

# Perceived accessibility, and adequacy of COVID-19 related information in Nigeria

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## Abstract

Information on COVID-19 has evolved and blended with fake news, which the public, unfortunately, has to make an individual decision on how to use. As a result, access to authentic and adequate health information on COVID-19 is crucial for curbing the ongoing pandemic. The study was aimed at identifying sources of information on COVID-19 commonly used by adult Nigerian residents; determine the adequacy of information received; determine the accessibility of information on COVID-19 among Nigerians, and explore the relationship between location and access to information. An adapted version of the World Health Organization's (WHO) COVID-19 behavioral insight questionnaire was used to collect data from 1,039 adult residents in Nigeria across the geopolitical zones through an online survey. Analysis was done using SPSS version 24. Logistic regression was used to examine if location predicts access to information. Social media was identified as the major source of information among Nigerians. The top three accessible sources included social media 807(77.7%), television 546 (52.6%), and WHO websites 340 (32.7%). It was also found that they perceived information received on COVID-19 as adequate. The logistic regression model of the location did not predict access to COVID-19 information ( $p < 0.05$ ; 95% CI). Health authorities like the WHO, the ministry of health, CDC should optimize social media for better health information coverage.

## Introduction

The current COVID-19 pandemic is one of the severest threats to human existence and remains a public health concern. The infection which first struck in China in 2019<sup>1</sup> has now spread across affecting many nations of the globe.<sup>2</sup> Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus named SARS-CoV-2.<sup>3</sup> Its cardinal symptoms include hyperpyrexia, newly developed continuous cough, and a loss or change to a sense of smell or taste. Although less virulent than influenza virus,<sup>4</sup> its danger lies in the lack of memory cells in the human immune system to stimulate an adequate and timely immune response to tackle the infection of COVID-19 early enough; the result is a cascade of severe reactions, some with critically poor outcomes.<sup>5</sup> Another disturbing characteristic of the virus is its rapid rate of transmission,<sup>3</sup> evident in the present pandemic.

Globally, COVID-19 has claimed as many as 3,768,987 lives from the human population with 174,439,909 confirmed cases as of the 10<sup>th</sup> of June, 2021. In European nations where the pandemic struck hardest, confirmed cases have attained a high of 54,828,356 while in Africa, it has spiked to 3,624,683 cases and 89,238 deaths.<sup>6</sup> In Nigeria, 167,027 cases have been confirmed cases and 2,117 deaths recorded so far. However, there have been assertions that the above statistics may not be a true representation of Nigeria due to unreported cases.

As anticipated, research efforts to understand the virus and curtail the disease spread are moving at a dramatic pace alongside the spread of speculations.<sup>7</sup> Numerous claims and controversial broadcasts in social media about treatment protocol, a greater susceptibility of certain groups than others, dispersion capacity of the virus, virus mutations, and even the mode of transmission<sup>7,8</sup> are just a few of the news about COVID-19 circulating the media leaving some people more perplexed than informed in the process. Recently, several firms have produced vaccines, which on its own is controversial as scientists are divided on its potency in protecting people from the disease leaving the public in doubt.<sup>9</sup> Amidst the influx of information from many sources, it is important to understand what people have found acceptable and the platforms they rely on for information on COVID-19. While there could be confusion about what information to believe and adopt, in times like this, it is expected that people will resort to organizations like the World Health Organization (WHO), the

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Nigeria Center for Disease Control (NCDC), *etc.* for their health information but this has not been ascertained.

In a risk modeling that contextualized risk to COVID-19 for different countries, Nigeria was rated as vulnerable based on its population density and capacity to control the outbreak.<sup>10</sup> In addition, some argued that Nigeria does not have a robust national information management system in terms of preparedness and response to COVID-19.<sup>11</sup> The above stance suggests the exigency of the situation. To a great extent, accurate and adequate information is imperative to making healthy choices and of course in alleviating the burden of the pestilence. In support of the above view, the WHO advised that the best way to prevent and slow down transmission,<sup>3</sup> is to be well informed about the COVID-19 virus, the disease it causes, and how it spreads. Having a reliable source for health information is vital to building a strong foundation of knowledge.<sup>12</sup> Therefore, among other needs, information regarding transmission, the recent development in clinical trials, preventive behaviors, up-to-date statistics, possible cures and advice on where to get assistance on issues of COVID-19, and other guidelines should be made accessible to the public. Ideally, it should allow all users to easily orientate themselves within the content; and be effectively perceived and understood.<sup>13</sup>

Although there are regular updates from health authorities such as WHO, NCDC, and the Ministry of Health, it is not clear whether people access this information with ease, or the available information answers the questions the public seeks to understand to make their health decisions. Besides, there is no existing data on the information needs of the Nigerian populace neither is it guaranteed that available information is adequate. Understanding how the public access COVID-19 related information will inform strategies for communicating targeted information through people's medium of choice.

The present study was embarked on in response to WHO's proposal for countries to develop insights into COVID-19 health behaviors of which accessibility, adequacy, and sources of information are elemental. The study intends to identify the preferred sources of information, how accessible information on COVID-19 currently is in the country and the adequacy of information obtained. Such pioneer study is essential for unraveling contextually relevant information needs of the populace and their preferred medium of communication. It will also create the opportunity to initiate interventions tailored to peoples' information needs and in the long run address some mis-

conceptions surrounding COVID-19.

## Materials and methods

### Study setting

Nigeria, known as the Federal Republic of Nigeria, is a sovereign country comprising 36 states with Abuja as its capital. It is located in West Africa bordered by Niger in the north, Chad in the northeast, Cameroon in the east, and Benin in the west. Its Southern coast is on the Gulf of Guinea in the Atlantic Ocean. Nigeria is inhabited by more than 250 ethnic groups with over 500 distinct languages all identifying with a wide variety of cultures.<sup>14</sup> The three largest ethnic groups are the Hausa, Yoruba, and Igbo, together accounting for more than 70% of the population, while the Edo, Ijaw, Fulbe, Kanuri, Urhobo-Isoko, Ibibio, Epira, Nupe, Gbagyi, Jukun, Igala, Idoma, and Tiv comprise between 25 and 30%; other minorities make up the remaining 5%.<sup>15</sup>

### Study design

The study was conducted in Nigeria and the cross-sectional descriptive survey method was adopted. The design was deemed most suitable for the research questions and aim of the study.

### Sample size

A sample size of  $n=1000$  was recommended by the WHO, for a 95% confidence level, a good estimate of the margin of error is given by  $1/\sqrt{N}$ , where  $N$  is the number of participants or sample size. So, 1000 as a sample gives a margin error of less than 0.005.<sup>16</sup> Therefore 1000 is considered adequate.

### Sampling method

Quota sampling was employed to ensure that the six geopolitical zones are represented. This method allows the researcher to stratify the population of study into groups (in this case geopolitical zones) and to meet the quota, samples are selected from groups.<sup>17</sup>

### Data collection

The instrument for data collection was an adapted version of the WHO's COVID-19 behavioural insight questionnaire. The questionnaire includes five domains: socio-demographics (6 items), sources of information (13 items), adequacy of COVID-19 information (15 items), and

accessibility to information (3 items). The original instrument has more than three domains but only three mentioned were

adopted as they were more specific to the study title.

The original instrument was prepared by Professor Betsch at the University of Erfurt, Germany, and subsequently reviewed by a group of experts, representing leading global experts in behavioural insights research for health and in developing and validating survey tools. Post adaptation, the research instrument was further reviewed by two experts in research and epidemiology who evaluated the relevance of the content and the clarity of statements.

The reliability of the original instrument was established through six rounds of data collection in Germany. A pre-test of the adapted instrument will be conducted to get the reliability of the adapted version using 10% of the sample size which is 100. One hundred (100) copies of the questionnaire will be distributed to different respondents representing various age groups, gender, and setting (urban/rural). Guttman's split-half model of test internal consistency yielded a reliability of 0.83.

Data were collected through a cross-sectional, internet-based survey using Google Forms disseminated through Facebook, WhatsApp, and emails. Before starting the survey, participants were shown an information sheet, which presented the details of the project, and the anonymous nature of participation.

### Data analysis

Data obtained were transferred from Google form to Excel sheets and finally analyzed using SPSS (Statistical Package for Social Sciences) version 24. Only completed surveys were considered during data analysis. Frequencies and percentages were used to analyze the socio-demographic information, adequacy of information on COVID-19, and sources of information whereas information accessibility was analysed using means and standard deviation. Logistic regression was used to test if the location (rural/urban) predicts accessibility to information on COVID at a 0.05 level of significance.

## Results

The mean age of the respondents is  $31.0 \pm 10.20$  and out of 1039 respondents, 411 (49.6%) were male and 628 (60.4%) females. All except one had some level of formal education. The majority, 911 (87.7%) had tertiary. Five hundred and forty-two (52.2%) claimed to be health professionals. Four hundred and seventy (45.2%) of the respondents were from the East, 135 (13.0%) from the West, 232

(22.3%) from the North, and 202 (19.4%) reside in Southern Nigeria (Table 1).

### Sources of information on COVID-19 commonly used in Nigeria

The majority of the study participants, 807 (77.7) obtained information on COVID-19 from social media. In addition, television 546 (52.6%), WHO, websites 340 (32.7%), health care workers 378 (36.4%) and random websites 320 (30.8) were also frequently visited for information on COVID-19. These are followed by the National Center for Disease Prevention and Control sources 286 (27.7%), radio (26.9%), newspaper 250 (24.1%). Sources least used are those related to Celebrities and social influencers 13 (1.3%) and COVID-19 hotlines 163 (15.7%) (Table 2).

### Adequacy of information received by adult residents in Nigeria

Among the sources reported getting sufficient information were social media 480 (46.2%), television 427 (40.1%) through health workers 442 (42.5%), National COVID-19 information website 421 (40.5%), and WHO 395 (38.0%; Table 3).

### The accessibility of information on COVID-19 among Nigerians

With a mean response of  $3.8 \pm 1.0$ , the majority of participants find it easy to access information on COVID-19 where 5 is 'very easy'. Also, participants indicated that they understood information available to them on COVID-19 with a mean response of  $4.0 \pm 1.0$ .

The response on whether participants believe they were being deprived of information regarding COVID-19 is divided. Mean response of  $3.0 \pm 1.5$  shows that more than half the participants felt that they are being deprived of information and the rest did not feel the same (Table 4).

Logistic regression was performed to ascertain the effect of location on the accessibility of information on COVID-19. The logistic regression model was not statistically significant,  $X^2(1)=5.72$ ,  $p=0.07(>0.05)$ . The model only explains 0.8% (Nagelkerke  $R^2$ ) of the variance in accessibility. Regarding the ease of assimilating information accessed, the logistic regression model was not statistically significant,  $X^2(1)=1.747$ ,  $p=0.407(>0.05)$ . The model only explains 0.3% (Nagelkerke  $R^2$ ) of the variance in accessibility. People in urban areas are 0.3% more likely to have access to information on COVID than people in rural areas (Table 5).

## Discussion

The authenticity of information largely depends on its source. With the influx of conspiracy theories related to COVID-19, made easy by technology, it is pertinent that information reaching the populace is sieved and made available through a trusted channel. While there is no absolute control over information dissemination due to the influence of social media on information sharing, the trusted authorities must assume their responsibilities as authentic sources.<sup>18</sup> As identified by the participants, social media is marginally at the top of the list of sources; 45% and 21% more sourced than WHO sites and television respectively. This

is an indication of the power and role of social media on the information system which should be leveraged for better health information outcomes. About 3 billion people across the world (approximately 40% of the world's population) use social media (University of the People, 2020). Presently, social media is competing with the mainstream media as can be seen in the results, television is the second most sourced by Nigerians. It is important, therefore, that organisations like the WHO, NCDC, the Ministry of Health, *etc.* maximise their social media handles to play their relevant roles. Although they have their websites, the current study shows that Nigerians don't use them as much as they use social media.

**Table 1. Sociodemographic information. N=1039.**

N	Items	Frequency	Percentage
1	Age		
	18-27	464	44.7
	28-37	360	34.6
	38-47	118	11.4
	48-57	72	6.9
	58-67	21	2.0
	>67	4	0.4
	Minimum	18.0	
2	Maximum	73.0	
	Mean±SD	31.0±10.20	
	Sex		
	Male	411	39.6
	Female	628	60.4
3	Level of education		
	No formal education	1	0.1
	Primary education	39	3.8
	Secondary education	88	8.5
	Tertiary	911	87.7
5	Where do you live?		
	Rural area	210	20.2
	Urban area	827	79.6
6	East	470	45.2
	West	135	13.0
	North	232	22.3
	South	202	19.4

**Table 2. Sources of information on COVID-19.**

From which sources do you get information on COVID-19	Frequency	Percentage
Social media	807	77.7
WHO	340	32.7
NCDC	286	27.5
Radio	279	26.9
COVID-19 hotlines	163	15.7
Church leaders	215	20.7
Colleagues	21	2.0s
Celebrities and social influencers	13	1.3
Television	546	52.6
Newspaper	250	24.1
Healthcare workers	378	36.4
Random websites	320	30.8

That draws attention to the qualities that make social media a preferred channel: interactivity, informativeness, and entertainment.<sup>19</sup> Social media is easy to access, and information is made interesting<sup>20</sup> and this is what the global organisations should adopt to provide health information to a fast-paced society.

In a global study that attempted to understand how young adults engage with technology in this pandemic, it was found that 43.9% of respondents reported they would likely share “scientific” content on their social media.<sup>20</sup> So, the health organisations can well make use of this medium. Although a study on the impact of social media on guideline dissemination in the United States showed that dissemination via social media is not more beneficial than

print-, email-, and other internet-based sources.<sup>21</sup>

In this study, information adequacy was measured based on a source’s ability to answer the questions people seek and how sufficient the answers are. On this note, the participants have identified social media, television, health worker, Ministry of Health, WHO websites, and COVID-19 hotlines as sources where they obtained sufficient information on COVID-19. Again, social media has the highest mean. While this is comforting that people have identified a popular source on which dissemination is quite easy, it is disconcerting because authentic information competes with fallacies on social media. Although it has been shown that most people can identify fake information when they see one,<sup>20</sup> it still has

some level of damage to people’s perception of information. It is a good sign that people do not feel deprived of information on COVID-19 and should be encouraged.

Since the pandemic struck, information on COVID-19 has been changing rapidly.<sup>22</sup> The ability of the public to keep pace with such changes depends on accessibility. Owing to the expediency of possessing reliable information to enable people to make healthier choices, it is pertinent that the populace does not struggle to access the information they need. The study intended to ascertain how people with a disability manage with accessing information, however, no response was returned from persons with disability (one of the items asked: do you have a physical disability?). It is worthy of note that people reported under-

**Table 3. Adequacy of information on COVID-19.**

How sufficient is information on COVID-19 received from the sources you identified above? (from your preferred sources of information)	Not at all sufficient	2	3	4	Very sufficient	Mean±SD
Television	57(5.5)	88(8.5)	212(20.4)	265(25.5)	427(40.1)	3.8±1.19
Newspapers	382(36.8)	225(21.7)	204(19.6)	118(11.4)	107(10.3)	2.3±1.34
Health workers	71(6.8)	89(8.6)	180(17.3)	257(24.7)	442(42.5)	3.8±1.24
Social media	44(4.2)	75(7.2)	173(16.7)	267(25.7)	480(46.2)	4.0±1.13
Radio	100(9.6)	144(23.9)	321(30.9)	225(21.7)	249(24.0)	3.4±1.24
Ministry of health	168(16.2)	155(14.9)	225(21.7)		267(25.9)	3.3±1.40
Institute of Public Health/Center for Disease	245(23.6)	312(30.0)	199(19.2)	140(13.5)	143(13.8)	2.6±1.34
Celebrities and social media influencers	450(43.3)	213(20.5)	165(15.9)	103(9.9)	108(10.4)	2.2±1.36
World Health Organization (WHO)	56(5.4)	89(8.6)	221(21.3)	278(26.8)	395(38.0)	3.8±1.18
COVID-19 Hotlines	321(30.9)	284(27.3)	149(14.3)	112(10.8)	173(16.7)	2.5±1.44
National COVID-19 information website	77(7.4)	116(11.2)	166(16.0)	259(24.9)	421(40.5)	3.8±1.28
Churches	83(8.0)	115(11.1)	202(19.4)	155(14.9)	193(18.6)	3.3±1.31
Colleagues	69(6.6)	110(10.6)	208(20.0)	189(18.2)	179(17.2)	3.4±1.24
Family and friends	82(7.9)	125(12.0)	215(20.7)	149(14.3)	185(17.8)	3.3±1.29
Random websites on the internet	109(10.5)	130(12.5)	213(20.5)	150(14.4)	152(14.6)	3.1±1.31
Grand mean=3.3±0.83						

**Table 4. Ease of access to information on COVID-19.**

Questions	Most difficult	2	3	4	Very easy
How easy is it for you to access the information you need on COVID-19? Mean±SD 3.8±1.0	30(2.9)	67(6.4)	266(25.6)	290(27.9)	386(37.2)
How easily do you understand the information available to you? Mean±SD 4.0±1.0	25(2.4)	72(6.9)	190(18.3)	332(32.0)	420(40.4)
	Not at all	2	3	4	Very much
Do you feel you are deprived of what you should know? Mean±SD=3.0±1.5	247(23.8)	141(13.6)	202(19.4)	163(15.7)	286(27.5)

**Table 5. Linear regression to determine if the location (rural/ urban) predicts accessibility to information on COVID-19.**

Variables	R <sup>2</sup>	X <sup>2</sup>	df	Sig.
How easy is it for you to access the information you need on COVID-19?	0.008	5.72	1	0.07
How easily do you understand the information available to you?	0.003	1.747	1	0.407

standing information available to them and have no feeling of being deprived of what they should know. So far, no study has explored how people access information on COVID-19. Although a study has examined the accessibility features on the WHO website considering people with disability.<sup>18</sup>

A logistic regression model run to examine whether participants' location (urban or rural area) predicted their access to information, showed that location did not influence access to information in Nigeria. In essence, information was accessible to everyone irrespective of their location in the country. This could be explained by a high reliance on internet-based sources such as social media, WHO websites, *etc.* It is an advantage that information on COVID-19 is widespread and can be accessed by both rural and urban dwellers.

### Limitations

The present study shows that respondents were mostly young and middle adults showing that the elderly did not participate well in the survey. Being an online survey, people who are limited in the use of smart-phones or do not have access to strong network signals may have been technically excluded. The study did not ascertain which platform on social media people preferred most. Ideally, accessibility should recognize the people with disabilities such as being deaf, dumb and blind, none of the respondents reported having a disability. So, care should be taken when generalising information from this study.

### Conclusions

Social media is a major source of information and health authorities should optimize the platforms on social media to ensure useful information is conveyed to the populace. They should also find ways to engage the public to actively participate in sharing useful information on their social media to challenge unverified sources.

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