

Evaluation of Factors Affecting Post COVID-19 Pandemic Compliance to Hand Washing among Health Care Workers in a Nigerian Tertiary Hospital

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ABSTRACT

Objective: Compliance to hand hygiene is critical in the hospital settings. While most studies had focused on the rate of compliance during the COVID-19 pandemic, this may not be true in post pandemic era. The objective of the study was to evaluate the factors affecting post COVID-19 pandemic compliance to hand washing among health care workers in a Nigerian tertiary hospital.

Methods: This descriptive, cross-sectional study was designed and conducted at the University of Benin Teaching hospital, Benin City, Edo State, Nigeria from March to June 2022. The questionnaire was self-administered and adapted from World Health Organisation (WHO) risk assessment tool for health care workers in context of COVID -19. Descriptive and inferential statistics were performed. All data was analysed using SPSS software version 26 (IBM, Armonk, New York, US). P- Value less than 5% was considered significant.

Results: The age range of the respondents was 18-70 years with a mean age of 37.3 ± 9.97 years. The female to male ratio was 1.2: 1. The respondents that tested negative for COVID-19 were more than two-thirds (84.8%) however only 15.2% tested positive for COVID-19 virus. Majority (74.6%) of the respondents were unaware of their source of exposure to the COVID-19 virus. Almost (94.9%) all the respondents were compliant with hand washing guidelines. The demographic variables studied did not significantly affect the compliance to hand washing

Conclusion: Though there was an excellent compliance to hand washing by the healthcare workers but none of the demographic factors was associated with the rate of compliance.

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INTRODUCTION

COVID-19 disease is a highly infectious viral respiratory disease that is more severe in older people and is caused by corona virus (SARS-CoV-2) (Sigal, 2020). COVID-19 infection can either be asymptomatic or symptomatic with prominent ones being fever, cough, sore throat and shortness of breath (Cao et al., 2020). The disease was pronounced a Pandemic, although it emanated from

Wuhan, China, and devastated the global community, disrupting all aspects of human lives (WHO, 2020).

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As of 29th July 2021, there were 172,821 reported COVID-19 cases with 2141 deaths in Nigeria and more than thirty-seven million infected worldwide. (Kabir et al., 2020). Healthcare workers are more likely to be exposed to SARS-COV-2 in the course of clinical practice and are, therefore, at higher risk of COVID-19 infection than the general community (Kim et al., 2020; Ngunyen et al., 2020). Hence, the impact of the COVID-19 pandemic on healthcare workers has been enormous (Geralda et al., 2020). However, prevention remains the best weapon for protecting healthcare workers against the COVID-19 pandemic (Cascella et al., 2020). Therefore, adherence to infection prevention and control protocols is critical at minimizing healthcare workers exposure to the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Id et al., 2021).

Standard precautions for all patient care include hand hygiene (Powell-Jackson et al., 2020) use of personal protective equipment (PPE) (Powell-Jackson et al., 2020), respiratory hygiene/cough etiquette principles (Lai et al., 2020), appropriate patient placement and isolation precautions (Xiong et al., 2020), disinfection of equipment and medical instruments (Chavali et al., 2020), and sterilisation of ward coats (Karaslan et al., 2020).

Hand Hygiene (HH) is among the most efficient methods of infection control programmes, but compliance is generally poor (Goel et al 2020). Hand hygiene improvement interventions must include control of compliance, which is mostly conducted by direct observation (WHO, 2020). Adherence to hand hygiene recommendations is the most important means to prevent and control the spread of healthcare associated infections. According to the WHO guidelines for hand hygiene, the 5 moments of hand washing include before touching a patient, before clean/aseptic procedures, after body fluid exposure/risk, after touching a patient and after touching patient surroundings. (Matrajt et al., 2020) Indeed, correct and consistent compliance with infection prevention control (IPC) protocols is effective in minimizing the risk of COVID-19 infection. (Cascella et al., 2020; Powell-Jackson et al., 2020). Compliance with IPC protocols is facilitated by training of healthcare workers on IPC, provision of IPC materials and regular audit of IPC practices. (Goel et al., 2020) Generally, IPC strategies in response to highly infectious diseases, such as COVID-19, should include early recognition, physical distancing, source control, taking precautions and appropriate use of PPEs, hand washing, restriction of movement, environmental cleaning and disinfection as well as support for healthcare workers. (WHO 2020; Matrajt et al., 2020; Ashinyo et al 2021).

Most studies. (Powell-Jackson et al., 2020; Chavali, et al., 2020; Karaslan et al., 2020, Goel et al., 2020; Ashinyo et al., 2021) had focused on the rate of hand hygiene compliance during the COVID-19 pandemic, this may not be true in post pandemic era. The objective of this study was to evaluate the factors affecting post COVID-19

pandemic compliance to handwashing among health care workers in a Nigerian tertiary hospital.

MATERIALS AND METHODS

This descriptive, cross-sectional study was designed and conducted at the University of Benin Teaching hospital, Benin City. Edo State. Nigeria from March to June, 2022. The study population were all health care workers in the various Departments of dental care facility of the hospital. Ethical approval was given by the Research and Ethics Committee of the hospital and written informed consent was obtained from the eligible participants. Excluded from the study were those who were not willing to participate in the study. Sample size was calculated to be 110 using the Taro Yamane Formula (Chaokromthong, 2021):

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

Where,

n = sample size

N = Population Size ≈ 150 medical practitioners

e = level of precision always set the value of 0.05

$$n = \frac{150}{1 + 150(0.05^2)}$$

n = 109.09 ≈ 110 practitioners will be sampled. To adjust for attrition the sample was estimated to be 138 samples. The questionnaire was self-administered and adapted from World Health Organisation (WHO) risk assessment tool (WHO, 2020) for health care workers in context of COVID -19. This questionnaire had two sections, section one which consists of questions on clinico-demographic characteristics. Section two had questions on compliance to handwashing after COVID-19 pandemic. Descriptive and inferential statistics were performed. In the descriptive statistics, range, means and standard deviation were estimated for continuous variables while frequency and percentages were estimated for categorical variables. Inferential statistics were done with Chi-square of association and binary logistic regression. All data was analysed using SPSS software version 26 (IBM, Armonk, New York, US). P- Value less than 0.05 was considered statistically significant.

RESULTS

All the 138 questionnaires designed in this study were answered and returned by the respondents given a response rate of 100%. The age range of the respondents was 18-70 years with a mean age of 37.3 ± 9.97years. Table1 shows the demographic characteristics of the respondents. More than half (53.6%) of the respondents were females given a female to male ratio of 1.2: 1. Most (61.6%) of the respondents were married which was followed (36.2%) by the single respondents. The highest (28.3%) number of the respondents among the ethnic groups were the Binis which was followed by the Yorubas (20.3%). In the level of education, the majority (94.9%) of

the respondents had tertiary levels of education while the least (0.8%) were those without formal education. More than half of the respondents were dental surgeons and this was followed (14.5%) by dental health technicians. Highest (21.0%) proportion of the respondents were from the department of oral and maxillofacial surgery while the least (13.0%) proportion were from the department of oral diagnosis.

Table 2 shows the clinical characteristics of respondents. Just a few (0.7%) of the respondents gave a history of smoking while majority (99.3) were non-smokers. More than half (52.5%) of the respondents do take alcohol. The respondents that tested negative for COVID-19 were more than two-thirds (84.8%) however only 15.2% tested positive for COVID-19 virus. Headache (15.9%) was the commonest symptom experienced by the respondents while the least (4.3%) was shortness of breath. Though just a few (0.7%) respondents had treatment following

manifestation of symptoms, most (68.1%) did not present to any health facility for treatment. Majority (74.6%) of the respondents were unaware of their source of exposure to the COVID-19 virus.

Table 3 shows the compliance to handwashing by respondents. Interestingly, almost (94.9%) all the respondents were compliant with handwashing guidelines although 99(71.9%) respondents had training on handwashing techniques. About two-third (71.7%) of the respondents preferred handwashing with soap and water for 20 seconds while few (6.5%) respondents preferred sanitizer with above 60% alcohol. Most of the respondents (92%) had the knowledge of the guidelines of hand hygiene before and after clinical procedures.

Table 4 shows the factors influencing the compliance to handwashing by the respondents. The demographic variables studied did not significantly affect the compliance to hand hygiene.

Table 1: Demographic characteristics of respondents(n=138)

Variables	Frequency(n)	Percentage (%)
Gender		
Male	64	46.4
Female	74	53.6
Marital status		
Single	50	36.2
Married	85	61.6
Divorced	1	0.7
Widowed	2	1.4
Ethnicity		
Bini	39	28.3
Esan	20	14.5
Yoruba	28	20.3
Ibo	26	18.8
Hausa	3	2.2
Others	22	15.9
Education		
Non formal	1	0.8
Primary	4	2.9
Secondary	2	1.4
Tertiary	131	94.9
Occupation		
Doctor	96	69.2
Nurse	13	9.4
Dental technician	20	14.5
Porter	2	1.4
Cleaner	6	4.3
Ambassador	1	0.7
Department		
Restorative	23	16.7
Oral Medicine	24	17.5
Preventive	22	15.9
Oral Surgery	29	21.0
Periodontics	22	15.9
Oral Diagnosis	18	13.0

Table 2: Clinical characteristics of respondents

Variables	Frequency(n)	Percentage (%)
Do you smoke		
Yes	1	0.7
No	137	99.3
Do you take alcohol		
Yes	72	52.2
No	66	47.8
Have you tested positive for COVID-19		
Yes	21	15.2
No	117	84.8
How many of the What symptoms of COVID-19 do you have		
Fever	19	13.8
Cough	17	12.3
Shortness of breath	6	4.3
Sore throat	10	7.2
Headache	22	15.9
Muscle ache	12	8.7
Runny nose	11	8.0
Fatigue	10	7.2
Diarrhoea/ Nausea/ Vomiting	6	4.3
Loss of smell	11	8.0
Itchy Eyes/redness	8	5.8
None	6	4.3
Treatment		
Seen in Emergency	1	0.7
Seen in clinic	7	5.1
Consulted on Phone	11	8.0
Self-Isolation at home	25	18.1
No treatment	94	68.1
What was your source of exposure if tested positive for COVID-19		
Contact with someone tested positive	15	10.9
Contact with one who likely had tested positive.	14	10.1
Travel to a different area	6	4.3
None	103	74.6
Are you at risk of COVID		
Yes	69	50
No	69	50
Why are you at risk?		
Been in close contact with persons who have COVID-19	42	30.4
Recent travel from an area with COVID-19 spread	4	2.9
Both	16	11.6
None	76	55.1

DISCUSSION

The compliance to hand hygiene among health workers was assessed by this study. The relevance of compliance to hand hygiene cannot be over-emphasized due to patient-doctor close contact during oro-dental examination which remains source of infection. Data on studies on compliance to hand hygiene measures will help to focus on area of challenges in performing hand hygiene measures.

The response rate of 100% in this study is an indication that the findings can readily be generalised to all the staff

of our facility. The mean age of the respondents in this study was 37.3 years. This finding is similar that reported in previous studies. (Goel, 2020; Ashinyo, 2020). More females responded to our questionnaires compared to their male counterparts which was in agreement with previous studies. (Matrajt et al., 2020; Ashinyo et al, 2020) but in contrast with others (Goel et al., 2020) who reported a male preponderance.

Table 3: Compliance to hand washing by respondents

Variable	Frequency(N)	Percentage(%)
Compliance to hand washing		
Yes	131	94.9
No	7	5.1
Did you receive training for Hand washing		
Yes	99	71.9
No	39	28.3
Preferred method of Hand hygiene		
Handwash with soap & water for 10 seconds	15	10.9
Hand washing with soap & water for 20 seconds	99	71.7
Use of sanitizer with at least 60% alcohol	15	10.9
Use of sanitizer with at above 60%	9	6.5
Which hand hygiene prevents transmission of coronavirus		
After touching a patient	4	2.9
After fluid exposure	5	3.6
After exposure to patient's surroundings	2	1.4
After and before PPE Use	127	92

Table 4: Factors influencing compliance to hand washing by the respondents

Variables	Compliance to hand washing		Chi Value	P-Values
	Yes (n= 131)	No (n= 7)		
Age group				
Young Adult	49(37.4)	3(42.9)	0.27	0.87
Middle aged	78 (59.5)	4(57.1)		
Elderly	4(3.4)	0(0.0)		
Sex				
Male	60(45.8)	4 (57.1)	0.34	0.56
Female	71(54.2)	3(42.9)		
Marital status				
Single	46(35.1)	4(57.1)	1.47	0.69
Married	82(62.6)	3(42.9)		
Divorced	1(0.8)	0(0.0)		
widowed	2(1.5)	0(0.0)		
Education				
No formal	1(0.8)	0(0.0)	0.39	0.49
Primary	4(3.1)	0(0.0)		
Secondary	2(1.5)	0(0.0)		
Tertiary	124(94.7)	7(100.0)		
Occupation				
Doctor	92(70.2)	4(57.1)	1.84	0.87
Nurse	12(9.2)	1(14.3)		
Technician	18(13.7)	2(28.6)		
Porter	2(1.5)	0(0.0)		
Cleaner	6(4.6)	0(0.0)		
Ambassador	1(0.8)	0(0.0)		
Department				
Restorative	28(21.4)	0(0.0)	6.92	0.33
Oral Medicine	20(15.3)	3(42.9)		
Preventive	20(15.3)	1(14.2)		
Oral Surgery	28(21.4)	0(0.0)		
Periodontics	19(14.4)	2(28.6)		
Oral Diagnosis	16(12.2)	1(14.3)		
Ethnic Group				
Bini	39(29.8)	0(0.0)	3.65	0.60
Esan	20(15.3)	0(0.0)		
Yoruba	26(19.8)	2(28.6)		
Ibo	24(18.3)	2(28.6)		
Hausa	2(1.5)	1(14.3)		
Others	20(15.3)	2(28.6)		

Interestingly, the prevalence of the health care workers that were compliant with handwashing guidelines was 94.9%. This could be due to the fact that majority of healthcare workers had had training in hand hygiene as in a similar study (Ashinyo et al, 2020). The prevalence in the present study was higher than that reported in previous studies (Powell-Jackson et al 2020; Karaslan et al 2014) which were performed during the pandemic of COVID-19. The possible reason for this variation in findings could be the study site which is a tertiary institution compared to other previous study (Ashinyo et al., 2020) done in a general hospital.

Most of the respondents were married and this was similarly reported by a study (Ashinyo et al, 2020) in Ghana. This may be due to the fact that most married persons work as health care providers. The highest number of the respondents among the ethnic groups were the Binis which was followed by the Yorubas. This could be due to the Binis being the most prominent ethnic group in the study environment.

In the level of education, the majority of the respondents had tertiary levels of education which is similar to another study (Ashinyo et al., 2020). This is obviously due to the fact that the healthcare workers in a tertiary health facility require a higher certificate to practice.

In this study, the demographic variables did not significantly affect the compliance to hand hygiene unlike in a previous study (Ashinyo et al. 2020) that reported association between level of education, category of staff and compliance to hand hygiene. The likely reason for this variation in findings could be related to the sample size and methodologic factors.

CONCLUSION

Though there was an excellent compliance to hand washing by the healthcare workers but none of the demographic factors was associated with the rate of compliance.

Conflict of interest:

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