

Knowledge and Practice of Hand Hygiene among Undergraduate Nurses in College of Medicine University of Lagos

I. Y Ademuyiwa¹, A.A Farotimi¹, W. A Afolabi², Y.O Quadri¹

¹Department of Nursing Science, Faculty of Clinical Sciences, College of Medicine, University of Lagos, Idi Araba, Lagos.

²School of Post Basic Psychiatric/Mental Health Nursing, Federal, Neuro-psychiatric Hospital, Yaba, Lagos.

Corresponding Author: I. Y Ademuyiwa

ABSTRACT

Background: Hand hygiene practices of health care workers have been shown to be an effective measure in preventing hospital infections. Despite the simplicity of the procedure, health care providers' compliance with hand hygiene is poor.

Objective: To assess the knowledge and compliance of hand hygiene practice among undergraduate nurses in CMUL.

Materials and Methods: The study adopted descriptive cross-sectional study. World Health Organization Hand Hygiene Questionnaire for Health Care Workers was administered to elicit information from the respondents and analysis was done using SPSS version 21. Categorical variables were tested for statistical significance using chi-square at 0.05 p-values.

Results: One hundred and forty-one (141) respondents had a good knowledge of hand hygiene compliance, 51 (36.2%) of the respondents demonstrated good practice of hand hygiene compliance while 90 (63.8%) of the respondents' practice of hand hygiene compliance was poor. There was a statistically significant association between the respondent's academic level and knowledge on hand hygiene compliance ($p < 0.001$) and between the respondent's knowledge and practice on hand hygiene compliance ($P < 0.001$).

Conclusion: The study concluded that academic level and knowledge of respondents positively impacts on compliance with hand hygiene practices. Therefore, undergraduate nursing curriculum should emphasize this important infection control technique.

Keywords: Hand hygiene compliance, Knowledge, Practice, Undergraduates.

INTRODUCTION

Mankind has struggled with the concepts of disease transmission and infection prevention for thousands of years. Beliefs on the origins of diseases have ranged from evil humors or sin as the cause of disease to our modern concepts about bacteria, viruses, and prions. In the past, people abandoned people who were ill to avoid the spread of illness without adequate knowledge of how transmission of infection

and illness occurred. Major advances in the theory of disease transmission and prevention were evidence in the 19th century. These discoveries were built on the gradual increase in knowledge and understanding of anatomy and physiology of these diseases. ^[1] Hand hygiene is a basic skill and key component of patient safety, and affects the morbidity and mortality of clients in the health care settings. ^[2] Hand hygiene practices of health care workers has been

shown to be an effective measure in preventing hospital acquired infection because the transfer of disease causing microorganism have been reduced just by maintaining a good hand hygiene practice. [2]

Health care related infections are the most common adverse event in health care system resulting in a significant burden on patients, their families, and health care systems [3] Health care related infections prolong hospital stays, results to long term disabilities, increase costs for patients and even result in loss of life; luckily, the simple act of hand washing is the primary measure to reduce infections. [4] However, studies have shown that the level of compliance with the use of proven HAI measures by healthcare workers (HCWs) has not been encouraging at all. Despite the simplicity of this procedure, compliance with hand hygiene among health care providers is as low as 40%. [5] Some of the reasons for the low compliance to hand hygiene actions include; lack of equipment, low staff to patient ratios, allergies to hand washing products, insufficient knowledge among health care practitioners about risks and procedure. [6]

The significance of hand hygiene was identified in the year 1840s, by Dr. Oliver Wendell Holmes to prevent childbed fever and in the late 1840's, by Dr. Ignaz Semmelweis to reduce maternal mortality in a Vienna hospital. Hand washing is a simple procedure, Compliance to hand hygiene practices is highly known as the most essential factor in preventing transmission of infection to patients in the hospitals. [7]

Nursing students represent the future of nursing profession and must be adequately prepared to demonstrate professional skills and safe practices (College and Association of Registered Nurses. [8] To eliminate this problem, continuous efforts should be made to identify sustainable strategies. Introduction of "Five moments of hand washing" by World Health Organization was one of the evidence-based concept. The concept has

been widely used to improve the understanding, training, monitoring, and reporting hand hygiene among healthcare workers. [9] With adequate knowledge and constant safe hand hygiene practices, Student nurses are able to limit the spread of microorganisms thus reducing the incidence of nosocomial infection. Also, the hand hygiene habits of nursing students develop in the course of their clinical rotations will also affect their future practice. [10,11]

The hands of Nurses' and student nurses comes into close contact with patients and are frequently contaminated during nursing procedures such as auscultation and palpation or while touching contaminated surfaces, devices or materials such as changing of dressing so it is necessary to ensure nursing care is given without doing harm and this is directly tied to the nurse's duty to keep the patient's safe. [12] Adherence of Health Care Workers to recommended hand hygiene procedures in literatures has been reported ranges from 5% to 89% and an overall average of 38.7%. [13] Therefore, this study was carried out to assess the level of knowledge and practice of hand hygiene compliance among undergraduate students in College of Medicine, University of Lagos.

MATERIALS AND METHODS

This study was conducted in the year 2016. The study adopted a descriptive cross-sectional study. The populations studied were all Undergraduate nurses from 200 - 500 level of the Department of Nursing Science, College of Medicine, University of Lagos. Total enumeration was used in order to have enough samples to generalize the findings of the study. A total of 157 undergraduate nurses from 200 – 500 level were used for the study, only 141 questionnaires were found usable given a response rate of 94%. Data was collected using a structured questionnaire adopted from the WHO's Hand Hygiene Questionnaire for Health Care Workers. The questions had 35 items and were in four sections and comprised of both open and

close ended questions with Cronbach alpha value for Reliability of 0.86. Data was analysed using statistical package for service solution (SPSS) version 21. Chi-square was used to compare relationship between variables at 0.05 p-values.

Procedure: The authors administered a structured questionnaire to the students of Department of Nursing, CMUL in June, 2016.

Ethical Considerations: Ethical approval was taken from Ethical Committee of Lagos University Teaching Hospital (LUTH), with an ethical approval number (ADM/DCST/HREC/APP/1202). Informed consent was also taken from the respondents before administering the questionnaires.

RESULTS

Table 1 shows that a total of One hundred and forty-one were analysed; 79 (56.0%) of the respondents were within age range 18-22, 39, (27.7%) were within the group of 23-26 years while 13(9.2%) were within 27-30 and a total of 10(7.1%) were within age 30 and above. 16(11.3%) of the respondents were males while 125(88.7%) were females; 43(30.5%) were Igbo, 3(2.1%) were Hausa, 80(59.6%) were Yoruba while other tribes consisting of Urhobo, Edo, Esan were 11(7.8%). 128 (90.0%) of the respondents were Christians while 13(9.2%) were Muslims. Also, 40 (28.4%) of the respondents were 200 level students, 33(23.4%) are 300 level students, 53(37.6%) are 400 level students while 15(10.6%) were 500 level students. 6(4.3%) of the respondents were Registered Nurses, 4(2.8%) were both Registered nurses and Registered Midwives. 127(90.1%) of the respondents were singles while 14(9.9%) were married.

Table 2 shows that the respondents agreed that the route of transmission of potentially harmful germs between patients occurs when Health care workers hands are not clean. For the most frequent source of germs responsible for health care associated infections. One hundred and eleven (78.7%) respondents reported that germs already

present on the patient, 24 (17.0%) reported germs within the patient while 6 (4.3%) reported germs within the patient and germs already present on the patient. 47(33.3%) of the respondents agreed that soapy water was a requirement for hand hygiene while 94(66.7) of the respondents disagreed. One hundred and thirty six (96.5%) of the respondents agreed that running water and antiseptic soap was a requirement for hand hygiene while 5 (3.5) of the respondents disagreed. One hundred and thirty two (93.6%) of the respondents agreed that alcohol hand rub was a requirement for hand hygiene while 9(6.4) of the respondents disagreed. One hundred and twenty (85.1%) agreed that clean paper or hand dryer was a requirement for hand hygiene while 21 (14.9%) disagreed. All respondents agreed that performing hand hygiene before touching a patient prevents the transmission of germs to the patient. One hundred and thirty four (95.0%) agreed that hand hygiene actions immediately after risk of body fluid exposure prevents the transmission of germs to the patient while 7(5.0%) disagreed. One hundred and twenty five (88.7%) agreed that hand hygiene actions prevents the transmission of germs to the patient after exposure to immediate surroundings of a patient while 16(11.3%) do not agree to this fact.

Also, twenty five of the respondents (88.7%) agreed that hand hygiene actions after exposure to the patient immediate surroundings prevents the transmission of germs to the patient while 16(11.3%) disagreed. All the respondents agreed that hand hygiene actions immediately, before a clean or aseptic procedure prevents the transmission of germs to the patient. Majority 136(95.1%) of respondents agreed that Hand hygiene actions performed after touching a patient will prevent the transmission of germs to the health care worker Nurse while 5(3.5%) disagreed to this fact. Almost 139(98.6%) all the respondents agreed that Hand hygiene actions immediately after a risk of body fluid exposure prevent the transmission of

germs to the Health care worker while 2(1.4%) disagreed. 126(89.4%) agreed that Hand hygiene actions prevent transmission of germs to the Health care worker immediately before a clean or aseptic procedure while 15(10.5%) disagreed to the above statement. Also 136(95.5%) agreed that Hand hygiene actions prevents the transmission of germs to the Health care worker, Nurse after exposure to the immediate surroundings of a patient whereas 5(3.5) respondents said Hand hygiene actions do not prevent the transmission of germs to the Health care worker, Nurse after exposure to the immediate surroundings of a patient. One hundred and thirty one (92.9%) agreed that wearing Jewellery should be avoided, as associated with increased likelihood of colonization of hands with harmful germs while 10(7.1%) had a contrary opinion towards it. One hundred and thirty six (96.5%) agreed that damaged skin should be avoided, as associated with increased likelihood of colonization of hands with harmful germs while 5(3.5%) disagreed. All the respondents agreed that artificial fingernails should be avoided, as associated with increased likelihood of colonization of hands with harmful germs, 61(43.3%) agreed that regular use of the hand cream

should be avoided, as associated with increased likelihood of colonization of hands with harmful germs while 80(56.7) respondents disagreed. Lastly, 61(43.3%) agreed that regular use of the hand cream should be avoided, as associated with increased likelihood of colonization of hands with harmful germs while 80(56.7) respondents disagreed to the fact that regular use of the hand cream should be avoided.

Table 1: Sociodemographic Data

Variables	Frequency (n = 141)	Percentage (%)
AGE		
18 – 22	76	56
23 – 26	39	27.7
27 – 30	13	9.2
> 30	10	7.1
GENDER		
Females	125	88.7
Males	16	11.3
ETHNIC GROUP		
Igbo	43	30.5
Hausa	3	2.1
Yoruba	80	59.6
Other Tribes	11	7.8
RELIGION		
Christianity	128	90.8
Islam	13	9.2
PREVIOUS POST HELD		
NONE	131	92.9
RN	6	4.3
RN, RM	4	2.8
MARITAL STATUS		
Married	14	9.9
Single	127	90.1

Table 2: Knowledge on Hand Hygiene

Variables (n = 141)	Frequency	%
Main route of germ transmission (Hands when not clean)	141	100
Frequent source of germ (Germs already present or within the patient)	141	100
Requirements for Hand hygiene;		
Soapy water in a basin (No)	97	66.7
Runny water and Antiseptic soap (Yes)	136	96.5
Alcohol hand rub (Yes)	132	93.6
Clean paper and towel (Yes)	120	85.1
HH Actions that prevent germ transmission to patients:		
Before touching a patient (Yes)	141	100
Immediately after risk of body fluid exposure (Yes)	134	95
After exposure to immediate surroundings of patient (Yes)	125	88.7
Immediately, before a clean or aseptic procedure (Yes)	141	100
HH Actions that prevent the transmission of germs to the health worker		
After touching a patient (Yes)	136	96.5
Immediately after risk of body fluid exposure (Yes)	139	98.6
Immediately, before a clean or aseptic procedure (Yes)	126	89.4
After exposure to immediate surroundings of patient (Yes)	136	96.5
Which increases the likelihood of germ colonization with the hands		
Wearing Jewelry (Yes)	131	92.9
Damaged Skin (Yes)	136	96.5
Artificial Nails (Yes)	141	100
Regular use of hand cream (No)	80	56.7

Table 3: Practice of hand hygiene compliance

	SA	A	I	D	SDA
Sometimes I miss out hand hygiene simply because I forget it (Disagree)	17 (12.1%)	54 (38.8%)	7 (5.0%)	28 (19.9%)	35 (24.8%)
Hand hygiene is an essential part of my role (Strongly Agree)	119 (84.4%)	20 (14.2%)	-	2 (1.4%)	-
The frequency of hand hygiene required makes it difficult for me to carry it out as often (Disagree)	14 (9.9%)	43 (30.5%)	10 (7.1%)	47 (33.3%)	27 (19.1%)
Infection prevention team has a positive influence on my hand hygiene (Agree)	77 (54.6%)	34 (24.1%)	13 (9.2%)	15 (10.6%)	2 (1.4%)
Infection prevention notice boards reminds me to do hand hygiene (Agree)	76 (53.9%)	38 (27.0%)	15 (10.6%)	10 (7.1%)	2 (1.4%)
It is difficult for me to attend hand hygiene courses due to time pressure (Agree)	26 (18.4%)	35 (24.8%)	35 (24.8%)	27 (19.1%)	18 (12.8%)

Table 4: Chi-square test between the academic level and knowledge of undergraduates on hand hygiene compliance

Chi-Square Tests	
	Value
Pearson Chi-Square	0.00
N of Valid Cases	141

Table 5: Chi-square testing between the knowledge and practice of hand hygiene compliance.

Chi-Square Tests	
	Value
Pearson Chi-Square	0.00
N of Valid Cases	141

Table 3 shows that Seventeen of the respondents (12.1%) strongly agreed that they sometimes miss out hand hygiene simply because they forget it while 35(24.8%) respondents strongly disagreed. One hundred and nineteen (84.4%) strongly agreed that hand hygiene is an essential part of their role while 2(1.4%) disagreed to this fact. 14(9.9%) strongly agreed that frequency of hand hygiene required makes it difficult for them to carry it out as often while 27(19.1%) respondents disagreed. Seventy seven (54.6%) strongly agreed that Infection prevention team has a positive influence on hand hygiene while 2(1.4%) respondents strongly disagreed. Seventy six (53.9%) strongly agreed that infection prevention notice boards reminds them to do hand hygiene while 2(1.4%) of the respondents strongly disagreed to this fact. Thirty five (24.8%) agreed that it was difficult for them to attend hand hygiene courses due to time pressure while 18(12.8%) respondents were disagreed and strongly disagreed to the statement above.

The results in Table 4 shows that there was a statistically significant

association between the academic level and knowledge on hand hygiene compliance of the respondents, $P < 0.05$

The result in Table 5 shows that there was a statistically significant association between the knowledge and practice on hand hygiene compliance among the respondents $P < 0.05$.

DISCUSSION

Majority of the respondents 79 (56%) were between age 18-22; Most of the respondents were females 125 (88.7%). This may be due to the fact that more females seek admission for the Nursing degree programme than the males thus have a higher chance of being admitted. This corresponds with a study carried out by ^[14] where 257 (90.8 %) of the respondents were females and 26 (9.1%).

Knowledge on hand hygiene practices has been shown to be a predictor of good hand hygiene practice. ^[15] The results of this study shows that all 141 (100%) of respondents had a good knowledge of hand hygiene compliance. This may be attributed to the fact that all of the students have been exposed to clinical postings on the wards. This result agrees with the findings Nair, Hanumantappa, Hiremath, Siray and Raghunath, ^[16] a study conducted at a Tertiary Health Care Centre in Raichur, India where the Nursing Students had a better knowledge than the Medical students. This results disagrees with the findings from a study carried out among Undergraduate nurses in a Tertiary institution in India reported that the Knowledge on hand hygiene compliance

was low Thakker and Jadhav. [17] Findings from this study revealed that 51 (36.2%) of the respondents demonstrated good practice of hand hygiene compliance while majority of the respondents practice of hand hygiene compliance was poor 90 (63.8%), this was in accordance with an observational study conducted among Health care workers in Egypt hand hygiene compliance was reported to be poor also (34%). Similar studies in Ghana, hand hygiene compliance was also low (9.6% to 54%) and in the intensive care unit (ICU) in a tertiary hospital in South West, Nigeria, hand washing compliance rate of 53% was reported to be low. [18]

Ninety five (67.4%) of the respondent agreed that the number of patients per student nurse is one the factors influencing Hand Hygiene Compliance, insufficient time (53.9%), shortage/non-functioning sinks (93.6%) and (94.3%) said inadequate soap and paper towels. In similar finding from other studies, respondents strongly alluded to the fact that the busy work schedule due to the number of patients to attend to may hinder their hand hygiene compliance. Also, the shortage or closeness of functioning sinks and the availability of soap and paper towels or dryers affects the compliance to hand hygiene practice among nurses. [18] Other reasons stated include; Non availability of hand sanitizers, dryers and clean water.

CONCLUSION

The study concluded that the respondents had a good knowledge of hand hygiene compliance. However their Practice of hand hygiene compliance was poor. The poor practice depicts a gap between knowledge and application to the nursing practice of hand hygiene compliance.

Conflict of Interest: There was no conflict of interest.

REFERENCES

1. Nawab T, Mehnaz S, Abedi-Safui SR, KhaliqueM, Ansari A, Khan Z. Knowledge, Attitude and Practice of Hand Hygiene

among Medical and Nursing students in a Tertiary Hospital in India. International Journal of Sciences and Applied Research 2015, 2 (6): 29-39.

2. The Global Public-Private Partnership. About Hand washing, 2014. Retrieved from www.globalhandwashing.org/about-handwashing/why-handwashing/.
3. Veena M, Navin- Chandra M, kaore, Vijay K R, Sanjay KG, Amod B, Rituja K: A Study to Assess Knowledge and Attitude Regarding Hand Hygiene amongst Residents and Nursing Staff in a Tertiary Health Care Setting of Bhopal City. J Clin Diagn Res. 2014, 8(8): 4–7.
4. Knutsen: Nurses, Hand Hygiene and Infection Control. Retrieved from <http://www.nursing.advanceweb.com/Features/Articles/Nurses-Hand-Hygiene-Infection-Control.aspx>,2013.
5. Longtin Y, Sax H, Allegranzi B, Schneider F, Pittet D: “Videos in clinical medicine. Hand hygiene,” The New England Journal of Medicine 2011, 24: 324-364.
6. Bello S, Effa EE, Okokon EO, Oduwole OA:Hand Hygiene Knowledge and Practices among Health Care Providers in a Tertiary Hospital, South West Nigeria. International Journal of Infection Control 2013. 9(14): 7-13.
7. Haas JP,Larson E.L. Compliance with hand hygiene guidelines: Where are we in 2008? Am J Nurs 2008, 108(8):40-44.
8. Center for Disease Control. Hand washing: Clean hands Saves Lives. Retrieved from <http://www.cdc.gov/handwashing/when-how-handwashing.html>,College and Association of Registered Nurses of Alberta. Entry-to-practice competencies for the registered nurses profession 2015.Retrieved from http://www.nurses.ab.ca/CarnaAdmin/Uploads/2013_Entry_to_Practice_Compencies.pdf
9. BasurrahM and Madani T: “Hand washing and gloving practice among health care workers in Medical and Surgical wards in a tertiary care centre in Riyadh, Saudi Arabia”, Scandinavian Journal of Infectious diseases 2006, 38(8) 620-624.
10. Kelčíkova S, Skodova Z, StrakaS : Effectiveness of hand hygiene education in basic nursing school curricula. Public Health Nursing Journal. 2012, 29(2): 152–159

11. NicolPW, Watkins RE, DonovanRJ, WynadenD, Cadwallader H: The power of vivid experience in hand hygiene compliance. *Journal of Hospital Infection* 2009, 72: 36–42.
12. .Kampf G, Loffler H : ‘Hand disinfection in hospitals-benefits and risks’, *Journal of the German Society of Dermatology*. 2010, 8:12, 978-983.
13. Hung M, LiYK, Ngai CY, Wong YY, Yam WS: Knowledge, Practices and Beliefs on hand hygiene of Nursing Students in Hong Kong 2010.
14. Dersch SC. Knowledge, belief and practice of hand hygiene among senior nursing students in Canada. Retrieved from <http://www.uleth.ca/healthsciences/> 2009.
15. World Health Organization Guidelines on Hand Hygiene in Health Care: First global safety challenge: clean care is safe care. Retrieved from http://whqlibdoc.who.int/publications/2009/9789241597906_eng.pdf
16. NairSS, Hanumantappa R, Hiremath SG, SirajMA, Raghunath, P: Knowledge, attitude and practice of hand hygiene among medical and nursing students in Raichur, India. *ISRN Preventive Medicine* 2014. Retrieved from <http://dx.doi.org/10.1155/2014/608927>.
17. Thakker VS, Jadhav PR.: Knowledge of Hand Hygiene in Undergraduate Students. *Journal of Family Medicine and Primary Care* 2016.4 (4):582-586.
18. Van de Mortel TF, Apostolopoulou E, Petrikkos G: A comparison of the hand hygiene knowledge, beliefs, and practices of Greek nursing and medical students. *American Journal of Infection Control*. 2010;38(1):75–77.

How to cite this article: Ademuyiwa IY, Farotimi AA, Afolabi WA et.al. Knowledge and practice of hand hygiene among undergraduate nurses in college of medicine university of Lagos. *Int J Health Sci Res*. 2019; 9(12):97-103.
