

# Factors Associated with Utilization of COVID-19 Preventive Measures by Patients Attending Private Healthcare Facilities in Southwest Nigeria

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## ABSTRACT

### Background:

Understanding disease risk is important for prevention. Identifying high-risk COVID-19 patients helps healthcare professionals implement precautions. This study examined factors related to COVID-19 prevention in patients at private healthcare facilities in Southwest Nigeria, during the early stages of the pandemic.

### Methods:

A descriptive cross-sectional survey was conducted in two hospitals using multi-stage sampling. 400 respondents were selected two out of 78 private healthcare facilities in in Southwest Nigeria. Trained interviewers administered a questionnaire to collect information on risk profile, symptoms, perception of COVID-19 risk, and preventive practices. Data was analyzed using descriptive statistics, chi-square test, and binary logistic regression at a significance level of 0.05.

### Results:

The average age of participants was 27.83 + 10.46 years. 52.8% of respondents were female. 70.5% were single, 75.8% belonged to the Yoruba ethnic group, and 72% identified as Christians. None had a history of international travel or contact with a confirmed COVID-19 case in the past 14 days, but 12.75% had been in contact with suspected cases. 47% reported having a fever. The majority had a low risk score for COVID-19. Most did not smoke (98.5%), consume alcohol (83.75%), or visit club houses (85.75%). Only 9.5% underwent COVID-19 testing, and 16.0% of those tested were positive. The main reason for test refusal was a lack of perception of susceptibility to COVID-19. Adherence to preventive practices was poor in all

investigated circumstances.

**Conclusion:** Patients presenting in hospitals during the early phase of the COVID-19 pandemic had a low risk of COVID-19. However, their poor compliance with preventive protocols and low testing uptake make them a potential source of transmission. Strategies to promote adoption of preventive measures are needed, especially among patients at private healthcare facilities.

**Keywords:** utilization, COVID-19 preventive measures, private healthcare facilities.

## INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic, caused by a new strain of coronavirus, is a highly contagious respiratory illness (WHO, 2020a). It spreads through respiratory droplets and can cause mild to severe symptoms such as fever, cough, and fatigue. The incubation period is around 5 to 14 days. The first case was reported in Wuhan, China on December 31, 2019, and Nigeria confirmed its first case in Lagos on February 27, 2020 (CDC, 2020; WHO, 2020b).

Understanding the burden and distribution of risk factors is crucial in decision-making for implementing preventive measures (Ye *et al.*, 2021; Alkhalidi *et al.*, 2021; Sánchez-Arenas *et al.*, 2021; Feyisa, 2021). An individual's perception of their risk to COVID-19 is influenced by personal and social factors. Having an accurate perception of one's risk is vital in motivating individuals to take necessary protective actions. Adherence to preventive measures can effectively prevent and control the spread of the disease. Limited awareness of COVID-19 symptoms and risk factors may hinder willingness to adopt preventive measures. Identifying common risk factors can enhance preventive efforts (Otu *et al.*, 2018). Early identification of a patient's risk category can contribute to curtailing the spread of the disease (Y. H. Jin *et al.*, 2020). The objective of this study was to determine the risk category of patients seeking care during the pandemic and identify factors associated with the adoption of COVID-19 preventive practices among patients attending a private healthcare facility in Oluyole Local Government, Ibadan.

## METHODS

This was a descriptive cross-sectional study involving 400 outpatients visiting private healthcare facilities in Oyo State. This study aimed at investigating factors related to the utilization of COVID-19 preventive measures in two private healthcare facilities in Southwest, Nigeria.

A multi-stage sampling technique was used to select participants for this study (in the first stage a simple random sampling method was used to select the Local Government Area (LGA), thereafter a simple random sampling without replacement was used to select two hospitals among the 78 healthcare facilities within the LGA, systematic random sampling was utilized in the third stage to recruit participants into the study.

Data was collected through using an interviewer-administered questionnaire, focusing on socio-demographic characteristics and prevention practices such as physical distancing, hand washing, use of hand sanitizers, use of facemask. Participants had to be willing, able to understand information, and adults aged 18-60 who had visited two hospitals. Exclusions included those taking antipyretics, severely ill individuals, and those who did not provide informed consent.

The questionnaire was administered to respondents who met the inclusion criteria until the desired sample size was reached. Ethical approval was obtained from the Oyo State Ministry of Health participants concern was obtained and their confidentiality was ensured (by de-identifying the questionnaire). The questionnaires were counted, screened, coded, and entered into SPSS version 23. Binary logistic regression was used to

identify predictors for utilization of practices for COVID-19. A p-value of less than 0.05 was considered statistically significant.

## RESULTS

The average age is  $27.83 \pm 10.46$  years. 57.8% of the population is below 20 years old, while 17.0% falls within the 20-29 age range. 52.8% are female. 70.5% of the population is unmarried. 303 individuals identify as Yoruba, 8.5% as Igbo, and 4.3% as Hausa. 72.0% of the population is Christian. 56.8% are students. 58.1% have completed secondary education, while 42.3% have completed tertiary education. 17% of the population reports medical conditions, with hypertension being the most prevalent at 38.8%, followed by respiratory disease at 19%, diabetes mellitus at 3.5%, and hemoglobinopathy at 2.25% (Table 1).

### Adherence to preventive practices during individual conversations

Table 2 reveals that the respondents displayed a lack of adherence to preventive practices. In individual conversations, only 21.5% of individuals wore facemasks, while a staggering 97.7% did not maintain physical distance. Similarly, during social gatherings, 96.0% did not utilize hand sanitizer, 96.3% failed to maintain physical distance, 97.5% neglected to wash their hands, and 88.3% were not subjected to temperature checks. During religious gatherings, 95.3% did not use hand sanitizer, 92.7% did not wash their hands, 85% were not temperature checked, and only 19.3% practiced physical distancing. However, according to Table 3, there was no significant correlation between adherence to preventive measures and demographic information. Interestingly, females, older individuals, those with no formal education, and lecturers were more inclined to adopt preventive practices. Nevertheless, no demographic factors had a significant impact on the implementation of preventive measures. This finding contradicts the results of an online survey conducted among 368 dental healthcare workers in Jordan, where almost all participants (88.3%) consistently wore facemasks during conversations (Khader et al., 2020). Furthermore, this finding also differs from another online cross-sectional descriptive study conducted among 136 Ugandan healthcare workers in four teaching hospitals, which found that 54% of healthcare workers regularly wore facemasks during conversations (Olum et al., 2020). These findings are in contrast to the studies conducted by Sánchez-Arenas et al. (2021) and Ye et al. (2021), both of which found that factors such as being female (OR: 1.08; CI: 1.04, 1.13), older age (OR: 1.002; CI: 1.0008, 1.003), and higher literacy (OR: 1.003; CI: 1.001, 1.004) were associated with the utilization of preventive methods.

### Adherence to preventive practices during outdoor gathering

Results from Tables 4 and 5 revealed that precautionary measures were implemented at outdoor gathering venues, with gender and employment status playing significant roles in adherence. Females demonstrated higher adherence compared to males, while unemployed individuals exhibited greater adherence compared to those employed in other occupations. Specifically, males had a 61% decrease in the odds of adhering to preventive measures, whereas the unemployed were 8 times more likely to adhere. Therefore, when promoting adherence, it is crucial to consider gender and employment factors. In Table 5, respondents displayed adherence to preventive measures during a recent religious gathering. Occupation was the only significant factor, with lecturers being 3 times more likely to adhere compared to students (OR 2.775; CI: 1.06 – 7.655). Although unemployment was associated with higher adherence, it did not reach statistical significance. Notably, a survey conducted in Jordan among 368 dentists found that the majority believed in the importance of instructing patients on physical distancing and consistently practiced hand hygiene (Khader et al., 2020). Similarly, a survey in China involving 4704 participants revealed that males were less inclined to adopt outdoor preventive measures, while individuals with lower incomes were more willing to adopt such measures (Ye et al., 2021). In Mexico, a survey of 1030 adults indicated that being female was associated with engaging in preventive health behavior (Sánchez-Arenas et al., 2021). Lastly, a study

conducted in Ethiopia with 384 youths found that male youths were less likely to practice preventive measures (Feyisa, 2021).

## STRENGTHS AND LIMITATIONS

One key strength of this study lies in validity and reliability of perception constructs that has been derived with a robust statistical method. A limiting factor of this study is the likely recall bias among participants, which may be based on their willingness to voluntarily and correctly start COVID-19 result outcome, but this may not necessarily imply they were intentionally done.

## CONCLUSION

Understanding factors that drive utilization of preventive practices should guide policy and risk communication strategies to achieve more positive uptake behaviour. Our study found that occupation with gender were positively associated with high utilization of COVID-19 preventive practices. While intent towards compliance with preventive measures tend to vary over time, due to increased awareness, this utilization will likely change throughout the different phase of the COVID-19 pandemic.

## AVAILABILITY OF DATA AND MATERIALS

All data relevant to the study are included in the article or uploaded as supplementary information.

## AUTHOR CONTRIBUTIONS

All authors were involved during: Concept and design, acquisition, analysis or interpretation of data, drafting and critical revision of the manuscript.

## DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

**Table 1: Socio-demographics characteristics of the study population**

CHARACTERISTICS		Frequency (n= 400)	Percentage (%)
<b>AGE</b>	< 20 year	231	57.8
	20-29 year	68	17.0
	30 – 39 year	57	14.3
	40-49 year	26	6.5
	50 – 59 year	18	4.5
	≥60 years	0	0

CHARACTERISTICS		Frequency (n= 400)	Percentage (%)
<b>GENDER</b>	Male	189	47.3
	Female	211	52.8
<b>ETHNICITY</b>	Yoruba	303	75.8
	Hausa	17	4.3
	Ibo	34	8.5
	Others	46	11.5
<b>RELIGION</b>	Christianity	288	72.0
	Islam	111	27.8
	Traditional	1	0.3
<b>MARITAL STATUS</b>	Single	282	70.5
	Married	116	29.0
	Separated	2	0.5
	Widowed	0	0.0
<b>LEVEL OF EDUCATION</b>	No formal	3	0.8
	Primary	1	0.3
	Secondary	229	58.1
	Tertiary	169	42.3
<b>OCCUPATION</b>	Student	227	56.8
	lecturer	19	4.8
	Civil servant	18	4.5
	Unemployed	6	1.5
	Others	130	32.5

CHARACTERISTICS		Frequency (n= 400)	Percentage (%)
<b>MEDICAL CONDITIONS</b>	Hypertension	35	8.75
	Heart disease	0	0
	Diabetes mellitus	14	3.5
	Kidney disease	0	0
	Respiratory disease	19	4.75
	Hemoglobinopathy	9	2.25

**TABLE 2: Preventive practice adopted in various situation**

Preventive practice during a conversation with a person within the past 24 hour	Yes	No
Wearing a masks	86(21.5)	314(78.5)
keeping physical distancing of about 6 feet	9(2.3)	391(97.7)
<b>Preventive practice adopted during a visit to a place of social gathering</b>		
Use of hand sanitizer at the venue	16(4.0)	384(96.0)
Keep physical distancing	15(3.7)	385(96.3)
Wash hands	10(2.5)	390(97.5)
Temperature check	47(11.7)	353(88.3)
<b>Preventive measure adopted during recent visit to a place of religious gathering</b>		
Use of hand sanitizer at the venue	19(4.7)	381(95.3)
Keep physical distancing	77(19.3)	323(80.7)
Wash hands	29(7.3)	371(92.7)
Temperature check	60(15)	340(85)

**Table 3:** output of binary logistic analysis between preventive measures adopted in one on one conversation with a person within the past 24 hours and the demographic information such as gender, religious. Level of education and occupation of the respondents

	B	Sig.	Exp(B) Odd Ratio	95% C.I.for EXP(B)	
				Lower	Upper
<b>Age</b>	0.005	0.768	1.005	0.970	1.043
<b>Gender</b>					
Female			1		
Male	-.329	.190	.720	.440	1.177
<b>Religious</b>					
Traditional		.994	1		
Christianity	19.811	1.000	401524237.570	0.000	.

Islam	19.841	1.000	413890628.768	0.000	.
<b>Level of education</b>					
Tertiary		.657	1		
No formal	.441	.727	1.554	0.131	18.462
Primary	-20.504	1.000	0.000	0.000	.
Secondary	-0.348	0.255	0.706	0.388	1.286
<b>Occupation</b>					
Others		.872	1		
student	-0.150	.724	.860	0.373	1.984
lecturer	0.165	.766	1.179	0.398	3.491
civil servant	-0.661	.325	0.516	0.138	1.928
unemployed	-20.048	.999	0.000	0.000	.
<b>Constant</b>	-20.794	1.000	0.000		

Table 4: Output of binary logistic analysis between preventive measures adopted at their recent visit to a place of social gathering and the demographic information such as gender, religious. Level of education and occupation of the respondents

	B	Sig.	Exp(B) Odd Ratio	95% C.I. for EXP(B)	
				Lower	Upper
<b>Age</b>	0.034	0.080	1.035	0.996	1.075
<b>Gender</b>					
Female			1		
Male	-0.942	0.001*	0.390	0.225	0.676
<b>Religious</b>					
Traditional		0.704	1		
Christianity	19.380	1.000	260973828.709	0.000	.
Islam	19.138	1.000	204874023.894	0.000	.
<b>Level of education</b>					
Tertiary		.557	1		
No formal	-20.097	0.999	0.000	0.000	
Primary	-20.889	1.000	0.000	0.000	.
Secondary	-0.464	0.150	0.629	0.334	1.182
<b>Occupation</b>					
Others		0.119			
student	.588	0.211	1.800	0.716	4.523
lecturer	.899	0.103	2.458	0.834	7.247
civil servant	.178	0.767	1.195	0.368	3.887
unemployed	2.016	0.027*	7.508	1.258	44.807
<b>Constant</b>	-21.470	1.000	0.000		



Table 5: Output of binary logistic analysis between preventive measures adopted at their recent visit to a place of religious gathering and the demographic information such as gender, religious, Level of education and occupation of the respondents

	B	Sig.	Exp(B) Odd Ratio	95% C.I.for EXP(B)	
				Lower	Upper
<b>Age</b>	0.002	0.883	1.002	0.971	1.035
<b>Gender</b>					
Female			1		
Male	-0.079	0.708	0.924	0.611	1.398
<b>Religious</b>					
Traditional		.704	1		
Christianity	20.725	1.000	1001650718.504	.000	.
Islam	20.923	1.000	1221278671.369	.000	.
<b>Level of education</b>					
Tertiary		.563	1		
No formal	1.483	.236	4.405	0.378	51.272
Primary	-20.550	1.000	.000	.000	.
Secondary	0.261	0.323	1.298	0.774	2.177
<b>Occupation</b>					
Others		0.151			
student	-0.033	0.930	0.968	.467	2.004
lecturer	1.021		2.775	1.006	7.655
civil servant	0.592	0.248	1.808	0.661	4.944
unemployed	1.342	0.138	3.826	0.651	22.497
<b>Constant</b>	-21.501	1.000	.000		

REFERENCES

1. Africa, T. C. (2018) *Why some people don't want to take a COVID-19 test*. Available at: <https://theconversation.com/why-some-people-dont-want-to-take-a-covid-19-test-141794> (Accessed: 15 March 2021).
2. AfricaSource (2020) *Barriers to mass testing for COVID-19 in Africa*. Available at: <https://www.atlanticcouncil.org/blogs/africasource/barriers-to-mass-testing-for-covid-19-in-africa/> (Accessed: 3 November 2021).
3. Alkhalidi, G. *et al.* (2021) 'Perceptions towards COVID-19 and adoption of preventive measures among the public in Saudi Arabia: a cross-sectional study', *BMC public health*. BMC Public Health, 21(1), p. 1251. doi: 10.1186/s12889-021-11223-8.
4. Barrett, E. S. *et al.* (2020) 'Prevalence of SARS-CoV-2 infection in previously undiagnosed health care workers at the onset of the U.S. COVID-19 epidemic', *medRxiv*, p. 2020.04.20.20072470. doi: 10.1101/2020.04.20.20072470.
5. CDC (2020) *FIRST CASE OF CORONA VIRUS DISEASE CONFIRMED IN NIGERIA*. Available at: <https://ncdc.gov.ng/news/227/first-case-of-corona-virus-disease-confirmed-in-nigeria> (Accessed: 22 September 2020).
6. Dan-Nwafor, C. *et al.* (2020) 'Nigeria's public health response to the COVID-19 pandemic: January to May 2020', *Journal of Global Health*, 10(2). doi: 10.7189/JOGH.10.020399.
7. Elimian, K. O. *et al.* (2020) 'Descriptive epidemiology of coronavirus disease 2019 in Nigeria, 27 February-6 June, 2020', *Epidemiology and Infection*, (September). doi:



- 10.1017/S095026882000206X.
8. Federal Ministry of Health (2019) *NIGERIA Health Facility Registry (HFR)*. Available at: <https://www.hfr.health.gov.ng/facilities/hospitals-list?page=1735> (Accessed: 21 March 2021).
  9. Feyisa, Z. T. (2021) 'Factors limiting youths' practice of preventive measures toward the outbreak of COVID-19 in Oromia special zone surrounding Finfinnee, Ethiopia', *PLoS ONE*, 16(3 March), pp. 1–15. doi: 10.1371/journal.pone.0248495.
  10. Halvatsiotis, P. *et al.* (2020) 'Demographic and clinical features of critically ill patients with COVID-19 in Greece: The burden of diabetes and obesity', *Diabetes Research and Clinical Practice*. Elsevier B.V., 166, p. 108331. doi: 10.1016/j.diabres.2020.108331.
  11. Ibadan Development Association (2020) *Local Government*. Available at: [http://ibadanlanda.org/Local\\_Government.html](http://ibadanlanda.org/Local_Government.html) (Accessed: 21 March 2021).
  12. Jin, J. M. *et al.* (2020) 'Gender Differences in Patients With COVID-19: Focus on Severity and Mortality', *Frontiers in Public Health*, 8. doi: 10.3389/fpubh.2020.00152.
  13. Jin, Y. H. *et al.* (2020) 'Perceived infection transmission routes, infection control practices, psychosocial changes, and management of COVID-19 infected healthcare workers in a tertiary acute care hospital in Wuhan: A cross-sectional survey', *Military Medical Research*. Military Medical Research, 7(1), pp. 1–13. doi: 10.1186/s40779-020-00254-8.
  14. Khader, Y. *et al.* (2020) 'Dentists' Awareness, Perception, and Attitude Regarding COVID-19 and Infection Control: Cross-Sectional Study Among Jordanian Dentists', *JMIR Public Health and Surveillance*, 6(2), p. e18798. doi: 10.2196/18798.
  15. Kim, L. *et al.* (2020) 'Hospitalization Rates and Characteristics of Children Aged < 18 Years Hospitalized with Laboratory-Confirmed COVID-19', *Morbidity and Mortality Weekly Report*, 69(32), pp. 1081–1088.
  16. Klein, S. L. and Morgan, R. (2020) 'The impact of sex and gender on immunotherapy outcomes', *Biology of Sex Differences*. *Biology of Sex Differences*, 11(1), pp. 1–13. doi: 10.1186/s13293-020-00301-y.
  17. Olum, R. *et al.* (2020) 'Coronavirus Disease-2019: Knowledge, Attitude, and Practices of Health Care Workers at Makerere University Teaching Hospitals, Uganda', *Frontiers in Public Health*, 8(April), pp. 1–9. doi: 10.3389/fpubh.2020.00181.
  18. Osibogun, A. *et al.* (2021) 'Outcomes of COVID-19 patients with comorbidities in southwest Nigeria', *PLoS ONE*, 16(3 March), pp. 1–12. doi: 10.1371/journal.pone.0248281.
  19. Otu, A. *et al.* (2018) 'An account of the Ebola virus disease outbreak in Nigeria : implications and lessons learnt'. *BMC Public Health*, pp. 1–8. doi: 10.1186/s12889-017-4535-x.
  20. Oyo State EOC (no date) *COVID-19 Risk scoring guige*.
  21. Perrotta, F. *et al.* (2020) 'COVID-19 and the elderly: insights into pathogenesis and clinical decision-making', *Aging Clinical and Experimental Research*. Springer International Publishing, 32(8), pp. 1599–1608. doi: 10.1007/s40520-020-01631-y.
  22. Sánchez-Arenas, R. *et al.* (2021) 'Factors associated with COVID-19 preventive health behaviors among the general public in Mexico City and the State of Mexico', *PLoS ONE*, 16(7 July), pp. 1–18. doi: 10.1371/journal.pone.0254435.
  23. The Jakarta post (2020) *Stigma, precarity deter Indonesians from getting tested for COVID-19*. Available at: <https://www.thejakartapost.com/news/2020/07/08/stigma-precarity-deter-indonesians-from-getting-tested-for-covid-19.html> (Accessed: 15 March 2021).
  24. Turcotte, J. J. *et al.* (2020) 'Risk factors for severe illness in hospitalized Covid-19 patients at a regional hospital', *PloS one*, 15(8), p. e0237558. doi: 10.1371/journal.pone.0237558.
  25. WHO (2020a) *Coronavirus*. Available at: [https://www.who.int/health-topics/coronavirus#tab=tab\\_3](https://www.who.int/health-topics/coronavirus#tab=tab_3) (Accessed: 22 September 2020).
  26. WHO (2020b) *Coronavirus disease 2019 (COVID-19) Situation Report – 94*.
  27. Ye, Y. *et al.* (2021) 'Preventive behaviours and family inequalities during the COVID-19 pandemic : a cross-sectional study in China', *Infectious Diseases of Poverty*. BioMed Central, pp. 1–14. doi: 10.1186/s40249-021-00884-7.

28. Zealand, R. N. (2020) *Doctors frustrated by patients refusing Covid-19 tests*. Available at: <https://www.rnz.co.nz/news/national/422169/doctors-frustrated-by-patients-refusing-covid-19-tests> (Accessed: 15 March 2021).