



Knowledge of Covid 19 and Compliance with Preventive Measures in Asaba Delta State, Nigeria

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ABSTRACT

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Background: The 2019 COVID-19 pandemic has caused global trepidation and anxiety, prompting urgent measures like hygiene, isolation, and social distancing. However, cultural differences in knowledge and compliance with preventive measures persist.

Study design: A survey of 589 volunteers in Asaba, Nigeria, evaluated Covid-19 compliance and prevention techniques, focusing on demographic characteristics, knowledge, awareness, compliance rate, and awareness-affecting factors.

Methods: This study explored knowledge of COVID-19 and compliance with preventive measures among members Umuagu, Umuaji and Akwebulu communities Asaba, Delta State, Nigeria, using oral and written interviews. Data were sourced from 589 persons comprising 30 household heads age 18 years and above. Data were analyzed statistically and anglicized thematically

Result: The study found that 99.5% of respondents had knowledge of COVID-19, with internet/social media and TV being the main sources of information. 82.3% believed everyone should wear face masks, and most protective measures included proper hygiene, self-isolation, face masks, and prayers. However, 52.1% felt the government was not doing enough to curb the pandemic, and poor knowledge negatively affected compliance with preventive measures.

Conclusion: To improve knowledge on the coronavirus pandemic, an accurate information dissemination strategy to ensure compliance with preventive measures is recommended.

KEYWORDS:

Covid-19, Prevention, Compliance, Delta State

INTRODUCTION

COVID-19, also known as SARS-CoV-2, is a severe respiratory disease caused by the novel coronavirus ¹. It was first reported by the World Health Organization in December 2019 and became a global pandemic on March 11, 2020 ². The virus began in Wuhan, China, and spread worldwide, except Antarctica ³. The pandemic led to the closure of public places, halting public transportation, and isolation of infected

individuals. Symptoms include fever, fatigue, dry cough, malaise, and breathing difficulty. The disease has high morbidity and mortality rates, and the global lockdown has caused a downturn and economic fall due to a break in the global supply chain ⁴.

Before the WHO declared COVID-19 a global public health challenge, Nigerians and their government downplayed the virus's emergence, hesitating the adoption of initial preventive measures ⁵. After the index COVID-19 case in Lagos, Nigeria, other parts of the country, including the north-central region, continued their normal routines without implementing the initial preventive measures outlined by the Nigeria Centre for Disease Control (NCDC). Public opinion in central Nigeria was that COVID-19 was a "big man disease" with low education levels, leading to misinformation

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and uncertainty. As COVID-19 cases increased, particularly in metropolitan areas like Abuja, the state of the inhabitants in these regions became palpable fear and uncertainty⁶.

The urban slums, dense population, and lack of access to potable water in central Nigeria make implementing hygiene and public health measures impossible. Misinformation and traditional treatment promote unscientific treatment, further jeopardizing preventive measures⁶. The government's inability to maintain social distancing policies and ban on large gatherings may accelerate COVID-19 super-spreading. To effectively control and mitigate COVID-19, timely epidemiological data from the populace will inform health authorities to design relevant and understandable interventions and policies⁷.

This highly contagious disease presents symptoms such as dry cough, fever, anosmia, weakness, headache, body pains, vomiting, sore throat, and respiratory difficulty. Symptoms typically last 1-14 days. Some infected individuals might not show any symptoms, while the majority of symptomatic cases are mild or moderate, with 10% being severe⁸.

The elderly are more susceptible to HIV infection due to factors such as obesity, underlying medical conditions, and immune-compromising diseases. These age groups also have higher mortality rates, as reported by various studies. Other vulnerability factors include diabetes mellitus, systemic hypertension, and other cardiac pathologies⁹.

Due to the lack of a treatment or vaccine, preventive measures like regular hand washing, alcohol-based hand sanitizer, and masking one's face when outside, avoiding crowded areas, and maintaining social distancing are the only scientific evidence to reduce the high spread and mortality associated with the disease¹⁰.

Knowledge and attitude towards a disease are closely linked, affecting the practices and measures aimed at controlling it¹¹. In Pakistan, a study found that inadequate knowledge and a negative attitude led to poor compliance with disease prevention measures¹². However, adequate knowledge also encouraged individuals to comply with practices that promote good health. Factors such as availability of information, source, and demographic variables like gender and education level significantly influence people's knowledge, behavioral response, and compliance with preventive measures against disease outbreaks¹³.

COVID-19 knowledge is primarily acquired through social media and the internet, with professionals and scientific institutions having a positive attitude and higher confidence about the disease¹⁴. The virus's ferocity leads to trepidation and desperate measures, such as hygiene, isolation, and social distancing. Compliance with these measures remains a concern, especially in Nigeria¹⁵. While there are studies on preventive measures, awareness, and clinical characteristics of hospital patients, there are no studies on awareness to reduce community transmission in Nigeria. Most publications focus on the preparedness and capacity of the

National Covid-19 Control Centre (NCCDC) in Nigeria. The purpose of this investigation is to contribute to literature on COVID-19 in Nigeria, support state government efforts, and highlight the need for social workers in response. Rapid gathering of information on KAP of individuals in Nigeria will aid in planning, developing, and implementing behavior change programs, interventions, and tracking COVID-19¹⁵.

METHODS

Study Design

This study involved a cross-sectional survey of 589 volunteers in Umuagu, Umuaji, and Akwebulu communities in Asaba, Nigeria, to assess Covid-19 compliance and prevention techniques. The questionnaires were structured into five parts, covering demographic characteristics, knowledge of Covid-19, awareness of preventive measures, compliance rate, and factors affecting awareness. Data was collected for two weeks and analyzed to determine standard preventive measures compliance.

Study Area

The investigation was carried out in Asaba, an urban community in Oshimili North Local Government Area of Delta State, South south of Nigeria. The population of Oshimili North according to the 2006 population census was 172, 773 (National Population Commission, 2010). The choice of this community was informed by the urban status and crowding due to large market space with Onitsha Market.

Scope of Study

This study was limited to the knowledge, awareness of prevention methods and the factors influencing the practice of preventive measures in 589 randomly selected volunteers within the ages 18 and above in Oshimili North Local Government Area of Delta State, Nigeria.

Study of Population

The target population were people from age 18 years upwards from which the sample size was selected by simple sampling technique. The research study populations were residents in Oshimili North Local Government Area.

Sample Size Determination

The sample size was determined using Fisher's Formula¹⁶:

$$n = z^2 p (1-p) / e^2$$

Where

n = Minimum required sample size in population >10,000.

Z = Standard normal deviation at 95% confidence interval. Level of significance is 1.96.

P = Prevalence of women who have knowledge of good nutrition from literature reviewed = 0.185.

E = Acceptable margin of sampling error (0.05).

n = 589

Sampling Procedure

Simple random sampling was used to select three villages three area that make up the community. This was to give each area an equal chance of being selected in the study. Availability sampling technique was adopted to select respondents who were willing to participate in the study. This was based on previous phone contacts with the respondents inviting them to participate in the study. A total of 30 households were selected for the study, with 10 households representing each selected village. Male and female household heads age 50 years and above were selected for the interview.

Inclusion Criteria

Volunteers who have been resident in the Umuagu, Umuaji and Akwebulu communities in Asaba of Oshimili North Local Government Area for at least ten years from 18years old, were selected for the study

Exclusion Criteria

Volunteers under 18years old who are not resident in the Umuagu, Umuaji and Akwebulu communities in Asaba Oshimili North Local Government Area were not selected for the study.

Method and Instrument for Data Collection

The study used a semi-structured interviewer-administered questionnaire, adapted from a Chinese resident study, and pretested for reliability. The questionnaire assessed participants' knowledge of COVID-19 symptoms, transmission and prevention, attitudes towards foreigners, recent returnees, and COVID-19 survivors. It also covered practices related to the pandemic, such as social distancing, hand washing, face masks, over-the-counter medications, and herbal remedies.

Questions on the knowledge section were designed in the true/false pattern, and a scoring system was developed to assess knowledge. The study assessed knowledge of COVID-19 using a 25-point scale. The first nine questions focused on symptoms and transmission, while the remaining eight questions focused on prevention. A score of less than 13 (< 50%) was considered poor knowledge. The attitude section used a 5-point Likert scale, with positive attitudes scoring one point and negative attitudes scoring no point. The practice section used yes/no questions and multiple-choice questions, with scores ranging from 0 to 50.

Validity of the Research Instrument

The researcher used a self-structured questionnaire with contents relevant to the topic and was assessed by the researcher's supervisor prior to the administration of questionnaire, so as to ensure the questionnaire is valid and subsequently approved.

Reliability of the Research Instrument

Test-re-test was used prior to this study. The questionnaire was pre-tested among thirty (30) female residents of Amai Village in Delta State. The responses obtained during the pretesting was used to modify the questions, thereafter a second test was carried out on the same respondents to determine the reliability of this instrument (questionnaire) and the score of both test correlated after computation.

Ethic Considerations

This study involved children from Novena University, who were interviewed in the presence of their parents. Parental consent was obtained, and the study aimed to respect the indigenous belief system and interview children first before adults to avoid influencing their views.

Data collection

The study used in-depth interviews to gather data from 36 respondents, including 6 children and 30 household heads, between October 10 and November 5, 2020. The interviews were conducted in Igbo and English, with participants informed about the research's objectives, anonymity, confidentiality, and the freedom to withdraw at any time. The interviews were transcribed into English, and the original meaning of the participants' words was preserved to ensure reliability and validity of the data.

The study analyzed respondents' responses on COVID-19, physical/social distancing, hand washing, and lockdown impact on child care. Analytical themes were identified, and the data was manually analyzed to maintain originality and avoid manipulation.

Limitations

This study provides a baseline of knowledge and perceptions about COVID-19 among respondents across 180 Nigerian municipalities. However, it may not be generalizable due to oversampling and selection bias. The study is part of a larger research aimed at understanding how knowledge and compliance shape Nigerians' response and precautionary behavior.

RESULTS

Sociodemographic characteristics of Participants

A total of 589 respondents participated in this online survey. Majority of the study population were male 59.6% (351), 80.6% (475) were between ages 18–39 years, 90.4% (522) had a college (Bachelor) degree or above and 56.2% (331) reside in urban areas respectively. The majority of the respondents 58.7% (346) and 56.5% (333) live in residences arranged in linear (straight) street patterns and houses with a maximum of 5 inhabitants (Table 1)

Table 1. Sociodemographic characteristics of Participants

Variable		Frequency (n = 589)	Percent (%)
Age (years)	18–29 years	261	44.3
	30–39 years	214	36.3
	40–49 years	93	15.8
	50–59 years	21	3.6
Gender	Female	238	40.4
	Male	351	59.6
Marital status	Married	230	39.0
	Single	354	60.1
	Divorced	3	0.5
	Widow/widower	2	0.3
Level of education	High school	26	4.4
	College/bachelor	348	59.1
	Master	153	26.0
	PhD	31	5.3
	Others	31	5.3
Residential location	Urban	331	56.2
	Semi-urban	213	36.2
	Rural	45	7.6

The study found that 99.5% of respondents had knowledge of COVID-19, with internet/social media and television being the main sources of information. Most agreed that COVID-19 is caused by a virus, with a 1-14 day incubation period. Most respondents identified breathing difficulty, dry cough,

and high fever as symptoms. However, 76.2% believed in infected individuals without symptoms and believed alcohol-based sanitizers, soap/detergents, and diluted chlorine could kill the virus.

Table 2. Knowledge of respondents to Covid 19

S/N	Questions	Frequency (n = 589)	Percent (%)
1	Have you heard of COVID-19?		
	Yes	586	99.5
	No	3	.5
2	If yes in 1 above, from where did you hear of it?		
	Other sources	22	3.7
	Internet/social media	328	55.7
	Newspaper	7	1.2
	Friends/family	16	2.7
	TV	162	27.5
	Government enlightenment campaign	54	9.2
3	Is COVID-19 the same as Flu virus?		
	Yes	154	26.1

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S/N	Questions	Frequency (n = 589)	Percent (%)
	No	352	59.8
	I don't know	83	14.1
4	What causes COVID-19?		
	Bacteria	11	1.9
	Fungi	3	.5
	Virus	541	91.9
	I don't know	34	5.8
5	Does eating or contacting wild animals' results in COVID-19 infection?		
	Yes	136	23.1
	No	316	53.7
	I don't know	137	23.3
6	Which of the following disease(s) is similar to COVID-19? You are free to choose more than one		
	Typhoid	55	9.3
	Malaria	119	20.2
	Ebola	199	33.8
	HIV/AIDS	50	8.5
	SARS	326	55.3
	All of the above	29	4.9
	None of the above	65	11.0
7	Is it possible for a COVID-19 positive person to show no symptoms?		
	Yes	449	76.2
	No	108	18.3
	I don't know	32	5.4
8	How long does it take from contracting the disease till showing symptoms (Incubation period)?		
	Less than 7 days	15	2.5
	1–14 days	543	92.2
	2–21 days	16	2.7
	1–3 months	2	.3
	I don't know	13	2.2
9	Who can get infected with COVID-19?		
	Old people only	3	.5
	Young adults only	1	.2
	Anyone can be infected	584	99.2
	Teenagers and children only	1	.2
10	Which is a symptom for COVID-19? (select all that applies)		
	High fever	512	86.9

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S/N	Questions	Frequency (n = 589)	Percent (%)
	Runny nose	241	40.9
	Dry cough	528	89.6
	Breathing difficulty	557	94.6
	Muscle pain	181	30.7
	Fatigue	308	52.3
	Bleeding	53	9.0
11	How does the virus spread? (select all that applies)		
	Air droplets (from patient sneezing/coughing)	548	93.0
	Mosquitoes/flies	7	1.2
	Contact with contaminated surfaces	504	85.6
	Close contact with people who have the virus	521	88.5
	I don't know	5	0.8
12	What can kill the virus? (select all that applies)		
	Clean surfaces with diluted chlorine	345	58.6
	Alcohol-based sanitizers	558	94.7
	Soap/detergents	481	81.7
	Water alone	17	2.9
	I don't know	19	3.2
13	Is hand-wash important?		
	Yes	583	99.0
	No	2	0.3
	Maybe	4	0.7
14	If yes in 13 above, how long should you wash your hands to kill the virus?		
	Less than 20 s	57	9.7
	20 s to 1 min	485	82.3
	I don't know	47	8.0

The study found that 82.3% of respondents believe everyone should wear face masks during the COVID-19 pandemic. Most protective measures include proper hygiene, self-isolation, face masks, and prayers. Most respondents follow FMOH and NCDC preventive guidelines, but only 79.5% follow them. Most respondents agreed to avoid crowded places during lockdowns. Respondents expressed feelings of boredom, nervousness, fear, stress, anger, and happiness. Most adapted by following social media, watching TV, reading, and spending time with family.

Attitude of respondents to Covid 19

The majority of respondents in Nigeria believe the government is not doing enough to curb the COVID-19 pandemic, with only 63.5% agreeing with the lockdown. They also disagree with Chinese doctors' intervention and vaccines. However, they report practicing health recommendations, social distancing, and avoiding handshakes and face kissing to reduce the spread. Most respondents are satisfied with media reporting.

Table 3. Perception of respondents towards national community response to covid 19

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S/N	Variable	Frequency (n = 598)	Percent (%)
1	Do you think that the government has/is doing enough to stop the global pandemic in Nigeria?		
	Yes	139	23.6
	No	307	52.1
	Maybe	143	24.3
2	Do you agree with the obligatory lockdown/measures Nigeria is taking?		
	Yes	374	63.5
	No	115	19.5
	Maybe	100	17.0
3	Do you agree with the government stay-at-home order?		
	Yes	428	72.7
	No	84	14.3
	Maybe	77	13.1
	Are you complying with the government stay-at-home order?		
4	Yes	460	78.1
	No	25	4.2
	Sometimes	104	17.7
5	Do you believe in Chinese doctors' intervention in Nigeria?		
	Yes	73	12.4
	No	401	68.1
	Maybe	115	19.5
6	Will you accept COVID-19 vaccine?		
	Yes	171	29.0
	No	268	45.5
	Maybe	150	25.5
7	On a scale of 1–5, how satisfied are you with your country's response against the COVID-19 pandemic?		
	Not satisfied	141	23.9
	Partly satisfied	155	26.3
	Satisfied	234	39.7
	More than satisfied	34	5.8
	Very satisfied	25	4.2
8	How satisfied are you with the media/social media coverage of the COVID-19 pandemic?		
	Very satisfied/keeps me updated	267	45.3
	Makes me worry more/stressful	55	9.3
	Not enough information	70	11.9
	There are more lies than truth	138	23.4
	I don't follow any media update	8	1.4
	No comment	51	8.7

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S/N	Variable	Frequency (n = 598)	Percent (%)
9	What do you think we can do as a community to reduce the spread COVID-19 (select all that applies)?		
	Follow/respect the health recommendations of my country	531	90.2
	Eat healthy/practice sports	311	52.8
	Attending religious gatherings	28	4.8
	Social distancing/avoid crowd	464	78.8
	Volunteer to support whenever possible	268	45.5
	Avoid handshakes and face kissing	438	74.4
	I don't know	5	0.8
	Do you think we can prevent such a global pandemic in the future?		
	Yes	415	70.5
	No	34	5.8
	Maybe	140	23.8
	Which of these can prevent/help against the occurrence of such a global pandemic in the future? (select all that applies)		
11	Reduced international travels	266	42.2
	Improve surveillance in the human and animal health sectors	394	66.9
	Establish early alerts and global warning systems for infectious diseases	486	82.5
	Collaboration between environmental, animal and human health workers	344	58.4
	Intensify research on preventive measures such as vaccines/diagnosis	460	78.1
	Raise public awareness of proper hygiene/healthy habits	452	76.7
	Prioritize human life/health welfare over animal or environmental ones	208	35.3
12	Are you willing to read and share with others the right information about COVID-19?		
	Yes	552	93.7
	No	8	1.4
	Maybe	29	4.9

Hypothesis 1

Residents with good knowledge of COVID-19 will have positive attitude towards COVID-19.

Residents of north-central Nigeria with good knowledge of COVID-19 had significantly positive attitude towards

COVID-19, $F(1,585) = 11.116, p = 0.001 (p < 0.05)$; with a mean score of 1.961 for positive attitudes towards COVID-19 and 1.886 for negative attitudes towards COVID-19 hence, hypothesis 1 was supported (Tables 4).

Table 4. Mean score of COVID-19 knowledge in relation to attitude and perception towards preventive measures and national response

Attitudes towards preventive measures, perception towards national response	Mean score	Std. error	95% Confidence interval	
			Lower bound	Upper bound
Negative attitude	1.886	0.018	1.852	1.921
Positive attitude	1.961	0.014	1.934	1.988
Negative perception	1.896	0.014	1.868	1.925
Positive perception	1.951	0.017	1.917	1.984

Table 5. ANOVA source table for knowledge of covid 19 attitude and preventive measures and perception of national responses

Source	Type III sum of squares	Df	Mean square	F	p-value
Corrected model	1.756 ^a	3	0.585	8.789	0.000
Intercept	1983.049	1	1983.049	29,778.429	0.000
Attitude towards preventive measures	0.740	1	0.740	11.116	0.001
Perception of national response	0.393	1	0.393	5.896	0.015
Attitude towards preventive measures*perception of national response	0.393	1	0.393	5.896	0.015
Error	38.957	585	0.067		
Total	2224.000	589			
Corrected total	40.713	588			

^aR Squared = 0.043 (Adjusted R Squared = 0.038)

Hypothesis 2

Residents with good knowledge of COVID-19 will have positive perception towards national response of COVID-19. Residents with good knowledge of COVID-19 had positive perception towards national response of COVID-19, $F(1,585) = 5.896$, $p = 0.015$ ($p < 0.05$); with a mean score of 1.951 and 1.896 for positive perception and negative perception towards national response of COVID-19 respectively. The hypothesis that residents with good knowledge of COVID-19 will have positive perception towards national response of COVID-19 was supported (Table 5).

Hypothesis 3

There is a significant relationship between knowledge of COVID-19, attitude towards preventive measures and perception of national response among residents of Asaba, Nigeria. The hypothesis tested with Pearson's correlation statistics showed that there was a significant relationship between knowledge of COVID-19, attitude towards preventive measures and perception of national response, $r = 0.177$, $p = 0.004$ ($p < 0.01$), $r = 0.137$, $p = 0.001$ ($p < 0.01$) respectively, hence, the hypothesis tested was supported (Table 6).

Table 6. Pearson's correlation table for relationship between knowledge of COVID-19, attitude towards preventive measures and perception of national response

	Perception of national response	
	Pearson's correlation (r)	p-value
Knowledge of COVID-19	0.177	0.004
Attitude towards preventive measures	0.137	0.001

Hypothesis 4

Good knowledge of COVID-19 is inversely proportional to the spread of the COVID-19 virus in Asaba.

The results of the regression model 1 summary (Table (Table7)) revealed that the coefficient of determination $R^2 = 0.041$, $F(1,587) = 0.316$, $DW = 2.075$ (95% confidence

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interval). This showed that the model can be held for 4.1% change in the spread of the COVID-19 virus. The F- statistic (ANOVA) of the model had no closeness of fit which means that the model is not statistically significant at 95% CI ($p < 0.05$) level of significance. The Durbin–Watson value of 2.075 shows that autocorrelation between the variables under consideration are without multicollinearity.

DISCUSSION

This study evaluated COVID-19 knowledge and compliance in Asaba, Nigeria, focusing on the need for adequate knowledge to survive the pandemic and adopt appropriate precautionary measures. Results show high awareness of the virus, its source, transmission, symptoms, preventive behavior, and major sources of information. However, a significant number of Nigerians believe COVID-19 is a Chinese biological weapon, affecting bilateral relations and hindering acceptance of Chinese aid. The study suggests campaigns to raise awareness and combat stereotypes, and suggests religious leaders may be influenced by this belief.

Knowledge about infectious diseases can prevent infection, and understanding Ebola risk reduction can decrease infection cases. COVID-19 has high fatalities, with 79,384 deaths reported worldwide as of April 7, 2020. Mass media and traditional media are major sources of information, but the internet is the premier during outbreaks¹⁷. The survey assessed compliance with the pandemic in Asaba, Delta State, Nigeria, finding a 99.5% awareness of the virus among male and single respondents. The majority of educated respondents, college graduates and under 40, use social media and the internet for COVID-19 information, excluding underprivileged individuals.

Nigeria's social media, particularly WhatsApp and Facebook, is the primary source of information about COVID-19, with 85.49 million users in Q1 2020, 70% of whom are youth. The WHO and NCDC have provided guidelines to dispel misinformation and ignorance⁶. Despite 91.7% believing COVID-19 is caused by a virus, 55.5% agree. Respondents in Nigeria recognize COVID-19 transmission routes, incubation period, and symptoms, with 99.2% believing everyone is at risk. The study found that respondents in Nigeria had good knowledge about COVID-19 transmission, incubation period, and symptoms, but a lower proportion (56.5%) had sufficient knowledge. Most respondents took precautionary measures during lockdown, including social distancing, improved hygiene, and face mask use. However, the Nigerian north-central region's governments struggle to implement strict IPC measures, leading to increased risk behaviors among the population¹⁸. The study also found a significant relationship between good knowledge of COVID-19 and a positive attitude towards the virus among residents of Asaba, Nigeria.

During the lockdown in Nigeria, most respondents used social media, TV, and reading as adaptive activities, but many experienced anxiety, paranoia, stress, and insomnia. Media misinformation and superstitious beliefs negatively impacted mental health, with only 25.3% satisfied with government efforts and 68.1% having no faith in Chinese doctors' intervention. Only 29.0% would accept COVID-19 vaccines due to fear and misconceptions. The majority believe adherence to FMOH and NCDC IPC guidelines can reduce COVID-19 community spread, but the underprivileged and vulnerable population have limited knowledge about the virus, leading to negative attitudes. Further research is needed to assess attitudes and practices, especially with lockdown plans. COVID-19 poses a global public health challenge with no known treatment or vaccines.

A study found that 75% of participants had a positive attitude towards COVID-19, with higher educational qualifications indicating a positive attitude¹⁹. However, they still practiced low levels of preventive measures, such as wearing masks, hand washing, avoiding crowds, and maintaining a distance of at least 1 meter from people. This aligns with previous studies in Malaysia and China, but differs from Bangladesh's negative attitude.

CONCLUSION

The study reveals Nigerians are knowledgeable and believe in the pandemic's lethality, but show poor preventive practices due to local belief in black African adaptations. However, educated individuals and females show higher compliance. With a positive attitude and government measures, mitigation of COVID-19 spread is near. Social media and the internet significantly contribute to knowledge acquisition, but government efforts in curtailing COVID-19 remain unsatisfactory.

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COMPETING INTERESTS

The authors declare no conflict of interests.

ETHICAL APPROVAL

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