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# Assessment of Hand Hygiene Knowledge, Attitudes, and Practices Among Kampala International University Medical Students at Fort Portal Regional Referral Hospital, Kabarole District, Western Uganda

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#### ABSTRACT

This study aimed to assess the knowledge, attitudes, and practices towards hand hygiene among Kampala International University Medical Students at Fort Portal Regional Referral Hospital. The study involved 171 students who agreed to participate. The data was collected through questionnaires and analyzed using SPSS. The results showed that 76.1% of respondents were aware that unclean hands of healthcare workers are the primary route of cross-transmission of potentially harmful germs between patients and healthcare workers. 58.2% of respondents correctly stated that the minimum time needed for alcoholbased hand rub to kill most germs on hands is 20 seconds. 88.1% correctly identified that wearing jewelry is associated with the colonization of harmful germs, and 65.6% correctly recognized that artificial nails are associated with the colonization of harmful germs. Attitudes towards hand hygiene were high, with 38.9% strongly agreeing to review WHO and CDC guidelines before starting clinical training. The majority of respondents (93.9%) strongly agreed that medical students should practice effective hand hygiene in line with their career. However, 47.8% disagreed with the statement that they felt confident enough to remind their colleagues to wash their hands, and 36.3% felt disappointed by their supervisors if hand hygiene was omitted.

**Keywords:** Hand-washing practices, Medical Students, Healthcare workers, Infection, Hand hygiene.

#### INTRODUCTION

Hand Hygiene refers to public health conditions related to clean drinking water, adequate treatment, and disposal of human excreta and sewage [1, 2], as well as a hygienic means of promoting health through the prevention of human contact with the hazards of waste [3]. It is one of the basic determinants of the quality of life and the hygiene [4]. Poor linked Hand Hygiene is to the transmission of diseases such as cholera, diarrhea, dysentery, hepatitis A, typhoid, and polio, and exacerbates stunting [5]. This challenge has been observed in developing countries where inadequate sanitary conditions and poor Hand Hygiene practices play major roles in the increased burden of communicable diseases [6]. By increasing the risk of

infectious diseases. the lack of safe Hand Hygiene systems also contributes to the emergence and spread of antimicrobial resistance [7]. Therefore, unless proper, functional Hand Hygiene facilities such as handwashing points are in use, complemented with the right types of Hand Hygiene behaviors, communities will be vulnerable to recurrent incidences water and Hand Hygiene-related of diseases [8]. Considerably, worldwide, three billion people do not have access to hand washing facilities with soap, and 673 million people still practice open defecation [9]

The schools' water, sanitation, and hygiene (WASH) intervention programs in both developed and developing countries have been found to increase knowledge

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INOSR APPLIED SCIENCES 10(3):241-250, 2023 and improve behavioral practices toward Hand Hygiene in communities [10]. such practices However, are not sustainable, inconsistent, and tend to decline after the intervention program is over [10]. In Australia, good Hand Hygiene is considered to reduce infection transmissibility in the hospital setting [11]. In Ethiopia, good knowledge, favorable attitude, and good practice on WASH were observed in 42.2%, 48.5%, and 49.2% of the residents, respectively [12] Regarding general Hand Hygiene, the overall mean knowledge of Hand Hygiene was 78.1%, and favorable attitudes to Hand Hygiene were 73.6% in Uganda [13]. In Kenya, 50.7% of residents had acquired no knowledge of Hand Hygiene from WASH programs, 19.9% reported having acquired knowledge on water treatment from WASH programs, and 12.1% said they acquired knowledge have on water treatment and hand washing from WASH programs [14]. In Uganda, the Uganda Hand Hygiene Fund (USF) was established in August 2011 to help communities gain knowledge of the importance and aspects of improved Hand Hygiene [15, 16]. However, a considerable strain on public sector service delivery for Hand Hygiene has resulted from Uganda's population growth of over 3 percent per year, which is one of the highest in the world [9]. In Kabarole District, it has been suggested that 64% of the population has good knowledge of the management of feces, have knowledge of the and 49% cleanliness of latrines (WE Consult, 2014). A study among 392 medical students at

Study Design

In this study, a descriptive cross-sectional design was employed. It was chosen because it is cost-effective, easier to implement, time-saving, and enhances data reliability.

#### Area of Study

The study was conducted at Fort Portal Regional Referral Hospital, commonly known as Buhinga Hospital, located in the town of Fort Portal City, Kabarole District, Western Uganda. This hospital serves as the referral facility for the districts of Bundibugyo, Kabarole, Kamwenge, Kasese, Kampala International University found that more than half of the respondents (203) had poor knowledge of Hand Hygiene, while 43.1% had an average, and 5.1% were considered to have good knowledge. Most of the respondents had good attitudes toward hand hygiene in most of the aspects that were assessed [17]. However, this study was limited to hand hygiene, which aimed to assess knowledge, practice, and attitudes toward Hand Hygiene.

Sanitation practices are vital to one's health and well-being, especially in the prevention of communicable diseases [8]. Globally, 2.0 billion people still do not have basic sanitation facilities such as hand washing points ([18], and 90% of diarrhea-related mortality results from poor Hand Hygiene practices [18]. This was evident in the WHO African Region, where 45% of deaths that occurred in 2015 were attributed to unsafe WASH services [18]. However, little attention is paid to medical students' hand-washing practices [19], even though they are exposed to patients and are frequently contaminated during routine patient care [17, 20]. At KIU-WC, there is limited data on knowledge, attitude, and practice toward Hand Hygiene among medical students. Therefore, conducting a study to assess the knowledge, attitude, and practice toward Hand Hygiene among KIU medical students at Fort Portal Regional Referral Hospital Kabarole District is vital in addressing Hand Hygiene health problems.

# METHODOLOGY

Ntoroko, and Kyenjojo. The coordinates of the hospital are 0°39'19.0"N, 30°16'53.0"E (Latitude: 0.655278; Longitude: 30.281389). At Fort Portal Regional Referral Hospital, KIU-WC hosts approximately 300 medical students annually for placements.

#### Study Populations

The study population consists of Kampala International University Western Campus medical students at Fort Portal Regional Referral Hospital.

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#### Sample Size Determination

Sample size determination involves calculating the number of observations used to estimate characteristics of a given population. The minimum required sample size was determined using the formula by Kish and Lisle [21] with a precision of +/-5% at a confidence level of 95%. The formula is expressed as follows:  $N = n / (1 + n(E)^2)$ 

Where:

N = desired sample size

n = target population (300)

E = level of precision = 0.05

Therefore, N =  $300 / (1 + 300(0.05)^2)$ N = 171.428, rounded to 171 respondents who were recruited for the study.

# Sampling Techniques & Rationale

The study employed stratified random sampling because it provides greater precision and effectiveness for small samples and eliminates bias in strata with large respondents. A simple random technique was then used to select participants from each class rotation.

#### **Study Inclusion Criteria**

Eligible participants for the study were KIU Medical students at Fort Portal Regional Referral Hospital who agreed to participate.

#### Study Exclusion Criteria

Excluded from the study were KIU Medical students at Fort Portal Regional Referral Hospital who refused to participate and those who were too ill or absent.

#### Dependent Variables

The dependent variable in this study was "Hand Hygiene among KIU medical students."

#### **Independent Variables**

The independent variables included knowledge, practice, and attitude toward hand hygiene practices.

#### Research Instrument, Quality Control, Validity, and Reliability:

Quantitative data were collected using a pre-tested questionnaire that contained both open-ended and close-ended questions. The data were edited and entered into MS Excel 2016 before being exported to the Statistical Package for Social Scientists (SPSS) version 25 for analysis. The findings were presented in the form of frequencies, percentages, and cross-tabulations on graphs and charts to describe the knowledge, practice, and attitude toward hand hygiene among KIU medical students at Fort Portal Regional Referral Hospital.

#### **Ethical Consideration**

The researcher initially presented the research proposal to the Faculty of Clinical Medicine and Dentistry Research Committee. After approval of the proposal, a letter of approval and an introduction letter were obtained from the Kampala International University Research and Ethics Committee. The proposal and introductory letter were then presented to the administration of Fort Portal Regional Referral Hospital for permission to access medical students. The purpose, benefits, safety, and rights of the participants were explained thoroughly. Participants were informed of their freedom to withdraw from the study without penalty, and their confidentiality and privacy were assured by not using their names in the study. No promises of rewards, whether in cash or in kind, were made to the participants.

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RESULTS Demographic findings			
Table 1: showing demographic characteristics of respondentsN=1			
Variables	Frequency	Percent	
Age of respondents			
20-25	133	77.3	
26-35 years	18	10.5	
Above 35 years	20	12.1	
The education level of the respondent			
Bachelors	152	89.1	
Diploma	19	10.9	
Gender of respondents			
Male	64	37.4	
Female	107	62.6	
Religion of respondents			
Catholic	30	17.5	
Anglican	80	46.9	
Moslem	42	24.6	
Adventists	19	10.9	

The majority 133(77.3%) were aged 20-25 years, 152(89.1%) were of bachelor's level of education, the majority 107(62.6%)

were females and lastly, the majority 80 (46.9%) were Anglicans.

Knowledge of hand hygiene among respondents				
Table 2: Knowledge on hand hygiene among respondents	N=	=171		
Statements	Frequency	Percent		
Health-care workers' hand when not clean is the main route of cross-transmission of potentially harmful germs between patients in health-care workers				
Yes	130	76.1		
No	41	23.9		
Hand rubbing is more rapid for cleaning than hand washing				
Yes	122	71.6		
No	49	28.4		
Hand rubbing causes skin dryness more than hand washing				
Yes	69	40.3		
No	102	59.7		
Hand rubbing is more effective against germs than hand washing				
Yes	41	23.9		
No	130	76.1		

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Hand rubbing and hand washing are recommended to be performed in sequence		
Yes No	79 93	46.3 53.4
The minimal time needed for alcohol based hand rub to kill most germs on hands is 20 seconds		
Yes	100	58.2
No	71	41.8
Hand washing is better than hand rubbing after removing examination gloves		
Yes	61	35.8
No	110	64.2
Washing hands is better than hand washing before palpation of the abdomen		
Yes	140	82.1
No	30	17.9
Wearing jewelry should be avoided because it is associated with an increased likelihood of colonization of hands with harmful germs		
Yes	151	88.1
No	20	11.9
Artificial fingernails should be avoided because it is associated with an increased likelihood of colonization of hands with harmful germs		
Yes	112	65.6
No	59	34.4

Table 2 represents the knowledge of the participants about hand hygiene. About 76.1% of the respondents had knowledge of healthcare workers' hands when not clean, it is the main route of cross-transmission of potentially harmful germs between patients in healthcare workers. Knowledge of hand rubbing is more effective for hand cleansing than hand washing showed 23.9% among respondents. The participant's knowledge

about the minimal time needed for alcohol-based hand rub to kill most germs on your hands is 20 seconds, which was shown correctly in 58.2% of respondents. The study was also conducted about the knowledge about wearing jewelry, and artificial nails are associated with colonization of harmful germs and results reported that 88.1% and 65.6% in respondents.

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#### Attitudes towards hand hygiene among respondents Table 3: Table showing attitudes towards hand hygiene among respondents

Statements	Strongly	Agree		Disagree	Strongly
	Agree		Not	21045100	Disagree
	U		sure		0
Before starting my clinical training, I	67	33	0	43	28
reviewed the respective WHO and CDC	(38.9%)	(19.4%)	(0.00%)	(25.1%)	(16.6%)
guidelines on hand hygiene					
Medical students should practice	155	5	2	4	4
effective hand hygiene in line with their	(90.9%)	(2.9%)	(1.2%)	(2.3%)	(2.3%)
career	4 <b>0 -</b>		2	-	1.0
Hand hygiene practices should be an	137	21	3	1	10
acquired personnel	(80.3%)	(12%)	(1.8%)	(0.6%)	(5.6%)
I better complete other tasks assigned	4	4	3	4	126
than performing hand hygiene	(2.3%)	(2.3%)	(1.8%)	(2.3%)	(73.5%)
Hand hygiene should be include in the	97	35 (20.4%)	14	3 (1.90/)	$(12 F^{0})$
After joining the work force I have	(30.9%)	(20.4%)	(0.2%)	(1.6%)	(12.5%)
After Johning the work force i lidve	02 (10.20/)	(10.2%)	3U (17 20/)	(2.8%)	(20.4%)
hand hygiene practice	(40.2/0)	(10.270)	(17.5/0)	(3.0%)	(20.4%)
It is negligence not to perform hand	82	17	30	17	17
hygiene as recommended	(48.2%)	(10.2%)	(17.3%)	(10.2%)	(10.2%)
It is hard to adhere to hand hygiene	17	50	6	31	66
practice	(10.2%)	(29.3%)	(3.8%)	(18.3%)	(38.7%)
	1.0	n	1 7	2.4	0.2
I feel confident enough to remind my		(1.00/)	$\frac{1}{(10, 20)}$	(14, 20/)	82
hands	(10.8%)	(1.8%)	(10.2%)	(14.2%)	(47.8%)
I feel frustrated when others omit hand	63	2	20	16	53
hygiene	(36.8%)	(1.2%)	(11.7%)	(9.2%)	(30.8%)

Table 3 demonstrates the attitude of the participants about hand hygiene. Results showed that many (38.9%) strongly agreed before starting my clinical training, they reviewed the respective WHO and CDC guidelines on hand hygiene and the least 16.6% strongly disagreed. The majority of the respondents 93.9% strongly agreed that medical students should practice effective hand hygiene in line with their career and the least 1.2% were not sure. Of the respondents, 80.3% strongly agreed that hand hygiene should be acquired personal habit and the least only 5.6% strongly disagreed. Many 73.5% strongly disagreed that they would better complete other tasks assigned than performing hand hygiene and only 2.3% agreed. When asked if hand hygiene should be included in the curriculum for medical students 56.9% strongly agreed, and only 12.5%

strongly disagreed. The majority 48.2% of the respondents strongly agreed with the statement that after joining the workforce they had the power to change their colleague's poor hand hygiene practices and 20.4% strongly disagreed. Most respondents 48.2% strongly agreed that it is negligence not to adhere to hand hygiene as recommended and 10.2% strongly disagreed. When asked if it is hard to adhere to hand hygiene practice, 38.7% strongly disagreed and 10.2% strongly agreed. However, the majority strongly disagreed 47.8% with the statement that they felt confident enough to remind their colleague in attachment to wash hands and only 10.8% strongly disagreed. Majority 36.3%strongly agreed that they would feel disappointed by their supervisors on the omission of hand hygiene and 30.8%strongly disagreed.

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Practices towards hand hygiene among respondents
Table 4: Practices towards hand hygiene among respondents

Statements	Yes	No
I follow the steps of hand-washing	118 (69.0%)	53 (31.0)
I always wash my hands before touching the patient	113 (65.9%)	59 (34.1%)
I wash my hands before performing the aseptic and clean procedure	139 (81.4%)	32(18.6%)
I wash my hands after being a risk of exposure	150 (87.6%)	21(12.4%)
I wash my hands after touching the patient's surroundings	114 (66.7%)	56(33.3%)

Practicing hand hygiene among medical students has been shown in Table 3. It was shown that 118 (69.0%) followed the steps of hand washing reflected in terms of knowledge score). Practicing habits of

#### Knowledge on hand hygiene among KIU medical students at Fort Portal Regional Referral Hospital

About 76.1% of the respondents were having knowledge of health-care workers' hands when not clean. it is the main route of cross transmission of potentially harmful germs between patients in healthcare workers. About 24.8% of respondents stated correctly that germs present on or within the patient is the most frequent of germs source responsible for healthcare-associated infections. Knowledge of hand rubbing is more effective for hand cleansing than hand showed 23.9% washing among respondents. The participant's knowledge about the minimal time needed for alcohol-based hand rub to kill most germs on your hands is 20 seconds, which is shown correctly in 58.2% of respondents. The study was also conducted about the knowledge about wearing jewelry, and artificial nails are associated with colonization of harmful germs and results reported that 88.1% and 65.6% of respondents. A study conducted in the Western Region of Nepal among medical students found that the knowledge of hygiene was moderate (84%) among the total study population [22]. Another study conducted in India among 98 medical and 46 medical students in a tertiary medical hand washing before touching the patient was 65.9%. Practicing hand washing before performing the aseptic and clean procedures was done by 87.6% and 66.7% respectively.

#### DISCUSSION

college found that only 9% of participants (13 out of 144) had good knowledge regarding hand hygiene and medical students' knowledge of Hand Hygiene was significantly better than medical students [23]. A study conducted in India among registered nurses and medical students showed that 71.8% of medical students knew main route of transmission of harmful potentially germs between patients, only 37.6% knew the most frequent source of germs responsible for health care associated infections, only 69.2% knew need for hand hygiene: after touching a patient, 90.6% knew that need of washing hands after exposure to immediate surroundings of a patient, and 61.5% were performing hand hygiene before palpation of abdomen [24].

#### Practices towards hand hygiene among KIU medical students at Fort Portal Regional Referral Hospital.

Generally, results in this study revealed that 118 (69.0%) followed the steps of hand washing reflected in terms of knowledge score). Practicing habits of hand washing before touching the patient was 65.9%. Practicing hand washing before performing the aseptic and clean procedures was done by 87.6% and 66.7% respectively. However, the study finding was low when compared to 97.4% of medical students who adhered to collect

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sanitary practices in a study conducted in India [24]. Also lower than (64.2%) of the [25] had good practices and 60.8% of medical students with good sanitation practices in a study done by Ghanian Azupogo [26]. This low finding contradicts a study done in India by Nair et al. [23] and a study done in Karad by Shinde & Mohite [27] since these studies show that medical students' practices on sanitation were better.

#### Attitude towards hand hygiene among KIU medical students at Fort Portal Regional Referral Hospital.

This study showed that it was showed that 118 (69.0%) followed the steps of hand washing reflected in terms of knowledge score). Practicing habits of hand washing before touching the patient was 65.9%. Practicing hand washing before performing aseptic and clean procedures was done by 87.6% and 66.7%

There general fairly good knowledge the minimum time required for an alcoholbased hand rub to kill most germs, healthcare workers' hands as the main route of cross-transmission of potentially harmful germs between patients in health-care workers, as well as wearing jewelry and artificial nails to be associated with harmful germ colonization, and hand washing was known to be more effective than hand rubbing. The findings showed positive attitude towards reviewing the respective WHO and CDC guidelines on hand hygiene, adhering to hand hygiene

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respectively. In regard to the respondent attitude majority had a positive attitude on the assessed aspects of hand hygiene. From the highlighted barriers, there is a clear indication that social environmental factors influence medical students' hand hygiene practice as indicated by Bandura in his social cognitive theory which explains beyond the individual factors to other factors (environmental and social) that shape human behaviour. In reference to hand hygiene barriers, Al-Naggar and Al-Jashamy in their study majority of the participant mentioned laziness as the major and leading barrier to hand washing practice which was followed by lack of nearby water supply and a feeling that their hands were not dirty enough to get infected [28]. Lack of time and negligence has also been cited as a barrier to hands hygiene in medical students.

# CONCLUSION

as recommended, practicing effective hand hygiene in line with their career. acquiring hand hygiene as a personal habit, and including hand hygiene in the curriculum medical for students. However, there were negative attitudes towards the power to change their colleague's poor hand hygiene practices, reminding and their colleague in attachment to wash hands. The findings revealed fairly good practices for hand washing before touching the patient, before performing aseptic and before cleaning procedures.

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