospital management of hospital where these students go for postings should supply adequate barrier equipments for staff and students.
- 5 Seminar and workshops should be organized in nursing schools and hospitals to increase awareness about practice of universal precautions.

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