

Knowledge and Practice of Hand Hygiene as Prevention of Spread of Corona Virus Disease among Students of University of Abuja

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Abstract

Background: Covid-19 is an emerging respiratory disease caused by Coronavirus. It is known to cause diseases ranging from common cold to severe acute respiratory syndrome. It is a pandemic known to have affected every sector of life, hence the need to contain its spread. The adherence to the various precautionary measures put forward by various health bodies influences the effectiveness of controlling the spread of the virus. The study explored the knowledge and practice of hand hygiene as prevention of corona virus disease among students of the University of Abuja. **Methods:** A multistage sampling was used in selecting 290 participants used for this study. A structured questionnaire was used to collect information on the socio-demographic characteristics of the respondents, their knowledge on Covid-19 and its safety protocols, and level of adherence to the different safety protocols. Statistical comparisons were done using Chi square test.

Result: About 45.5% had a good knowledge of Covid-19, while 69.5% had a good knowledge on hand hygiene. Majority of participants got their information from social media. Adherence to hand hygiene was poor. There was statistically significant association ($p=0.047$) between knowledge of Covid-19 and practice of hand hygiene. The availability of Covid-19 vaccine was the major reason for non compliance to these prevention protocols.

Conclusion: Evidence from this study shows that the school management's efforts to curb the spread of Covid-19 are not adequate. There is need for health education on hand hygiene practice among the students. Provision of equipment (including water and soap) and close monitoring of hand washing spots will lead to positive turnaround of hand hygiene practice among the students.

Key words: Knowledge; Practice; Hand hygiene; COVID, Prevention

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I. Introduction

Background: Covid-19, a new strain of corona virus leads to a condition known as severe acute respiratory syndrome- 2 (SARS-CoV-2).^[1] Covid-19 was first reported to the WHO on 31 December 2019 in which it was declared a disease of public health importance of international concern on 30th January 2020 and on the 11th of March declared a pandemic by the WHO.^[2] Corona viruses are single stranded RNA viruses, named for the crown-like spikes on their surface. There are four main sub-groupings of corona viruses, known as alpha, beta, gamma, and delta.^[3] Corona-virus disease symptoms vary from asymptomatic, mild symptoms to severe respiratory, manifestation. These symptoms begin from 2-14 days following exposure to the virus. The symptoms of Covid-19 disease include cough, severe shortness of breath, fever, sore throat, nasal congestion, malaise, headache, muscle pain, diarrhea etc. Certain co-morbidities like hypertension, coronary artery disease, diabetes, cerebral infarction and chronic bronchitis, have been said to increase the severity of the symptoms and progress of the disease.^{[5], [6]}

The mode of transmission of covid-19 is not well understood but person-to-person spread is apparently the most common. It is thought to occur through close-range contact, mainly via respiratory droplets. Infection might also occur if a person's hands are contaminated by droplets or by touching contaminated surfaces and then they touch their eyes, nose, or mouth. Airborne transmission can also occur; however, the extent to which this occurs under natural conditions and how much this mode of transmission has contributed to the pandemic are controversial. The virus has been detected in non-respiratory specimens, including stool, blood, ocular

secretions, and semen, but the role of these sites in transmission is uncertain. So far, fecal-oral transmission has not been clinically described and the likelihood of blood borne transmission appears low. The potential to transmit the virus begins prior to the development of symptoms and is highest early in the course of illness; the risk of transmission decreases thereafter. A study in China showed that infectiousness starts 2.3 days prior to symptom onset, peaked 0.7 days before symptom onset, and decline within seven days.^[5] The duration of viral RNA shedding is variable and detectable viral RNA does not always indicate the presence of infectious virus. Transmission can occur despite the absence of symptoms both asymptomatic and pre-symptomatic transmissions have been documented. The risk of transmission after contact with an individual with COVID-19 increases with the closeness and duration of contact and appears highest with prolonged contact in indoor settings.

In the management of these corona-virus disease no current treatment modalities is available. However there are various measures in place to prevent the transmission of the disease of which hand hygiene is a core preventive measure. Hand hygiene is an important practice in the prevention of spread of transmittable diseases.^[7] In a general term it refers to any action of hand cleaning such as hand washing, hand disinfection, hand decontamination, hand care, these can be done with any of the hand hygiene product such as alcohol based (hand) rub, antiseptic agent, detergent.^[7-9] There has been poor adherence to the preventive measures including hand hygiene due to the many misconceptions about corona virus in Africa especially in Nigeria. So many individuals including students have a wrong perception of corona virus disease and this has affected adherence to safety measures put in place to prevent the spread of the disease.

The negative impact of Covid-19 outbreak has affected various sectors of life, including economic, religious and other human daily activities. The educational sector has not been spared also as students spent about a year at home, with no academic work, though the developed world was able to still circumvent this situation a bit, the developing countries couldn't do so much till after the lockdown. A lot has been proposed about the treatment of corona virus but none has been adopted as the efficacies of the drugs are poor.^[10-12] With the recent development of the vaccine, the safety measures still are the best ways to prevent Covid-19 as people said to have been vaccinated are also said to come down with covid-19.

The study included undergraduate students of the University of Abuja and the study in both the mini campus and the main campus. The university environment, due to the regular contact among students, has shown to increase the transmission of the corona virus disease among them. Although extensive research has been conducted to investigate the hand hygiene knowledge, beliefs and practices of health care providers and daycare centers and elementary schools, there are very few previous studies addressing hand hygiene practice on university campuses. This study would be very useful in identifying gaps in knowledge, poor attitudes and substandard practice to enhance the development of appropriate strategies to promote hand hygiene for undergraduate students in the suitable.

This study sought to assess the knowledge of corona virus disease and hand hygiene among undergraduate students in the University of Abuja. It also determined the practice of hand hygiene in the prevention of spread corona virus among the respondents.

II. Methodology

Study Area: The study area federal capital territory (FCT) lies between latitude 80⁰25 and 90⁰25' north of the equator and longitude 60 45' and 70 45-' east of the Greenwich Meridian. It is located in the middle belt of Nigeria 1977^[13] and bordered by four states; Kaduna in the north, Nassarawa in the west, Isoh, in the south and Niger in the East. It covered a land mass of 8,000 square kilometer. The location of FCT in the middle belt region of Nigeria rids it of the extreme characteristics of climate of the north and southern Nigeria. The region experiences two major seasons wet and dry season. The rainy season usually begins in March and ends in the middle of October in the North and early November in the South. Gwagwalada Area Council is about 45km from the FCT.^[13] It is the largest satellite town and third largest urban center in the federal capital. The temperature of the area ranges from 30⁰C to 37⁰C yearly with the highest temperature experienced in the month of March. Gwagwalada is occupied predominantly by the Gbagyi people with their majority occupation being farming. Transportation within Gwagwalada is by road mainly with the use of motor bikes and tricycles. Water supply to most residents is by boreholes, while some places have access to pipe borne water.^[13] The University of Abuja, Gwagwalada mini campus is the first campus in the university to be established at the time. Though the university is gradually relocating to the permanent site; up till this day, the campus hosts three female hostels and two male hostels all accommodating close to five thousand students.

Study Population: The study population was undergraduate students of the University of Abuja.

Study Design: The study design was a descriptive cross – sectional study.

Sample Size Estimation: The sample size was calculated using the Leslie – kish formula, taking prevalence as the knowledge and practice of hand hygiene among. Medical students in India

$$n = \frac{Z^2 Pq}{e^2} [14]$$

$$d^2$$

Where n is the desired sample size Z is standard normal deviation taking as 1.96 P is prevalence taken as P is prevalence taken as U.76 from similar study. $q = 1 - p$ (0.76)^[15] d = degree of precision (5%-0.05)

$$n = \frac{(1.96)^2 \times 0.76 \times 0.24}{0.052}$$

$$= 280, \text{ Add 10\% non response rate} = 10 \times 280; n = 280 + 28 = 308$$

Inclusion Criteria: All undergraduate students from any department and at any level.

Sampling Techniques: A multistage sampling technique was used. Also a simple random sampling technique was used to group the faculties in the University of Abuja into 10 strata. At each stratum, a simple random sampling technique was used to administer the statistically determined sample size (308) copies of the questionnaire to participants who met the inclusion criteria and were willing to participate in the study.

Data Collection: A semi structured interviewer – administered questionnaire was used for collection of data from the participants. The questionnaire comprised of four sections: section A had questions about the socio – demographic characteristics of the respondents section B assessed knowledge on covid-19. Section C assessed knowledge of hand hygiene section D assessed the level of practice of hand hygiene among the students.

Data Analysis: Fully completed questionnaire was entered into the computer and analyzed using Statistical package for the social sciences (SPSS) software version 21. Independent variables were summarized using simple descriptive statistic frequencies and percentages. Frequency table were used to represent variables such as socio-demographic data, knowledge of Covid-19, knowledge of hand hygiene and practice of hand hygiene among respondent overall knowledge on Covid-19 hand hygiene and practice.

Ethical Consideration: Ethical approval was obtained from the Health Research and Ethic Committee of the University of Abuja Teaching Hospital (UATH) Gwagwalada. Permission was obtained from the school authority. Each respondent was briefed and adequately informed on the purpose of the study, after which informed consent was obtained, before commencing with interviewing the participants. The respondents were assured of confidentiality on whatever information they have throughout the data collection the entire study period and beyond.

Limitation: Information bias from the participants was a limitation during the study but was handled by reiterating the confidentiality of the results.

III. Result

A total of 308 questionnaires were administered to the respondents and 292 were retrieved and analyzed giving a response rate of 94.8%. The mean age of males was 21 years, while that of female was 20 years. Most of the participants (98.4%) were within age of 18 and 30 years.

Table 1: Socio-Demographic characteristics of Respondent

VARIABLE	Male = (n=150) (n%)	Female = (n=142) (n%)	X ²	P. value
AGE GROUPING (YEARS)				
16 – 20	25 (16.66)	30 (21.12)	1.762	0.0347
21 – 25	61 (40.70)	89 (62.70)		
26 – 30	40 (26.70)	14 (9.86)		
31 – 35	24 (16.00)	9 (6.34)		
RELIGION				
Islam	66 (44.00)	45 (31.60)	3.264	0.0182
Christianity	84 (56.00)	97 (64.67)		
MARITAL STATUS				
Married	14 (9.33)	29 (19.33)	2.411	0.0331
Note married	134 (89.33)	112 (75.33)		
Others	2 (1.30)	0 (0.0)		
FACULTY				
Education	34 (22.67)	24 (16.90)	1.966	0.067
Science	21 (14.00)	18 (12.67)		
Art	14 (9.33)	21 (14.00)		
Social Science	19 (12.67)	17 (11.33)		
Law	8 (5.33)	10 (7.07)		
Management Science	15 (10.00)	12 (8.45)		
Engineering	9 (6.00)	6 (4.22)		
Agricultural Science	11 (7.30)	18 (12.67)		
Veterinary Medicine	6 (4.00)	9 (6.33)		

College of Health Science		13 (8.67)	7 (4.92)		
LEVEL OF STUDY	100	16 (10.6)	10 (7.04)	2.480	0.0339
	200	41 (27.33)	77 (54.22)		
	300	42 (28.00)	21 (14.00)		
	400	30 (20.00)	18 (12.00)		
	500	8 (5.33)	9 (6.00)		
	600	13 (8.66)	7 (4.67)		
	Others	0 (0.00)	0 (0.00)		
RESIDENCE WHEN IN SCHOOL					
	Hostel	98 (65.33)	107 (75.35)	1.974	
0.0345	Off Campus	52 (34.66)	35 (23.30)		
TRIBE					
	Hausa	43 (28.61)	37 (26.06)	3.931	
0.0771	Yoruba	31 (20.60)	27 (19.00)		
	Igbo	28 (18.60)	22 (15.40)		
	Others	49 (32.40)	56 (39.40)		

Most of the respondents are 200 level students resident in the hostel being more than those that stay off campus. The respondents from Faculty of Education were a bit more than those from other facilities. The socio-demographic information of participant is shown in table 1 above.

Table 2: Knowledge of Corona Virus Disease among the respondents

S/N	Knowledge Items	Male= (n=150) n (%)	Female= (n=142) n (%)
1	Ever heard of Corona virus disease	142 (100)	150 (100)
2	Source of Information		
a.	Media	30(21.10)	81(54.00)
b.	Health workers	24(16.90)	21(14.00)
c.	Lectures	19 (13.30)	6(4.00)
d.	Friends	26 (18.00)	33 (22.00)
e.	Relatives	43 (30.20)	9 (6.00)
3	What causes Corona Virus Disease		
a.	Bacteria	0 (0.00)	5 (3.00)
b.	Virus	140(100)	141 (94.00)
c.	Parasite	2 (1.40)	1 (13.00)
d.	Fungi	1(0.70)	3
4	Believes Corona Virus Disease is transmittable	142 (100)	150 (100.00)
5	If yes tick the means it can be transmitted		
a.	Droplets after sweating	72 (50.70)	42 (28.00)
b.	Hand shake	26 (17.30)	40 (26.00)
c.	Touching eyes, nose and mouth	44 (29.30)	68 (45.00)
6	Who can contact corona virus disease		
a.	Every one	142 (100)	140 (93.30)
b.	Only children	0 (0.00)	0(0.00)
c.	Only Adult	0(0.00)	3
d.	Don't know	0(0.00)	7
e.	No body	0(0.00)	0
7	How can Corona Virus Disease be prevented		
a.	Proper Hand Hygiene	33(23.20)	4 (29.00)
b.	Social distancing	27(64.20)	41 (27.13)
c.	Drinking of warm salt water	0(0.00)	5 (3.30)
d.	Use of face mask	82 (54.60)	60(40.00)

Table 2 shows the itemized knowledge about corona virus disease (CVD) among the respondents. All the students have heard about CVD, know that the cause is a virus (100%), and believe CVD is transmissible (100%). Also, 100% of males know that everyone is susceptible, while 93.3% of the females have the same knowledge.

Table 3: Knowledge of hand hygiene according to gender of respondent

S/NO	Knowledge Items	Male= (n=150) n (%)	Female= (n=142) n (%)
1	Ever heard about Hand Hygiene	147 (98)	142 (100)
2	Source of Information		
	Media	59 (39.30)	69 (48.0)
	Health workers	13 (8.66)	10 (7.00)
	Lectures	14 (9.31)	9 (6.30)
	Friends	38 (25.41)	50 (35.20)
	Relatives	26 (17.30)	4 (2.81)
3	Hand Hygiene important in Prevention of CVD spread	137 (91.30)	127 (89.40)
4	Hand hygiene effective in prevention of transmittable disease	134(89.30)	149 (99.3)
5	Received any formal training on hand hygiene in the campus	11(7.30)	14 (9.90)
6	Contaminated hand is a vehicle for transmitting infection	140(93.30)	142(100)
7	Hand hygiene an effective measure in prevention of corona virus disease	103(68.70)	134(94.40)

Knowledge of hand hygiene according to gender is shown in table 3 above. While all the females (100%) have heard about hand hygiene, 98% of the males have ever heard about it. Moreover, 91.3% of males know that hand hygiene is important in prevention of CVD spread while 89.4% of their female counterparts had the same knowledge. All the females (100%) and 93.3% of the males know that contaminated hand is a vehicle for transmitting infection. Similarly the knowledge that hand hygiene is effective in prevention of transmittable disease is possessed by 99.3% of the females as opposed to the 89.3% of their male counterparts.

Table 4: Practice of Hand Hygiene by gender of respondent

S/N	Practice Items	Male= (n=150) n (%)	Female= (n=142) n (%)
1	Hand hygiene is an essential part of my role	134(89.30)	142(100)
2	Sometimes forget and miss out hand hygiene	136(90.60)	123(86.60)
3	The frequency of hand hygiene required makes it difficult for me to carry it out as necessary	42(28.00)	48(33.80)
4	Fear of corona virus infection have positive influence on my hand hygiene	141(94.00)	59(41.50)
5	Adhere to correct hand hygiene practice at all times	91(60.67)	68(47.90)
6	Sometimes have more important things to do than hand hygiene.	82(54.67)	24(16.90)
7	Lectures and other priorities make hand hygiene more difficult at times.	42(28.00)	105(73.90)
8	Feel frustrated when others omit hand hygiene.	53(35.30)	34(23.90)
9	Feel guilty if omit hand hygiene	39(26.00)	29(20.40)
10	How long do you wash your hands 10 -15 seconds, 16 -30 seconds, 31- 60seconds, >60 seconds	5(3.30) 17(11.67) 62(41.30) 66(44.00)	4(2.81) 23(16.19) 41(28.87) 24(52.11)
11	What do you practice hand hygiene with		
a	Hand sanitizers	120(80.00)	126(88.70)
b	Hand washing	46(30.67)	47(33.10)
c	Wearing hand gloves	4(0.00)	0.00(0.00)

In table 4, while all the females have hand hygiene as an essential part of their role, 89.3% of the males have the same practice. Also 90.6% of the males and 86.6% of the females sometimes forget and miss out hand hygiene.

In table 5, 133(45.5%) of the respondents displayed good knowledge while 159 (54.4%) had bad knowledge but there is no significant difference in the two values ($X^2=1.621$ $P=0.0784$). Good knowledge of

hand hygiene, 203(69.5%) is significantly higher than the bad knowledge 89 (29.4%) [$X^2=3.482$, $P=0.0413$]. However, poor practice of hand hygiene 139 (57.8%) is higher than the good practice 153 (42.1%), though not statistically significantly [$X^2=2.181$, $P= 0.069$].

Table 5: Composite knowledge and practice of Covid-19 and hand hygiene among the respondents

Knowledge of covid-19	n (%)	X^2	P. value
Good knowledge	133 (45.5)	1.621	0.0784
Bad knowledge	159 (54.4)		
Total	292 (100)		
Knowledge of hand hygiene	n (%)	X^2	P. value
Good knowledge	203(69.5)	3.482	0.0413
Bad knowledge	89 (29.4)		
Total	292 (100)		
Practice of hand hygiene	n (%)	X^2	P. value
Good practice	153 (42.1)	2.181	0.069
Poor practice	139 (57.8)		
Total	292 (100)		

Table 6: Association between knowledge of Covid-19 and hand hygiene practices for both male and female respondent

Level of knowledge of Covid-19	Adherence to hand hygiene			X^2	P. value
	Good Practice	Poor Practice	Total		
Good knowledge	133	70	203	2.361	0.047
Poor knowledge	20	69	89		
Total	153	139	292		

Table 6 shows that there is a significant positive association between the knowledge of Covid-19 and hand hygiene practice among the respondents [$X^2=2.361$, $P=0.047$].

IV. Discussion

SARS-CoV-2 is an emerging infectious disease which poses a significant threat to public health. Currently, there is no specific treatment to COVID-19; therefore preventive measures play a crucial role in controlling the spread of the infection. This indicates the necessity of the general public to adhere to these safety protocols. This study aimed to assess the knowledge of COVID-19 among University of Abuja students, their knowledge of hand hygiene and adherence/ practices of hand hygiene.

In this study, the participants were males and females all displaying higher knowledge of hand hygiene compared to knowledge of COVID-19. This is similar to a study which indicated that men have a lower knowledge on COVID-19 compared to women.^[16] In this study, 133 (45.5%) of respondents had a good knowledge on COVID-19 with majority getting their information from Social media. Most of the respondents were aware of how COVID-19 was transmitted.

In this study, majority of respondents 203 (69.5%) had a good knowledge on hand hygiene. This finding is consistent with other studies that have shown satisfactory levels of knowledge across the Saudi and Nigerian populations.^[17, 18] Another study conducted in China also showed high degree of knowledge towards hand hygiene.^[19] The high rate of correct answers to knowledge related question was not surprising, this may be due to the characteristic of the sample, as they were in their tertiary level of education, it may also be due the lockdown where students gained awareness and knowledge about the disease from Social media, Television, and other news platform and media to protect themselves and their family. This finding contradicts a study conducted in a Bangladeshi.^[20] It is also at variance with another study done in northern Nigeria which showed a poor knowledge of COVID-19 among members of the community.^[21] These inconsistencies might be due to poor education, and low socio-economic status in those regions.

In regards to practice of hand hygiene, 123 (42.1%) adhered to the various hand hygiene practices. This is consistent with findings of similar studies in Ethiopia.^[22, 23] However, this finding is at variance with other studies where the practice was moderately high.^[24] The possible reason for the low compliance in the current study was due to the fact that most respondents do not believe in the existence of COVID-19. Other reason

could be the inadequate enforcement of the COVID-19 hand hygiene practice, and poor effort of the school management and government to make adequate provisions for hand hygiene practice.

This study concludes that females have a higher knowledge on Covid-19 and are more likely to adhere to Covid-19 safety protocols. Information on Covid-19 and its safety protocols was gotten mostly from social media. The majority of University of Abuja undergraduate students had a good knowledge of Covid-19 and its safety protocols, probably due to the luxury of time during the pandemic which allowed enough time to be spent on social media. Although only about half of the participants adhered to Covid-19 safety protocols, adherence to these protocols at all times was also very low. The low compliance rate may be attributed to low morbidity and mortality in this part of the world and the ongoing nationwide vaccination program. In fact 63 (23.2%) of participants said the school management approach to Covid-19 safety protocols were poor, 105 (38.7%) of participants were of the opinion that the school management's approach to Covid-19 prevention was fair, with only 18 (6.6%) saying the school management did an excellent job at ensuring Covid-19 precautionary measures were enforced.

From the result of the study, the following recommendations were made: 1) Proper health education on the need for students to practice hand hygiene. 2) More equipment for proper hand washing should be provided by the school management, to ensure that every corner of the school's environment is provided with adequate facility for proper hand hygiene. 3) Previous hand washing spots should be monitored by the school authorities, while also making sure there is a regular supply of water and soap.

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