
HAND HYGIENE KNOWLEDGE AND PRACTICE AMONG STUDENTS IN SELECTED DEPARTMENTS AT ADELEKE UNIVERSITY, EDE, OSUN STATE

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ABSTRACT

In a range of settings, such as healthcare facilities, daycare facilities, and elementary schools, hand hygiene is crucial for preventing the transmission of infectious diseases. It has been noted that college students rarely wash their hands, which raises their risk of contracting infectious diseases. This study was conducted at Adeleke University in Ede, Osun State, with the intention of examining students' understanding and usage of hand hygiene. 250 respondents were chosen using the Fisher formula convenience sampling technique in a descriptive cross-sectional design. A self-made questionnaire was used to collect the data. The study questions were addressed, the acquired data was analyzed using tables and percentages, and the hypotheses were tested using chi square for some variables and chi square at the 0.05 level of significance. The purpose of the pilot study was to evaluate the questionnaire's internal consistency. Analysis of the pilot research results revealed a Cronbach alpha score of 0.884, indicating a strong instrument reliability index. This study revealed that 89 (75.6%) of the respondents had good knowledge of hand hygiene while (78%) had a high level of practice. The majority (69.3%) felt that there was insufficient material to ensure hand hygiene practice. Chi square analysis reveals a statistically significant link ($p < 0.05$) between knowledge and practice of hand hygiene ($X^2 = 5.963a$, $p\text{-value} = 0.05$). In this investigation, a major hurdle discovered was a lack of soap and detergent. There was a statistically significant

association between knowledge and practice of hand hygiene.

Keywords: Knowledge, Practice, Hand hygiene, Students.

INTRODUCTION

According to the World Health Organization, infectious diseases can be transmitted from one person to another either directly or indirectly and are brought on by pathogenic microorganisms such as bacteria, viruses, parasites, or fungus (WHO, 2018). Person-to-person contact through the hands is one of these mechanisms of transmission where bacterial illness is frequently spread (Barker, Bloom & Stevens, 2017). *Streptococcus pneumoniae*, *Staphylococcus epidermidis*, and community-associated methicillin-resistant staphylococcus are among the serious disease-causing organisms that are frequently identified in educational settings (Scott & Vanick, 2017).

The practice of washing one's hands with soap and water or rubbing one's hands with hand sanitizer without using water is referred to as practicing hand hygiene by the WHO (2009a). Hand washing is a simple and efficient way to stop the spread of infection and disease (Borghi, Curtis, Guinness & Ouedraogo, 2012). According to studies, good cleanliness is crucial for reducing the spread of infectious diseases in a number of settings, such as hospitals, daycare centers, and elementary schools (Aiello, Coulborn, Perez & Larson 2018). A significant link between poor hand hygiene and an increase in infectious diseases, medical visits, and time off from school or work has been identified (Prater et al., 2016). Absenteeism caused by communicable diseases has ramifications for educational institutions, such as the need to re-teach missing students (Minnesota Department of Health, 2016).

It has been demonstrated that those who don't frequently wash their hands have an increased risk of contracting viral diseases, which can necessitate bed rest (Drankiewicz & Dundes, 2017). In 2012, it was determined that practicing good hand hygiene on a regular basis could mean the difference between a successful recovery and a healthcare-associated infection, which causes 99,000 associated deaths and 2.7 million infections annually in American hospitals alone. The situation is even worse in developing nations like Nigeria (Center for Disease Control and Prevention [CDC], 2012). Due to tight environments and low hand washing rates, disease transmission on college campuses is comparable to that in hospitals (Guinan, McGuckin-Guinan & Severeid, 2016). The faecal pathway accounts for the bulk of pathogenic organisms that cause diarrhea. There are numerous more faeco-oral pathways, such as via fingers, fomites, or dirt ingested by prior hand washing, that can result in faecal-oral transmission besides those that are water-borne, food-borne, or direct (Cairncross & Feachem, 2018).

Knowing how to properly wash your hands with soap and water will help you avoid getting typhoid, diarrhea, or hepatitis A or E. (Cairncross & Feachem, 2018). One of the most crucial instruments in the fight against infectious diseases is having adequate knowledge of hand washing technique. Students' careless attitudes and indifference towards the understanding and application of hand hygiene are unintentionally the origin of infections and a number of diseases that have wreaked havoc and created hurdles to human health.

Increased efforts are urgently needed to make sure that students and the general public are aware of and frequently practice hand hygiene as part of the fight to end this pandemic. At Adeleke University in Ede, Osun State, this study investigates the knowledge and practices of students

regarding hand hygiene.

➤ **Objective of the Study**

Broad objective: In a few selected departments at Adeleke University in Ede, Osun State, the knowledge and application of hand hygiene by students will be evaluated.

The following are the precise goals:

- i. Assess the degree to which students at Adeleke University in Ede, Osun State, are aware of proper hand hygiene.
- ii. Assess the hand hygiene practices at Adeleke University in Ede, Osun State, among students in selected departments.
- iii. Identify the challenges to practicing hand hygiene among Adeleke University Ede Osun students in particular departments.

➤ **Research Hypothesis**

H1: The knowledge and practice of hand washing among respondents do not statistically significantly correlate.

H2: There is a significant correlation between the respondents' educational background and their propensity for hand washing.

MATERIAL AND METHODS

Research Design

At Adeleke University Ede in Osun state, knowledge and practice of hand hygiene among students were assessed using a descriptive cross-sectional methodology.

Research Setting

At Adeleke University in Ede, the study was carried out with participants from a few departments. In the historic town of Ede, Osun State, in southwest Nigeria, Adeleke University is a private, religiously focused educational institution situated on 520 acres of land. The University was established in 2011 by Dr. Adedeji Adeleke through the Springtime Development Foundation (SDF), a charitable, non-profit group whose goal is to assist underprivileged students in obtaining a good higher education. The Seventh-day Adventist educational ethos is used by more than 100 universities across the globe, including Adeleke University. Six faculties, which cover every college, make up the university.

Target Population

The intended audience consists of students from the nursing science, public health, and mechanical engineering departments.

Sample Size Determination

The sample size for this investigation was determined using simple random sampling procedures. In this study, three (3) departments were chosen for sample size, with a population (students) of six hundred and seventy (670) (Table 1). Using Yamane's (1967) method given by Israel, a sample size

of two hundred and fifty (250) was determined from three selected departments with a population of six hundred and seventy (670) (1992) Table 2. The Yamane’s formula was used thus:

$$n = \frac{N}{1 + N(e)^2}$$

Where n = Sample size

N = Total Population

e = Level of significance (95%)

Therefore,

$$\begin{aligned} n &= 670 / 1 + 670(0.05)^2 \\ &= 670 / 1 + 670(0.0025) \\ &= 670 / 1 + 1.675 \\ &= 670 / 2.675 \\ &= 250.46 \end{aligned}$$

Approximately 250 respondents were given questionnaire instrument,

Table 1: Estimated Total Population of the Selected Departments in Adeleke University Ede, Osun State

S/N	Selected Departments	Population
1	Nursing science	315
2	Public health	260
3	Mechanical engineering	95
TOTAL		670

Source: Field data, 2021

Table 2: Student Population and Sample Size of Selected Departments in Adeleke University Ede, Osun State

S/N	Selected Department	Total Population	Percentage	Number of Respondents
1	Nursing science	315	47.01	118

2	Public health	260	38.81	97
3	Mechanical engineering	95	14.18	35
TOTAL		670	100	250

Source: Field data, 2021

➤ Sampling Technique

A convenient sampling technique was adopted for this study.

Instrument for Data Collection

Data were gathered using a questionnaire that was self-created. There were four sections to the survey.

Section A: Data on the respondents' socio-demographics (6 items)

Section B: Knowledge of Hand Hygiene There were 12 closed-ended questions with True/False responses in total. The most pertinent option for each respondent was requested to be selected.

8 practice questions were asked in Section C to gauge the respondents' level of hand hygiene practice. A Likert scale was used to organize it (Always, Often, Sometimes, Rarely, and never).

Section D: Obstacles to practicing good hand hygiene: It consisted of five multiple-choice questions that were written in the "Yes and no" format.

Validity

The supervisor of the researcher, a specialist in health research, evaluated the face and content validity of the research instrument and determined its validity to ensure that it measures what it was intended to measure. Based on the observations and suggestions made, the instrument was modified.

Reliability

To guarantee that the research tool maintains consistency in measuring what it is designed to measure. To evaluate the questionnaire's consistency within itself, a pilot study was done. The three chosen departments at Adeleke University in Ede, Osun state, carried out this. 10% of the sample size, or 25 people, were used for this. The test was given to 25 participants from the three departments using 25 copies of the questionnaire. When the pilot research results were analyzed, a Cronbach alpha score of 0.884 was obtained, showing a strong reliability index for the instrument.

Method of Data Collection

Both open-ended and close-ended questions were included in the administered surveys. The pretested questionnaire was personally administered by the researcher at the study locations. The respondents were given this to complete and were asked to return it after it was finished. The questionnaire was translated for individuals who needed assistance understanding it.

Method of Data Analysis

The statistical package for social sciences (SPSS) version 25 was used to analyze the obtained data. To describe the study population in respect to important factors, descriptive statistics such as means, frequencies, percentages, and standard deviation were used. The hypotheses were tested using inferential statistical techniques such as chi-squared in addition to descriptive statistics.

Ethical Considerations

To make the administration of the questionnaire easier, a letter of consent to gather data for the study was obtained from the Adeleke University's Department of Nursing in Ede. Before the study began, written informed agreement was obtained from the participants after verbal explanations of the study's significance were given to them. The participants' privacy was kept strictly confidential, and the non-maleficence concept was observed. No coercion or forced participation in the study was used to compel respondents. Throughout the duration of the study, the data collected from respondents was kept private and anonymous.

RESULT AND DISCUSSION

Demographic characteristics of respondents

Below is table (3), which shows the demographic characteristics of the respondents; The age range is 17-28 years, with a standard deviation of 6 years; 70 (28%) were under the age of 20, the majority of 120 (48%) were 20-24 years old, and 60 (24%) were 25 years and older. 140 (60%) were males and 110 (44%) were females; the majority (157, 62.5%) were Christians, 69 (27.6%) were Muslims and 24 (9.6%) were others; 104 (41.6%) were nursing students; 82 (32.8%) were public health students; 64 (25.6%) were mechanical engineering students; the majority (94.8%) were from Yoruba tribe; 13 (5.2%) Igbo; the father's level of education; 79 (31.6%) primary level, 50 (20%) secondary and 121 (48.4%) tertiary; 97 (38.8%) were from single family; 89 (35.6%) nuclear family and 64 (25.6%) extended family.

Table 3: Socio-demographic characteristics of respondent

Sociodemographic Data			
Variables	Categories	Frequency(n)	Percent (%)
Age Mean±SD (22±6)	Less than 20years	70	28.0
	20-24 Years	120	48.0
	25 years and above	60	24.0
Gender	Male	140	56.0
	Female	110	44.0

Religion	Christianity	157	62.8
	Islam	69	27.6
	Others	24	9.6
Department	Nursing science	104	41.6
	Public health	82	32.8
	Mechanical engineering	64	25.6
Ethnicity	Yoruba	237	94.8
	Igbo	13	5.2
Mothers level of Education	Tertiary	113	45.2
	Secondary	75	30.0
	Primary	62	24.8
Fathers level of Education	Primary	79	31.6
	Tertiary	121	48.4
	Secondary	50	20.0
What kind of family are you from	Single parent	97	38.8
	Nuclear	89	35.6
	Extended	64	25.6
Total(n)=250			

Source: Field data, 2021

Knowledge of hand hygiene

The respondents' knowledge about hand hygiene is displayed in Table 4 below; 151 (60.4%) were granted Use cold water to wash your hands. Accepted: 154 (71.6%) Water should be medium-hot for washing your hands. When washing hands, 149 people (59.6%) agreed that watches and

bracelets don't need to be taken off. 183 respondents (73.2%) agreed that rings do not need to be taken off before washing hands. 149 individuals (59.6%) believed that washing one's wrists wasn't necessary. The need for at least 15 seconds of hand washing was accepted by 163 people (65.2%). 116 people (46.4%) agreed that drying hands after washing them is necessary. 138 (55.2%) persons agree that using handwashing to prevent infection is important. 154 people (61.6%) agreed that hand washing is a necessary component of personal hygiene. 61 (24.4%) people had low understanding of hand hygiene, compared to 189 (75.6%) who had strong knowledge (Figure 1).

Table 4: Knowledge of hand hygiene among students in Adeleke university

Variables	Categories	Frequency (n)	Percent (%)
Cold water should be used for hand washing	Yes	151	60.4
	No	99	39.6
Medium hot water should be used for hand washing	Yes	154	61.6
	No	96	38.4
There is no need to remove watches and bracelets when washing hands	Yes	149	59.6
	No	101	40.4
There is no need to remove rings when washing hands	Yes	183	73.2
	No	67	26.8
There is no need to wash wrists	Yes	149	59.6
	No	101	40.4
Hands need to be washed at least 15 seconds	Yes	163	65.2
	No	87	34.8
Hands need to be dried after washing	Yes	116	46.4
	No	134	53.6

Hand hygiene practices prevent an individual getting infection	Yes	138	55.2
	No	112	44.8
Hand washing is part of personal hygiene	Yes	154	61.6
	No	96	38.4
		Total(n)=250	

Source: Field data, 2021

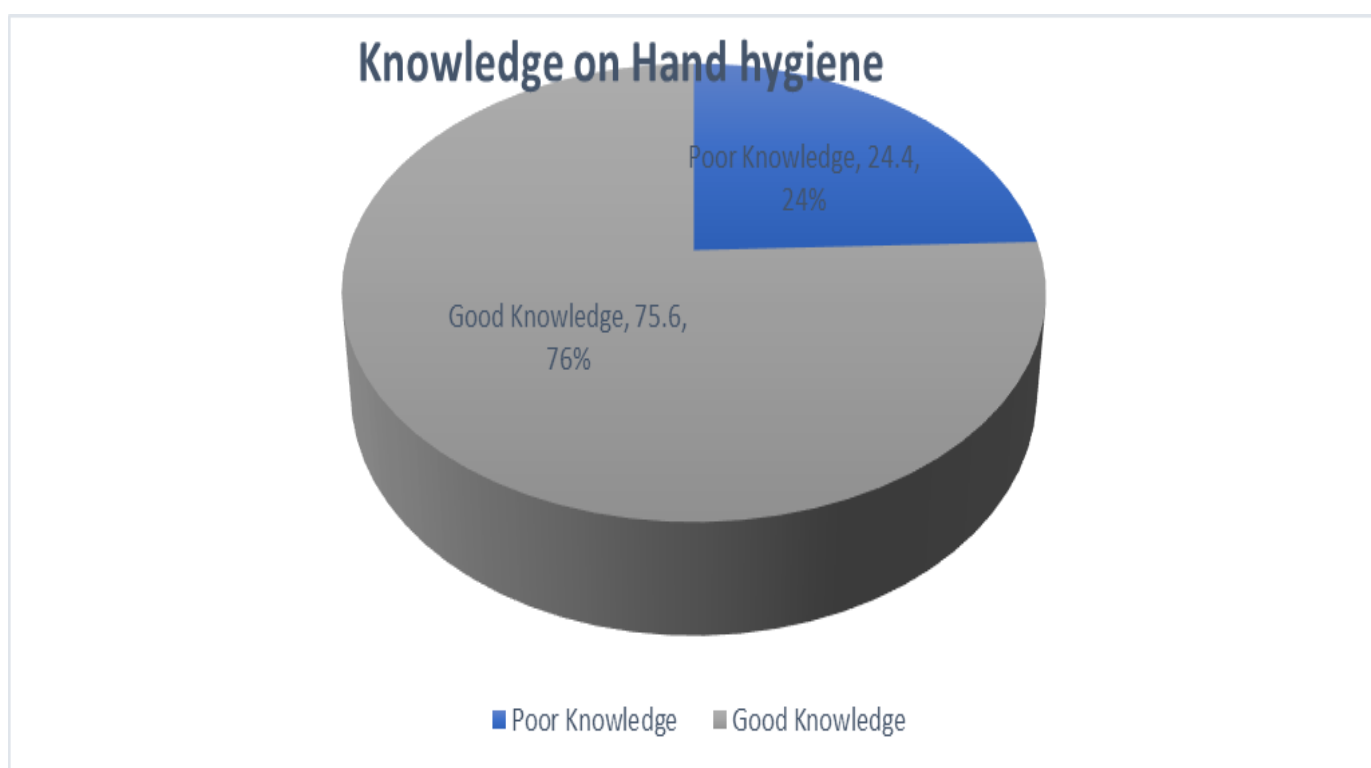


Figure 1: Pie chart showing respondents overall knowledge on Hand hygiene

Practice of hand hygiene

The practices of respondents on hand hygiene are shown in Table 5 below; 72 (28.8%) always wash their hands before meals, 71 (28.4%) always wash their hands after meals, 53 (21.2%) always wash their hands after using public transportation, 111 (44.4%) only wash their hands if they are dirty, 66 (26.4%) always wash their hands before preparing meals, 70 (28%) always wash their hands after exchanging money, 50 (20%) always wash their hands after touching trash, and 66 (26.4%) 51 (22%) had a poor level of hand hygiene practice, compared to 199 (78%) who had a high level (Figure 2).

Table 5: Practice of hand hygiene among students in Adeleke University

Variables	Categories			
	Always n (%)	Sometimes n (%)	Never n (%)	Rarely n (%)
I wash my hands before meals	72(28.8%)	100(40.4%)	68(27.2%)	9(3.6%)
I wash my hands after meals	71(28.4%)	64(25.6%)	98(39.2%)	17(6.8%)
I wash my hands after using public transportation	53(21.2%)	109(43.6%)	74(29.6%)	14(5.6%)
I wash my hands only if they are soiled	111(44.4%)	87(34.8%)	43(17.2%)	9(3.6%)
I wash my hands before preparing meals	66(26.4%)	53(21.2%)	112(44.8%)	19(7.6%)
I wash my hands after money exchange	70(28%)	74(29.6%)	79(31.6%)	27(10.8%)
I wash my hands after touching garbage	50(20%)	74(29.6%)	80(32%)	46(18.4%)
I wash my hands after sneezing and blowing my nose	66(26.4%)	98(39.2%)	73(29.2%)	13(5.2%)
	Total(n)=250			

Source: Field data, 2021



Figure 2: Pie chart showing respondents overall Practice on Hand hygiene

Barriers to hand hygiene practice

Barriers to using proper hand hygiene are shown in Table 6 below; 173 (69.3%) people concurred that there are no materials readily available to guarantee good hand hygiene; There is no running water on campus or in the dorms, according to 126 (50.4%) respondents; 145 (58%) claimed they are unaware of the significance of maintaining good hand hygiene; 164 (65.6%) said that there is no soap or detergent; 153 people (61.2%) claimed that their personal habits prevent hand washing.

Table 6: Barriers to hand hygiene practice among students in Adeleke university

Variables	Categories	Frequency (n)	Percent (%)
There is no availability of material to ensure hand hygiene	Yes	173	69.2
	No	77	30.8
There is no running water on campus or in the hostel	Yes	126	50.4
	No	124	49.6
There is no soap or detergent	Yes	164	65.6
	No	86	34.4
I lack awareness on importance of hand	Yes	145	58.0

hygiene	No	105	42.0
Does your Personal habit go against washing of hands	Yes	153	61.2
	No	97	38.8
Total(n)=250			

Source: Field data, 2021

Hypothesis testing

The null hypothesis (HO) is rejected and the alternative hypothesis (HI) is accepted if the P-value is less than 0.05; otherwise, the null hypothesis is accepted and the alternative hypothesis is rejected.

Hypothesis one

Ho-There is no significant relationship between knowledge and practice of hand washing among the respondents?

Table 7: Relationship between knowledge and Practice of hand washing

Variables	Categories	Level of Practice of Hand hygiene		Total	X ²	Df	p-value	Remarks
		Low level of practice	High level of practice					
Level of knowledge on Hand hygiene	Poor Knowledge	20 _a	41 _b	61	5.963 ^a	1	0.015	S
	Good Knowledge	34 _a	155 _b	189				
Total		54	196	250				

x²=pearsons' Chi square

df=degree of freedom

Inference: Because the p-value is less than 0.05, there is a statistically significant relationship between hand hygiene knowledge and practice.

Hypothesis two

Ho-There is a significant relationship between course of study and practice of hand washing among the respondents

Table 8: Relationship between course of study and Practice of Hand washing

Variables	Categories	Level of Practice of Hand hygiene		Total	X ² cal	Df	p-value	Remarks
		Low level of practice	High level of practice					
Department	Nursing science	21	83	104	2.182 ^a	2	0.336	NS
	Public health	22	60	82				
	Mechanical engineering	11	53	64				
Total		54	196	250				

X²=pearsons' Chi square

Df=degree of freedom

As a result, because the P-value (P-0.336) is greater than 0.05, there is no statistically significant relationship between course of study and hand hygiene practice ($p > 0.05$) tested at 0.05.

Discussion of Findings

This study tends to assess knowledge and practice of hand hygiene among students in selected departments at Adeleke University, Ede, Osun state.

The sociodemographic features of the respondents included the following: the lowest and maximum age ranged from 17 to 28 years with a standard deviation of 6 years; 70 respondents (28%) had ages under 20, 120 respondents (48%) had ages 20 to 24, and 60 respondents (24%) had ages 25 and up. This is comparable to what Afia, Linda, and Mbroh (2017) reported, who found that the majority of respondents were under 25 years old. 110 (44%) were female, while more over half (60%) were men. More than half (140) were men, making up the majority (64.5%), followed by 110 (44%) women, 104 (41.6%) nursing students, 82 (32.8%) public health students, and 64 (25.6%) mechanical engineering students. Due to the survey being done in Southwest Nigeria, which is primarily populated by Yorubas, the majority (94.8%) of participants were of the Yoruba tribe.

According to this study's findings, 154 (61.6%) and 151 (60.4%) respondents agreed that medium-hot water should be used for hand washing and that cold water should be used for hand washing (WHO, 2009b), and using very hot water should be avoided since it increases the risk of skin injury. Watches and bracelets don't required to be taken off when washing your hands, according to 149 people (59.6%). The WHO stated in 2019 that washing hands with wristwatches can increase the likelihood of infection transmission, which is in direct opposition to what has been stated here. There is no requirement to take off rings before washing your hands, as 183 people (73.2%) agreed. 149 persons (59.6%) believed there was no need to wash one's wrists. Hands must be cleansed for at least 15 seconds, according to 163 (65.2%) people. 116 people (46.4%) agreed that washing and drying hands is necessary. To avoid infection, 138 (55.2%) persons agree that hand hygiene habits are important. Hand washing was acknowledged as a necessary component of personal hygiene by 154 people (61.6%).

In overall, 189 (75.6%) of the participants had good understanding of hand hygiene, while 61 (24.4%) had low knowledge. According to this study, 53 people (21.2%) always wash their hands after using public transportation, and 72 people (28.8%) always wash their hands before meals, 71 people (28.4%) always wash their hands after meals. 111 (44.4%) people only wash their hands when they are dirty, 66 (26.4%) people always wash their hands before making food, 70 (28%) people always wash their hands after exchanging money, 50 (20%) people always wash their hands after handling trash, and 66 (26.4%) people always wash their hands after sniffing and blowing their nose. When should one wash their hands, according to the CDC, regardless of where they are? Before, during, and after handling food; before eating; before and after caring for someone who is ill; before and after treating a cut or wound; after using the restroom; after changing diapers or cleaning up a child who has used the restroom; after touching animals; after feeding animals; after handling pet food or treats; and after using the toilet; (CDC, 2018b). 51 people (22%) practiced hand hygiene at a low level, compared to 199 people (78%) who generally had high levels of the habit.

This study found that 145 people (58%) said they are unaware of the significance of hand hygiene, 173 (69.3%) agreed there is no availability of materials to ensure hand hygiene practice, 126 people (50.4%) said there is no running water on campus or in the hostel, 164 people (65.6%) said there is no soap or detergent, and 153 people (61.2%) agreed their personal habits are against hand washing. On Chi square analysis, neither soap nor detergent was found to be a barrier that affected the practice of hand hygiene.

CONCLUSION

An evaluation of students at Adeleke University Ede in Osun state's understanding and practice of hand hygiene was made based on the study that was conducted, and several research questions were posed and addressed. Additionally, the set of hypotheses was examined using chi-square at a significance threshold of 0.05. The results of this survey showed that the respondents had a good degree of understanding and practice of hand hygiene. The absence of soap and detergent was one of the main barriers found in this investigation. The connection between hand hygiene knowledge and practice was statistically significant.

Following are some recommendations based on the study's findings:

- This study is strongly advised for policymakers to improve the availability of hand hygiene materials to students to enhance hand hygiene promotion. There is also a requirement for

sufficient adherence to hand hygiene practice among students in this pandemic period.

- A comparable study can be carried out to evaluate academic and non-academic staff members' knowledge and hand washing habits.
- Students at various state-run institutions could be compared to one another in a comparison study.
- A study can be done to determine the lecturers' and parents' understanding of hand washing procedures.
- Provide instruction and refresher courses on proper hand hygiene.

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