

Full Length Research Article

Knowledge, Attitude, Practice and Stigma Related to COVID-19: A 2020 Survey in North-Central Nigeria

*Danborno A.M.¹, Ogbe S.O.¹, Mallo M.J.¹, Toryila J.E.¹, Shafe M.O.¹,
Ochayi M.O.², Danborno B.³

¹Department of Physiology, Faculty of Basic Medical Sciences, College of Medicine and Health Sciences, Bingham University, Karu, Nigeria

²Department of Physiology, Faculty of Basic Medical Sciences, Baze University, Abuja, Nigeria

³Department of Anatomy, Faculty of Basic Medical Sciences, College of Medical Sciences, Ahmadu Bello University, Zaria, Nigeria

Summary: Pandemics have claimed an estimated 414 million lives from 165 AD to present, with COVID-19 pandemic killing close to 2 million people. The best counter for pandemics has been the use of vaccines, but before it is widely available, the best strategy is to avoid being infected. COVID-19 pandemic was met by behaviours and attitudes ranging from unbelief to fear of dying and stigmatisation of those who have contracted the virus or recovered from the disease. This study aims to investigate the knowledge, attitudes, practices (KAP), fear and stigma of the populace towards COVID-19 from state to state of north central Nigeria. This research was a cross-sectional study carried out from April to October 2020. Using stratified sampling, the population was divided into different strata based on sex, ethnicity, level of education, occupation and marital status. Data was collected through a structured questionnaire distributed to 650 individuals. Respondents who participated were 591 (males n= 335 and females n= 256), aged 18-60 years (mean age 30.25 ± 10.45 years, range 18-60). Data were analysed using SPSS 25.0 for Windows version 26.0 (IBM Corporation, Armonk, NY, USA). Significant level was pegged at P<0.05, and all statistical tests were two-tailed. The results show that 98.3% of participants believe that COVID-19 disease exists. On the practice, 74.7% wear face masks, 81.5% avoid crowded places, 73.7% practice social distancing and 85.1% follow the WHO-hand-washing technique as measures to curb the spread of the disease. About 60.5% of the participants believe that lockdown is an effective measure to reduce transmission risk. 55.6% will stigmatise those who just recovered from the disease, 75.3% are afraid to visit high-risk areas as part of the protective measures, 12% believe that every infected person will die. More males (28.3%) than females (17.6%) believe that taking herbs can cure the disease ($\chi^2 = 9.32$, df= 1, P<0.01). All government and nongovernmental organizations must develop more awareness programs to win the battle against COVID-19 disease as the second wave is emerging.

Keywords: COVID-19, Knowledge, Attitude, Practice, Stigma, North-Central Nigeria

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*Address for correspondence: angeladanborno@yahoo.com; Tel: +234 806 003 8527

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INTRODUCTION

Many pandemics have punctuated humanity's history from the Antoine Plague to the present coronavirus pandemic (COVID-19). The COVID-19 has been the most debilitating pandemic due to its rapid spread across the world due to higher global mobility of human populations due to economic activities and lifestyle (Akin and Gozel, 2020; Morens *et al.*, 2020).

COVID-19 disease is an infectious disease caused by a novel virus (Severe acute respiratory syndrome coronavirus 2, SARS-CoV-2) first reported in December 2019 in Wuhan China. On 7th of January 2020, the CDC identified the novel Coronavirus and was named 2019-nCoV by WHO. It is now commonly known as COVID-19 (WHO 2020a; Santarpia *et al.*, 2020; Kannan *et al.*, 2020; Sun *et al.*, 2020). In Africa, WHO reported the first case in Egypt on the 14th of February, 2020. The second on Africa's continent was in

Algeria on the 25th of February, 2020 (Afro News 2020; Moses *et al.*, 2020). In Nigeria, the first case was reported on 27th February 2020, in Lagos State by Nigerian Center for Disease Control (NCDC), making it the first case in Sub-Saharan Africa. COVID-19 reached Africa through travellers returning from hotspots in Asia, Europe and the United States of America. Nigeria was not an exception as the first case was brought into Nigeria by an Italian on a business trip to Lagos (NCDC, 2020a).

On the 10th of March 2020, the NCDC announced first local case, and from then onwards cases began to rise, and the Nigerian government shut down schools on 23rd of March 2020. The government finally declared a total lockdown, and further restricted interstate travel (Ajide *et al.*, 2020; Ogoina, 2020)

Respiratory droplets, direct contact with persons infected, and indirect contact with contaminated surfaces and objects in the immediate environment have been

described as the mode of transmission of this disease (WHO, 2020a; Arinola 2020). Some studies have been able to show the survival rate of SARS-COV-2 on different surfaces and in aerosol. The rooms of COVID-19 patients have shown varying levels of environmental contamination (Van Doremalen *et al.*, 2020; Chen *et al.*, 2020; Santarpia *et al.*, 2020). There are variations in the manifestation of the symptoms of SARS-CoV-2; some infected persons do not show symptoms for up to 48 hours, this accounts for the widespread of the disease (Al-Tawfiq *et al.*, 2020; Rothe *et al.*, 2020). It has been reported that about 12.6% of reported cases were from presymptomatic transmission (Du *et al.*, 2020).

COVID-19 was met by all kinds of behaviours and attitudes ranging from unbelief to fear of dying due to lack of vaccines for the disease, leading to many deaths even in the most advanced climes. This development has triggered many investigators to evaluate and report peoples KAP towards COVID-19 (Alobuia *et al.*, 2020; Azlan *et al.*, 2020; Hossain *et al.*, 2020; Adesegun *et al.*, 2020; Abdel *et al.*, 2020; Olaimat *et al.*, 2020; Al-Dossary *et al.*, 2020; Bates *et al.*, 2020; Jones *et al.*, 2020).

There have been tremendous efforts by biopharma like Pfizer/BioNTech, Moderna, SinoFam, Oxford University/AstraZeneca, Novavax, CanSino Biologics, Merk, Wuhan Institute of Biological Products, Sinovac, Symvivo Corporation etc. to develop COVID-19 vaccines. They have reached different levels of clinical trials with up to 96% success (Koirala *et al.*, 2020; Haque and Pant, 2020; Jeyanathan *et al.*, 2020; Wang, Hu, Hu, *et al.*, 2020; Peiris and Leung, 2020, Tripathi *et al.*, 2020, WHO, 2020b). The COVID-19 vaccine is the most rapidly developed in humanity's history, and this is not unconnected with the advanced technologies powering the biotech companies (Koirala *et al.*, 2020; EBioMedicine, 2020; Wang, Peng, Xu, *et al.*, 2020).

Presently, the statistics reported for Nigeria by the Nigerian Center for Disease Control (NCDC) as at 09/12/2020 stated confirmed cases (84,815), active cases (12,194), discharged (71,375) with fatalities (1,264), which is approximately 1.70% mortalities (www.covid19.ncdc.gov.ng, accessed 28/12/2020). Global statistics for COVID-19 infections are reported to be 81,146,264 confirmed cases, 1,771,161 deaths, with the United States having the highest infections as 19,248,978 334,361 deaths (www.conavirus.jhu.edu, accessed 28/12/2020).

This study sets out to investigate the knowledge, attitude and practices (KAP) towards COVID-19 in different states of Nigeria as it impacts the lives of the people from state to state. Also, we investigated the fear and stigma of the populace towards the disease.

MATERIALS AND METHODS

This study was cross-sectional conducted between April and October of 2020 in four states (Benue, Kaduna, Nasarawa, Plateau) and the Federal Capital Territory, Abuja. Due to COVID-19 restrictions in movement at the time of data collections, data was collected by using the convenience sampling method, through a structured questionnaire distributed to 650 individuals. Respondents who participated were 591 (males n= 335 and females n= 256) and aged 18-60 years (mean age 30.25 ± 10.45 years, range

18-60) drawn from five states in the north-central region of Nigeria. Only participants who gave their informed consent were included in the study, adults ≥ 18 years of age ≤ 60 years of age were included in the study. Participants from different ethnic backgrounds but who are residents in the study states were all included in the study. Interpreter was used for participants that cannot read English. The study was approved by the Bingham University Research and Ethics Committee (BHU/REC/20/H001).

Questionnaire: The study used a structured questionnaire to collect data from the participants. The questionnaire consisted of two sections. A general section concerned with self-reported biodata of participants and their families. The other section tested for the knowledge, attitude and practice (KAP). This section contained 27 questions, which 14 assessed knowledge, six assessed attitudes, stigma and fear, while the remaining seven assessed practices.

Statistical Analysis: Descriptive statistics and percentages were used to calculate for sociodemographic variables. A regression and correlation model was used to assess the relationship between variables. Chi-square test was used to test for the association between the variables. Multiple binary regression was used to investigate the association between KAP with sociodemographic variables by using the odd ratio (OR) and corresponding 95% confidence interval. Data were analysed using SPSS 25.0 for Windows version 26.0 (IBM Corporation, Armonk, NY, USA). Significant level was pegged at $P < 0.05$, and all statistical tests were two-tailed.

RESULTS

Demographic characteristics of participants: As shown in Table 1, 335 (56.7%) of the participants are male, and 256 (43.3%) are female, out of which 14.6% are Hausa's, 12.7% are Igbos, 12.5% are Yoruba's, while the other minority tribe make up the remaining 58.9%.

Table 1:
Demographic characteristics of participants

Characteristics	Frequency	Percentage (%)	
Sex	Males	335	56.7
	Females	256	43.3
Ethnic group	Hausa	98	16.4
	Igbo	76	12.7
	Yoruba	75	12.5
	Others	349	58.4
	No formal education	8	1.4
Educational attainment	Primary	12	2
	Secondary	115	19.6
	Tertiary	452	77
	Professionals	70	13.8
Occupation	Civil servants	88	17.3
	Trading	46	9.1
	Artisans	57	11.2
	Farmers	7	1.4
	Applicants	240	47.2
Marital status	Married	229	38.5
	Single	360	60.5
	Divorced	6	1

Values are expressed in frequencies and percentages except otherwise stated

Table 2:

Assessment of Knowledge and fear of the participants towards COVID-19 according to gender

		Female	Male	Overall
Knowledge	Covid-19 is caused by a Virus.	236 (92.9)	313 (94.3)	549 (93.7)
	Do you believe it exists?	238 (99.2)	295 (97.7)	533 (98.3)
What are the Symptoms of Covid-19?	Fever	157 (61.3)	220 (65.6)	377 (63.7)
	Coughing	179 (69.9)	226 (67.4)	405 (68.5)
	Difficulty breathing	204 (79.6)	239 (71.3)	443 (74.9)
	Sore throat	116 (45.3)	174 (51.9)	290 (49)
What is the mode of transmission?	Eating with an infected person	87 (33.9)	122 (47.6)	209 (35.3)
	Touching an infected person	198 (77.3)	269 (80.2)	467 (79)
	Contact with an animal	39 (15.2)	59 (17.6)	98 (16.5)
How can you protect yourself from Covid-19?	Avoid crowd	172 (67.1)	217 (64.5)	389 (65.8)
	Face mask	168 (65.6)	212 (64.7)	380 (64.2)
	Hand sanitizer	162 (63.2)	203 (61)	365 (61.7)
	Social distancing	193 (75.3)	256 (76.4)	449 (75.9)
Are you afraid to visit high-risk areas as a protective measure?		185 (74.3)	252 (76.1)	437 (75.3)
Is there a cure for Covid-19?		52 (20.4)	113 (33.9)	165 (28.1)
Can children get infected?		223 (87.1)	297 (89.2)	520 (88.3)
Should an infected person be isolated for 14 days		240 (95.2)	302 (91.2)	542 (93)
Is isolation and treatment of infected person an effective way to reduce the spread of the disease?		227 (90.4)	291 (87.7)	518 (88.9)
Can the Coronavirus survive in cold weather?		166 (65.6)	234 (70.7)	400 (68.5)
Can Coronavirus survive in hot weather?		95 (37.8)	123 (36.9)	218 (37.3)
What is your source of information on your knowledge of Coronavirus?	Social media	119 (46.4)	147 (43.8)	266 (45)
	Internet	134 (52.3)	185 (55.2)	319 (53.9)
	Television	150 (58.5)	189 (56.4)	339 (57.3)
	Radio	84 (32.8)	109 (32.8)	193 (32.6)
	Other sources	8 (3.1)	15 (4.4)	23 (3.89)

Table 3:

Knowledge of the participants towards COVID-19 according to the level of education

Knowledge		None	Primary	Secondary	Tertiary	Total
Covid-19 is caused by a Virus.		7 (87.5)	11 (100)	99 (86.8)	430 (95.6)	530 (98.3)
Do you believe it exists?		5 (83.3)	12 (100)	100 (97.1)	413 (98.8)	530 (98.3)
What are the Symptoms of Covid-19?	Fever	2 (25)	5 (41.6)	66 (57.3)	301 (66.5)	374 (63.7)
	Cough	5 (62.5)	6 (50)	70 (60.8)	324 (71.6)	405 (68.9)
	Difficulty breathing	4 (50)	7 (58.3)	73 (63.4)	362 (80)	446 (75.9)
	Sore throat	2 (25)	4 (33)	43 (37.3)	242 (53.5)	291 (49.5)
What is the mode of transmission?	Eating with an infected person	4 (50)	6 (50)	39 (33.9)	158 (34.9)	207 (35.2)
	Touching an infected person	6 (75)	8 (66.6)	84 (73)	368 (81.4)	466 (79.3)
	Contact with an animal	-	-	29 (25.2)	67 (14.8)	96 (16.9)
How can you protect yourself from Covid-19?	Avoid crowd	6 (75)	6 (50)	65 (56.5)	309 (68.3)	386 (65.7)
	Face mask	3 (37.5)	6 (50)	63 (54.7)	309 (68.3)	381 (64.9)
	Hand sanitizer	1 (12.5)	7 (58.3)	55 (47.8)	301 (66.5)	364 (62)
	Social distancing	3 (37.5)	6 (50)	74 (64.3)	366 (80.9)	449 (76.4)
Are you afraid to visit high-risk areas as a protective measure?		6 (75)	10 (90.9)	88 (77.9)	330 (74.2)	434 (75.2)
Is there a cure for Covid-19?		4 (50)	6 (50)	38 (33)	118 (26.3)	166 (28.4)
Can children get infected?		7 (87.5)	10 (83.3)	97 (85.1)	400 (88.9)	514 (88)
Should an infected person be isolated for 14 days		6 (75)	12 (100)	102 (91.1)	418 (93.7)	538 (93.1)
Is isolation and treatment of infected person an effective way to reduce the spread of the disease?		7 (87.5)	11 (91.7)	99 (86.1)	399 (89.7)	516 (89)
Can the Coronavirus survive in cold weather?		7 (87.5)	8 (66.7)	73 (64)	307 (68.7)	395 (68)
Can Coronavirus survive in hot weather?		4 (50)	3 (25)	43 (37.7)	164 (36.8)	214 (36.9)
What is your source of information on your knowledge of Coronavirus?	Social media	4 (50)	2 (16.6)	39 (33.9)	218 (48.2)	263 (44.8)
	Internet	3 (37.5)	2 (16.6)	43 (37.3)	269 (59.5)	317 (54)
	Television	2 (25)	6 (50)	57 (49.5)	275 (46.8)	340 (57.9)
	Radio	2 (25)	2 (16.6)	42 (36.5)	151 (16.3)	197 (33.5)
	Other sources	-	1 (8.3)	6 (5.2)	16 (3.5)	23 (3.9)

1.4% of the population have never had any formal education, 2.0% have primary school, 19.6% have a secondary school certificate, and 77% have tertiary

education, other demographic characteristics studied are also presented.

Assessment of Knowledge and fear of the participants towards COVID-19 according to gender: On the knowledge of COVID-19 as caused by a virus, 93.7% of the participants were correct on the cause of COVID-19. 63.7% know that fever was associated, 68.5% agreed that coughing was associated, 74.9% responded that there is difficulty breathing in the last stages, but only 49% associated sore throat with COVID-19 as presented in Table 2. On the fear of contracting the disease, 35.3% express fear in eating with infected persons, 79.0% are afraid to touch infected persons, while 75.3% are afraid to visit high-risk areas. Almost all the respondents (93.0%) believed that infected persons should be isolated for 14 days. (Table 2). In Table 3, most tertiary education participants are confident that COVID-19 is not the same as malaria.

Attitude and stigma of participants towards COVID-19 according to gender and Level of education: More male (28.3%) than female (17.6%) believe that taking herbs and malarial drugs can treat COVID-19, while only 60.5% of participants believe that lockdown is an effective measure to curb the spread of the disease. Participants with tertiary education believe in self-protection against the disease, while only 44.4% of the participants will go close to someone who just recovered from the disease (see Tables 4 and 5).

Table 4:
Attitude and stigma of participants towards COVID-19 according to gender

Attitude	Female	Male	Overall
Can Covid-19 be treated?			
Herbs	45 (17.6)	95 (28.3)	140 (23.6)
Taking malarial drugs	23 (8.9)	63 (18.8)	86 (14.6)
Not sure	188 (73.4)	203 (60.5)	391 (66.1)
Can government measures reduce the spread of Covid-19?	189 (75)	254 (76.3)	443 (75.7)
Do you do self-protection against Covid-19	228 (89.8)	296 (89.4)	524 (89.6)
Will you go close to someone who just recovered from COVID-19	95 (37.8)	161 (49.5)	256 (44.4)
Will every infected person die	31 (12.1)	40 (11.9)	71 (12)
Is lockdown an effective measure for the spread of the disease	153 (61.2)	199 (59.9)	352 (60.5)

Table 5:
Attitude and stigma of participants towards COVID-19 according to the level of education

Attitude	None	Primary	Secondary	Tertiary	Total
Can Covid-19 be treated?					
Herbs	2 (22.2)	4 (28.6)	25 (21.2)	105 (22.3)	136 (22.3)
Taking malarial drugs	2 (22.2)	2 (14.3)	17 (14.4)	62 (13.2)	83 (13.6)
Not sure	5 (55.6)	8 (57.1)	76 (64.4)	303 (64.5)	392 (64.2)
Can government measures reduce the spread of Covid-19?	6 (75)	11 (91.7)	77 (68.1)	343 (76.6)	437 (75.2)
Do you do self-protection against Covid-19	6 (75)	11 (91.7)	94 (82.5)	411 (91.9)	522 (89.8)
Will you go close to someone who just recovered from COVID-19	4 (50)	5 (41.7)	43 (38.4)	201 (45.6)	253 (44.2)
Will every infected person die	1 (14.3)	2 (16.7)	21 (18.8)	45 (10.1)	69 (12)
Is lockdown an effective measure for the spread of the disease	4 (50)	9 (75)	71 (62.3)	265 (59.7)	349 (60.4)

Table 6:
Practice of the participants against COVID-19 according to gender

Practice	Female	Male	Overall
Do you avoid crowded places?	220 (85.9)	261 (78.1)	481 (81.5)
Do you always wear face masks when leaving home?	201 (78.5)	239 (71.8)	440 (74.7)
Do you wear your mask in the correct way?	218 (85.5)	278 (83.5)	496 (84.4)
Do you dispose of your mask or wash them thoroughly after use?	217 (87.5)	277 (84.7)	494 (85.9)
Do you follow the WHO-hand-washing technique?	221 (86.3)	281 (84.1)	502 (85.1)
Do you practice social distancing wherever you go?	179 (70.2)	255 (76.3)	434 (73.7)
Do you strictly obey or follow the lockdown orders?	198 (77.3)	231 (69.2)	429 (72.7)

Practice of the participants against COVID-19 according to gender and level of education: 81.5% of participants avoid crowded places, 74.7% wear face mask, more female (86.3%) than male (84.0%) follow the WHO hand-washing technique guideline. Also, more female (77.3%) than male (69.2%) strictly obeys or follow government lockdown orders, while more male (76.3) than female (70.2%) practice social distancing where ever they go. Table 7 shows that those with some form of tertiary education (82.9%) avoid crowded places and rightly wear their face mask more than those with primary and secondary education (Tables 6 and 7).

Multiple Binary logistic regression on factors associated with practice and attitude towards COVID-19: This table shows the logistics regression, odds ratios and confidence intervals of the variables associated with practice and attitudes towards COVID-19. Three questions (Do you avoid crowded places?, Do you always wear face masks when leaving home? and Do you strictly obey or follow the lockdown orders?), were found to be statistically significantly associated with practices toward COVID-19 with particular reference to males. The attitude expressed by participants were statistically significantly associated with those who have a tertiary level of education (Table 8).

Table 7:

Practice of the participants against COVID-19 according to the level of education

Practice	None	Primary	Secondary	Tertiary	Total
Do you avoid crowded places?	5 (62.5)	9 (75)	89 (77.4)	374 (82.9)	477 (81.4)
Do you always wear face masks when leaving home?	6 (75)	11 (91.7)	86 (74.8)	333 (74)	436 (74.5)
Do you wear your mask in the correct way?	6 (75)	10 (83.3)	90 (78.3)	384 (85.5)	490 (83.9)
Do you dispose of your mask or wash them thoroughly after use?	7 (87.5)	10 (90.9)	96 (86.5)	379 (85.7)	492 (86)
Do you follow the WHO-hand-washing technique?	7 (87.5)	12 (100)	92 (80)	385 (85.4)	496 (84.6)
Do you practice social distancing wherever you go?	6 (75)	12 (100)	86 (74.8)	325 (72.1)	429 (73.2)
Do you strictly obey or follow the lockdown orders?	6 (75)	10 (83.3)	88 (76.5)	318 (70.5)	422 (72)

Table 8:

Multiple Binary logistic regression on factors associated with practice and attitude towards COVID-19

Questions	OR (SE)	95% CI
Practice		
Do you avoid crowded places?		
Sex (male)	0.58 (0.22) P = 0.014	(0.37-0.89)
Level of education (tertiary education)	1.49 (0.24) P = 0.093	(0.94-2.37)
Do you always wear face masks when leaving home?		
Sex (male)	0.68 (0.19) P = 0.048	(0.47-1.00)
Level of education (tertiary education)	0.87 (0.23) P = 0.541	(0.56-1.36)
Do you wear your mask in the correct way?		
Sex (male)	0.85 (0.23) P = 0.477	(0.54-1.33)
Level of education (tertiary education)	1.55 (0.25) P = 0.079	(0.95-2.51)
Do you dispose of your mask or wash them thoroughly after use?		
Sex (male)	0.86 (0.23) P = 0.499	(0.55-1.34)
Level of education (tertiary education)	1.01 (0.27) P = 0.968	(0.60-1.70)
Do you follow the WHO-hand-washing technique?		
Sex (male)	0.82 (0.24) P = 0.410	(0.52-1.31)
Level of education (tertiary education)	1.24 (0.26) P = 0.406	(0.75-2.07)
Do you practice social distancing wherever you go?		
Sex (male)	1.37 (0.19) P = 0.092	(0.95-1.98)
Level of education (tertiary education)	0.76 (0.23) P = 0.239	(0.49-1.20)
Do you strictly obey or follow the lockdown orders?		
Sex (male)	0.65 (0.19) P = 0.024	(0.45-0.95)
Level of education (tertiary education)	0.71 (0.23) P = 0.131	(0.45-1.11)
Attitude		
Can government measures reduce the spread of Covid-19?		
Sex (male)	1.11 (0.19) P = 0.580	(0.76-1.62)
Level of education (tertiary education)	1.37 (0.22) P = 0.145	(0.90-2.10)
Do you do self-protection against Covid-19?		
Sex (male)	0.93 (0.26) P = 0.789	(0.56-1.56)
Level of education (tertiary education)	2.17 (0.28) P < 0.005	(1.26-3.74)
Will you go close to someone who just recovered from Covid-19?		
Sex (male)	1.57 (0.17) P = 0.008	(1.13-2.19)
Level of education (tertiary education)	1.28 (0.20) P = 0.221	(0.86-1.89)
Will every infected person die?		
Sex (male)	0.98 (0.26) P = 0.950	(0.60-1.62)
Level of education (tertiary education)	0.51 (0.28) P = 0.015	(0.30-0.88)
Is lockdown an effective measure for the spread of the disease?		
Sex (male)	0.99 (0.17) P = 0.929	(0.71-1.37)
Level of education (tertiary education)	0.86 (0.20) P = 0.456	(0.58-1.28)

Significant associations are expressed in boldface. For the level of education, tertiary education was used as the reference whereas, male was the reference for sex. 95% CI: 95% confidence interval

DISCUSSION

This study sets out to evaluate KAP towards COVID-19 amongst Nigerians resident in some north-central states, including the Federal Capital Territory. There have been several campaigns and health communication to enlighten people about COVID-19 and the preventive measures to stop person-to-person transmission of the virus. Some of these measures include the use of nose mask/face shield,

regular washing of the hand and use of hand sanitisers (WHO 2020c, 2020d), maintenance of physical distance as well as sites where updates on recommendations and advice on COVID-19 is found (Paakkari and Okan, 2020). These measures are well recognised to prevent transmission of the virus (WHO 2020c, 2020d).

A face mask may reduce disease transmission by decreasing droplet spread from infected or asymptomatic persons, which are infected people before the symptoms

(Olaimat *et al.*, 2020). Our study shows that most respondents know that face mask is a measure to protect yourself from COVID-19, some indicated that using hand sanitisers can protect you from contracting the virus. Still, more of the participants reported that social distance is an effective measure to reduce the disease's spread. Despite the knowledge of about 57.3% through television, 53.9% through the internet, 45% through social media and 32.6% through the radio about these guidelines and information, there are still mixed feelings among Nigerians. At the same time, some expressed fear of contracting the disease, and others felt the government had been too hard on the measures. On the 31st of August, 2020, the government had to appeal to its citizens that COVID-19 guidelines are not designed to oppress them but help prevent the transmission of the disease and that wearing face masks is less cumbersome than being on ventilators.

On respecting government measures, most of the respondents believe that government measures can reduce the spread of COVID-19. About 60.5% believe that lockdown is an effective measure to curb the spread of the disease. This contrasts with a study among Nepalese residents where almost all participants (96.4%) believe that lockdown is the best way to reduce transmission of COVID-19 (Asraf *et al.*, 2020). On the practice and obedience to government measures to prevent the transmission, some people complained that wearing a face mask is uncomfortable, following the WHO-hand-washing technique is cumbersome. Practising social distancing is only possible in government-owned facilities, schools, hospitals, and banks, but not in public market places, on the streets, and even in the villages where law enforcement agencies' presence is reduced.

If the battle against COVID-19 is to be won, better practice against the disease requires each citizen's sense of responsibility, be it in cities, urban areas, or villages. In most instances, more females than males practice the COVID-19 guidelines, and this is in line with the study of Olaimat *et al.* (2020) who reported that more females than males show significant higher practice scores toward COVID-19 among University students in Jordan. This is also connected to the fact that females are generally more careful in doing things, and they will also have to be there to help the children follow the COVID-19 guidelines.

Those with tertiary education correctly wear their mask more than others, while those in the primary and secondary education level obey the government lockdown orders more. The rapid development of COVID-19 into a pandemic has created awareness for people to gain and apply health information, and change their behaviour rapidly (Paakkari and Okan, 2020). Our study shows that most people know that watching television, listening to the radio or even using social media are good sources of information about the disease. All the participants know that COVID-19 exists, it is caused by a virus, and some of the early symptoms are fever, coughing and difficulty in breathing. Most of the respondents are also knowledgeable that you can contract the disease by touching an infected person. That 14 days isolation period for the infected person is of paramount importance.

On the disease's fear and stigma, most participants are afraid to visit high-risk areas as part of the protective measures. A good number of the participants reported that

they would avoid someone who just recovered from the disease. More awareness is required because this means that people who just recovered from the illness are being stigmatised. Because of the stigmatisation, people with COVID-19 disease are afraid to discuss how they contracted the disease and advocate for the government guidelines to help curb the disease's spread.

Medicinal herbs have been used in the treatment and management of human diseases, because it is relatively safer, more affordable, and sometimes offers better therapeutic value than synthetic drugs, even though scientists advocate for proper toxicological studies (Danborno *et al.*, 2019). COVID-19 disease is not an exception. Scientists are also advocating medicinal herbs for its treatment (Luo *et al.*, 2020; Owoyele *et al.*, 2020; Yang *et al.*, 2020). In this study, more males than females believe that taking herbs can cure the disease, even though those with a primary education level are the ones who believe it the most.

In conclusion, pandemics like COVID-19 must be managed with caution to reduce fatalities. To achieve this, the people need to be correctly educated and be directed by the appropriate authorities such as Primary health Centers (PHC), hospitals, schools and even health care workers to help in containing the spread of the disease. This requires a serious campaign to reorientate the populace. This can be achieved through vigorous programmes to educate the citizens through the mainstream and social media, churches and mosques. The second wave of COVID-19 has been reported to be more dangerous and deadly than earlier strain; therefore, there is urgent need to enforce the COVID-19 guidelines and protocols strictly to contain the fatalities that may arise.

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