Research Report

Misinformation about COVID-19 among internet users in Nigeria: Tools to effective public awareness, prevention and control.

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Abstract - Since the World Health Organization announced in early 2020 that the COVID-19 pandemic was accompanied by an infodemic of misinformation, we are left with the question of public perspective-driven compliance to safety measures. This preliminary study evaluated some claims about COVID-19 including vaccine conspiracy theories among Nigerians with factors influencing it. An online structured questionnaire was designed to collect one-time data from voluntary participants. Demographically, major respondents were; bachelor: 284 (75.1%), age-group between 18 and 30 years: 312 (82.5%) and male: 207 (54.8%). Those that do not know the range of infected population in the country accounted for 260 (72.2%). In opinion, 57 (15.1%) supported that SARS-COV-2 cannot survive the warm climate of African continent, and 41 (10.8%) believed the hoax theory about COVID-19. Unapproved herbal medication was reported to be used by 251 (66.4%) of the respondents while 92 (24.3%) made use of Chloroquine. For transmission related conceptions, 52 (13.8%) indicated that an asymptomatic carrier cannot spread the virus to another healthy individual. About half of the respondents 182 (48.1%) suspected that SARS-COV-2 was an engineered virus and 173 (45.8%) supported that there are underlying negative intentions on the clinical trial of COVID-19 vaccines on Africans. There is a weak correlation between the demographic data of the respondents and the claims. The level of misconception Nigerians have about COVID-19 is a major concern. Thus, it is imperative to continuously engage in community awareness and education using proven facts about the virus, and its available prophylaxis measures in order to avoid the dangers that are associated with the prevailing misconceptions.

Keywords: Misinformation, Vaccine conspiracy, COVID-19, Compliance.

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Introduction

Misinformation has been said by the BBC to have huge consequences on public health (BBC News 2021) and public perspective on contagions like the ravaging COVID-19 had also been reported to ultimately influenced the level of compliance to safety measures (Bridgman *et al*. 2020; Nsoesie & Oladeji 2020). Inference can also be made from the case of Ebola outbreak in 2014 when members of the community trusted in fate to put an end to the disease and consequently recorded declined commitment, compliance and reported cases (Yusuf *et al.* 2014). One will think that it is well enough to curb community transmission when governments of most countries, private and public enterprises are providing basic regulatory measures such as running water with soap, or alcohol-based hand sanitizers in strategic public places (ITUC-AFRICA 2021), but compliance is still dependent on factors such as enforcement, political interference, education and various other factors related to the public (Sandada & Kambarami 2016). Compliance itself is a transferrable psychological practice especially when the projecting personnel that breach standard is of higher social, religious, or educational status (LUMEN 2021b). As previously mentioned by Ogbonda *et al.* (2020) of the effectiveness and continuity of control measures to infection can only be met when the users are thereby proactive, thus, public health departments should lay emphasis on correcting or emphasizing the general perspective of the public on issue related to their health as COVID-19.

In addition to reduced compliance, other characteristics of misinformed public include; fear, stigma, racism, and threat (Smith *et al.* 2020) which bread paradigm, and prejudice against intended aids and support from concerned third parties. However, if the level of awareness of the public matches up with preventive measures put in place they would appreciate rather than complaining about the practices just as the case of the EBOLA endemic (Yusuf *et al.* 2014). One of the factors influencing misinformation is the social group, which immensely influences has impact on compliance (Lumen 2021). However, reduced occupational stress, encouragement, education and reminder play a major role in ensuring compliance with safety measures. Evidence of significant predictors such as gender, and year of professional experience to compliance level of health workers in North-Eastern Nigeria are to be reemphasized in the case of the current pandemic (Abdulraheem *et al.* 2012). Socio-demographic groups have also been suggested to

influence misinformation by certain studies (Barthel *et al*. 2016). These factors are important in predicting transmission of the virus through carrying over of enormous misconceptions. It has been shown also that the connection between misinformation and real-time social behavior in relation to the speed of dissemination of such misinformation are huge challenges while putting effort to curtail the spread of infectious diseases (Krishna Kumar & Geethakumari 2014). There is therefore the need to investigate factors responsible for community transmission of COVID-19 in Nigeria since its provenance data from the National Center for Disease Control (NCDC) has been on geometric decline from 100% in February, 60% in March, 11% in April until it remains stable at 2% since May 2020 (NCDC 2021).

This preliminary study is based on survey questions has the aim to identify the major misconception about COVID-19, SARS-CoV-2, the likely correlation between misinformation and demographic information, and the widespread of vaccine conspiracy concepts in Nigeria.

Methods

Electronic internet-based survey with predefined questions was designed to collect one-time data from the eleventh of May 2020 to second day of September 2020 from each willing participants in this study after filling a consent page preceding the research question. A respondent was given only a chance to response to the form. Questionnaire was made available to internet users in Nigeria and others that could be reached in persons through link. The visibility and dissemination of the questionnaire to the e-participants were aided by common social media and professional platforms including Facebook, Twitter handle, WhatsApp, and LinkedIn. Four social media marketers were recruited to disseminate the link to willing participants, with higher response from the WhatsApp users. Participants were of age eighteen (18) years and above and those who indicated age below this were automatically excluded from partaking in the survey. The sample size is based on a significant difference of 95%, 5% of margin error, and a population of one hundred and thirty-four million (134,000,000) internet users in Nigeria (Nigeria: number of internet users 2023 | Statista 2020). The expected sample size is, therefore, three hundred and eighty-five (385) ("Sample Size Calculator by Raosoft Inc." 2020). Participation in the

study was not influenced by any form of incentive. Denial of consent at the beginning of participation by intending participants was designed to lead to an automatic exclusion from the survey. Descriptive and inferential data analysis was done using SPSS version 21. Correlation Analysis using Pearson Product-Moment Correlation was used to measure the significance of correlation between the assumptions and demographic data.

Results and analysis

Responses of the participants were categorized into four groups; demographic, knowledge-based, attitudes and assumptions towards prevention and cure, the suspicious claim about the virus, its vaccine and the COVID-19 pandemic as a whole.

Table 1: Demographical data

Variables	Options	Frequency	Percentage (%)
Gender	Male	207	54.8
	Female	171	45.2
Age group	18-30	312	82.5
	31-40	50	13.2
	41-50	8	2.1
	51-60	5	1.3
	71-80	1	0.3
	81-90	2	0.5
Education level	First Leaving Certificate	3	0.8
	SSCE	29	7.7
	BSC	284	75.1
	MSC	49	13.0
	PHD	13	3.4
Field of profession	Student	107	28.3
	Education	83	22
	Business	34	9
	Civil Servant	36	9.5
	Unemployed	42	11.1
	Private Sector	76	20.1
Current job related to taking care of the sick	No	291	77
	Yes	86	22.8
	I don't know	1	0.3

The descriptive analysis of the demographic data as shown in Table **1** revealed that dominant groups among the 378 respondents were bachelor's degree holders 284 (75.1%), of age group 18 – 30 years 312 (82.5%) with two (2) respondents in the age group 81 – 90 years, students 107 (28.3%), male 207 (54.8%), and were those whose professions are not related to taking care of the sick 291 (77%). Students and educational related professions contributed to 190 (50.3%) of the respondents. While data obtained for the age group skewed towards the right and the education level was a normal distribution data set.

Common misconceptions

There is gap in the awareness of the respondent in the each of the key areas questioned. This gap ranged from 26.2% to 99.2%.

Table **2**: Misconception on SARS-COV-2 and COVID-19.

Knowledge based questions	Options	Frequency	Percentage (%)	Knowledge Percentage
Where did the current covid-19 pandemic originate from?	Others	3	0.8	99.2
	Wuhan	375	99.2	
What Part of the body does Covid-19 affects most?	Others	13	3.5	96.6
	Respiratory Tract	365	96.6	
Is SARS-COV-2 related to MERS-CoV and SARS-CoV?	Others	130	34.4	65.5
	Yes	248	65.6	
Covid-19 only affect elderly persons	No	358	94.7	94.7
	Others	20	5.3	
Covid-19 does not affect Africans	No	369	97.6	97.6
	Yes	9	2.4	
Covid-19 is a conspiracy/Hoax theory. It does not exist	No	337	89.2	89.2
	Others	41	10.9	
Covid-19 is a disease of the rich	No	362	95.8	95.8
	Yes	13	3.4	
Covid-19 virus cannot survive the warm climate in African countries	No	321	84.9	84.9
	Yes	57	15.1	
What is the average fatality rate of Covid-19 worldwide?	1-8%	99	26.2	26.2
	Others	279	73.9	
How many people had been affected worldwide as at August 2020?	Others	260	68.0	27.8
	Correct Value	105	27.8	
Which of these is the major symptoms of Covid-19?	Others	112	29.6	70.4
	Difficulty in breathing	266	70.4	
Average Knowledge and Awareness Percentage				77.1%

As shown in Table **2** above, the knowledge of the respondents on SARS-COV-2 and COVID-19 was 99.2% concerning its origin, 96.6% on anatomical target in host age during infection, 94.7% on influence of geographical distribution on transmission of the virus, and 95.8% on the influence of economic status influencing susceptibility to COVID-19; whereas knowledge about the degree of fatality of the virus was misrepresented by the respondents with accurate response of 26.2%. Only 27.8% of the respondents knew the actual range of the infected population in the world. Of the respondents, 57 (15.1%) indicated that SARS-COV-2 cannot survive the warm climate in African continent, and 41 (10.8%) assumed that COVID-19 does not exist. About 70.4% rightly indicated the major symptoms of COVID-19.

Prevention and Cure of COVID-19

As shown in figure **1** below, about one-third (30.8%) of the respondents reported that effective drug had been developed and approved to combat COVID-19, while most (66.4%) indicated their choice to use unapproved herbal medication that is advocated to cure the disease. A perception of sole spiritual remedy to COVID-19 was reported among 16.1% of the respondents, and 24.3% indicated that anyone of Chloroquine, Goya oil, or antibiotics will cure COVID-19. Gaggling or steaming herbal concoction was reported among 15.6% to be effective to cure the disease at once. Spraying of alcohol all over the body was also indicated as effective remedy for COVID-19 by 16% of the respondents while 13.8% indicated that asymptomatic carrier cannot spread the virus to other healthy person. However, it was mostly accepted by the majority of the respondents that hand washing (96.3%), and use of alcohol based hand sanitizer (97.1%) are effective ways of preventing Covid-19.
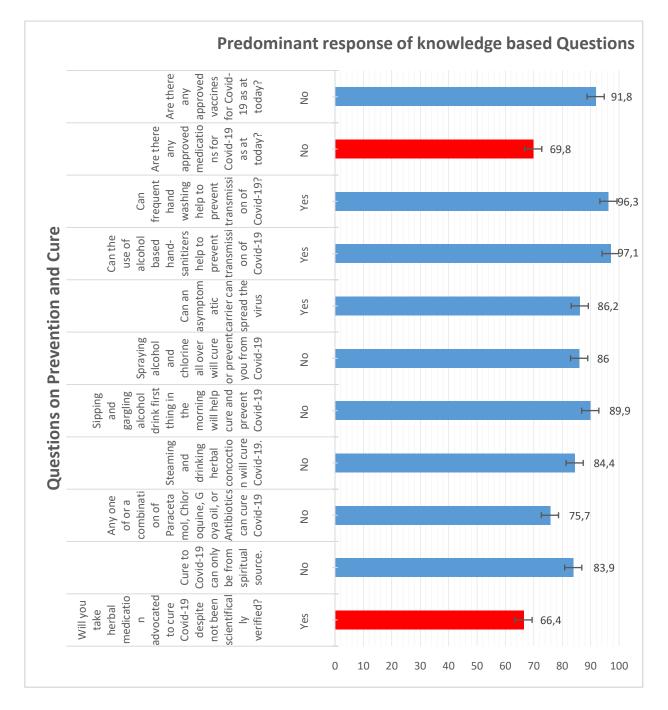
Fig. 1: Predominant Responses on Prevention and Cure of COVID-19.

Suspicious Claims on COVID-19

These are suspicions that are believed to be true concerning COVID-19 pandemic by the respondents. About 21.7% of the responded that vaccination against COVID-19 accompanied implantation of microchips into individual that takes it. While 73 (19.3%)

claimed that the virus was initially infused in the masks and other protective equipment donated to African countries. About half of the respondents 182 (48.1%) claimed that SARS-COV-2 is an engineered virus developed by some world powers with the intention to depopulate the world. Very few 50 (13.2%) suspected that the first global lock-down in year 2020 was indirectly enforced to give room for installation of the proposed 5G network. Also, about half 173 (45.8%) of the respondents suspected that there are underlying negative intentions on the clinical trial of drugs and vaccines for COVID-19 in African continent.

Table 3: Suspicious Claims on Covid-19 in Nigeria

Claims	Item	Frequency	Percentage (%)
The use of newly developed Covid-19 vaccines will accompany implantation of microchips.	No	261	69
	Yes	82	21.7
	I don't know	35	9.3
	Total	378	100
Mask and protective equipment donated to African countries are pre-infected with Covid-19 virus from China	No	257	68
	Yes	73	19.3
	I don't know	48	12.7
	Total	378	100
Covid-19 is a disease caused by an 'engineered virus' by a group of world power in order to depopulate the world.	No	196	51.9
	Yes	182	48.1
	Total	378	100
The global lock-down was enforced to enable the installation of the 5G network worldwide	No	305	80.7
	Yes	50	13.2
	I don't know	23	6.1
	Total	378	100
There are underlying negative intentions on the clinical trial of drugs and vaccines for Covid-19 in African continents?	No	171	45.2
	Yes	173	45.8
	I don't know	34	9.0
	Total	378	100
Do you think that there are close connections between Covid-19 and the 5G network advocated?	No	313	82.8
	Yes	65	17.2
	Total	378	100
Can you allow Scientists to prioritize the administration of Covid-19 vaccine for the elderly and children instead for the young adults?	No	174	46
	Yes	158	41.8
	Total	378	100
Do you believe that some countries have the cure for the Covid-19, but wait till is it widespread for higher monetary gain?	No	247	65.3
	Yes	131	34.7
	Total	378	100

With the awareness of available prophylaxis against COVID-19, 158 (41.8%) of the respondents indicated that they will not prioritize the administration of COVID-19 vaccine for the elderly and children instead for the young adults. Also, about one-third 131 (34.7%) indicated that some countries have the cure to COVID-19, but wait till is it widespread before they reveal it for higher monetary gain.

Table **4**: Correlation Analysis between misconception and demographic data.

Demographic data and misconception correlation		
Age group	Pearson Correlation	.032
	Sig. (2-tailed)	.537
	N	378
Education level	Pearson Correlation	.041
	Sig. (2-tailed)	.427
	N	378
Field of Profession	Pearson Correlation	.060
	Sig. (2-tailed)	.245
	N	378
**. Correlation is significant at the 0.01 level (2-tailed).		
*. Correlation is significant at the 0.05 level (2-tailed).		

The Pearson correlation coefficient of the demographic data and misinformation obtained in Table **4** above are all greater than zero (0) and positive for the age (0.032), educational level (0.041), and field of profession of the participants (0.060). Therefore a weak association exists between the misconceptions and the demographic data of the participants.

Discussion and Conclusion

Just as serology is important to evaluate the degree of herds immunity that had been achieved by a community over some period of time, it is important to assess the knowledge, and assumptions of the public on COVID-19. This is important because of the connection between the knowledge of the public and their compliance. From this study, the general knowledge index of the respondents was 0.771 out of 1.0 (77.1%). There are traces of

misinformation about SARS-COV-2 as reflected in the deviation from a perfect scale in each of the knowledge-based questions in this study. This minor knowledge gap of 22.9% has the tendency of spreading with low awareness of the public and high proximity of the recipients from sources of accurate information to verify claims; the spread of these misconceptions will be faster than the virus. There is an indication of abuse of herbal substances during the COVID-19 pandemic. Which showed a huge influence of traditional medical interventions on the decision of more than average Nigerian (66.4%) pertaining the health. The consequence of this will be a proliferated unrefined production, consumption, and recommendation of unverified organic compounds which may have detrimental long term health implications on the consumer and public health in general. In support to the finding in this study, Ahmed *et al.* 2020, reported that 34.5% of respondents did not know the actual cause of the diseases, and were unable to differentiate the previous MERS-COV, SARS-COV-1 and the SARS-COV-2 (Ahmed *et al.* 2020). It is important therefore for public health advocates to make use of both traditional and social media to promote accurate information about the diseases, and need for vaccination (Carlson *et al.* 2020). Less to forget that campaign strategies will only be successful to acceptable degree when they are buffered by community education and direct support programs. It is found that a weak correlation exists between misinformation about COVID-19 and demographic data, thus, misinformation is likely to be common among some group of people than the others. Most of the youth also regards equality in access to health intervention as an important factor to be considered during the COVID-19 pandemic with 44% of the respondent showing refusal to prioritize the administration of COVID-19 vaccine to immune-compromised members of the community such as pregnant women and the elderly. Members of the community have to be educated about the mechanism which the vaccine works in their body, their safety, and the importance of the vaccine in a way that they will understand, thus, researchers and scientist should not only depend on reviewed publications to communicate their findings, or intervention in medical situations to the general public. Other avenues should be explored to communicate to the public, while scientific publication should remain educationally relevant amidst like-minded and objective scientific colleagues around the globe. Such alternative, awareness (Saunder & Chris 2002) based avenues should be accessible to the public with the use of language and tone that is

directed to the understanding of the general public, with protected integrity, open to discussion, feedback and questions on particular health situation at hand. One of the reasons the degree of misinformation is trajectory in both resource limited, and affluence communities are low reading habit, lack of understanding of available research articles, use of difficult terms in communication from scientist, negative influence from high social class personalities in the community, political advantages, and frustration. For tracking viral information on the social media, it is important to link every information to their source, while acceptability of such information should depend on the integrity of the speaker, and the general public should endeavour to gain full understanding of what the information denotes before circulating.

Conflict of interest: The author declares no conflict of interest

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