# Knowledge Attitude and Preventive Practices towards Infection by Severe Respiratory Syndrome-CoV-2 among Residents of Kogi State during the COVID-19 Pandemic

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*This work was carried out in collaboration among all authors. Authors RI and IAY designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors ZOK and OBI managed the analyses of the study. Authors AY and AOA managed the literature searches. All authors read and approved the final manuscript.*

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## ABSTRACT

**Background:** Global spread of the Severe Acute Respiratory Syndrome-CoV-2 (SARS-CoV-2) responsible for the COVID-19 pandemic constitute a public health threat requiring strict infection prevention practice for every individual in the community. Control measures have been prescribed

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to check the rapid spread of the COVID-19 pandemic in Nigeria. Whether populations in these communities adhere optimally to these control measures depends on a number of factors. This study aimed to assess health knowledge and attitude, and preventive practices regarding Infection by SARS-Cov-2 among residents of Kogi State during the COVID-19 Pandemic.

**Methodology:** A cross-sectional study was conducted among residents of Kogi State. Using the authors' internal connections with the Kogi residents, 865 residents were recruited into the study via simple random sampling method. The data were collected by an online questionnaire designed by Google form which was adapted from a study in China. The data were analyzed using SPSS version 23 at various levels with p value at < 0.05.

**Results:** Among 865 questionnaires sent out, 639 were filled completely and returned given a respondent rate of 73.9%. Of the 12 questions on knowledge, the mean overall correct answers was 9.9 given overall correct rate of the participants' knowledge of 82.5%. 88.4% of the respondents had confidence that Nigeria can win the battle against COVID-19. Just about 52.6% of the participants wore masks when going out in recent days. In multiple binary logistic regression analyses, there was significant statistical association between the COVID-19 knowledge score, and a lower likelihood of negative attitudes (OR: 0.87-3.98, P<0.001) and preventive practices towards COVID-19(OR: 0.53-0.67, P<0.001).

**Conclusion:** Health education training to improving COVID-19 knowledge is needed for Kogi residents to have optimistic attitudes and maintain appropriate preventive practices.

*Keywords: Knowledge; attitude; practice; COVID-19; Kogi.*

## 1. BACKGROUND

Coronaviruses belong to families of viruses that are well known in the community. Historical perspective have shown that the virus is a zoonotic disease transmitted through birds and mammals, with humans susceptible to infection and transmission of the virus [1].

Coronavirus disease 2019 ("COVID-19") is said to be an emerging respiratory disease caused by a novel coronavirus initially called 2019-nCoV but subsequently renamed Severe Acute Respiratory Syndrome Coronavirus [2] (SARS-CoV-2) by the International Committee on Taxonomy of Viruses (ICTV).2 SARS-CoV-2 is a new strain discovered in 2019, seems to have originated from bats with cases first reported from Wuhan, Hubei Province in China, suggesting an animal-to-person spread in a live animal market. The virus has since then spread beyond Hubei to the rest of the world via human transmission. Several countries including Nigeria have now reported community spread. Because of its wide spread across countries, the COVID-19 was declared as a pandemic by World Health Organization (WHO) on March 11, 2020 [3].

The disease which is highly infectious is characterized with the following main clinical symptoms: fever, dry cough, fatigue, myalgia, and dyspnea. WHO reported that more than 80% of COVID-19 patients showed mild symptoms and recovered without any medical intervention while approximately 20% of infected cases had a severe illness such as shortness of breath, septic shock and multi-organ failure, and that an estimated 2% of cases can be fatal [4]. The elderly and those with underlying chronic diseases are at higher risk of increased severity. It was reported in China that 18.5% of the patients with COVID-19 develop to the severe stage, which is characterized by acute respiratory distress syndrome, septic shock, difficult-to-tackle metabolic acidosis, bleeding and coagulation dysfunction [5].

According to European Centre for Disease Prevention and control, as of 16 April 2020, 2 029 930 cases of COVID-19 (in accordance with the applied case definitions and testing strategies in the affected countries) have been reported, including 136 320 deaths world-wide while in Africa there are 17 243 cases reported with five countries reporting most cases: South Africa (2 506), Egypt (2 505), Algeria (2 160), Morocco (2 024) and Cameroon (855) with 911 deaths; the five countries reporting most deaths are Algeria (336), Egypt (183), Morocco (127), Tunisia (35) and South Africa (34) [6]. In Nigeria, the first case was reported on the 27th February 2020 and as at April 16, 2020, 442 confirmed cases have been reported in 20 states with 13 deaths [7].

Currently there is no known specific antiviral treatment and preventive vaccine. There are guidelines recommended to decline the spread of infection and respond to the challenges during the epidemic. CDC recommended that

coronavirus spreads mainly from person-to-person by close contact (within about 6 feet) with infected people via respiratory (coughs or sneezes) or transmitted by touching a surface or object that the virus on it [8]. The best prevention is to avoid being exposed to COVID-19. This is done by washing hands with soap and water, and using face masks, isolating confirmed and suspected cases [8].

The spread of COVID-19 in Nigeria is still a problem that calls for everybody's concern. To achieve control of the spreading, people's adherence to these control measures are important and this depend largely on their health knowledge and attitudes, and preventive practices (KAP) towards infection by Severe Respiratory Syndrome-Cov-2 in accordance with KAP theory [9]. A study has shown that SARS outbreak in 2003 suggest that knowledge and attitudes towards infectious diseases are associated with level of panic emotion among the population, which can further complicate attempts to prevent the spread of the disease [10]. To facilitate the management of COVID-19 in Nigeria, there is an urgent need to understand the public's awareness of the disease.

The objective of this study was to assess the KAP toward COVID-19 of Kogi state residents during this COVID-19 pandemic. The findings will help authorities to organize the necessary health educational programs and trainings in order to provide up-to-date information and deliver the best practice to control the COVID-19 disease.

## 2. MATERIALS AND METHODS

### 2.1 Study Design and Area

An online cross sectional study was conducted in Kogi State for the period of 17th to 30th April 2020.

### 2.2 Study Population

The study was conducted among residents of Kogi State

### 2.3 Sample Size and Sample Technique

Relying on the authors' network (email address and social media outlets) with the residents of Kogi State, the online questionnaires were sent to potential 865 Kogi residents using simple random sampling method

### 2.4 Data Collection

Because of lockdown, a community-based sampling survey was not possible. The collection of information was through the use of structured, pretested and self -administered online questionnaire adapted from a similar study in China [11] to assess respondents on the study objectives The questionnaire was designed using Google form, has section A (socio-demographic questions) and section B, which consist of questions on health knowledge and attitudes, and preventive practices. Twelve (12) questions on health knowledge asked were on the clinical characteristics including transmission routes and prevention of COVID-19 with options of true, false and I don't know answers. A correct answer was assigned 1 point and an incorrect/I don't know answer assigned 0 points. The total knowledge score ranged from 0 to 12, with a higher score denoting a better knowledge of COVID-19. Assessments on residents' attitudes and practices towards COVID-19 included questions on confidence in winning the battle against COVID-19, wearing masks when going out in recent days and COVID-19 vaccine.

### 2.5 Data Analysis

The dependent variable in this study was knowledge scores while the independent variables were socio-demographic characteristics of the participation. Percentage and tables were used to describe the participants' responses.

We compared the health knowledge scores and attitudes, and preventive practices of the participants according to demographic characteristics using independent samples $t$ test, one-way analysis of variance (ANOVA), or Chi-square test as appropriate. Multiple linear regression analysis with demographic variables as independent variables and knowledge score as the outcome variable were carried out to identify factors associated with knowledge. Similarly, binary logistic regression analysis was used to identify factors associated with attitudes and practices. Factors were selected with a backward stepwise method. Unstandardized regression coefficients (β) and odds ratios (ORs) and their 95% confidence intervals (CIs) were used to quantify the associations between variables and KAP. Data analyses were conducted with SPSS version 23.0. The statistical significance level was set at $p < 0.05$ (two-sided).

## 2.6 Limitations

One of the drawbacks of this study was the limited sample representativeness. Due to limited access to internet and online health information resources, vulnerable populations of Kogi State under this COVID-19 pandemic were not like reached

## 3. RESULTS

A total of 639 participants filled the questionnaires completely and returned given a respondent rate of 73.9%. Among this final sample, the average age was 33.0 years (standard deviation [SD]: 10.7). 512 (80.1%) were men, 398 (72.1%) were civil servants, and 471 (73.7%) were kogi central residents as shown in Table 1 below.

### Table 1. Socio-demographic characteristics of participants

| Characteristics | Frequency (n=639) | Percentage (%) |
|---|---|---|
| **Gender** | | |
| Male | 512 | 81.3 |
| Female | 127 | 18.7 |
| **Age group** | | |
| 18-29yrs | 90 | 14.4 |
| 30-49yrs | 471 | 73.7 |
| 50yrs and above | 78 | 11.9 |
| **Marital status** | | |
| Single | 186 | 29.3 |
| Married | 453 | 70.7 |
| **Religion** | | |
| Islam | 380 | 58.5 |
| Christianity | 259 | 41.5 |
| **Region** | | |
| Kogi central | 471 | 74.9 |
| Kogi east | 65 | 9.8 |
| Kogi west | 103 | 15.3 |
| **Occupation** | | |
| Unemployed | 150 | 37.5 |
| Civil servant | 389 | 62.5 |

In the Table 2, the mean COVID-19 knowledge score was 9.9 (SD: 1.3, range: 0-12), given an overall 82.5% (9.9/12*100) correct rate on knowledge test. Knowledge scores significantly differed across genders, age-groups, categories of marital status, religion, residence places and occupation (P<0.001).

Multiple linear regression analysis showed that male gender (vs. female, β: -0.48, P<0.001), age-group of 16-29 years (vs. 30-49 years, β: -0.48, P<0.001), and place of residence of Kogi west (β: -0.20, P<0.001) and of Kogi central (β:-0.19, P<0.001) (vs. Kogi east) were significantly associated with lower knowledge score as shown in the Table 3.

From Table 4, the attitude towards the final success in controlling COVID-19 differed across demographic characteristics, with majority of the respondents (83.2%) agreed that COVID-19 will finally be successfully controlled. On average, 88.4% of the respondents had confidence that Nigeria can win the battle against COVID-19 and this varies across the demographic characteristics.

As shown in the Table 5 below of multiple logistic regression analysis, gender, age group, marital status, religion, region and occupation when compared with COVID-19 knowledge score were found to be significantly associated with disagreement on the final success in controlling the disease. In the same table multiple logistic regression analysis showed civil servant (vs. unemployed, OR:3.98, P<0.001) and COVID-19 knowledge score (OR:3.98, P<0.001) were significantly associated with no confidence of winning.

Most of the participants had not visited any crowded place (70.0%) and about half of the participants (52.6%) wore masks when going out in recent days. The rates of these two practices significantly differed across demographic categories as in Table 6.

Multiple logistic regression analysis showed that factors such as gender, age group, religion and region were significantly associated with going to any crowded place when compared with COVID-19 knowledge score while all the demographic characteristics were significantly associated with not wearing a mask outside in relation to COVID-19 knowledge score (Table 7).

**Table 2. Demographic characteristics of participants and knowledge score of COVID-19 by demographic variables**

| Characteristics | | Number of participants Freq (%) | Knowledge score Mean ±SD | t/F | p |
|---|---|---|---|---|---|
| Gender | Male | 512(81.3) | 10.1±1.2 | | |
| | Female | 127(18.7) | 9.3±1.2 | 70.977 | 0.001 |
| Age group | 18 - 29yrs | 90(14.4) | 10.2±1.5 | | |
| | 30 - 49yrs | 471(73.7) | 9.9±1.2 | | |
| | ≥50yrs | 78(11.9) | 9.6±1.2 | 53.007 | 0.001 |
| Marital status | Single | 186(29.3) | 10.0±1.2 | | |
| | Married | 453(70.7) | 9.9±1.3 | 52.2 | 0.001 |
| Religion | Christianity | 259(41.5) | 10.2±0.9 | | |
| | Islam | 380(58.5) | 9.8±1.4 | 63.379 | 0.001 |
| Region | Kogi central | 471(74.9) | 10.1±1.2 | | |
| | Kogi east | 65(9.8) | 9.6±1.5 | | |
| | Kogi west | 103(15.3) | 9.4±1.0 | 100.221 | 0.001 |
| Occupation | Unemployed | 150(37.5) | 9.5±1.3 | | |
| | Civil servant | 389(62.5) | 10.2±1.1 | 60.562 | 0.001 |

**Table 3. Results of multiple linear regressions on factors associated with poor COVID-19 knowledge**

| Variable | Coefficient | S.E. | t | P |
|---|---|---|---|---|
| Gender (Male vs. female) | -0.48 | 0.082 | 33.812 | 0.001 |
| Age group (16 -29 vs. 30 – 49) | -0.48 | 0.082 | 33.812 | 0.001 |
| Marital status (Single vs. Married) | -0.052 | 0.07 | 0.553 | 0.46 |
| Religion(Christianity vs. Islam) | -0.25 | 0.067 | 14.699 | 0.001 |
| Region (Kogi west vs. Kogi East) | -0.20 | 0.035 | 5.230 | 0.001 |
| Region (Kogi Central vs. Kogi East) | -0.19 | 0.052 | 15.743 | 0.001 |

**Table 4. Attitudes towards COVID-19 by demographic variables**

| Characteristics | | Final success in controlling F (%) | | | Confidence of winning F (%) | |
|---|---|---|---|---|---|---|
| | | Agree | Disagree | I don't know | Yes | No |
| Gender | Male | 481(94.0) | 15(2.9) | 16(3.1) | 462(90.2) | 50(9.8) |
| | Female | 92(72.4) | 28(22.1) | 7(5.5) | 110(86.6) | 17(13.4) |
| Age group | 18 - 29yrs | 89(98.9) | 0(0.0) | 1(1.1) | 80(88.9) | 10(11.1) |
| | 30 - 49yrs | 417(88.5) | 34(7.2) | 20(4.3) | 433(91.9) | 38(8.1) |
| | 50yrs and above | 67(85.9) | 9(11.5) | 2(2.6) | 59(75.6) | 19(24.4) |
| Marital status | Single | 185(99.5) | 0(0.0) | 1(0,5) | 159(85.5) | 27(14.5) |
| | Married | 388(85.6) | 43(9.5) | 22(4.9) | 413(91.2) | 40(8.8) |
| Religion | Christianity | 245(94.6) | 7(2.7) | 7(2.7) | 228(88.0) | 31(12.0) |
| | Islam | 328(86.3) | 36(9.5) | 16(4.2) | 344(90.5) | 36(9.5) |
| Region | Kogi central | 415(88.1) | 43(9.1) | 13(2.8) | 410(87.0) | 61(13.0) |
| | Kogi east | 65(100) | 0(0.0) | 0(0.0) | 65(100.0) | 0(0.0) |
| | Kogi west | 93(90.3) | 0(0.0) | 10(9.7) | 97(94.2) | 6(5.8) |
| Occupation | Unemployed | 229(91.6) | 9(3.6) | 12(4.8) | 234(93.3) | 16(6.7) |
| | Civil servant | 344(88.4) | 34(8.7) | 11(2.9) | 338(86.9) | 51(13.1) |
| COVID-19 knowledge score | | 10.03(1.22) | 8.81(1.15) | 9.39(0.94) | 9.89(1.27) | 10.19(0.98) |

**Table 5. Results of multiple binary logistic regression analysis on factors significantly associated with attitudes towards COVID-19**

| Variable | OR (95%CI) | P |
|---|---|---|
| **A1: disagree with final success (vs. agree)** | | |
| Gender (Male vs. female) | 1.54 (1.03, 2.47) | 0.001 |
| Age group (16 -29 vs. 30 – 49) | 2.08 (1.45, 2.74) | 0.04 |
| Marital status (Single vs. Married) | 5.04 (2.72, 9.13) | 0.45 |
| Religion (Christianity vs. Islam) | 1.40 (1.12, 1.50) | 0.001 |
| Region (Kogi west vs. Kogi East) | 0.83 (0.63, 0.91) | 0.001 |
| Region (Kogi Central vs. Kogi East) | 3.43 (1.66, 5.90) | 0.001 |
| Civil servant vs unemployed | 1.505(0.903, 3.15) | 0.001 |
| COVID-19 knowledge score | 0.87 (0.63, 0.72) | 0.001 |
| **A2: no confidence of winning** | | |
| Civil servant vs unemployed | 3.98 (0.603, 7.16) | 0.001 |
| COVID-19 knowledge score | 3.98(0.603,7.16) | 0.001 |

**Table 6. Practices towards COVID-19 by demographic variables**

| | | P1: Going to a crowded place F (%) | | P2 Wearing a mask F(%) | | P3… F (%) | |
|---|---|---|---|---|---|---|---|
| | | Yes | No | Yes | No | Yes | No |
| Gender | Male | 110(21.5) | 402(78.5) | 248(48.4) | 264(51.6) | 439(85.7) | 73(14.3) |
| | Female | 49(38.6) | 78(61.4) | 72(56.7) | 55(43.3) | 65(51.2) | 62(48.8) |
| Age group | 18 - 29yrs | 16(17.8) | 74(82.2) | 50(55.6) | 40(44.4) | 69(76.7) | 21(23.3) |
| | 30 - 49yrs | 120(25.5) | 351(74.5) | 228(48.4) | 243(51.6) | 363(77.1) | 108(22.9) |
| | 50yrs and above | 23(29.5) | 55(70.5) | 42(53.9) | 36(46.1) | 72(92.3) | 6(7.7) |
| Marital status | Single | 31(16.7) | 155(83.3) | 80(43.0) | 106(57.0) | 148(79.6) | 38(20.4) |
| | Married | 128(28.3) | 325(71.7) | 240(53.0) | 213(47.0) | 356(78.6) | 97(21.4) |
| Religion | Christianity | 46(17.8) | 213(82.2) | 116(44.8) | 143(55.2) | 187(72.2) | 72(27.8) |
| | Islam | 113(29.7) | 267(70.3) | 204(53.7) | 176(46.3) | 317(83.4) | 63(16.6) |
| Region | Kogi central | 141(29.9) | 330(70.1) | 247(52.4) | 224(47.6) | 379(80.5) | 92(19.5) |
| | Kogi east | 13(20.0) | 52(80.0) | 11(16.9) | 54(83.1) | 44(67.7) | 21(32.3) |
| | Kogi west | 5(4.8) | 98(95.2) | 62(60.2) | 41(39.8) | 81(78.6) | 22(21.4) |
| Occupation | Unemployed | 45(18.0) | 205(82.0) | 144(57.6) | 106(42.4) | 190(76.0) | 60(24.0) |
| | Civil servant | 114(29.3) | 275(70.7) | 176(45.2) | 213(54.8) | 314(80.7) | 75(19.3) |
| Knowledge score | | 9.97(1.5) | 9.91(1.1) | 9.86(1.0) | 9.98(1.3) | 9.9(1.2) | 9.6(1.3) |

## 4. DISCUSSION

To the best of our knowledge, this is the first study in Nigeria on the KAP towards COVID-19 among her residents. In this study, most of the respondents are knowledgeable about COVID-19 with an overall correct rate of 82.5% on the knowledge questions. Majority of the participants held an optimistic attitude towards the COVID-19 epidemic with 83.2% believed that COVID-19 will finally be successfully controlled, and 88.4% had confidence that Nigeria can win the battle against the virus. Despite this attitude, the practices of Kogi residents were not very encouraging with 70% of them avoided crowded places and about half (52.6%) wore masks when leaving the home during this period of the COVID-19 pandemic.

The finding of a high correct rate of COVID-19 knowledge among Kogi residents was unexpected, because this survey was conducted few weeks after the first case was reported in Nigeria. The high correct rate of COVID-19 knowledge among our study population was not surprise, because of the seriousness of the pandemic and the overwhelming news on the pandemic that is everywhere. In a study done in China, 90.8% of the participants believed that COVID-19 can be controlled successfully and 97.1% % had confidence that China can win the battle against COVID-19 [11]. These were almost similar to what we obtained in our study. The same findings was obtained during the SARS epidemic, 70.1-88.9% of the Chinese residents believed that SARS can be successfully

**Table 7. Results of multiple binary logistic regression analysis on factors significantly associated with practices towards COVID-19**

| Variable | OR (95%CI) | P |
|---|---|---|
| **P1: going to a crowded place** | | |
| Gender (Male vs. female) | 0.54 (1.43, 4.41) | 0.001 |
| Age group (16 -29 vs. 30 – 49) | 0.08 (1.42, 1.74) | 0.001 |
| Marital status (Single vs. Married) | 3.04 (2.32, 7.17) | 0.25 |
| Religion (Christianity vs. Islam) | 0.40 (1.10, 1.50) | 0.001 |
| Region (Kogi west vs. Kogi East) | 0.83 (0.66, 0.91 | 0.001 |
| Region (Kogi Central vs. Kogi East) | 2.43 (1.36, 5.90) | 0.001 |
| Civil servant vs unemployed | 1.55(0.93, 2.15) | 0.001 |
| COVID-19 knowledge score | 0.67 (0.95, 0.43) | 0.001 |
| **P2: not wearing a mask** | | |
| Gender (Male vs. female) | 2.00 (1.45, 2.78) | 0.001 |
| Age group (16 -29 vs. 30 – 49) | 1.37 (1.05, 1.75) | 0.001 |
| Marital status (Single vs. Married) | 2.70 (1.85, 4.00) | 0.001 |
| Religion (Christianity vs. Islam) | 1.40 (1.15, 1.70) | 0.001 |
| Region (Kogi west vs. Kogi East) | 0.90 (0.85, 0.96) | 0.00 |
| Region (Kogi Central vs. Kogi East) | 1.50 (1.21, 1.85) | 0.001 |
| COVID-19 knowledge score | 0.53 (0.73, 0.83) | 0.001 |

controlled or prevented, and 94.7-100% had confidence that China can win the battle against SARS [12].

The attitude of the Kogi residents could be due to the unprecedented COVID-19 control measures such as complete closure of religion centers, schools closure and the lockdown of most states in Nigeria, which enhance people's confidence in winning the battle against the virus. Second, the concerted efforts from across the country also increase people's confidence to overcome the epidemic, for example, to aid the COVID-19 virus control efforts, the federal government through the Presidential Task Force (PTF) and Nigeria Centre for Disease Control and Prevention (NCDC) had dispatched medical workers and provided a large number of medical materials to various states in Nigeria. The good knowledge about COVID-19 among the participants could also explain the positive attitude as shown by the results of multiple analyses of higher COVID scores to be significantly associated with less likelihood of negative answers to questions on attitude. Although attitudes towards COVID-19 were optimistic, most residents took precautions to prevent infection by COVID-19: not going to crowded places and wearing masks when going outside. These strict preventive practices could be primarily attributed to the very strict prevention and control measures implemented by state governments such as banning public gatherings. Secondly, they could also be the result of the residents' good knowledge regarding the high infectivity of the COVID-19 virus, which

can be easily transmitted between people via invisible respiratory droplets. Despite this attitude, our study has shown that 30% residents went to crowded places and 47.6% did not wear masks when leaving homes recently. These potentially risky behaviors were found to be related to some of the socio-demographic characteristics of the participants (male gender, age, location of residency and employment status) and poor COVID-19 knowledge. It is worth mentioning that higher COVID-19 knowledge scores were found to be significantly associated with a lower likelihood of negative attitudes and potentially dangerous practices towards COVID-19 pandemic in our study. Our findings of the socio-demographic factors associated with KAP towards COVID-19 are consistent with study done on COVID-19 in China and previous studies on SARS in 2003 [13]. These findings were useful since they will assist policy-makers and public health workers to identify target populations for COVID-19 control and prevention, and health education program.

## 5. CONCLUSION

Our findings suggest that Kogi residents with a relatively high level of socioeconomic have had good knowledge, optimal attitudes, and appropriate preventive practices towards COVID-19 during this pandemic. Also we found that good COVID-19 knowledge is associated with optimistic attitudes and appropriate practices towards the disease.

## CONSENT AND ETHICAL APPROVAL

Ethical clearance was obtained from research and ethical committee of Federal Medical Centre Lokoja, Kogi State- Nigeria. The participants were recruited into the study only after they obtain explanation about the objectives of the study and written consents obtain from them. Confidentiality of the study participants will be maintained.

## ACKNOWLEDGEMENTS

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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**ANNEXURE**

## Questionnaire

1. What is your gender?

   a. Male
   b. Female

2. What is your age group?

   a. 18 – 29yrs
   b. 30 – 49yrs
   c. 50yrs and above

3. What is your marital status?

   a. Single
   b. Married
   c. Others
4. What is your religion?

   a. Christianity
   b. Islam
   c. Others

5. Where is your current place of resident?

   a. Kogi central
   b. Kogi east
   c. Kogi west
   d.
6. What is your occupation?

## Knowledge

1. The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia.

   a. True
   b. false
   c. I don't know

2. Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus.

   a. True
   b. False
   c. I don't know

3. There is currently no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection.

   a. True
   b.  False
   c.  I don't know

4. Not all persons with COVID-2019 will develop to severe cases. Only those who are elderly, have chronic illnesses, and are obese are more likely to be severe cases.

   a. True
   b. false,
   c. I don't know

5. Eating or contacting wild animals would result in the infection by the COVID-19 virus.

   a. True
   b. false,
   c. I don't know

6. Persons with COVID-2019 cannot transmit the virus to others when a fever is not present.

   a. True,
   b. false,
   c. I don't know

7. The COVID-19 virus spreads via respiratory droplets of infected individuals.

   a. True,
   b. false,
   c. I don't know

8. Ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus.

   a. True
   b. False
   c. I don't know

9. It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus.

   a. True,
   b. false,
   c. I don't know

10. To prevent the infection by COVID-19, individuals should avoid going to crowded places such as religion places and avoid taking public transportations.

    a. True
    b. False
    c. I don't know

11. Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.

    a. True
    b. False
    c. I don't know

12. People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days.

    a. True,
    b. false,
    c. I don't know

**Attitudes**

1. Do you agree that COVID-19 will finally be successfully controlled?

   a. Agree,
   b. Disagree
   c. I don't know

2. Do you have confidence that Nigeria can win the battle against the COVID-19 virus?

   a. Yes
   b. No

**Practices**

1. In recent days, have you gone to any crowded place?

   a. Yes
   b. No

2. In recent days, have you worn a mask when leaving home?

   a. Yes,
   b. No