

Epidemiological survey of knowledge, attitudes and practices towards COVID-19 pandemic in Kogi state, Nigeria.

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Abstract

Knowledge, attitudes, perception, and preventative practices regarding COVID-19 are fundamental in its prevention and control. Reports of other studies revealed that the majority of people in sub-Saharan African are noncompliant with proposed health and safety measures recommended by the World Health Organization (WHO). This lack of noncompliance has been attributable to unawareness and misinformation, thereby raising questions about people's knowledge, attitudes, perception, and practices towards COVID-19 in these parts of the world. Therefore, this study was carried out to epidemiologically assess the knowledge, attitudes and practices towards COVID-19 pandemic in Kogi State, Nigeria. This study adopted a cross-sectional survey and was conducted within Kogi State, Nigeria using a Snowball Sampling Technique. The questionnaires were hosted on Google Online Survey Platform. The selected respondents were sent the link via Social Media (Whatsapp and Facebook posts) and asked to participate in an online survey. Respondents were pulled across all the Local Government Areas of Kogi State, Nigeria. Results of the socio demographic characteristics of respondents revealed that highest numbers of the participants were within the age range of 30-39. Majority of the study participants were female (52.0%) and married (47.3%) with College/Bachelor Degree as the highest qualification (51.7%). Residents from the Urban City locations in the state constituted the majority of the respondents (32.5%). More of the respondents (21.0%) lived with up to 5 persons in the house. Assessment on the Knowledge of COVID 19 revealed that all the respondents (100%) had knowledge of COVID-19 and 93.1% of the respondents agreed that COVID-19 is caused by a virus. Majority of the respondents knew that breathing difficulty is one of the prominent symptoms COVID-19 infections and can be transmitted through air droplets (from patients' sneezing/coughing) and close contact with infected persons. More of the respondents (33.0%) admitted that hand

Keywords

COVID-19,
Knowledge,
Attitudes,
Practices,
Pandemic

washing and social distancing and improved personal and public hygienic practices are the most effective ways of preventing the infection. This study has established evidence of high frequency of knowledge on COVID-19 in all participants. However, the level of compliance with the World Health Organization's Protocols for the prevention and control of the pandemic was low. Hence, there is a need for continued sensitization on acquiescence with the correct attitudes and practices towards COVID-19 and other infectious diseases.

Introduction

The outbreak of coronavirus (COVID-19) from Wuhan, China, that causes severe respiratory tract infections in humans has become a global health concern (WHO 2020). Though, the leading mode of transmission via respiratory droplets, contaminated hands, and surfaces have been reported (Dowell *et al.*, 2004; Shereen *et al.*, 2020); the other modes can't be neglected (Fan *et al.*, 2019). The factors like low air temperature and low humidity highly influence the transmission of COVID-19 (Wang *et al.*, 2003; Chan *et al.*, 2020). The population density, qualitative medical care, etc. also affect the control of COVID-19. The consequence of all the factors and modes of transmission lead to the infection in human which may lead to death. Although, there are no direct vaccines available to cure it, alternative medicines are used to treat the patients to recover (WHO, 2020).

The ravaging coronavirus which is also called severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) causes a severe respiratory disease known as coronavirus disease (COVID-19) (Abdehafiz *et al.*, 2020). World Health Organization (WHO) first reported coronavirus infectious disease (COVID-19) on the 31st December 2019 and announced it as a global pandemic on 11th March 2020 (WHO, 2020). The contagious virus began its ravaging effect from Wuhan, Hubei Province, China and then around the world (Abdehafiz *et al.*, 2020; CDC, 2020; Wang *et al.*, 2020). The closure of public places, halting of public transportation, isolation and management of infected persons were carried out in a bid to control the spread of SARS-CoV-2 (Zhong *et al.*, 2020).

The clinical presentations of COVID-19 symptoms include fever, fatigue, dry cough, malaise and breathing difficulty (Abdehafiz *et al.*, 2020). The disease is characterized by high morbidity and mortality rates beside other ailments. The closing down of social activities all over the world to allay the spread of the pandemic has led to a global lockdown, causing a downturn and global economic fall owed to a break in the international supply chain (WHO, 2020). Preceding the WHO pronouncement of COVID-19 as a global public health threat and pandemic, many Nigerians regarded the disease as a distant white man's infirmity that could never spread to their abode. Despite the expert advice and recommendations, Nigerians and the government downplayed the emergence of COVID-19 in their territory thereby hesitating the adoption of initial preventive measures which would have eluded costs while protecting the citizenry from undue exposure to the virus (NCDC, 2020). Despite the validation of COVID-19 case in Lagos, Nigeria on February 20, 2020, other parts of the country including the north-central region continued their usual routines and social activities bereft of observing the knitted preventive measures initially outlined by Nigeria Centre for Disease Control (NCDC) (NCDC, 2020). The public view within Central Nigeria was that COVID-19 is a "big man disease" (i.e. disease of the highly influential persons). Considering the low level of education within this region of Nigeria, their abrupt conclusion and misinformation on those susceptible to the disease were probable. Due to the rise of COVID-19 cases among the Nigerian population, mainly of metropolitan areas including Abuja, the Federal Capital Territory

(FCT) situated in central Nigeria, unfound uncertainties, intense fear amidst misinformation concerning COVID-19 characterized the state of the inhabitants of the region.

Moreover, the dominant presence of urban slums, dense population, inadequate access to potable water, fragile healthcare system, sharing of sanitation facilities with a high degree of social mixing among the residents of central Nigeria will make the enactment of hygiene and other public health measures necessary for the curbing of the coronavirus difficult (Makoni, 2020). Similarly, the spread of misinformation and fictions regarding the COVID-19 and promotion of unempirical traditional treatment within the central Nigerian further jeopardized the implementation of preventive measures (Ioannidis, 2020; Vigdor, 2020).

The inability of Government to sustain the social distancing policy and ban on large gatherings including religious and cultural activities, funerals, weddings and sports may undoubtedly create accelerated COVID-19 super-spreading scenarios (Wong *et al.*, 2015). For effective control and mitigation of COVID-19 within this region, factional and timely epidemiological data generated from the populace will inform health authorities to design robust interventions and policies that are relevant and comprehensible to the occupant of this region.

Consequently, the rapid gathering of information on the individuals in central Nigeria through online platforms amidst the lockdown will aid and speed up the planning, development and implementation of behavior refinement programs/campaigns, establishment of needed interventions and to some extent tracking of COVID-19.

Methodology

The Study Area

Kogi State is found in the Central Region of Nigeria, located on the latitude $7^{\circ} 30'N$ and longitude $6^{\circ} 42'E$ with a total land area of 29,833km and has a population of 3,595,789 in the year 2006 which was the 24th in the ranking of most populous state in Nigeria. It is popularly called the Confluence State because of the confluence of River Niger and River Benue at its capital. Lokoja town is the first administrative capital of modern-day Nigeria. The state was created in 1991 from parts of Kwara and Benue States. The three main ethnic groups and languages in Kogi State are Igbala, Ebira, and Okun (Part of Yoruba) with other minorities like Bassa, a small fraction of Nupe mainly in Lokoja, Gwari, Kakanda, Owuro people (similar to Yoruba) Ogori, Mangogo and the Eggan community under Lokoja Local Government.

Kogi State is surrounded by many other states which are: Federal Capital Territory (Nigeria) to the North, Nassarawa State to the Northeast, Benue State to the South, Enugu State to the Southeast, Anambra State to the South, Edo State to the Southwest, Ondo and Ekiti States to the West, Niger State to the North and Kwara State to the Northwest. Kogi State has 21 Local Government Areas and they are: Adavi, Ajaokuta, Ankpa, Bassa, Dekina, Ibaji, Idah, Igalamela-Odolu, Ijumu, Kabba/Bunu, Kogi, Lokoja, Mopa-Muro, Ofu, Ogori/ Mango, Okechi, Okene, Okmaboro, Omala, YagbaEast, and Yagba West.



Figure 1: Map of Nigeria Showing Kogi.

Study Design and Population

This study adopted a cross-sectional survey and was conducted within Kogi State, Nigeria using a Snowball sampling technique. The selected respondents were sent the link via Social Media (Whatsapp and Facebook posts) and asked to participate in an online survey. A snowball sampling technique was employed to recruit more Nigerians living in Kogi State, Nigeria during the COVID-19 pandemic by encouraging those sent the link to kindly share with their contacts. Respondents were pulled across all the Local Government Areas of Kogi State, Nigeria.

Due to the Nigerian Government social distance rules and curfew/lockdown enforcement, physical interaction was not adopted. Hence, the survey was promoted online and the study participants were encouraged to send the web link of the survey to potential respondents. The questionnaires were hosted on Google Online Survey Platform. Ethical approval was obtained from the relevant authorities. Participation was completely consensual, anonymous and voluntary, and informed consent was obtained from all respondents.

Instruments

The survey instrument used in this study was designed according to the guidelines recommended for the awareness and prevention of COVID-19 by the Nigerian Centre for Disease Control (NCDC). (2020), and also from the Knowledge Approach and Practice (KAP) of previous outbreaks (Ebola and Lassa fever) in Nigeria (Reuben and Gyar, 2016; Etokidem *et al.*, 2018). Online questionnaire used in this study was drafted and validated before hosting online. Public health and epidemiology experts were asked to assess the instrument and give their expert view on the relevance and correctness of the KAP regarding COVID-19, and also the relativity and simplicity of the instrument having in mind the study population. A pilot study was conducted which pretested the questionnaire on very few participant sex cluded from the study. Expert opinions were used to reshape the questionnaire into an easier, simpler and shorter instrument which could be filled within 6 minutes.

Socio-demographic data was elicited from the respondents on variables such as gender, age, marital status, ethnicity, educational qualification, religion, perceived financial situation and present location. Knowledge about COVID-19 was assessed using five items adapted from the Ebola knowledge scale developed by Rolison and Hanoch (2015). Components of COVID-19 knowledge assessed included the source of COVID-19, modes of transmission, symptoms, methods of preventing and curbing the infection, perception of COVID-19 fatality and sources of information about COVID-19.

Respondents' knowledge about COVID-19 was gotten by summing correct responses across the items. The mean score and the percentages of frequencies were calculated to indicate the respondents' level of knowledge. The components of the knowledge section contained the awareness of COVID-19 and the source of information, cause and modes of transmission, symptoms, individuals at risk and preventive measures. The attitude section comprised of items such as attitudes towards COVID-19 preventive measures, adherence to government disease prevention orders, social distancing, use of face mask, feelings and adaptive measures towards the pandemic. The practice section investigated the respondents' perception towards the COVID-19 pandemic, government response, compliance and satisfaction with NCDC guidelines, media coverage, acceptance of possible COVID-19 vaccine, community response and opinion about Chinese doctors' intervention in Nigeria.

Statistical Analysis

Data collected from this study was analyzed using SPSS V.21. Results were presented using frequencies and percentages through descriptive statistical analysis.

Results

Results of the Socio Demographic Characteristics of Respondents

A total of 621 respondents participated in this online survey. The highest numbers of the participants were within the age range of 30-39 (37.5%). Majority of the study participants were female (52.0%) and married (47.3%) with College/Bachelor Degree as the highest qualification (51.7%). Residents from the Urban City locations in the state constituted the majority of the respondents (32.5%). The majority of the respondents (21.0%) lived with up to 5 persons in the house (Table 1).

Results of the Assessment on the Knowledge of COVID 19

The current findings showed that all the respondents (100%) had knowledge of COVID-19 with the majority of the respondents (45.2%) and (33.7%) affirming that Internet/social Media and Television (TV) as their major source of knowledge. Although 93.1% of the respondents agreed that COVID-19 is caused by a virus, only 61.3% believed that it is similar to SARS. Knowledge regarding the transmission of COVID-19, the majority of respondents (75.8%) believed that eating or contact with wild animal could result to COVID-19 infection and also that Ebola is the most similar pandemic to COVID-19 (56.0%). Furthermore, 93.5% and 70.3% believed that it is possible for a COVID-19 infected person not to show symptoms but could begin to show symptoms within 1-14 days of infection respectively. More of the respondents (64.2%) opined that anyone can contact COVID-19 infection. More so, 37.2% and 50.8% of the respondents knew that Breathing Difficulty is one of the prominent symptoms COVID-19 infections and can be transmitted through air droplets (from patients' sneezing/coughing) and Close contact with infected persons. From this study, 34.6% of the respondents opined that alcohol-based sanitizers, soap/detergents and cleaning of surfaces with diluted chlorine could kill COVID-19 virus (Table 2).

Table 1: Socio Demographic Characteristics of Respondents

Variable	Response	Frequency (n=621)	Percentage (%)
Age (years)	18-19	104	16.7
	30-39	233	37.5
	40-49	181	29.1
	50-59	93	15.0
Gender	Male	298	48.0
	Female	323	52.0
Marital status	Married	294	47.3
	Single	255	41.1
	Divorced	21	3.4
	Widow/Widower	51	8.2
Level of education	High school	121	19.5
	College/Bachelor	321	51.7
	Master	85	13.7
	PhD	21	3.4
	Others	73	11.8
Residential location	Urban	202	32.5
	Semi urban	98	15.9
	Rural	63	10.1
	Residential layout	56	9.0
	Nucleated	41	6.6
	Scattered	21	3.4
	No clear street	82	13.2
Number of persons living together	Estate	58	9.3
	2	71	11.4
	3	101	16.3
	4	123	19.8
	5	130	21.0
	6 and above	196	31.6

Table 2: Assessment on the Knowledge of COVID 19

S/N	Question	Frequency n=621	Percentage (%)
1	Have you heard of COVID-19?		
	Yes	621	100
	No	0	0.0
2	If yes how did you hear it?		
	Internet/social media	281	45.2
	Newspaper	55	8.9
	Friends/family	57	9.2
	Television	209	33.7
	Government campaign	12	1.9
	Other sources	7	1.1
3	Is COVI-19 the same as Flu virus?		
	Yes	381	61.3
	No	163	26.2
	I don't know	77	12.4
4	What causes COVID-19?		
	Bacteria	3	0.5
	Fungi	4	0.6
	Virus	578	93.1
	I don't know	36	5.8
5	Does eating or contact with wild animals result to COVID-19 infection?		
	Yes	471	75.8
	No	97	15.6
	I don't know	53	8.5
6	Which of the following disease is similar to COVID-19?		
	You can choose more than one option.		
	Typhoid	21	3.4
	Malaria	23	3.7
	Ebola	348	56.0
	HIV/AIDS	221	35.6
	All of the above	5	0.8
	None of the above	3	0.5
7	Is it possible for a COVID-19 infected person to show no symptoms?		
	Yes	581	93.5
	No	33	5.3
	I don't know	7	1.1
8	How long does it take from contracting the disease till showing symptoms?		
	Less than 7 days	69	11.1
	1-14 days	437	70.3
	2-21 days	62	10.0
	1-3months	33	5.3
	I don't know	20	3.2

9	Who can get infected with COVID-19?		
	Old people only	137	22.1
	Young adults only	53	8.5
	Anyone can be infected	399	64.2
	Teenagers and children only	32	5.1
10	Which is a symptom of COVID-19? (select all that implies)		
	High fever	99	16.0
	Runny nose	15	2.4
	Dry cough	137	22.0
	Breathing difficulty	231	37.2
	Muscle pain	21	3.3
	Fatigue	31	5.0
	Bleeding	87	14.0
11	How does the virus spread?(select all that applies)		
	Air droplets (from patients sneezing/coughing)	316	50.8
	Mosquito/flies	2	0.3
	Contact with contaminated surfaces	111	17.8
	Close contact with people who have the virus	188	30.2
	I don't know	4	0.6
12	What can kill the virus? (select all that applies)		
	Clean surfaces with diluted chlorine	215	34.6
	Alcohol based sanitizers	203	32.6
	Soap/detergent	64	10.3
	Water alone	1	0.2
	I don't know	35	5.6
	Local herbs	103	16.5
13	Is hand wash important?		
	Yes	587	94.5
	No	3	0.4
	Maybe	33	5.3
14	How do you wash your hand if it's important?		
	Less than 20s	119	19.1
	20s to 1 minute	403	64.9
	I don't know	99	16.0

Results for the assessment of respondents' knowledge on the pathogenesis of COVID-19 infection as shown in Table 3 revealed that the majority of respondents (50.2%) and (25.6%) believed COVID-19 is a biological weapon designed by humans and it is acquired by touching contaminated objects and surfaces

respectively. Furthermore, only 83 (13.3%) of the 621 respondents has no idea on the symptoms of COVID-19. The majority of respondents (33.0%) admitted that hand washing and social distancing is the most effective ways of preventing the infection.

Table 3: Respondent's knowledge on the Pathogenesis of COVID 19 Infection

S/N	Question	Frequency n=621	Percentage(%)
1	What do you think is the source of COVID-19?		
	An exaggeration to cause fear and panic	11	1.7
	A virus designed to sell drugs	142	22.8
	A biological weapon designed by the USA Govt.	32	12.2
	A virus designed to reduce or control population	101	16.2
	A plague caused by sin and unbelief of humans	51	8.2
	A severe illness transmitted to people from wild animals	153	24.6
A biological weapon designed by humans	131	50.2	
2	What is the mode of transmission of COVID-19?		
	Eating contaminated food or water	123	19.8
	Kissing, hugging, sex or other sexual contact	106	17.1
	Touching contaminated objects or surfaces	160	25.7
	Airborne droplets via breathing, sneezing or coughing	132	21.2
3	What are the symptoms of COVID-19?		
	I don't know	83	13.3
	Muscle pain	106	17.1
	Fatigue	113	18.2
	Sore throat	127	20.4
	Fever	131	21.1
	Sneezing	153	24.6
	Shortness of breath	163	26.2
Cough	171	27.5	
4	What are the preventive methods of COVID-19?		
	Taking chloroquine and antibiotics	21	3.3
	The African hot weather	99	16.0
	Fumigation of public places	111	17.8
	Closing schools and public places	92	14.8
	Disinfecting contaminated surfaces	115	18.5
	Hand washing and social distancing	205	33.0

Discussion

The results obtained in this study reviewed varied information on the knowledge, attitude, perceptions, and preventative practice (KAP) towards novel coronavirus 2019 in Kogi State, Nigeria. The KAP of the people is very important in the control of the virus and significant for policies and intervention efforts. This study revealed that the participants had very good COVID-19- related knowledge. This disagree with studies conducted in Ethiopia (Kebede *et al.*, 2020; Elnadi *et al.*, 2021), Cameroon (Nicholas *et*

al., 2020), where participants had low scores of good knowledge of COVID-19. This might be due to differences in the level of awareness creation and public enlightenment programmes. However, our findings agree with the report of Anikwe *et al.* (2020) in Southeastern Nigeria. The reason might be owed to the similarities in access to information, socio-demographic characteristics, and awareness.

This study found that majority of the participants from the urban areas had very good knowledge, positive attitude, and good practice towards COVID-19 as compared to the rural areas where most respondents had low knowledge, negative attitude, and poor practice towards COVID-19. A possible explanation for the participants' good KAP in the urban areas could be attributed to the unlimited access to information about COVID-19, disseminated on various media, which was different from the rural areas, where most participants had no access to internet and electricity, thereby resulting in limited access to COVID-19 related updates and information. This finding is in agreement with the reports of Anikwe *et al.* (2020) and Mbachu *et al.* (2020) in Abakiliki and Southern Nigeria respectively.

Majority of the participants believe that COVID-19 is a Biological Weapon designed by humans for selfish reasons and that the government at the Federal level is not sincere enough in the prevention and control of COVID-19 outbreaks in Nigeria. Notably, good knowledge about COVID-19 did not always appear to be a precursor of positive attitude or preventative practices and vice versa. In some cases, knowledge score was high, but attitude and/ or preventative practice was poor.

This study found that most of the participants mentioned dry cough, fever, fatigue and myalgia as the major COVID-19 signs and symptoms. However, despite possessing relatively good knowledge on COVID-19 pathogenesis, few participants showed the wearing of face masks and hand hygiene as a priority, hence these were rarely purchased and few wore face masks when leaving home. The practice of physical/social distancing and other preventive measures were not adhered to in some areas. This finding agrees with the reports of Ojo *et al.* (2020) in North Eastern Nigeria. However, implementing these preventative measures will likely help to slow down the spread of the virus in the communities.

The majority of the respondents agreed that hand-washing, social distancing, disinfection of contaminated surfaces and fumigation of public places are the most effective preventive measures against COVID-19. Also, more respondents in this study believed that African hot weather is the major reason why the impact of COVID-19 is less in African countries compared to other regions of the world. This is similar with the report of Okoro *et al.* (2020) in Nigeria.

Conclusion

This study revealed evidence of high frequency of knowledge on COVID-19 in all participants included in the study. Conversely, there is a major gap in the attitude and practice towards COVID-19 preventive measures in the study area, suggesting that interventions should go beyond just knowledge, but begin to positively affect attitudes and practices. Hence, it is imperative to continually strengthen health education, information broadcasting, and awareness on the knowledge, attitude, and practice of COVID-19 to slow down this pandemic. There is also a need for vaccine development and administration to bring COVID-19 pandemic to its ebb if not completely eradicated. Hence, government at all levels and Non-Governmental Organizations should begin aggressive sensitization programme on the safety and justification for acceptability of COVID-19 vaccine as many are not willing to embrace it due to misinformation and fear of the unknown.

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	Subject: Public Health
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DOI: 10.22192/ijamr.2021.08.10.004	

How to cite this article:

D. Makolo, D.E. Alkali and A.A. Egbunu. (2021). Epidemiological survey of knowledge, attitudes and practices towards COVID-19 pandemic in Kogi state, Nigeria. *Int. J. Adv. Multidiscip. Res.* 8(10): 31-42.

DOI: <http://dx.doi.org/10.22192/ijamr.2021.08.10.004>