Knowledge, Attitude, and Practices Towards Preventive Strategies Against COVID-19 Pandemic Among Nigerian Young Adults: A Cross-Sectional Survey

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Abstract

Background: Since the onset of the COVID-19 pandemic, efforts have been aimed at promoting preventive measures towards curtailing the spread of the SARS-CoV-2 virus. The effectiveness of measures put in place by the government are mostly determined by the Knowledge, Attitude, and Practices (KAP) of the citizenry. We sought to determine the KAP of young Nigerian adults towards preventive strategies against COVID-19. Methods: An online survey was prepared using an 18-question questionnaire to assess the KAP of each participant that satisfied predefined criteria. Data obtained were screened for error and analyzed with SPSS version 23. The level of significance was set at p≤0.05. Results: A total of 925 valid responses were received with a 96.25% response rate. Females made up 52.4% of the respondents, 62.4% were aged between 21-24, and 88.4% from South-western Nigeria. The mean knowledge score was 9.02 (SD 1.18) with a maximum possible knowledge score of 13. Most of the participants (91.7%) agreed that COVID-19 will eventually be successfully controlled. Only 31.1% however had been wearing masks when leaving home. The confidence of winning the battle against COVID-19 differed significantly across the ethnic groups (p≤0.01). Ages between 15 and 24 were more likely to visit crowded places (p≤0.01). Conclusion: This study revealed a good knowledge level and an optimistic attitude towards the control of the COVID-19 pandemic. However, much more work is needed by government and health officials to translate these to better practices towards prevention and control as the fight against the COVID-19 pandemic continues.

Key Words: Attitude; Coronavirus Disease 2019; Knowledge; Prevention (Source: MeSH-NLM).

Introduction

The Coronavirus Disease 2019 (COVID-19) is an illness caused by the novel Coronavirus also called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS - CoV-2), which was first discovered during an outbreak of respiratory illness in Wuhan, Hubei province, China, and reported to the World Health Organization (WHO) on the 31st of December, 2019.1 COVID-19 was declared a global health emergency on the 30th of January, 2020, and was subsequently declared a pandemic on the 11th of March, 2020.2,4,5

The nomenclature of the disease has undergone rigorous reviews as the WHO termed the deadly virus COVID-19 to avoid any form of discrimination based on region, person, or nationality. In this light, particular mention is given to the efforts of the Coronavirus Study Group of the International Committee on the Taxonomy of Viruses, which on the 11th of February, 2020 issued a statement officially designating the novel virus as SARS - CoV-2.4 It is important to note that the coronaviruses as a family are not necessarily unique to humans and that they have the potential to cause pandemics, hence the occurrence of the Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS).

Since the outbreak of the COVID-19 there has been a steady rise in the number of confirmed cases of the disease all over the world, including Nigeria. As of 22nd of August, 2021, a total of 211,288,358 cases had been confirmed, with 4,422,666 confirmed deaths in 209 countries and territories, with a possible surge in the number of cases subsequently.6 This has prompted extraordinary measures on the part of governments worldwide to curb the spread of the virus. Such measures include stay-at-home orders, self-isolation and quarantine of visitors, the use of hand sanitizers and washing of hands in public places, enforcement of social distancing protocols, and the use of facemasks in public places, amongst others.6

Research into the transmission of the disease shows that people at higher risk of infection include individuals with a travel history to countries with a high number of confirmed cases, health workers caring for COVID-19 patients, and close contacts of infected patients.2 Once infected, the SARS-CoV-2 virus has a more severe course in the elderly (65 years and above) and those with longstanding chronic illnesses.4 Major symptoms of the disease include fever, cough, fatigue, and body aches. Other less common symptoms include diarrhea, loss of sense of taste or smell, headaches, shortness of breath, and respiratory distress. Dyspnea is typically associated with a more severe infection.4,5 It has been shown that about one-third of infections may be asymptomatic, although this does not exclude the ability to infect.9 Since the discovery of COVID-19, the transmission of the disease has grown from local to community transmission, necessitating strict measures instituted by the Nigerian government in order to curtail it. While there is a growing need and attempt to understand the pathogenesis of this coronavirus, the government and various parastatal continue to ensure compliance to the already constituted measures.10

Despite the growing attention given to COVID-19 in Nigeria and globally, there is still a lot of misinformation about the virus. More so, compliance with the safety measures and precautions is largely dependent on how informed the citizens are about the coronavirus based on evidence from previous disease outbreaks such as the Ebola virus.11 The young adults occupy a larger portion of the Nigerian population either as students at different levels of education or as “working-class” and are prone to risky behaviors that could jeopardize effort by the government and health care workers in combating the
spread of the virus. Early studies in Nigeria showed a mortality rate of about 2.6% and a preponderance of the male gender.12 Despite the available data in Nigeria and globally, there is a need to objectively assess how informed the Nigerian youths are about the coronavirus. Knowledge assessment is an important precedence to COVID-19 guidelines adherence. This study aims to assess the knowledge, attitudes, and practices regarding COVID-19 among young adults in Nigeria. Data from this study will be beneficial to the Nigeria Center for Disease Control and potentially to other low-income nations in the fight against the COVID-19 pandemic.

Methods
Study Design and Setting
This was a cross-sectional study based on a survey of young adults in southwestern Nigeria, which includes Lagos, Oyo, Ondo, Ekiti, Ondo, and Ogun state or other states in Nigeria. Participants were recruited into the study by convenience sampling using a web-based questionnaire designed in Google Forms. This method of data collection was adopted due to the restriction in movement imposed by the Nigerian government as one of the measures to curb the spread of the Coronavirus Disease 2019. Study participants were encouraged to share the link to the survey with others on their various social media timelines.

Study Participants
The study inclusion criteria were being a young adult with 16 to 35 years of age, from Nigeria, who reside in any of the states in southwestern Nigeria and who granted informed consent and permission to share collected data. The exclusion criteria included Nigerian young adults who resided outside the country as of the data collection period and/or outside the age bracket (16-35). In addition, participants who partially completed their questionnaire were excluded from the study. All respondents were recruited into the study by convenience sampling method.

Data Collection
The link to the online survey was shared via social media platforms (WhatsApp, Twitter, and Facebook) using the authors’ immediate social network and each participant was encouraged to do so too. Data was collected in the two-week period of April 19 to May 3, 2020. Accompanying the questionnaire was a poster that represented the cover page of the questionnaire and contained information about the purpose of the study, anonymity of participants’ responses, and voluntariness of participation. Those who read the poster would then further answer a question as to whether they are willing to participate or not. Participants who selected a “YES” (as indicative of a willingness to be recruited into the survey) could proceed to the questionnaire while those whose responses were “NO” to the consent question were automatically logged out of the form. The .csv file generated from the Google Form was exported to SPSS for data cleaning and analysis.

Research Tool
The self-administered questionnaire was sectioned into two: Sociodemographics and Knowledge, Attitude, and Practices (KAP) about COVID-19. The KAP aspect of the questionnaire was a poster that represented the cover page of the questionnaire and contained information about the purpose of the study, anonymity of participants’ responses, and voluntariness of participation. The attitude of respondents towards the control of the COVID-19 was assessed by two questions (A1 and A2) assessing the respondents’ belief in the future control of COVID-19 and if Nigeria as a nation could win the fight against the disease. Practices towards preventive strategies were measured with three questions (P1-P3) assessing the adherence of the participants to measures instituted by the government such as wearing of face mask, regular washing of hands, and avoiding crowded places.

Data Analysis
Data obtained were screened for errors and completeness, after which the data were analyzed using IBM-SPSS version 25 for Windows. Results were presented in frequency, percentage, mean, and standard deviation (SD). A Chi-square test was used to investigate whether there is a relationship between knowledge of COVID-19 and practices towards preventive strategies against COVID-19. Multivariate analysis was used to explore the association between sociodemographic characteristics of participants and knowledge of COVID-19. Significance was set at a p-value <0.05.

Ethics statement
Our study protocol, methodology, and tools were approved by the University of Ibadan and University College Hospital Ethical Committee with IRB of UI/EC/20/0295 before the commencement of the research.

Results
A total of 961 responses were collected within two weeks from the first day of the survey was launched. Of these, respondents, 7 were excluded for not consenting to participate in the study, 10 were invalid, and 19 did not meet the eligibility criteria. Consequently, the data from 935 responses were considered valid for statistical analysis. Females constituted the majority of the study participants accounting for 52.4% (n=485) of the total. 62.4% (n=577) were between ages 21-25, 42.4% (n=855) practiced Christianity as a religion and 71.6% (n=662) of the study participants were single. 88.4% (n=818) of the participants were from Southwestern Nigeria and 69% (n=639) had a Bachelor’s degree and above (Table 2).

Overall, 92.9% (n=853) of the study participants had a good to excellent knowledge score (Figure 1). The mean knowledge score was 9.02, SD 1.18 92.3% (n=854) agreed that the clinical symptoms of COVID-19 include fever, fatigue, dry cough, and body pains. Almost all the participants, 98.2% (n=928), believed that there was no cure for COVID-19 at the time of the study and that early symptomatic and supportive treatment can help most patients recover from the infection. 96.6% (n=894) believed that the virus spreads via respiratory droplets of infected individuals. Other responses are shown in Figure 2. There was not a significant difference in knowledge scores across sociodemographic characteristics of participants.

The majority of the respondents agreed that COVID-19 will eventually be successfully controlled (n=848, 91.7%), and this attitude differed significantly across the different ethnic groups (p<0.05). Fewer participants, (n=388, 85.2%) selected ‘yes’ to the question “Do you have confidence that Nigeria can win the battle against the COVID-19 virus?” The confidence of winning the battle against COVID-19 differed significantly across the ethnic groups (p<0.01, Table 3).
In regards to practices towards prevention of the disease, 83.9% (n=775) of the participants responded that they had not been to any crowded place in recent days (Figure 3). There was a very strong association with age group and knowledge level at p<0.01 (Table 4). 92% (n=851) responded that they had been washing their hands regularly. There was a significant association with gender, marital status, and level of education (p<0.05) (Table 4). However, only 31.1% (n=288) of participants with tertiary education or more had been wearing masks level of education (p<0.05). There was a significant association between regular hand washing and knowledge of COVID-19 (p<0.001). The multivariate analysis yielded no significant finding.

Discussion

The Coronavirus Disease 2019, universally known as COVID-19, was first discovered in Wuhan City, China. Following its discovery, the disease subsequently spread to over two hundred countries of the world, causing global disarray and posing threats to all aspects of human endeavors.16-18
Nigeria is the largest and most populated country in Africa, with a population size of over two hundred million people. As a densely populated country, Nigeria is at greater risk of spreading the coronavirus among its citizens given the already established mode of spread and risk factors. The Nigerian population is largely constituted by children and young people, given the life expectancy of Nigerians. During the early phase of the pandemic in Nigeria, one of the reasons for this study was the rising belief about the immunity of young people to the virus, a belief that led to the non-compliance to guidelines put in place by the Federal Ministry of Health (FMoH) by the youths. Future approaches could include the population of people over 35 years of age, to understand if there is a difference in KAP among these populations. This study, therefore, provides objectively measured epidemiological data to assess the KAP of COVID-19 among this set of Nigerians.

In this study, there were more female participants (52.4%) than males (47.6%). Against COVID-19.

The high overall knowledge of COVID-19 as seen in this study may be partly because the majority of the respondents have a minimum of tertiary education or degrees. This is in tandem with findings from other studies conducted within and outside of Nigeria. Likewise, it is common knowledge that the sample population in this study is more acclimatized to the internet and social media which were the major means of sensitizing various population groups about the COVID-19 pandemic during the rapid rising phase of the disease in Nigeria. Internet and social media have also been documented to have played a tremendous role in keeping the people informed about the COVID-19 pandemic as documented in other studies. These findings are in tandem with that of Nwagbara et al., a trend that is consistent in many indigenous African studies. This trend is predominant in many African studies contrary to findings in other continents.

When explored, there was no association found between knowledge scores and sociodemographic characteristics of participants in this study. However, when compared to their married counterpart, respondents whose marital status was single had a lower COVID-19 knowledge score. This finding could be because unmarried people tend to be care-free sometimes as compared to married ones who may be eager to know more about the disease due to the lives of immediate family members such as children and spouses. In addition, the mean knowledge score was lower among participants with lower educational qualifications. In an Ugandan study, females were found more adherent to preventive measures against COVID-19 than males. This is similar to the finding in this study, in which a greater proportion of females were more likely to adhere to preventive practices compared to males.

Practices towards preventive strategies by each participant were assessed using three questions (P1-P3, Table 1). Overall, positive responses towards the preventive strategies against COVID-19 were recorded, as over seventy percent of respondents were complying with the social distancing practices and avoidance of crowded places and regular washing and/or sanitizing of hands (Table 3 and 4). On the contrary, greater than sixty percent of the respondents denied the use of face masks when going out to public places despite evidence showing the effectiveness of face masks in reducing the infection and transmission of the coronavirus. According to Reuben et al., knowledge of COVID-19 does not match up with practices towards the virus. Meanwhile, Kim et al. documented that having a family member infected with the virus and a higher socioeconomic status were both correlated with good attitudes and practices towards the virus. Various factors could have been responsible for the poor compliance with the use of face masks among these young people, one of which could have been the exponential rise in the price of face masks as a result of its limited availability and inflated prices. Second, this sample population believes they are immune to the virus and this could have influenced their compliance with mask usage. Furthermore, the non-use of face masks may have been influenced by early statements from health authorities in which it was not clear whether their use was effective or not.

In this study, there were more female participants (52.4%) than males and the majority were single individuals (97.5%). The overall knowledge score in this study was 9 out of a total score of 13, which means that most the respondents have good knowledge of COVID-19. These findings are in line with previously published data in India, Egypt, and China.

### Table 1

| Practice | Percentage Response |
|----------|---------------------|
| In recent days, have you gone to any crowded place? | 83.9 |
| In recent days, have you washed your hands regularly? | 68.9 |
| In recent days, have you worn a mask when leaving home? | 92 |

Legends: * "No" is the appropriate response

### Table 2

| Practice | Percentage Response |
|----------|---------------------|
| In recent days, have you gone to any crowded place? | 16 |
| In recent days, have you washed your hands regularly? | 31.1 |
| In recent days, have you worn a mask when leaving home? | 8 |

In recent days, have you been washing your hands regularly? | 92 |

**Figure 2.** Percentages of Responses to Each of the Knowledge Questions.

**Figure 3.** Percentage Responses to Questions on Preventive Strategies Against COVID-19.
Table 3. Attitudes Towards COVID-19 by Demographic Variables.

| Characteristics | Final success in controlling | Attitudes, n (%) | Confidence of winning |
|-----------------|-----------------------------|-----------------|----------------------|
|                 | Agree | Disagree | p-value | Yes | No | p-value |
| **Gender**      |       |          |         |     |    |         |
| Female          | 450   | 35       | 7.2     | 422 | 63 | 11.0    |
| Male            | 398   | 42       | 9.5     | 367 | 73 | 16.6    |
| **Age group (years)** |       |          |         |     |    |         |
| 16-20           | 168   | 16       | 8.7     | 158 | 26 | 14.1    |
| 21-25           | 529   | 48       | 8.3     | 486 | 91 | 15.8    |
| 26-30           | 117   | 11       | 8.6     | 115 | 13 | 10.2    |
| 31-35           | 34    | 2        | 5.6     | 30  | 6  | 16.7    |
| **Religion**    |       |          |         |     |    |         |
| Christianity    | 786   | 69       | 8.1     | 733 | 122 | 14.3    |
| Islam           | 54    | 5        | 8.5     | 40  | 10 | 16.9    |
| Traditional     | 1     | 1        | 50.0    | 5   | 5  | 44.4    |
| Others*         | 7     | 2        | 22.2    | 2   | 0  | 0.0     |
| **Ethnicity**   |       |          |         |     |    |         |
| Yoruba          | 617   | 45       | 6.8     | 582 | 80 | 12.1    |
| Igbo            | 144   | 18       | 11.1    | 129 | 33 | 20.4    |
| Hausa           | 4     | 1        | 20.0    | 4   | 1  | 25.0    |
| Others*         | 83    | 13       | 15.5    | 78  | 22 | 25.5    |
| **Marital status** |      |            |         |     |    |         |
| Single          | 826   | 76       | 8.4     | 769 | 133 | 14.8    |
| Engaged         | 1     | 0        | 0.0     | 1   | 0  | 0.0     |
| Married         | 20    | 1        | 4.8     | 18  | 3  | 14.5    |
| Divorced        | 1     | 0        | 0.0     | 1   | 0  | 0.0     |
| **Highest level of education** |       |            |         |     |    |         |
| Secondary       | 196   | 17       | 8.9     | 178 | 35 | 16.4    |
| Associate degree | 70    | 3        | 4.1     | 68  | 5 | 6.8     |
| Bachelor degree | 535   | 50       | 8.8     | 498 | 87 | 14.6    |
| Masters and above | 47   | 7        | 13.0    | 45  | 9  | 16.7    |
| **Current state of residence** |       |            |         |     |    |         |
| Southwest       | 95    | 12       | 11.2    | 82  | 25 | 23.4    |
| Others*         | 753   | 65       | 7.9     | 707 | 111 | 13.5    |

**Legend**: a Religions that were not included on the survey; b Minority ethnic groups; c States apart from the six in southwestern Nigeria.

Table 4. Practices Towards COVID-19 by Demographic Variables.

| Characteristics | Going to crowded places | Practices, n (%) | p-value |
|-----------------|-------------------------|------------------|---------|
|                 | Yes | No | p-value | Yes | No | p-value | Yes | No | p-value |
| **Gender**      |     |    |         |     |    |         |     |    |         |
| Female          | 78   | 16 | (13.6)  | 111  | 13.6 | 0.908 | 126  | 28.6 | 0.118 |
| Male            | 72   | 16 | (13.6)  | 111  | 28.6 | 0.908 | 126  | 28.6 | 0.118 |
| **Age group (years)** |     |    |         |     |    |         |     |    |         |
| 16-20           | 15   | 8  | 53.8    | 75   | 46.2 | 0.005 | 17   | 50.0 | 0.005 |
| 21-25           | 106  | 18 | 22.9    | 35   | 77.1 | 0.001 | 71   | 22.9 | 0.001 |
| 26-30           | 25   | 19 | 75.9    | 35   | 24.1 | 0.001 | 71   | 24.1 | 0.001 |
| 31-35           | 5    | 13 | 19.6    | 35   | 80.4 | 0.001 | 71   | 80.4 | 0.001 |
| **Religion**    |     |    |         |     |    |         |     |    |         |
| Christianity    | 133  | 14 | 87.9    | 73   | 12.1 | 0.001 | 104  | 12.1 | 0.001 |
| Islam           | 12   | 20 | 41.7    | 19   | 58.3 | 0.001 | 35   | 58.3 | 0.001 |
| Traditional     | 1    | 20 | 41.7    | 19   | 58.3 | 0.001 | 35   | 58.3 | 0.001 |
| Others*         | 0    | 20 | 41.7    | 19   | 58.3 | 0.001 | 35   | 58.3 | 0.001 |
| **Ethnicity**   |     |    |         |     |    |         |     |    |         |
| Yoruba          | 112  | 16 | 50.0    | 55   | 50.0 | 0.001 | 70   | 50.0 | 0.001 |
| Igbo            | 22   | 13 | 60.0    | 14   | 40.0 | 0.001 | 33   | 40.0 | 0.001 |
| Hausa           | 1    | 20 | 41.7    | 19   | 58.3 | 0.001 | 35   | 58.3 | 0.001 |
| Others*         | 15   | 16 | 41.7    | 19   | 58.3 | 0.001 | 35   | 58.3 | 0.001 |
| **Marital status** |     |    |         |     |    |         |     |    |         |
| Single          | 145  | 14 | 91.7    | 71   | 8.3 | 0.001 | 104  | 8.3 | 0.001 |
| Engaged         | 0    | 1   | 100.0   | 0    | 0  | 0.0    | 0    | 0  | 0.0    |
| Married         | 5    | 23 | 69.0    | 20   | 31.0 | 0.001 | 104  | 31.0 | 0.001 |
| Divorced        | 0    | 1   | 100.0   | 0    | 0  | 0.0    | 0    | 0  | 0.0    |
| **Highest level of education** |     |    |         |     |    |         |     |    |         |
| Secondary       | 29   | 13 | 48.3    | 18   | 51.7 | 0.001 | 41   | 51.7 | 0.001 |
| Associate degree | 9    | 12 | 41.7    | 14   | 58.3 | 0.001 | 35   | 58.3 | 0.001 |
| Bachelor degree | 11   | 17 | 41.7    | 14   | 58.3 | 0.001 | 35   | 58.3 | 0.001 |
| Masters and above | 11  | 20 | 52.4    | 19   | 47.6 | 0.001 | 35   | 47.6 | 0.001 |
| **Current state of residence** |     |    |         |     |    |         |     |    |         |
| Southwest       | 133  | 16 | 85.7    | 25   | 14.3 | 0.001 | 70   | 14.3 | 0.001 |
| Others*         | 17   | 15 | 50.0    | 10   | 50.0 | 0.001 | 20   | 50.0 | 0.001 |

**Legend**: a Religions that were not included on the survey; b Minority ethnic groups; c States apart from the six in southwestern Nigeria.
One of the strong points of this study is its large sample size and the ability to pull such responses during the rapid rise of the COVID-19 virus in Nigeria, especially in the southwest where the majority of the daily new cases were recorded. Our data captured individuals who can be said to belong to the middle-to-high social class as demonstrated by the sociodemographic characteristics of our study. This, in part, may be responsible for the good level of knowledge about COVID-19 among men and women equally.

Due to the nature of the questionnaire, a larger portion of Nigerian young adults may reside in the rural areas where there is limited internet access, and/or some without mobile phones given the modality of the data collection tool. Therefore, our data do not capture the majority in these categories that are more likely to have poor of the data collection tool. Therefore, our data do not capture the majority in these categories that are more likely to have poor knowledge about COVID-19 and inappropriate attitudes and practices towards preventive strategies. These limitations strengthen the need for further research among these groups of people. Finally, due to the restriction in movement during the period of data collection, which informed the mode of data collection, KAP about COVID-19 may be better assessed through other forms such as key-informant interviews, focused group discussion, among others.

Conclusion
Our study has demonstrated good knowledge of young adults in Nigeria towards COVID-19 and developed a positive attitude and practices towards the preventive strategies necessary to curtail the spread of the virus. Citizens, governments, and agencies can join hands to fight the pandemic as they continue to discover more about the virus and develop positive attitudes and practices towards the prevention of further transmissions. As the pandemic continues to ravage all aspect of human endeavors, government and health related bodies must intensify efforts in order to reach the young adults.

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