

# Hand hygiene perception and practices among nursing students in Lagos State.

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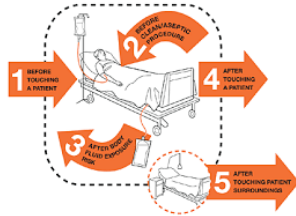
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## Disclosures

• Research grants: None



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• Worldatlas.com

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**Background**

- Against the background of **Ebola haemorrhagic disease**, Lassa fever and other contagious diseases ravaging parts of West Africa and the implication of the **contaminated hands of health-care professionals (HCPs)** as a vector in the transmission of potentially pathogenic organisms;
- The burden of **Health care-associated infection (HCAI)** in developing countries due to **understaffing, poor sanitation, scarcity of basic equipment, limited financial resources.**
- An adverse social and political milieu in populations generally affected by malnutrition and other types of infections that increase the risk of HCAI.<sup>1,2</sup>

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**Background**

- Nurses are with the patient more than any other HCP, and play very critical roles - observing, caring and ensuring that patients receive high-quality care.<sup>3</sup>
- The only Ebola outbreak in Nigeria illustrates this fact since **the first Nigerian victim, who eventually died was a nurse-HER FIRST DAY AT HER NEW JOB!**
- Some investigators have underscored the deficiency of many undergraduate programs to effectually train students of various clinical disciplines,<sup>4</sup> possibly indicative of an underlying link between undergraduate education and poor compliance with infection control guidelines.

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## Slide 5

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- OA1** Allegranzi B, Pittet D. Healthcare-associated infection in developing countries: simple solutions to meet complex challenges. *Infection Control and Hospital Epidemiology*. 2007;28:1323–1327  
OYAPERU AFOLABI, 27/04/2019
- OA2** Pittet D, et al. Infection control as a major World Health Organization priority for developing countries. *Journal of Hospital Infection*. 2008;68:285–292.  
OYAPERU AFOLABI, 27/04/2019

## Slide 6

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- OA3** Agency for Healthcare Research and Quality, U.S. Department of Health & Human Services (AHRQ). (2015). Nursing and patient safety. Retrieved from [psnet.ahrq.gov/primer.aspx?primerID=22](https://psnet.ahrq.gov/primer.aspx?primerID=22)  
OYAPERU AFOLABI, 27/04/2019
- OA4** Jennings-Sanders A, Jury L. Assessing methicillin-resistant *Staphylococcus aureus* knowledge among nursing students. *Nurse Educ Today*. 2010;30:789–93  
OYAPERU AFOLABI, 27/04/2019

## Study Objectives

### Primary Objective

We assessed hand hygiene (HH) perception and practices among a cohort of nursing students at three nursing schools in Lagos State.

### Secondary Objectives

- to assess their **knowledge** regarding hand hygiene practices.
- their **beliefs** about infection risk.
- to explore their self-reported **practices**.
- Determine association between dependent and independent variables.

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## Material and methods

### .....Study Design

-A descriptive, cross sectional study.

-210 nursing students were recruited from:

- School Of Nursing, Lagos State University College Of Medicine
- School Of Nursing, Lagos University Teaching Hospital; and the
- Lagos State School of Nursing, Igando.

- A multistage probability sampling method
- Stratification of the students into the three levels
- Simple random sampling at the second stage using the nominal roll of students as the sampling frame.

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## Questionnaire

A self-administered HH questionnaire developed by van de Mortel (2009) –(modified) with 5 sections was used for data collection.

- Socio-demographic characteristics of the study participants,
- The modified Hand Hygiene questionnaire which had ten multiple-choice questions that assessed basic HH knowledge;
- 13 Likert scale inquiries that assessed the students' opinions of the effectiveness of various teaching methods about HH;
- 23 Likert scale questions which assessed students' attitude and health belief about HH;
- 14 Likert scale questions on the students' practices of HH.

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## Slide 9

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**OA5** van de Mortel, TF 2009, 'Development of a questionnaire to assess health care students' hand hygiene knowledge, beliefs and practices', *Australian Journal of Advanced Nursing*, vol. 26, no. 3, pp. 9-16.

OYAPERU AFOLABI, 27/04/2019

### Data analysis

- Data analysis: The data was analyzed using the Statistical Package for the Social Sciences (SPSS), version 20 (IBM Corp., Armonk, NY, USA).
- Scores on individual items in the scale ranged from 1 to 5.
- **Multivariate linear and logistic regressions** were done to assess significant predictors, with odds ratios (ORs) and 95% confidence intervals specified as the measures of association between predictors and outcome variables.
- **p < 0.05** was considered statistically significant.

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### Results

- The total number of participants recruited for this study were 210, of which 77.6% (n = 163) were female; highest proportion of participants were 19-21 years old (37.1%, n = 78).
- Majority of the respondents (45.2%, n = 95) were in their second year of study.
- The mean score on the hand hygiene beliefs scale was 89.5 ± 8.4, with scores ranging from **23 to 88** out of a possible high score of **115**.
- The most positive health beliefs were associated with having **HH emphasized by supervisors** (3.63 ± 0.33); being a role model for HH (3.49 ± 0.47); and having it in the curriculum (3.38 ± 0.89);
- The worst was associated with **imitating bad HH practices performed by senior colleague** (1.42 ± 1.13).

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Table 1: Demographic characteristics of the study participants

Variable	Frequency (%)
<b>Age</b>	
≤18	32 (15.2)
19-21	78 (37.1)
22-24	48 (22.9)
25-27	27 (12.9)
≥28	25 (11.9)
<b>Mean±SD</b>	22.3±3.9
<b>Gender</b>	
Female	163 (77.6)
Male	47 (23.4)
<b>Year of study</b>	
First	69 (32.8)
Second	95 (45.2)
Third	46 (22.0)
<b>School</b>	
LASUCOM	60 (28.6)

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**Results**

- The teaching methods that participants rated as the most effective were **demonstration and clinical practice** with mean scores of  $3.55 \pm 0.54$  and  $3.49 \pm 0.62$ , respectively, out of a possible score of 5.
- The lowest rated methods included **research articles and websites** with more than half of the participants rating each as mildly effective or not effective.
- Student nurses in their 3rd year of study (OR = 1.98; 95% CI: 1.42–3.67), those with a higher risk perception (OR = 1.41; 95% CI: 0.85–2.17) and those who perceived the HH teaching methods they received as effective (OR = 1.31; 95% CI: 0.89–2.13) had better knowledge about HH. (Model 1).

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**Results**

- The frequency of HH performance is presented in percentages with scores ranging from **22.7% to 83.6%**. A score of 100% signifies that HH is always performed on every indication.
- Caring for a wound (n=187 [89.0%]) ( $3.97 \pm 0.66$ ) was associated mostly with the performance of HH, while **HH was least performed before coming in contact with a patient.** [n=48 [22.8%]] ( $-1.48 \pm 1.23$ ).
- Overall, 32.6% of the respondents had good knowledge, while 42.6% and 33.8% had positive attitude and good practices respectively.
- Nursing students from **LUTH** had the highest proportion with good scores -61.1%.

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**Table 4: Self-reported hand hygiene practices of respondents**

HH practices	Always	Mean±SD
After going to the toilet	155 (73.8)	3.66±0.29
Before caring for a wound	91 (43.3)	3.01±1.01
After caring for a wound	187 (89.0)	3.86±0.49
After touching potentially contaminated objects	165 (78.6)	3.79±0.66
After contact with blood or body fluids	179 (85.2)	2.98±0.73
After inserting an invasive device	129 (61.4)	3.62±0.51
Before entering a patient's room	102 (48.6)	2.19±0.74
After contact with a patient's skin	133 (63.3)	2.46±0.61
After exiting a patient's room	142 (67.6)	3.67±0.73
Before suctioning a patient	108 (51.4)	2.36±0.81
After contact with a patient's secretions	168 (80.0)	2.82±0.79
Before patient contact	63 (30.0)	1.83±1.22
After removing gloves	114 (54.3)	2.52±0.69
After hand hygiene	145 (70.2)	3.66±1.00

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## Results

- The results of the linear regression model showed that third-year student nurses, student nurses with a higher risk perception, and those who do not follow the example of senior health-care worker when deciding whether or not to perform HH had significantly **more positive attitudes** about HH (Model 2).
- Results of the multivariate logistic regression analysis, with the outcome variable of good self-reported HH practices, also revealed that the odds of appropriate behaviour were **higher if the student nurses were in their third year** of study (OR = 1.87; 95% CI: 1.17-4.18).
- An appropriate behaviour was also more likely in student nurses **with a higher risk perception** (OR = 1.62; 95% CI: 1.12-2.59) (Model 3).

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**Table 7: Multivariate logistic (1 and 3) and linear (2) regression model results**

Variables	OR adjusted	95% CI	P
<b>Model 1: Knowledge about HH</b>			
Log likelihood, $\chi^2$ , P	216.5, 11.48, 0.098		
Educational level - year of study			
First*	1.0		
Second	1.28	0.76-2.14	0.166
Third	1.89	1.24-3.35	<b>0.003*</b>
Student nurses with higher risk perception	1.53	1.04-2.37	<b>0.008*</b>
Perceived effectiveness of HH teaching methods	1.28	0.93-2.25	0.118
<b>Model 2: Positive attitude/beliefs about HH</b>			
R <sup>2</sup> , F, P	0.28, 0.0001, 0.92%		
Educational level - year of study			
First*	1.0		
Second	0.5	1.71	<b>0.048*</b>
Third	0.29	1.94	<b>0.025*</b>
Student nurses with higher risk perception	0.22	1.79	<b>0.043*</b>
Student nurses who do not follow the example of senior health-care worker when deciding whether or not to perform HH	0.22	1.79	<b>0.043*</b>
<b>Model 3: Good self-reported HH practices</b>			
Log likelihood, $\chi^2$ , P	252.42, 22.18, 0.0009		
Educational level - year of study			
First*	1.0		
Second	1.42	0.73-1.91	0.144
Third	1.87	1.17-4.18	<b>0.013*</b>
Student nurses with a higher risk perception	1.62	1.12-2.59	<b>0.011*</b>
Student nurses who do not follow the example of senior health-care worker when deciding whether or not to perform HH	1.59	1.04-2.39	<b>0.024*</b>

\*Reference group, CI: Confidence interval, OR: Odds ratio, HH: Hand hygiene

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## Discussion DA6



- Limitations:
  - Descriptive design and self reported
  - No proxy or direct observation.
  - However the first Nigerian study to assess multiple nursing school students.
- Nursing is an exceptionally hazardous occupation and Nurses constitute the highest percentage of frontline HCP.
- They devote more time to patient care than other HCPs, and hence their compliance with HH recommendations appears to be more critical in the prevention of disease transmission among patients.
- In a study of 60 U.S. hospitals in a 4-year period, nurses were the most likely HCP to experience a blood or body fluid exposure.

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**OA6** Occupational outlook handbook, 2002–2003 edition. Washington:  
U.S. Department of Labor, Bureau of Labor Statistics; 1999.  
OYAPERU AFOLABI, 27/04/2019

### Discussion



- There were obvious deficits in the cognitive, affective, and behavioural domains of the respondents with regard to HH.
- Our study respondents had little interest in research articles, information from websites, computer simulations on HH. They preferred didactic instructions and traditional learning modes.
- The reasons mentioned in the literature for preferring human sources to evidence-based information include convenience, an apparent lack of computer skills, and avoidance of large amounts of retrieved information which has to be read, analyzed, and evaluated.

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### Discussion



- Concerning the attitude of the participants, the most positive health beliefs were associated with **being a role model for HH** and having HH emphasized by supervisors.
- Experienced nurses should be role models for less-experienced staff members and must model safe behaviour, thus changing the culture of poor compliance.
- The **first** out of the **5 moments of HH** ( Before touching a patient) was poorly adhered to. Compliance with HH was greatest with **moment 3** ( After body fluid exposure risk).
- They were obviously more concerned about contacting infections rather than transmitting it to patients.

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### Discussion



- The outbreak of **Ebola hemorrhagic fever** in Nigeria in 2012 due to its importation into the country by a Liberian National made these deficiencies obvious even though the public health institutions in the country eventually rose to the occasion.
- This was after a period of **ill preparedness and glaring deficiencies** in compliance to standard precaution protocols.
- The increasing presence of new and evolving pathogens in health-care environments and the effect of clinician education on reducing the spread of HAIs points to an urgent need to **review the present curriculum**.

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### Discussion



- While it is imperative to instruct HCPs about the theoretical and practical aspects of HH, it must however be noted that **there are other administrative barriers to compliance.**
- Provision of materials and equipment for HH such as regular water supply, sinks, waste disposal facilities, alcohol-based hand rubs, and disposable paper towels are **insufficient** in resource-constrained countries like Nigeria.
- It is imperative that these additional barriers to HH practice are eliminated if proper compliance is anticipated.

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### Conclusion



- The study participants had **inadequate knowledge of HH, erroneous health beliefs, and deficient practices.**
- It also showed that they were inadequately exposed to evidence-based information sources.
- Nursing students can impact future HH compliance and the outcomes from this study underscores the importance of adequately incorporating HH into their academic curriculum.
- **Improved funding** of the health sector is also advocated.

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### Acknowledgments

- **IFIC**
- **IPAC**




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## Slide 22

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**OA7** Ward DJ. The role of education in the prevention and control of infection: A review of the literature. *Nurse Educ Today*. 2011;31:9–17.

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**Thank you for listening.**




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