Knowledge of Hand Hygiene among Medical Students in a Teaching Hospital, Kaduna State, Nigeria.

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Abstract

Hand hygiene is an important health issue globally. It is the single most cost-effective and practical measure to reduce the incidence of Health-care associated infections. One of the main reasons for the spread of infection in the healthcare environment is inadequate performance of hand hygiene. According to the World Health Organization (WHO), lack of knowledge of good hand hygiene practices is associated with poor compliance. This evaluated the knowledge of Hand Hygiene as a basic infection control measure among Medical Students in their clinical years at the Barau Dikko Teaching Hospital, Kaduna state.

This is a descriptive, cross-sectional study conducted on 123 Medical students in their fourth and fifth year. Self-administered structured questionnaires based on the questionnaire for hand hygiene knowledge assessment in health care workers from 2009 Global patient safety strategy initiative WHO guidelines were answered by the study participants after obtaining their informed consent. Data was analyzed using SPSS version 22. Level of significance was set at 95%.

A total of one hundred and twenty-three students (123) were recruited for the studies, of which 70(56.9%) were in 4th year medical school while 53(43.1%) were in 5th year. Male: Female ratio was 2:1. Majority (96.7%) of them had formal training in hand hygiene but only 34.1% routinely use alcohol hand rub. Medical student in 4th year were found to have a better knowledge in hand hygiene compared to their counterpart in 5th year (P=0.003). Prior formal training in hand hygiene was found to significantly influence the knowledge of medical students (P=0.004).

Hand hygiene knowledge is unsatisfactory amongst medical students. Sustained education, training and re-training should be included in their curricular throughout their pre-clinical and clinical years to improve knowledge and invariably, compliance to Hand hygiene performance.

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Introduction

Hand hygiene (HH) is the primary measure to reduce infections. Though this is a simple action, lack of compliance among Health-care providers is problematic all over the world. Health-care associated infections (HCAIs) is a major problem for patient's safety and its prevention must be a first priority for settings and institutions committed to make health care safer.[1]

The transmission of health-care associated pathogens through the contaminated health-care workers'(HCW) hands is the most common pattern in most settings. Failure to perform appropriate hand hygiene, is considered to be the leading cause of HCAI, the spread of multi-resistant organisms and has been recognized as a significant contributor to outbreaks.[2]

Risk factors for non-adherence have been extensively studied and physicians have been repeatedly observed as being poor compliers.[3] Medical students, in their clinical training phase within Health-care facilities (HCF) rotate through Laboratory medicine, Surgery, Internal Medicine, Paediatrics, Intensive Care Units and Labor and Delivery suites and can potentially transmit infections through their hands too.[4] Strategies, should therefore be established with regards to ensuring proper education and adequate training with the expectation that this will positively impact on their knowledge and practice of basic infection control measures.

In this study we aim at assessing the knowledge and attitude of Medical Students to HH as a basic infection control measure, with the intent of fishing out need-gaps in their training and providing feedback to all stake-holders including students, medical educators and public health policy makers.

Material And Methods

Study design

A descriptive, cross- sectional study was conducted in June -August 2018 among clinical, medical students of the Kaduna State University (KASU), at the Barau Dikko Teaching Hospital, (BDTH).

Study Location and Population

BDTH is a tertiary health care facility. This hospital is a major referral centre for Kaduna and its environs however it caters not only for Kaduna citizens

but for people from other parts of the North and the South of the country. It is the teaching hospital affiliated to KASU.

KASU is sited in Kaduna city, which is the capital of Kaduna State, located in northwestern Nigeria. The medical school of the university was established in 2007 with an initial intake of 46 students in 2009. By 2018, the number of students had grown to 162, distributed across four levels of study. The study population were the undergraduate medical clinical students of the university.

Sampling Method

The total population of medical clinical students of the university who were duly registered at the time of the study and gave informed consent were included in the study. Thus, the clinical students' entire population of 123 respondents was used in the study.

Categorization of knowledge scores

Correct answers were given one point whereas incorrect answers scored zero. The maximum score achievable for knowledge was 27 points. The level of hand hygiene knowledge was calculated by dividing the responses into three groups based on a score of more than 75% considered as good, 50-74% moderate, and less than 50% considered as low.

Data collection

A self-administered structured questionnaire was used to collect information about respondents' socio-demographic characteristics including age, gender, year of study in the clinical section of the medical school; history previous training on HH; knowledge about HH and practice of use alcohol-based hand rub. The questionnaire was based on the questionnaire for hand hygiene knowledge assessment in health care workers from 2009 Global patient safety strategy initiative WHO guidelines[6]. Before starting data collection, the research team received training on the methods of data collection and the principal investigator supervised the overall data collection activities.

Data Analysis

The questionnaires were checked for completeness and consistency. Data were entered into data entry templates and analyzed using SPSS version 22. Descriptive statistics such as mean and standard deviation were generated for variables including frequencies and percentages for categorical variables. the Independent t-test was applied to compare the mean knowledge scores with socio-demographic characteristics of respondents and also their status on training on HH. A p-value of less than 0.05 was used as the cut off level for statistical significance.

Ethical Considerations

The Ethics Research Committee of the Barau Dikko Teaching Hospital approved the research protocol. Also, informed, written consent was obtained from the study participants and confidentiality assured for all the information provided.

Result

Sociodemographics

This study included 123 medical students of which 71.5% were males and 28.5% were females. Their age ranged from 20 to 45 years with an average of 25.7± 4.2 years and a median age of 25 years. Fifty-six-point nine percent were in their first year in the clinical section of the medical school, while 43.1% of them were in their second year in the clinical section.

Hand hygiene knowledge

One hundred and nineteen respondents (96.7%) reported that they had a previous training in HH but, only 34.1% reported the routine use of alcohol hand rub (ABHR). Overall, 86(69.9%) respondents knew that unhygienic hands of healthcare workers were the main route of transmission of potential harmful germs and 50(40.7%) were aware that the main source of germs responsible for HCAI was from patients. Only, 50(40.7%) respondents knew that 20 seconds is the minimum time required for effective alcohol-based hand rub according to the WHO guideline. Some of the respondents' responses to hand hygiene knowledge questionnaire has been summarized in Table 1.

Level of hand hygiene knowledge

The knowledge on hand hygiene was moderate (69.9%, 86 of 123) among the majority of respondents. Only 3.3% of respondents (4 of 123) had good knowledge regarding hand hygiene [Table 2].

Comparison of hand hygiene knowledge scores

Medical students' hand hygiene knowledge score was significantly higher in the first-year clinical students (P <=0.004) than those in the second year, in respondents that were less than or equal to 25 years of age (P = 0.024) as compare to those greater than 25years of age and in those with/without history of previous training on Hand hygiene (P=0.004). There was no statistically significant association found between knowledge of Hand hygiene and gender (p=0.369) Table 3.

Discussion

Hand hygiene is the corner stone of infection prevention and enhanced compliance is associated with decreased cross-transmission of pathogens and reduced infection rates in Health care facilities.[5] In this study, the knowledge on Hand hygiene was moderate (69.9%, 86 0f 123), but only a few (3.3%, 4 of 123) of respondents have good knowledge with regards to Hand hygiene.

Majority of the students 96.7% acknowledge formal training. There is need to mention that the formal training the students acknowledged refers to a two-hour lecture during which the basic components of Infection

Table 1: A sample of respondents' responses to the WHO hand hygiene knowledge questionnaire

S/no	Question	Correctly answered (%)	Incorrectly answered (%)
1.	Receive formal training in hand hygiene in the Medical school	119(96.7)	4(3.3)
2.	Routinely use an alcohol-based hand rub for hand hygiene?	42 (34.1)	81(65.9)
3.	Main route of cross-transmission of potentially harmful germs between patients in a health¯care facility	86(69.9)	37(30.1)
4.	The most frequent source of germs responsible for health care-associated infections	50(40.7)	73(59.3)
5.	Hand hygiene actions which prevents transmission of germs to the patient		
5a	Before touching the patient	114(92.7)	9(7.3)
5b	Immediately after a risk of body fluid exposure	30(24.4)	93(75.6)
5c	After exposure to the immediate surroundings of a patient	34(27.6)	89(72.4)
5d	Immediately before a clean/aseptic procedure	94(76.4)	29(23.6)
6.	Which of the following hand hygiene actions prevents transmission of germs to the health - care worker?		
6a	After touching a patient	123(100)	0(0)
6b	Immediately after risk of body fluid exposure	110(89.4)	13(10.6)
6c	Immediately before a clean/aseptic procedure	49(39.8)	74(60.2)

Table 2: Respondents' level of hand hygiene knowledge

Hand hygiene knowledge	Frequency	Percent
Good >75%	4	3.3
Moderate 50-74%	86	69.9
Poor<50%	33	26.8
Total	123	100.0

prevention and control, including Hand hygiene, are taught the students followed by a practical demonstration of the performance of Hand washing. Students are made to individually perform this until they become quite adept at it.

This is usually done in their Medical Microbiology posting at 400 level. Students are required and encouraged to perform HH before and after every practical session, at the clinic and when in the wards. After their laboratory medicine posting, other clinical postings follow in which they interact and have frequent contact with patients. Students are told to practice basic infection and control measures to protect themselves but not much emphasis is laid on the importance of adequate HH performance, as a very effective means of preventing the cross- transmission of infection.

It therefore was not surprising to observe that in 400L students, hand hygiene knowledge score was significant compared with their counterparts in 500L (p

Table 3: Relationship between Socio -demographic characteristics of respondents and mean Hand Hygiene knowledge scores

Characteristics	Knowledge score	P value (t-test)	C I
Age			
≤25 years	15.9±3.3	0.024	0.16-1.97
>25 years	14.6+3.0		df 121
Level			
400 Level	17.6± 2.6	0.003	0.54-2.50
500 Level	16.0+ 2.9		df 121
Gender			
Females	15.8±3.9	0.369	0.63-1.40
Males	15.2+2.7		df 121
Training			
Yes	17.0±2.7	0.004	-6.82-1.33
No	13.0± 3.2		df 121

C I Confidence interval, df Degree of freedom

≤ 0.004). Hand hygiene knowledge score was also significant in respondents 25 years old or younger as compared with those greater than 25 years old. (p ≤ 0.024).

A study suggests that in the community, HH performance patterns are likely to be firmly established before the age of 9 or 10 years probably beginning at the time of toilet training. [6] This implies that from the perspective of behavior, humans are capable of deeply engrafting patterns of ritualized behavior perceived to be self-protective from infection. That is the younger one is, the more readily he/she is able to understand, institute or effect a behavior change.

In this study, only 34.1% of the students routinely use alcohol-based hand rub for hand hygiene. This is in contrast to findings in the study done by Modi et al[7] in which 71.9% of medical students routinely use alcohol-based hand rub. This may be because in that center, adequate training and work place reminder with educational and motivational programs for HCWs on hand hygiene may play prominent roles.

Studies also show that, the attitude of most students to hand hygiene performance is strongly influenced and molded by their mentor/trainer (Registrars, Senior Registrars and Consultants) at the bed side and clinics[8,9] If any these teach/demonstrate faulty hand hygiene, or do not practice it at all, it is very likely that their trainees will follow suit

In conclusion, students are bound to develop faulty hand hygiene practice if the curriculum is not enforced with hand hygiene concepts and skills. It is strongly recommended that the medical school curriculum should be modified to include this very important concept in order to improve hand hygiene knowledge and practice. Hospitals should also put in place adequate educational and motivational training programs and incentives to improve compliance.

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