

Level of Awareness of the Need to Practice Universal Precautions among Nursing Students in Niger Delta University, Bayelsa State

¹Augustina Chikaodili Isabu,*²Tochi Emmanuel Iwuagwu, ³Mgbo Okeke Kalu and ²Christopher Ngozi Aguocha

¹Department of Community Health Nursing, Niger Delta University Amassoma, Bayelsa State

²Department of Human Kinetics and Health Education, University of Nigeria, Nsukka

³Department of Health Education, Alvan Ikoku Federal College of Education, Owerri

*Correspondence: tochi.iwuagwu@unn.edu.ng

Abstract

The study investigated the level of awareness of the need to practice universal precautions among nursing students at Niger Delta University, Bayelsa State. Two research questions and one hypothesis guided the study. The study adopted a cross-sectional survey research design. Purposive sampling technique was used to select 160 nursing students that have commenced hospital clinical experience during 2019/2020 session in the faculty of nursing. Data were collected using a self-structured Level of Awareness of the need to Practice Universal Precaution Questionnaire (LAPUPQ) and an In-depth Interview Guide (IDIG). Descriptive statistics of frequency count and percentage were used to analyse the data generated while Chi-square statistic was used to test the hypothesis at .05 level of significance. Findings revealed that majority of the respondents had high-level awareness of the need to practice universal precautions. Factors identified by the respondents that influenced the practice of universal precaution are unavailability of personal protective equipment (72.5%), consideration of the feelings of the patient while using some of the PPE that can frighten the patient (53.1%), the practice of UP is difficult in emergencies (45.0%). Gender was significantly associated with the level of awareness of the need to practice UP while age was not. However, the authors recommended that personal protective equipment should be provided in all health facilities and that obligatory training programmes in universal precautions for all nursing students should be made available to them before their posting to clinical areas to prevent and control the risk of cross infections and deaths.

Keywords: Infection Prevention, Level of Awareness, Practice, Universal Precaution, Nursing Students, Niger-DeltaUniversity

Introduction

Hospital-acquired infection is a prominent occupational hazard that health care workers are always exposed to globally. The health care workers are at risk of being infected or infecting those they care for as they perform their clinical activities in the hospital. Health care workers and their client of care are usually exposed to infectious micro-organisms. According to Berman and Snyder (2012), micro-organisms occur normally in various locations of the human body, such as the surface of the skin and the gastrointestinal tract (normal commensals) and that they do not usually cause infection unless the immune system is compromised as a result of injury, physical or psychological sicknesses. Furthermore, those micro-organisms which could be harmless in one person could cause infection to another person or even to the same person (auto-infection) if the immunity is reduced. The precaution measures developed to prevent Hospital-acquired infections and associated consequences of morbidity and mortality include Standard Precautions (SP) or Universal Precautions (UP). Universal precautions are set of precautions designed by Center for Disease Control and Prevention for health care workers to prevent transmission of infections (especially bloodborne, droplets and fomite infections) from the patients to care providers and 'vice-versa' (Curran, 2015).

Identification of patients with pathogenic organisms cannot be reliably made by medical history and physical examination. Therefore, Centre for Disease Control and Prevention (CDC) recommended that universal precautions should be used on all patients regardless of knowledge about their infection status, and so the precautions apply to all body fluids including blood, secretions, and excretions (except sweat, regardless of whether or not they contain visible blood), skin that is not intact, mucous membrane, any unfixed tissue or organ or any other object that come in contact with Hepatitis B Virus (HBV), Coronavirus patients or containing culture medium or other solutions from an infected person (Smeltzer, Bare, Hinkle, & Cheeve, 2013).

The CDC recommended that Universal Precautions be used generally as means of infection prevention and control in addition to specific isolation measures (barrier nursing, reverse barrier nursing and quarantine) to include: effective hand hygiene, use of personal protective equipment (PPE) and environmental hygiene (Trueman, 2014). The author added that other measures include: respiratory and cough mannerism (that is covering the mouth

and nose when sneezing or coughing), wearing of surgical masks, hand gloves, gowns, eye protection and proper disposal of infected secretions, social distancing, observation of injection safety among others. It is also advisable that Universal Precautions be observed when providing care to all client rather than the suspected presence or absence of infectious organisms and compliance with a universal precaution which has been shown to reduce the risk of transmission of infectious micro-organisms, especially those from blood and body fluids among health care workers (Govender & Naidoo, 2020).

Blood and other body fluids from the patients are increasingly hazardous to health care providers, with the increasing scourge of deadly blood-borne diseases, such as HIV and AIDS and Hepatitis B, Ebola and Coronavirus, there is need for knowledge and practice of universal precaution to safeguard the health and life of health care providers, especially the student nurses that are naïve. Berman and Snyder (2012) stated that health personnel should know about infection risks. According to Wilson and Pratt (2014), compliance with the practice of universal precaution reduces to the barest minimum, the risk of infection both to the caregiver and care receiver.

However, the study aimed to investigate the level of awareness of the need to practice universal precautions among Nursing Students at Niger Delta University. Specifically, the study determined awareness of the need for the practice of universal precaution; the practice of universal precaution by nurses; factors influencing the practice of universal precaution by nurses, and the association between socio-demographic variables and awareness of the need to practice universal precaution. The study findings are expected to help identify specific areas of weakness in the knowledge and practice of universal precaution and enhance the knowledge and practice of universal precaution among nursing students during their clinical experience in the hospitals. Findings from this study may also reveal barriers to the practice of universal precaution, and possible precautions to take during service delivery in the hospital as well as public health safety.

Materials and Methods

A descriptive cross-sectional survey design was used for the study. The target population consisted of 360 nursing students in 300, 400 and 500 level at the Niger Delta University Amassoma Bayelsa State, Nigeria. Purposive sampling technique was used to select 160 nursing students that have commenced clinical experience in the hospitals.

Data were collected utilizing a self-structured Level of Awareness of the need to Practice Universal Precaution Questionnaire (LAPUPQ) and an In-depth Interview Guide (IDIG). The LAPUPQ consisted of 23 items divided into two parts: A and B. Part A consisted of four items on socio-demographic (age, gender, class level, religion) characteristics of the respondents while Part B consisted of 19 items on awareness of the need for the practice of UP (7), the practice of UP (6), and factors influencing the practice of UP (6). The LAPUPQ was face and construct validated by five experts from Nursing and Public Health areas, and as well was tested for internal consistency. The internal consistency of LAPUPQ was determined using Split half (Spearman's Brown Coefficient) with an index of .88. Therefore the instrument was adjudged reliable and used for data collection. In-depth interview was done on 20 nursing students in the hospitals studied

The Ethics Committee of the Faculty of Nursing, Niger Delta University, Amassoma, Bayelsa State approved the study. The researchers explained the objectives of research for the participants and the latter were assured about the privacy of their data. After their consent was gotten, nursing students were contacted in the selected health facilities where they undertake clinical experience for data collection. A total number of 160 questionnaires were filled out in the process. All the questionnaires administered were returned and used for analyses.

Collected data were analyzed and presented in frequencies and percentages. The hypothesis was tested at .05 level of significance, using Chi-square statistic.

Results

Table 1: Socio-demographic Characteristics of the Respondents

Response	Frequency	Percentage (%)
Age (in years)	15-25	73.1
	26-35	21.9
	36-45	4.4
	46-55	0.6
Gender	Female	78.1
	Male	21.9



Level	300 level	85	52.5
	400 level	69	43.1
	500 level	7	4.4
Religion	(Christian)	160	100.0
	Traditional Rel.	-	-

Table 1 shows that majority 117(73.1%) of the respondents were within the age range of 15-25 years, followed by 26-35 years 35(21.9%). 36-45 years constituted 7(4.4%) while 46-55 years constituted only 1(0.6%). Majority 125(78.1%) were females while 35(21.9) were males. Majority 85(52.5%) were in 300 level, 69(43.1%) were in 400 level, 7 (4.4%) were in 500 level.. All 160(100%) of the respondents were Christians.

Table 2: Awareness of the need for Practice of Universal Precaution (n=160)

Variables	Response	Frequency	Percentage (%)
1. Have you ever receive formal training on the practice of universal precaution?	Yes	89	55.6
	No	71	44.4
	Total	160	100.0
2. If yes, when did you receive it?	Less than a year	8	5.0
	One year	2	1.3
	2 years	77	86.5
	More than 2 years	2	1.3
	Total	89	94.1
3. Are you aware that the practice of universal precaution is designed to prevent transmission of pathogenic micro-organisms/ infections?	Yes	146	91.3
	No	14	8.8
4. Are you aware that the practice of universal precautions can prevent cross-infection between health care providers and patients?	Yes	153	95.6
	No	7	4.4
5. Are you aware that hand hygiene and hand decontamination are part of universal precaution practices?	Yes	155	96.9
	No	5	3.1
6. Are you aware that all patients are potentially at risk of infection transmission or contamination?	Yes	58	36.3
	No	102	63.8
7 Are you aware that prophylactic measures should be taken in the event of injury or exposure when universal precautions are not applied for your protection?	Yes	70	43.8
	No	90	56.3

Table 2 shows that majority 146 (91.3%) of the respondents have heard of universal precaution while 14 (8.8%) have not. Majority 92 (57.5%) of the respondents who have heard of universal precaution first heard of it in school, 23 (14.4%) heard of it in the hospital, 15(9.4%) heard of it in a seminar, 7(4.4%) heard of it from mass media, 6 (3.8%) heard of it from friends while 3.(1.9%) heard of it from literature. Majority 89 (55.6) of the respondents have received training on universal precaution while 71 (44.4%) have not. Majority 77 (86.5%) of the respondents who have received training on universal precaution, received it for 2 years 8 (5%) received it for less than a year while 2(1.3%) received it for one year and more than 2 years respectively. Majority 146 (91.3%) of the respondents responded that universal precaution are designed to prevent transmission of blood borne pathogens while 14 (8.8%) responded no. Majority 153 (95.6%) of the respondents responded universal precautions are designed to prevent cross-infection between health care providers and patients while 7(4.4%) responded no. Majority 155(96.9%) of the respondents responded hand hygiene and hand decontamination are part of universal precautions while 5(3.1%) responded no. Majority 102(63.8%) of the respondents disagreed that some patients don't pose a risk while 58(36.3%) agreed to that. Majority 90(56.3%) of the respondents do not know the prophylactic measures to be taken in the event of injury or exposure while 70(43.8%) are aware of the measures.

Table 3: Practice of Universal Precaution by Nurses

Variables	Response	Frequency	Percentage (%)
1. Do you always practise handwashing after having contact with a patient?	Yes	124	77.5
	No	36	22.5
2. Do you recap injection needles?	Yes	67	41.9
	No	93	58.1
3. Do you wear hand gloves for every procedure?	Yes	87	54.4
	No	73	45.6
4. Do you dispose of sharp objects into a safety box?	Yes	156	97.5
	No	4	2.5
5. Do you wear apron or gown when necessary?	Yes	151	94.4
	No	9	5.6
6. Do you put on face mask always	Yes	143	89.4
	No	17	10.6

Table 3 shows that majority 124(77.5%) of the respondents always practise handwashing after having contact with a patient while 36(22.5%) don't. Most 93(58.1%) of the respondents don't recap injection needle while 67(41.9) do. Majority 87(54.4%) of the respondents do wear hand gloves for every patient while 73(45.6%) do not. Most 156(97.5%) of the respondents do dispose of sharp objects into a safety box while 4(2.5%) do not. Majority 151(94.4%) of the respondents do wear an apron when necessary while 9(5.6%) do not. Majority 143(89.4%) of the respondents do put on a face mask while 17(10.6%) do not.

Table 4: Factors Influencing Practice of Universal Precaution by Nurses

Variables	Response	Frequency	Percentage (%)
1. Are the necessary medical equipment always available for practice?	Yes	44	27.5
	No	116	72.5
2. Do you think the implementation of guidelines is time-consuming?	Yes	70	43.8
	No	90	56.3
3. Do you think that working experience affect the practice of universal precaution?	Yes	94	58.8
	No	66	41.3
4. Do you receive medical attention when exposed to fluid or needle stick injury?	Yes	117	73.1
	No	43	26.9
5. Do you follow universal precautions during emergencies in the ward ?	Yes	88	55.0
	No	72	45.0

Table 4 shows that most of the respondents 116 (72.5%) indicated that the necessary medical equipment were not always available for the practice of universal precaution, 90(56.3%) of the respondents disagreed to the opinion that implementation of the guideline is time-consuming, 94(58.8%) of the respondents agreed to the opinion that working experience affect the practice of universal precaution, 117(73.1%) of the respondents indicated receiving medical attention when exposed to fluid or needle stick injury while 43(26.9%) do not. About 88(55%) of the respondents did follow universal precautions during emergencies in the ward while 72(45%) did not.

Table 5: Association between some Demographic Variables and Awareness of the need to Practise Universal Precaution

Variables	Awareness of need to practice universal precaution		Pearson chi-square χ^2 (p-value)	df	Remark
	Of	Ef			
Age	15-25	60	57	10.255	No significant relationship
	26-35	30	54	0.594*	
	36-45	3	51		
	46-55	0	60		
Gender	Female	63	62	6.045	significant relationship
	Male	30	5	0.014*	

*significant $p < .05$

Table 5 shows that there was no significant association between the age of respondents under study and their level of awareness of the need to practice universal precaution with p -value >0.05 , but there was a significant association between gender of the respondents and level of awareness of the need to practice universal precaution with p -value <0.05 .

Discussion

This study assessed the awareness and practice of universal precautions among nursing students at Niger Delta University Amassoma. The study is consistent with previous studies, the results reported in the previous studies are discussed here and the implications derived. The socio-demographic characteristics showed that majority (73.1%) of the nursing students were between the ages of 15-25 years which implies that they were of their prime age as students and were able to have adequate understanding of what is taught and instructed. Majority of the respondents were females, this may be because people believe that nursing is a female profession. It was also revealed that the Christians were predominant in the school.

The nursing students had adequate knowledge of universal precaution and have had training on universal precautions techniques, while in school. They identified that recapping needles after used was not a universal precaution technique. The practice of universal precaution among them was also inadequate as they washed their hands before and after every procedure, disposed used needles and syringes without recapping and wore gloves daily. The finding is in line with the report of *Govender and Naidoo (2020)*. A significant association was not found between socio-demographic characteristics and the knowledge of respondents, as well as between the practice of universal precaution and the knowledge of universal precautions among the respondents. Factors that influenced the need to practice UP included unavailability of personal protective equipment, consideration of the feelings of the patient while using some of the PPE that can frighten the patient, and practice of UP being difficult in emergencies.

The study also revealed that majority of the respondents is aware of the need to practice universal precautions. This finding is in contrast with the study carried out by Ganga and Lucille-Sanzero (2009) which revealed that Nepalese nursing students overall universal precautions awareness/knowledge was poor, regardless of the level of education. Majority of them first heard about universal precaution in school as well as a hospital. Majority of them defined universal precaution as measures designed to prevent transmission of the bloodborne pathogen between health care providers and patients while a minority (8.8%) of the low level of awareness about the practice of universal precautions. 56.2% of the respondents were not aware of the prophylactic measures to be taken in the event of injury or exposure while 43.8% were aware.

The study revealed that majority of the respondents were aware of the need to practice hand hygiene as they indicated the practice of handwashing after having contact with a patient. This is consistent with the recommendations of the Centre for Disease Control and Prevention (2019) as indicated for before and after patient contacts. A majority indicated proper disposal of used syringes and needles in a safety box and that majority of the respondents used gloves daily. This finding is in contrast with the study of Kermodé et al. (2005) and Asmr et al. (2019), which revealed that non-adherence with glove-wearing, was highest among those who believed that adherence interfered with care. Majority of the respondents used aprons when necessary and face masks which are in contrast with the finding of Sadoh, Fawole, and Sadoh (2006) that reported that less than two-thirds of the study respondents claimed they always used Personal Protective Equipment, such as aprons, gowns and gloves.

Majority of the respondents accepted that they adhere to universal precaution rules while a few others do not. Their reasons for not adhering to universal precautions were identified as based on their assumption that some patients did not pose risk for infections, equipment are not always available for practice, is time-consuming, is discomforting to patient. This finding is consistent with Ferguson, Beekmann, and Doebbeling (2006) study carried out among community hospital-based health care workers on reasons for not utilizing universal precautions. Their findings included the belief that stopping to use universal precautions would have put the patient at risk (22%); using precautions would have interfered with patient care (20%); precautions were not warranted in a specific situation (14%); less often, equipment was not available (7%), respondent forgot (6%), respondent thought that the patient did not pose a risk (4%), or the available equipment was not effective (3%).

The study also revealed that there was no significant association between respondents' age and level of awareness of the need for the practice of universal precaution, with $p > 0.05$, but there was a significant association between respondents gender and level of awareness of the need for the practice of universal precaution, with $p < 0.05$. This finding corroborates with the finding of Chan, Luk, Leong, Yeung, and Van (2002) whose study showed no significant association between the nurses' knowledge of the need to practice UP and compliance with Universal Precaution practices.

Implications of Universal Precautions for Nursing Practice

Universal precautions would help prevent nursing students from infections. The awareness of the need to promote universal precautions in nursing practice will not only prevent nursing students from infections but also protect other health workers, patients as well as nursing aids working with them. This study would also give insight to nursing students as to the need to employ universal precautions in future nursing practice even as they graduate and practice independently to protect themselves and others from infections.

Conclusion

This study assessed the knowledge and practice of universal precautions among nursing students at Niger Delta University, Amassoma. Universal precautions are vital measures that have been adopted to help prevent health workers from being infected in the line of duty. The knowledge and practice of universal precautions have been shown to prevent the majority of health care workers from blood-borne infections. If nursing students continue to adhere strictly to universal precautions principles then there will be less contamination of HIV and AIDS, hepatitis B as well as other blood infections. Knowledge is not enough to prevent infections but adequate skills during practice are very pertinent. Gender was significantly associated with the level of awareness of the need to practice UP while age was not.

Recommendations

Based on the findings of this study the following recommendations were made:

1. Personal protective equipment should be provided in all health facilities by the facility managers so as to reduce non-adherence to the practice of universal precaution.
2. Obligatory training programmes in universal precautions for all nursing students should be made available to them before their posting to clinical areas to prevent and control the risk of cross infections and deaths.

References

- Askarian, M., McLaws, M. L., & Meylan, M. (2007). Knowledge, attitude and practices related to standard precautions of surgeons and physicians in university-affiliated hospitals of Shiraz, Iran. *International Journal of Infectious Diseases*, 2007, 11(3), 213–219.
- Asmr, Y., Beza, L., Engida, H., Bekelcho, T., Tsegaye, N., & Aschale (2019). *Assessment of Knowledge and practices of Standard Precaution against Blood Borne Pathogens among Doctors and Nurses at Adult Emergency Room in Addis Ababa, Ethiopia. Emergency Medical international 2019 Apr 23.*
doi: 10.1155/2019/2926415PMCID: PMC6507162 PMID: 31179129.<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6507162/>
- Berman, A., & Snyder, S. J. (2012). *Fundamentals of Nursing: Concepts, Process, and Practice* (9th ed.). USA: Pearson Plc.
- Centre for Disease Control and Prevention. (2019). Standard precautions: *Excerpt from the guideline for isolation precautions: preventing transmission of infectious agents in health care settings 2019*. Retrieved from http://www.cdc.gov/ncidod/dhqp/gl_isolation_standard.html
- Chan, R., Luk, Leong, Yeung, & Van (2002). Nurses' knowledge of and compliance with universal precautions in an acute care hospital. *International Journal of Nursing Studies*, 39,157-163.
- Curran, E. T. (2015). Standard precaution: what it is and what is not: *Journal of Hospital Infection*. doi:<https://doi.org/10.1016/j.jnfection> Control Team.HPS, Glasgow2014.jhin.2014.12.020
- DeJoy, D., Searcy, C., Murphy, L., & Gershon, R. (2005). Behavioural-diagnostic analysis of compliance with universal precautions among nurses. *Journal of Occupational Health Psychology*. 5(1), 127-41.
- Ferguson, K., Beekmann, S., & Doebbeling, E. (2006). Critical incidents of non-adherence with Standard Precautions Guidelines Among Community Hospital-based Health Care Workers. *J GEN INTERN MED*,19, 726–731.
- Ganga, M., & Lucille -Sanzero, E. (2009). *HIV/AIDS and universal precautions: knowledge and attitudes of Nepalese nursing students the State University of New Jersey*. College of Nursing, Newark, New Jersey, USA.
- Govender, R., & Naidoo, S. (2020). A comparison of knowledge and practices of universal precautions among public sector health care workers in Ugu north sub-district, KwaZulu-Natal, South Africa (2010–2014). *Southern African Journal of Infectious Diseases*, 35(1), a162.doi: <https://doi.org/10.4102/sajid.v35i1.162>



- Kermode, M., Jolley, D., Langkham, B., Thomas, M. S., Holmes, W., & Gifford, S. M. (2005). Compliance with universal/standard precautions among health care workers in rural North *Indian American Journal of Infection Control*, 33(1), 27–33.
- Kotwal, A., & Taneja, D. K. (2010). Health care workers and universal precautions: Perceptions and determinants of non-compliance. *Indian Journal of Community Medicine*, 35(serialonline), 526-8. Available from: <http://www.ijcm.org.in/text.asp?2010/35>
- Sadoh, W., Fawole, A., Sadoh, A., Oladimeji, A., & Sotiloye, O. (2006). The practice of universal precautions among health workers. *Nigeria Journal of National Medical Association*, 98(5),722726.PMCID:PMC2569287PMID:16749647from[https://www.ncbi.nlm.nih.gov/pmc/articles/98\(5\),722726](https://www.ncbi.nlm.nih.gov/pmc/articles/98(5),722726)
- Smeltzer, S. C., Bare, B. G., Hinkle, J. L., & Cheeve, K. H. (2013). *Brunner & Suddarth's Textbook of Medical-Surgical Nursing* (12th ed.). USA: Lippincott Williams & Wilkins.
- Vaz, K., Mc Growder, D., Alexander- Lindo, R. Gordon, L., Brown, P., & Irving, R. (2020). *Knowledge, awareness and compliance with universal precautions among health care workers at the university hospital of the West Indies*, jaamaicwww.theijem.com vol, 1 number 4; October 2010.
- Wilson, J. A., & Pratt, R. J. (2014). National evidence-based guidelines for preventing healthcare-associated infections in NHS hospitals in England. *Journal of Hospital Infection*. 86, S1-S70.