

Knowledge, Perception, and Sources of Information on COVID-19 among Nigerian Youths in the First Month of the Pandemic

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Abstract

Background: This study aimed to assess the knowledge, perception, and sources of COVID-19 information among Nigerian youths.

Methods: We conducted a descriptive cross-sectional study among 817 National Youth Service Corps members. Participants' overall general knowledge about COVID-19 was assessed using nine questions that consisted of general knowledge on the cause, origin, mode of transmission, signs and symptoms, availability of a potent vaccine and specific therapy, prevention strategies of COVID-19 and knowledge of proper handwashing practices. P-values <0.05 were statistically significant.

Results: The mean age of the respondents was 24.1±2 years, 317 (41.2%) were males, and 73 (8.9%) had studied a health-related course. Of the 754 respondents who responded to the COVID-19 knowledge questions, 187 (24.8%) had general knowledge about COVID-19, while 280 (37.1%) had knowledge in all domains; mode of spread, symptoms and signs, and prevention of COVID-19. Among the respondents, 129 (40.7%) males had satisfactory knowledge of COVID-19 (P=0.070), while 38 participants (52.1%) who had studied a health-related course had satisfactory knowledge of COVID-19 (P=0.003). Regarding the knowledge of handwashing, 184 (58%) males displayed satisfactory knowledge (P=0.007). Social media (64.4%) and television (58%) were the main sources of COVID-19 information. Respondents who had studied a health-related course were twice likely to have satisfactory knowledge of COVID-19 (AOR=2, 95% CI=1.25-2.5 P=0.003,) and six times likely to have satisfactory knowledge of handwashing (AOR=5.6, 95% CI=3.3-10.0, P≤0.0001).

Conclusion: Utilization of both social media and the mainstream mass media in disseminating health education information and correcting fake news and misconceptions is needed. Health promotion strategies should be organized for all youths, especially among those who have no previous education in the health and allied courses.

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Introduction

The Coronavirus disease (COVID-19) is an infectious

disease caused by a newly discovered coronavirus, SARS-CoV-2, which is primarily transmitted through droplets from COVID-19 infected persons to healthy

individuals.¹ COVID-19 was declared a pandemic by the World Health Organization on March 11th, 2020 due to the infection of more than 100,000 persons across the globe.² Rapid public health responses, including campaigns thus became necessary in nations around the globe to mitigate the COVID-19 pandemic. Many individuals have displayed wrong notions and knowledge regarding the nature, symptoms, and mode of transmission of the COVID-19 pandemic. This has included denial of the existence of COVID-19 and shunning of recommended preventive measures.³ Possession of adequate knowledge and correct risk perception through different channels of information have been described as effective measures for breaking the chain of the COVID-19 pandemic.³

Currently, more than 37 million COVID-19 cases and nearly 1,077,508 deaths have been recorded globally as of October 12th, 2020.⁴ The index case of COVID-19 in Nigeria was recorded on the February 27th, 2020.⁵ As of the October 12th, 2020; however, there have been 60,266 confirmed cases and 1115 deaths in Nigeria.⁶ Lagos State is the epicenter of the COVID-19 pandemic in Nigeria, and currently accounts for nearly one-third of COVID-19 cases and about a fifth of COVID-19 deaths.⁶ The Nigeria Center for Disease Control (NCDC) and the Federal Ministry of Health commenced public health campaigns regarding COVID-19 since it was first reported in China. The messages were detailed on the nature of the virus, mode of transmission, signs and symptoms as well as methods of prevention. These messages have been disseminated through social media, health education at gatherings, TV/Radio jingles, and print media.⁷ Also there have been intensive activities implemented in Lagos state on risk communication via mass and social media platforms, social mobilization as well as community mobilization. These activities have provided public health messages to address concerns, allay fears, and enhance behavioral changes which aim at reducing the community spread.⁸

Although COVID-19 outbreak is novel locally and globally, Nigeria had in 2014 battled with the Ebola Virus Disease outbreak and is currently faced with the Lassa fever outbreak in some states.⁷ These outbreaks was followed by a lot of misconceptions and misinformation that caused a lot of challenges for health professionals tackling them.^{8, 9} Public enlightenment helped orient the public in the adoption of precautionary behavior in the transmission of these infections.^{10, 11} In a study on COVID-19 conducted in Katsina State, North-West Nigeria, the authors concluded that although there was high COVID-19 related knowledge which could have resulted from conducting the research during the current outbreak; misconceptions were widespread among the respondents. Misconceptions have consequences on the short- and long-term control efforts against COVID-19 and hence should be incorporated in

targeted campaigns.^{12, 13} The impact of the efforts of the government and public health authorities on COVID-19-related messages on social and mass media needs to be evaluated to determine its effects on the health-seeking behavior of the people for which such messages were intended.

Lagos State, with an estimated population of over twenty million people, has been the hub of the COVID-19 outbreak in Nigeria and its teeming population could have contributed to this occurrence.⁸ The assessment of knowledge on COVID-19 will be needful to guide the development and dissemination of appropriate public health messages that will address knowledge gaps, correct misconceptions, and improve practices that will halt further spread of the disease. To date, there have been few published studies on the knowledge, attitudes and practices regarding COVID-19 in Nigeria. This study is one of the first attempts at measuring the level of knowledge of COVID-19, especially in mass gatherings. This study, therefore, aimed to assess the level of knowledge about COVID-19 among recent Nigerian graduates, their perception, and current prevention practices engaged in, for the control of COVID-19 in Lagos, Nigeria.

Methods

Study Area

The survey was conducted in Lagos State, a highly urbanized region located in the southwestern geopolitical zone of Nigeria along the Coast of Guinea of the Bight of Benin. The state has a total area of about 3,577 square kilometers including water bodies and bounded to the north and east by Ogun State, and to the south and west by the Coast of the Atlantic Ocean and the Republic of Benin, respectively. Lagos is currently the most populous state in Nigeria with 24.6 million population.⁸ Administratively, Lagos State has 20 Local Government Areas (LGAs) and 357 wards. The state is the economic center of Nigeria. The Lagos State NYSC Permanent Orientation Camp is in Iyana-Ipaja, Agege LGA.¹⁴

Study Design

The study employed a descriptive cross-sectional design among a cohort of recent graduates of tertiary institutions during the orientation camp of the mandatory National Youth Service Corps (NYSC). Data collection took place on the 12th of March 2020.

Study Population

The study was conducted among NYSC members who had been newly posted to Lagos State. The NYSC scheme was established by the Federal Government of Nigeria in May 1973 after the Nigerian Civil war with a view to promoting national unity and integration. Each year, eligible Nigerian graduates from

universities and polytechnics are enrolled into youth service scheme for a year. These groups of graduates from diverse educational, socio-cultural, and religious backgrounds are assigned to states other than their states of origin. They are first required to undergo a three-week orientation at various NYSC orientation camps located across all the states of the Federation including the Federal Capital Territory, from where they are posted to places of primary assignment in different LGAs in the states.¹⁴

Sample Size Determination and Sampling Technique

We conducted a total survey of all NYSC members who were present on the orientation camp. Of the 1,500 corps members physically present at the time of data collection, only 817 responses were obtained, thus generating a response rate of 54.5%. Corps members who were at compulsory duty posts were unable to participate in the study. Respondents were grouped into six geopolitical zones of Nigeria based on their states of residence. Southwestern states mentioned by respondents were Ekiti, Lagos, Ogun, Ondo, Ogun, and Oyo States; South-east zone included Abia, Anambra, Enugu, and Imo States; and South-South included Akwa-Ibom, Cross River, Delta, Edo and Rivers State. North-central zone comprised Abuja, Kogi, Kwara, Nasarawa, Niger and Plateau; Northeast zone included Adamawa and Taraba, the Kaduna State in the North-western zone which was specified by a respondent.

Inclusion Criteria

Presence of Corps members on the Lagos State NYSC Orientation camp.

Exclusion Criteria

Participation in compulsory security duty posts such as patrol and quarter guard.

Data Collection Methods and Instrument

Data were collected using semi-structured, self-administered, paper-based questionnaires. The questionnaire was developed using a similar study conducted during the 2014 Ebola outbreak in Lagos, Nigeria.⁹ Adaptability of the questionnaire was done to suit the COVID-19 context. A panel of expert epidemiologists who were then involved in the COVID-19 response conducted face validation of the questionnaire. The questionnaire was pre-tested among other youths who were yet to be deployed for youth service in Lagos. A few ambiguous questions were rephrased upon feedback from the pre-testing activity. Data collection was done by five master's in public health students who were part of the COVID-19 response in Lagos State.

The independent variables in the study included sociodemographic characteristics such as age, sex,

religion, and course of study. The outcome variables included knowledge of the spread of COVID-19, signs and symptoms, precautionary measures for COVID-19, source of information on COVID-19, and perceptions on COVID-19.

Data Management: Measurement of Variables/ Statistical Analysis

Questionnaires were reviewed to exclude incomplete forms. Data were cleaned and coded in Microsoft Excel and analyzed using SPSS Version 23.¹⁵ The data on the respondents' age were summarized using mean and standard deviation, while categorical variables were summarized using frequencies and percentages. Chi-square test was used for assessing the associations between sociodemographic characteristics and the knowledge of COVID-19 as well as the practice of handwashing. The knowledge of COVID-19 was graded based on three domains: mode of spread, symptoms and signs, and preventive measures.

The participants' overall general knowledge about COVID-19 was assessed using nine questions that consisted of general knowledge on the cause, origin, mode of transmission, signs and symptoms, availability of a potent vaccine and specific therapy, prevention strategies of COVID-19, and knowledge of proper handwashing practices. Each correctly answered question was assigned a value of 1, while incorrect responses were assigned a value of 0. Multiple responses were allowed in the questions covering domains of knowledge of transmission, signs and symptoms and preventive strategies. Hence, the aggregate score for all knowledge questions, multiple choice inclusive, ranged from 0 to 46 points. Respondents who stated washing between the fingers, the palm, the back of hands, and the back of fingers had 4 points and were categorized to have good knowledge of handwashing.

The modified Bloom's cut-off of 80% was used to determine sufficient knowledge ($\geq 80\%$) in different domains and overall general knowledge on COVID-19.¹⁶ Stratified analysis was done among those with satisfactory knowledge to assess knowledge across each domain. P-value was set at a significant value of < 0.05 .

Ethical Consideration

This study was conducted as a part of the COVID-19 outbreak response in Lagos State. Ethical approval was obtained from the Institutional Review Board of the Nigerian Institute of Medical Research, Yaba, Lagos (Reference number: IRB/20/048). The research protocol was reviewed and approved by members of the COVID-19 Emergency Operations Center responsible for the overall design of the response. Permission was obtained from the NYSC Lagos

State Coordinator. Informed consent was obtained from the respondents who were assured of voluntary participation. All participants were equally assured of the confidentiality of their responses and the opportunity to withdraw at any time without prejudice in line with the Helsinki Declaration.

Results

A total of 817 respondents were interviewed; of them, 41.2% were males. Their mean age was 24±2 years. Overall, 687 (86.3%) were Christians, and 73 (8.9%) had studied a health-related course, including Medicine and Surgery, Biochemistry, Anatomy, Pharmacy, Microbiology, Physiology, Optometry, Radiography, Science Laboratory Technology, Physiotherapy, and Nursing (Table 1).

Among all respondents, 299 (39.7%) had satisfactory knowledge of the mode of spread of COVID-19, while 150 (19.9%) had satisfactory knowledge of COVID-19 symptoms and signs, and 414 (54.9%) displayed satisfactory knowledge regarding COVID-19 preventive measures (Table 2).

Fourteen percent of the respondents had not heard about COVID-19. COVID-19 was reported as a viral infection among 94% of the respondents, 8.7% mentioned that the pandemic was caused by bacteria, while 4.7% and 2.1% affirmed that the disease was a conspiracy and a scam, respectively.

Sixty-five percent of the respondents indicated that COVID-19 infection could be contracted through

Table 1: Socio-demographic characteristics of Youths, Lagos State, March 2020

Socio-demographic characteristics	Number of respondents (%)
Age distribution (n=817)	
<25	599 (73.3)
≥25	218 (26.7)
Sex (n=769)	
Male	317 (41.2)
Female	452 (58.8)
Religion (n=796)	
Christianity	687 (86.3)
Islam	104 (13.1)
Others	5 (0.6)
Course of study (n=817)	
Health-related	73 (8.9)
Non health-related	744 (91.1)

saliva of infected persons. Other common modes of spread indicated by respondents included physical contact (63.8%) and contact with respiratory droplets (54.4%). Another 30.9% of the interviewees indicated that COVID-19 could be spread through contact with beddings of infected persons. The most common signs and symptoms of COVID-19 mentioned by respondents were fever (74%), dry cough (53.8%), generalized feeling of being unwell (42.6%), and difficulty in breathing (40.6%) (Figure 1).

Of various COVID-19 preventive measures, 88.3% and 69.1% of respondents mentioned regular handwashing and respiratory etiquette, respectively. Others stated the adoption of the use of facemasks (61%), physical distancing (60.8%), and regular use of

Table 2: Knowledge score of Youths on COVID-19 across all domains, Lagos State, March 2020

Respondents with satisfactory knowledge across all domains					
Geopolitical Zone	Mode of Spread n (%)	Symptoms and signs n (%)	Preventive measures n (%)	General Knowledge n (%)	Knowledge in all domains n (%)
South-west (n=615)	248 (40.3)	130 (21.1)	346 (56.3)	166 (27.0)	236 (38.4)
South-east (n=80)	28 (35.0)	12 (15.0)	40 (50.0)	12 (15.0)	24 (30.0)
South-south (n=21)	7 (33.3)	3 (14.3)	9 (42.9)	3 (14.3)	5 (23.8)
North-central (n=31)	12 (38.7)	3 (9.7)	16 (51.6)	4 (12.9)	11 (35.5)
North-east (n=2)	1 (50.0)	1 (50.0)	0 (0)	0 (0)	1 (50.0)
North-west (n=5)	3 (50.0)	1 (20.0)	3 (60.0)	2(40)	3 (60.0)
All respondents (n=754)	299 (39.7)	150 (19.9)	414 (54.9)	187(24.8)	280 (37.1)

Table 3: Association between the level of knowledge of Youths on COVID-19 and key characteristics, Lagos State, March 2020

Variable	Satisfactory knowledge n (%)	Poor knowledge n (%)	Odds Ratio (95% CI)	Chi- Square	P value
Gender					
Male	129 (40.7)	188 (59.3)	1.315 (0.9–1.8)	3.279	0.070
Female	155 (34.3)	297 (65.7)			
Age (years)					
<25	218 (36.4)	381 (63.6)	1.027 (0.7–1.4)	0.026	0.872
≥25	78 (35.8)	140 (64.2)			
Course of study					
Health-related	38 (52.1)	35 (47.9)	2.04 (1.25–2.50)	8.689	0.003
Non health-related	258 (34.7)	486 (65.3)			

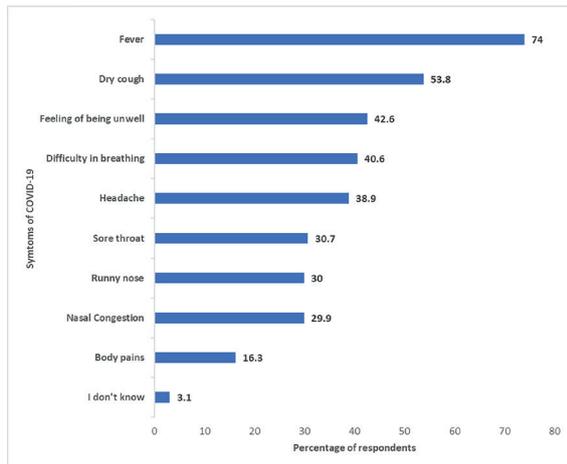


Figure 1: Signs and symptoms of COVID-19 mentioned by Youths in Lagos State, March 2020

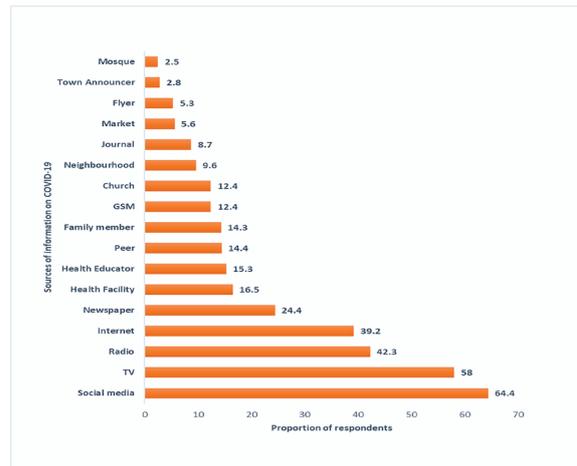


Figure 2: Sources of information on COVID-19 among Youths in Lagos State, March 2020

alcohol-based hand sanitizers (59%). Also, avoiding touch of the eyes, nose, and mouth (52.6%) and suspected COVID-19 positive persons (51.4%) were stated as necessary COVID-19 preventive measures. Those who embraced staying at home were 42.2%.

Respondents who had studied a health-related course were twice likely to have satisfactory knowledge of COVID-19 compared to others (OR=2, 95% CI=1.25-2.5 P=0.003) (Table 3). Overall, 66% of the respondents perceived COVID-19 as a problem in Nigeria, while 61.1% felt they could not contract COVID-19; the majority of them mentioned spiritual and divine protection, and the observation of appropriate precautions as the reason for their perception of the COVID-19 situation.

Among those who did not perceive COVID-19 as a problem in Nigeria, 44% felt there was only a single case in Nigeria, 36.5% thought the disease was being exaggerated, while 25.9% thought it was all a money-making venture. Sixty-eight percent of those who believed COVID-19 was a problem in Nigeria felt it was a deadly disease, 65% felt that COVID-19 was an infectious illness, 52% mentioned that it could create a lot of panic, and 40% mentioned that it had no cure.

Only 37.6% of the respondents thought that the government was doing enough to contain the outbreak, while others thought otherwise.

Respondents who thought the government was not doing enough stated that the government should have closed the international borders and ports of entry; instituted travel restriction to certain countries; provided adequate funding for research; created more awareness; made alcohol-based hand sanitizers available across the country, and established more COVID-19 testing centers.

Seventy-four percent of the respondents mentioned that they would go to a health facility if they developed symptoms of COVID-19; 67.5% would call COVID-19 Help Number. Seventy-five percent of the respondents would advise someone with COVID-19-like symptoms to call the COVID-19 help number, while 69% would advise going to the hospital.

In assessing the knowledge of hand washing, 84.1% of the respondents washed between the fingers; 66.5% washed the palm; 63.5% washed the back of the hand, while 55.6% washed the back of the fingers. Only 289 (35.4%) demonstrated complete knowledge of handwashing. Respondents who had studied a health-related course were six times more likely to have satisfactory knowledge of handwashing compared to others (OR=5.6, 95% CI=3.3-10.0 P<0.0001) (Table 4).

Among the respondents, 129 (15.8%) had, since the onset of COVID-19 in Lagos, stopped hand shaking, hugging, touching the face, eating away from home,

Table 4: Association between the level of knowledge of Youths on handwashing and key characteristics, Lagos State, March 2020

Variable	Satisfactory Knowledge n (%)	Poor knowledge n (%)	Adjusted Odds Ratio (95% CI)	Chi- Square	P value
Gender					
Male	184 (58.0)	133 (42.0)	1.485 (1.1 -2.0)	7.193	0.007
Female	218 (48.2)	234 (51.8)			
Age (years)					
<25	298 (49.7)	301 (50.3)	0.871 (0.6 -1.2)	0.766	0.381
≥25	116 (53.2)	102 (46.8)			
Course of study					
Health-related	61 (83.6)	12 (16.4)	5.618 (3.3-10.0)	34.689	<0.001
Non health-related	353 (47.4)	391 (52.6)			

and attending large gatherings. However, 316 (38.7%) respondents stated that they had started regular handwashing, maintaining a heightened standard of hygiene, frequent use of alcohol-based hand sanitizers and use of facemask.

The most common sources and channels of information concerning COVID-19 was social media (64.4%), television (58%), radio (42.3%), and the internet (39.2%) (Figure 2). Altogether, a total of 631(77.2%) respondents were aware of #COVID-19Lagos, while only 229 (28%) were aware of COVID-19 via the NCDC website (ncdc.gov.ng).

Discussion

In general, the participants in our survey had poor general knowledge about COVID-19, its methods of spread, signs and symptoms and prevention. This study found a high prevalence (75.2%) of poor general knowledge among Nigerian Youth Corps members in Lagos State. This is higher than what was found in Malaysia, Egypt, Ethiopia, Uganda, and Saudi Arabia, all of which reported lower proportion of persons with poor knowledge of COVID-19.¹⁷⁻²⁰ A comparable study conducted in North-Central Nigeria in contrast reported a high prevalence of satisfactory knowledge of COVID-19.²¹ The risky attitudes and adherence to false and superstitious beliefs shown by many during the Ebola crisis in Nigeria in 2014 were underpinned by similar inadequate awareness and poor knowledge.¹⁶ Variations in the results could be due to the use of different knowledge-assessing tools and knowledge-scoring systems. It could also be due to the differences in the timing of data collection. Because COVID-19 cases were initially identified only in Lagos State, many respondents from outside Lagos lacked sufficient information on the COVID-19 pandemic. The proximity of Lagos State to other states in South-West Nigeria could have accounted for the better knowledge of COVID-19 among respondents from the South-west geopolitical zone.

Findings from other parts of the globe indicated that community members with good knowledge of the mode of spread of COVID-19 infection are more likely to adopt appropriate measures to curb the spread of the infection.²²⁻²⁴ Contrary to established facts in these studies, more respondents in our survey mentioned contact with the saliva of the infected persons as a more frequent mode of spread. The results of the investigation showed a good level of knowledge among youths who had studied health-related courses than in those who studied non-health-related courses. These findings are consistent with the results of other studies recently done among healthcare students and those studying life sciences courses.^{25, 26} The consonance between these findings express the need for educational campaigns among

individuals studying non-health-related courses. This will equip them with a better knowledge of the practice of handwashing in combatting the spread of COVID-19 and other infectious diseases.

We found that only a third of the respondents in this study had complete knowledge of handwashing practice. This is lower than the findings of a Malaysian and two Chinese surveys in which 87.8%, 42% and 45% of the respondents had complete knowledge of handwashing, respectively.^{18, 27, 28} The better knowledge of handwashing among the Chinese population could have been due to enhanced information on COVID-19 prevention among them, considering that the pandemic originated in China. In the current pandemic, constant hand hygiene accompanied by mask-wearing is the approach proven to slow the exponential spread of SARS-CoV-2; hence, the major implication of a poor practice of hand hygiene against COVID-19 is a poor infection control and prevention.²⁹ Appreciation of the effectiveness of hand hygiene will also lead to the possibility of its adoption as a lifelong behavior.³⁰

Among the respondents, 64.4% identified the social media as their main source of information concerning COVID-19. The observed proportion on the social media as a main source of COVID-19 information is in the same line with the findings from Nigeria and other parts of the globe.²² This result is underpinned by a recent poll in Nigeria that showed that 70% of all young people in the age range of 18-35 years had access to the Internet compared to 58% for those in the age range of 36-60 years.³¹ Current statistics reveal that 83% of Nigerians use mobile phone connections, 42% use the Internet, while 13% are active social media users.³² In a radical departure from the findings of this research, another Nigerian study found the mass media more important as sources of information concerning COVID-19 than the social media.³³ Information targeting the youths would be better channeled through Facebook, WhatsApp, Twitter, Instagram, etc. The popularity of social media among the youths accounted for the high COVID-19 awareness level of respondents in Lagos within three weeks of Nigeria's index case of COVID-19. Mismanagement of information through the media has been adduced as one of the reasons for the sheer spatial expansion of COVID-19 in China in the early days.³⁴

Although our study found an average level of knowledge on the preventive measures for COVID-19, it is rather surprising that this did not translate into a positive precautionary attitude in its entirety as only 38.7% of the respondents mentioned that they had improved their hand hygiene and worn facemasks. This stands in contradiction to two studies carried out in Nigeria and Malaysia at latter periods of the COVID-19 pandemic, which reported a general willingness among the respondents to ensure behavioral changes

in the face of the pandemic.^{18,22} Our findings are also in contrast to another study conducted in Nigeria which reported a willingness for the uptake of COVID-19 preventive measures. The rather poor COVID-19-related attitudinal and behavioral changes among respondents in the present study could be due to the limited scope and awareness of the disease in the country at the time of this study. This finding thus highlights the need for the commencement of evidence-based public health information on the prevention of COVID-19 and other illnesses prior to the detection of the COVID-19 outbreak in Nigeria.

Limitation of the Study

This study was conducted amongst youths below 30 years; therefore, the findings may not be representative of the true state of the general Nigerian population. Also, reliable comparison could not be done between respondents from different zones because few respondents hailed from the northern geopolitical zones. The findings obtained from this study are, however, important in describing COVID-19 knowledge and perceptions among Nigerian youths from different geopolitical zones on COVID-19 during the first one month of the COVID-19 outbreak in Nigeria.

Conclusion

Nigerian youths who had been currently enrolled in the National Youth Service Corps had poor knowledge on the mode of spread, signs and symptom and prevention of COVID-19 within the first three weeks of COVID-19 in Nigeria. The study highlights the need for maximal utilization of both social media and the mainstream mass media in disseminating health education information, correcting fake news and misconceptions. Also, health promotion strategies should be organized for all youths, especially among those who have had no previous education in the health and allied courses. Health policies need to be increasingly focused among the youths who could serve as active agents in communicating evidence-based COVID-19 information to other members of the population.

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Conflict of Interest: None declared.

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