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Combating COVID-19 infodemic in Nigerian rural communities: The imperatives of Traditional Communication Systems

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Abstract

Since the outbreak of COVID-19 in December 2019, substantial attention has been devoted to combating the infodemic that has come to characterize it with the potential to prevent its effective containment. This is undoubtedly a very difficult task, especially in Nigerian rural communities that are characterized by severe lack of the requisite facilities to access information on modern media platforms, compounded by high illiteracy and poverty rates. This study presents a case for the utilization of people-oriented, traditional communication systems in combatting the infodemic at the grassroots level. It contends that, given the peculiarities of the country's rural settlements, traditional communication systems present suitable alternatives that could be harnessed and leveraged upon to carry everyone along in the fight against the pandemic. Using data from secondary sources, the study argues that the fight against COVID-19 infodemic can be more effective if stakeholders recognize and optimize the opportunities offered by traditional communication systems and channel them towards mobilizing and sensitizing rural dwellers to disregard the myriad conspiracy theories and myths about the pandemic, and instead adopt positive behaviors that would help to curtail its spread. This will go a long way in filling the information gap that exists at the grassroots and more effectively help contain the pandemic. To achieve this, the study recommends the need for a robust health intelligentsia to be trained and equipped with skills and competencies in using these communication channels for effective mobilization and sensitization of the people at the grassroots.

Keywords: COVID-19; pandemic; infodemic; rural settlements; Traditional Communication Systems and Nigeria.

1. Introduction

Since Corona Virus Disease (COVID-19) was discovered in December 2019, substantial attention has been devoted to countering the wave of conspiracy theories, myths, and misinformation that are peddled about the disease (Depoux et al., 2020; Naffi, Davidson & Jawhar, 2020; Padayachee & Toit, 2020). This information crisis is one of the biggest obstacles that stakeholders must contend with in the fight against the pandemic, evident in the fact that before declaring the disease a pandemic in March 2020, the World Health Organization (WHO) had already declared an "infodemic" on the disease in February (WHO, 2020a). Soon after its outbreak, COVID-19 became the world's foremost public health enemy (Poonam & Rathy, 2020). As of November 24, 2020, WHO reported a total of 58,425,681 confirmed

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positive cases and 1,385,218 deaths resulting from the pandemic across the globe (WHO, 2020b). The absence of either vaccine or cure has complicated the dangers the virus poses to the global health system with the rippling effect adversely felt in other sectors such as the economy, tourism and hospitality, socialization, and the entertainment industry, among others (Amzat et al., 2020; Oruonye & Ahmed, 2020; Ozili &Arun, 2020).

While the number of confirmed cases and death toll continues to rise, myths and conspiracy theories have been created and widely peddled daily. Therefore, the disease has become even more controversial in recent months, with grave danger to the struggle to manage and combat it effectively (Adom, Osei, & Adu-Agyem, 2020; Depoux et al., 2020). Although these conspiracy theories and misinformation are promoted on conventional and social media, the same platforms are intensively deployed to combat the infodemic by concerned agencies and stakeholders, such as WHO and other regional and national agencies (Aondover, 2020). In Nigeria, for instance, the Presidential Task Force on COVID-19, in collaboration with the Nigerian Centre for Disease Control (NCDC), previously organized daily briefings which were widely broadcast on leading national TV stations in the country and reported in the various daily newspapers and other online platforms. NCDC also engaged in extensive social media campaigns, sensitizing citizens on platforms such as Facebook, Twitter, WhatsApp, SMS, and its official website. At the global level, the WHO information bulletin of February 2, 2020 stated that:

> "… Due to the high demand for timely and trustworthy information about 2019-nCoV, WHO technical risk communication and social media teams have been working closely to track and respond to myths and rumors. Through its headquarters in Geneva, its six regional offices and its partners, the Organization is working 24 hours a day to identify the most prevalent rumours that can potentially harm the public's health, such as false prevention measures or cures. These myths are then refuted with evidence-based information. WHO is making public health information and advice on the 2019-nCoV, including myth busters, available on its social media channels (including Weibo, Twitter, Facebook, Instagram, LinkedIn, Pinterest) and website …" (WHO, 2020a)

However, as the pandemic attained community transmission status in countries across the globe, the efficiency of these conventional and social media platforms became highly questionable. This has been particularly so in developing and third world nations, given the peculiar nature of rural communities in these countries, characterized by lack of modern amenities to access information from sophisticated modern media platforms, compounded by illiteracy and high poverty rates, among other obstacles (Targema & Obun-Andy, 2020). This informs the need to explore alternative communication approaches that could be harnessed to effectively reach out to people at the grassroots. In this study, we present a case for the

integration of people-oriented traditional communication systems into the fight against the infodemic. The assumption is that these channels are popular and accessible to all, hence, their incorporation and utilization by stakeholders will go a long way in countering misinformation and conspiracy theories. This is the central thesis upon which the argument in this study is hinged.

1.1. Combating COVID-19 infodemic in Nigerian rural communities: The big challenge

Tackling the infodemic that surrounds COVID-19 is a challenging task that stakeholders must contend with in combatting the virus (Naffi, Davidson & Jawhar, 2020; WHO. 2020a). At the global level, WHO coordinates the fight against this infodemic by publishing regular updates, bursting myths, and debunking conspiracy theories once they are noticed in the public domain (WHO, 2020b). Other international, regional, and national agencies, non-governmental organizations, and health institutions are also at the forefront of combating this infodemic, utilizing conventional and emerging media platforms in the process.

In Nigeria, for instance, aside from publishing regular updates on the official website and social media handles of the NCDC, the Presidential Taskforce on COVID-19, in collaboration with relevant agencies and ministries during the period of the national lockdown that lasted from March to early May, organized daily briefings which were widely broadcast on national television stations across the country. This avenue was used to debunk myths and conspiracy theories on the pandemic. The period also saw the Presidential Taskforce engaging in intensive media advocacy and sensitization to stimulate positive attitudinal patterns required to tame the spread of the virus in the country. However, as the media advocacy ran on the country's conventional and new media platforms, a careful observation of the approach reveals the manifestation of Tichenor, Donohue & Olien's *Knowledge Gap Theory* hypothesis. The theory contends that: as the infusion of mass media information into a social system increases, higher socioeconomic status segments tend to acquire this information faster than lower socioeconomic status population segments. Hence, the gap in knowledge between the two tends to increase rather than decrease.

This assumption explains the likely situation that characterizes access to information on COVID-19 in Nigeria among people living in rural settlements. Rural dwellers in Nigeria are left behind in the communication circle that utilizes sophisticated modern communication systems. This is because the rural communities are characterized by neglect and deprivation

of the basic social amenities, including those that would facilitate access to information from conventional and emerging media platforms. For instance, most of the rural communities in the country have no access to electricity. This denies them access to media receptive gadgets that require electricity, such as television, computers, and mobile cell phones that require regular charging. Poverty level is also very high in these rural settlements, a factor that is critical to media access. This is compounded by illiteracy which has come to be the most disturbing feature of people at the local level.

Collectively, these factors make it difficult to carry people in rural areas along in terms of information and communication. Sadly, such communities are home to a substantial proportion of the Nigerian population. The World Bank (2020) estimates that about 98,156,651 million people in Nigeria (49.66 % of the entire population) live in the rural areas. The deprivation that characterizes these areas make it imperative to explore communication alternatives that would help to carry them along, especially in crucial times like the outbreak of COVID-19. This is because the fake news that feeds off the legitimate news goes viral, informing the need to adopt a holistic approach towards effectively countering them across all levels of society. The aim of this study is to demonstrate how traditional communication channels could be harnessed and deployed to effectively complement communication strategies for containing the COVID-19 infodemic in Nigerian rural communities that lack the capacity to access information from most of the modern media channels of communication.

2. Methods

This study utilizes qualitative research methods to generate data from secondary sources – books, journal articles, corporate websites, technical reports, newspaper and media reports, and databases of agencies to build up arguments in the study. The study focuses primarily on Nigeria, with rural communities as the centre of attraction, given their peculiarities in terms of access to authentic information. Data derived from secondary sources served to provide details about the endemicity rate of COVID-19 in Nigeria, the manifestation of conspiracy theories and how they have affected efforts to curb the disease as well as the imperatives of traditional communication systems for bridging the information gaps that exist at the grassroots with the high potential of effecting positive attitudinal patterns towards the pandemic.

3. Results and Discussion

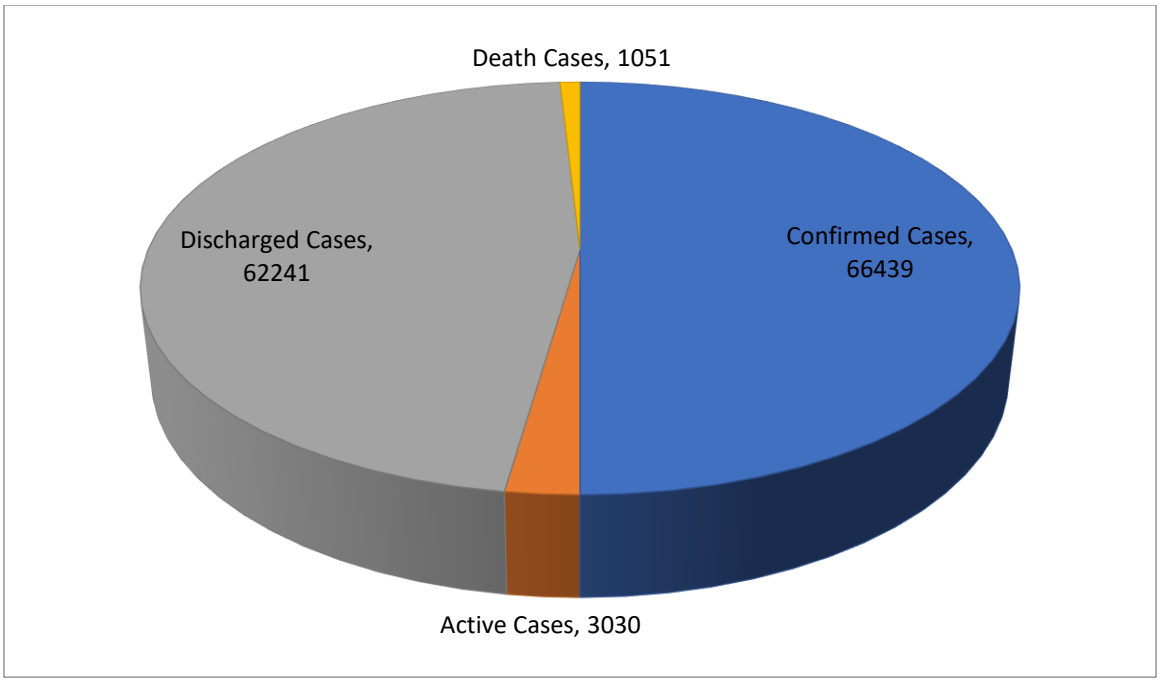
The following sections contain details of discussions arising from the data. They focus primarily on the outbreak of COVID-19 in Nigeria and highlights of the major developments, the ensuing infodemic, and popular COVID-19 myths and conspiracy theories that have been propagated in Nigeria and by extension, in Africa, the challenges of tackling the pandemic and infodemic, especially in rural communities with serious information deficits, and the relevance of traditional communication systems as alternative communication platforms for connecting with people at the grassroots level.

3.1. COVID-19 outbreak in Nigeria: Highlights of major developments and response strategies

The index COVID-19 case in Nigeria was recorded on February 27, 2020 (NCDC, 2020). An Italian citizen working in Lagos who had just returned from Milan tested positive for the virus. Lagos is the commercial hub and most populated state in the country. Since then, the number of positive cases has continued to rise. By the 18th of March, the federal government had imposed "a travel bans and suspended visa on arrival for all travellers coming from countries that registered over 1,000 cases domestically" (NCDC, 2020). However, the spread of the virus continued until it became necessary to lock down the country. On March 30th, lockdown was imposed on Abuja (the Federal Capital Territory-FCT), Lagos, and Ogun States. This was later extended to other states across the federation that also recorded high numbers of cases. Aside from states that were included in the federal government's lockdown, state governors in exempted states who also felt the need, locked down to curtail the spread of the virus within their borders. This was followed by an interstate travel ban that was imposed to prevent interstate mingling and movement of people across states of the federation. There were exceptions, though, for supplies of essential goods and services.

The lockdown sparked a serious socioeconomic crisis that saw citizens calling for reopening of the economy to enhance their living conditions. This was despite the palliatives- typically food items and in some instances, financial assistance- that were distributed to vulnerable individuals to cushion the effects of the lockdown in endemic states of the federation. Following the outcry, Federal Government relaxed the lockdown on the 4th of May (NCDC, 2020; Olufemi, 2020). This resulted in an exponential rise in the number of positive cases that doubled the initial total within the first week after the lockdown was relaxed. Olufemi (2020), also corroborates that "Nigeria recorded more COVID-19 cases in the past

week than in the previous eight weeks put together." Positive cases in the country rose from 1,728 on May 3rd to 3,526 one week later, by May 8. Since then, the cases have continued to rise. By the 24th of November, the country had recorded a total of 66,439 cases. Lagos remains the epicentre of the national pandemic, accounting for one-third of the total cases. Other states with high numbers of cases include the FCT, Oyo, and the Plateau states. Figure 1 below presents a summary of positive, active, and discharged cases, and deaths from COVID-19 in Nigeria as of November 24, 2020.



Fg. 1 Summary of COVID-19 cases in Nigeria as of November 24, 2020

Source: NCDC (2020)

3.2. The outbreak of an infodemic: An overview of the major conspiracy theories

COVID-19 is, no doubt, the most controversial disease in humanity's recent history. Several conspiracy theories have emerged with the potential to "delay or even derail efforts to contain the virus" (Miller, 2020). Depoux et al. (2020) observe that within weeks of its outbreak, misleading rumours and conspiracy theories circulated the globe, causing great panic and confusion among members of the public. They note that "a striking particularity of this crisis is the coincidence of virology and virality. Not only did the virus itself spread very rapidly, but so did the information—and misinformation—about the outbreak, and thus the panic that it created among the public."

The WHO (2020a) acknowledged this trend when it stated that the pandemic's "outbreak and response has been accompanied by a massive "infodemic" - an over-abundance of information, some accurate and some not – that makes it hard for people to find trustworthy sources and reliable guidance when they need it." In recognition of this, WHO emphasizes the need for "country risk communication and community engagement" as a critical public health intervention in all countries and recommends that "countries should prepare to communicate rapidly, regularly, and transparently with the population. All countries should prepare existing public health communication networks, media and community engagement staff to be ready for possible cases and for the appropriate response" (WHO, 2020a).

Smith, McAweeney and Ronzaud (2020) decry the damaging effects of the infodemic when they note that "the unprecedented volume of misinformation around the coronavirus, spreading across platforms and around the globe, has yielded unique network structures and illustrated the virality of mis- and disinformation in crisis situations." Obviously, this presents grave obstacles to ending the pandemic. As people become inundated with information about it, uncertainty develops regarding what to believe and what to dismiss. In the words of Smith, McAweeney and Ronzaud (2020), the ensuing scenario is such that:

> "… A global cacophony of voices is communicating conflicting and politicized information about the coronavirus, further amplified by the organic spread of misinformation from audiences eager to consume and share updates and advice on the coronavirus in a time of mass uncertainty …"

The first controversy that greeted COVID-19 centered on its origin. Early Chinese sources linked the disease to bats. The Report of the WHO-China Joint Mission on Coronavirus (2020:8) states that, "COVID-19 is a zoonotic virus. From phylogenetic analyses undertaken with available full genome sequences, bats appear to be the reservoir of COVID-19 virus, but the intermediate host(s) has not yet been identified…" The report notes that efforts are underway to establish the possibility of bats-human transmission. Shereen et al. (2020) corroborate the linkage between COVID-19 and bats but also note that "the intermediate source of origin and transfer to humans is not known." Li, Mendelsohn and Zong et al. (2020) state that:

> "… Bats (order Chiroptera) are reservoirs of a large number of zoonotic viruses, including coronaviruses (CoVs) that have caused disease outbreaks in human and livestock populations [such as] Severe Acute Respiratory Syndrome coronavirus (SARS-CoV), the causative agent of the SARS outbreak affecting 32 countries in 2002-3, infecting 8,096 people and causing 774 deaths, Middle East Respiratory Syndrome coronavirus (MERS-CoV), which has caused 823 deaths from 2,374 human cases in 27 countries by the end of February 2019, and is thought to have originally spilled over from bats into camels, in which is it now endemic; and Severe Acute Diarrhoea Syndrome coronavirus (SADS-CoV) which emerged in the pig population of southern China and caused the deaths of more than 20,000 piglets in 2017 and 2018 …"

While research on the origin of the virus is still ongoing, accusations and counteraccusations, claims and counterclaims, continue to trend between the world powers – primarily China and the US and their apologists – on the emergence of the virus (Smith, McAweeney & Ronzaud, 2020). US President Donald Trump maintained strongly that the virus emanated from the Wuhan Institute of Virology (BBC, 2020a). Trump had earlier referred to the virus as "the Chinese Virus," (Griffiths, 2020) a sentiment that was shared by Republican lawmakers and US Secretary of State Mike Pompeo (Aljazeera, 2020a). Trump further insisted that the WHO was complicit in the disaster by siding with China in the manufacture and distribution of the virus across the globe. "I think the World Health Organization should be ashamed of themselves because they're like the public relations agency for China," he told reporters in May (BBC, 2020b). Two months later, he sent a notice of withdrawal from the group to United Nations Secretary General António Guterres, effective July 6, 2021.

China, on the other hand, accused the US of manufacturing the virus. In a series of tweets on March 24, the Chinese embassy in Paris queried: "How many cases of COVID-19 were there among the 20,000 deaths due to the flu that started in September last year? Did the United States do not try to pass off pneumonia due to the new coronavirus as flu?" (Aljazeera, 2020a). Similarly, in a widely circulated Twitter update, Chinese Foreign Ministry spokesman Zhao Lijian claimed that "it might be the US army who brought the virus to Wuhan" (Westcott & Jiang, 2020). Although Zhao did not provide proof to buttress his claim, Chinese apologists keyed into it and hurled accusations at the US for genetically manufacturing the virus. Iran's Supreme Leader Ayatollah Ali Khamenei then claimed that the virus was manufactured by the US specifically for Iranians. Aljazeera (2020a) quoted him saying that the "virus is specifically built for Iran, using the genetic data of Iranians, which they have obtained through different means." Citing this as the reason, the Iranian leader turned down a US offer of assistance in the fight against the virus in Iran (Aljazeera, 2020b), one of the countries with an early spike in positive cases. According to Khamenei:

> "... I do not know how real this accusation is but when it exists, who in their right mind would trust you to bring them medication? Possibly your medicine is a way to spread the virus more. You might send people as doctors and therapists, maybe they would want to come here and see the effect of the poison they have produced in person (Iran's Supreme Leader Ayatollah Ali Khamenei quoted on Aljazeera, 2020b) ..."

This war of words degenerated further, and eventually took the form of the already existing divides of ideology and racism. Chinese products and people were stereotyped and

stigmatized within the group of nations, especially those inclined to the conservative right wing (Smith, McAweeney & Ronzaud, 2020). They cite the sudden "popularity of hashtags like #ChinaVirus and #WuhanCoronavirus, with posts often mentioning traditional Chinese food and culture in a stigmatizing manner" to buttress the stereotype. The outbreak of conspiracy theories on the pandemic was comprehensive and reflected the topical issues that continued to dominate the world's attention prior to the pandemic. Smith, McAweeney and Ronzaud (2020) observed that:

> "… At first, coronavirus conspiracies appeared to revolve around the origin of the outbreak, often by tapping into existing theories about the "new world order" and "population control." As the pandemic has spread to geographies in which communities that support these theories are traditionally particularly strong, conspiracy content has become more granular, with articles focused on various governmental responses to the outbreak …"

Another controversy that trails COVID-19 centres on the right medication to treat its patients. While frontline doctors are tempted to use hydroxychloroquine as one of the drugs to treat patients suffering from COVID-19 complications, WHO (2020b) warns that the misuse of hydroxychloroquine can cause serious side effects, illness, and even death. The US Food and Drug Administration (FDA) warns that the drug is neither safe nor effective for use on patients suffering from the disease, and states that it "can cause serious heart rhythm problems in Covid-19 patients" (BBC, 2020c; Howard, Azad & Fox, 2020). Despite this warning, Trump, in a very controversial move, recommended the use of the drug, and disclosed that he had been taking it as precaution against the disease! (BBC.com, 2020c). This sparked wide scale condemnation among health experts (Thomas, 2020). In the wake of the controversy, WHO on May 25 announced a "temporary pause" in its Solidarity Trial on the use of hydroxychloroquine for treatment of COVID-19 patients" (Okonoboh, 2020). However, in yet another controversial move, a Nigerian-trained doctor based in the United States, Stella Immanuel, in a viral video on social media in July claimed she had treated over 350 COVID-19 patients with hydroxychloroquine (Adebulu, 2020). This disclosure is an addition to the already crowded [mis]information space of the virus, as many more controversial and widely contested positions crop up on daily basis, further complicating the management of the disease.

3.3. Popular African COVID-19 myths and conspiracy theories

Africa's precarious situation leaves most of its countries at the mercy of conspiracy theories that greeted the emerging virus. The constant reliance on aid, grants, and technical

support renders many African countries undecided about where to align in the raging war of words between China and the US. Moreover, the inability of African nations to independently verify most of the claims that are being speculated leaves her reliant on the WHO and other Western sources, such as John Hopkins University, for *facts* about the pandemic and possible courses of action. Beyond the West vs. Chinese conspiracy theories, Africa has her own set of complicated information crises in tackling the virus on her shores. First is the purported Madagascar herbal cure – the COVID-Organics. COVID-Organics is one of the boldest attempts on the continent to contain the virus, but it was severely chided by superior world agencies such as the WHO (Adebayo, 2020; Burdon-Manley, 2020; WHO-Africa, 2020), and practically lampooned within the comity of nations, so much so that fellow African countries would not give it serious thought.

In the wake of the controversy that greeted Madagascar's public presentation of the herbal medicine, WHO welcomed the need to explore alternative traditional medications for the disease but cautioned against the use of treatments that have not been tested or investigated for clinical efficacy and safety. With the absence of a clinical test for efficacy, African countries (including Nigeria) that gave the disease a thought had to independently test it before its eventual usage (Folorunsho-Francis, 2020). However, after clinical trials, the herbal concoction was found to be ineffective for treating the virus (Tih, 2020). WHO warned that the use of local substances that could cure malaria as treatments for COVID-19 would cause people to develop resistance to those substances as potential cures for malaria, thereby complicating the health situation of citizens?

The 5G controversy is another widely speculated conspiracy theory (Chan, Dupuy & Lajka, 2020) that has generated serious interest in many African countries, Nigeria inclusive. It was speculated that 5G network facilitates the spread of the virus, a claim that lacked scientific proof. WHO (2020b) maintains that viruses cannot travel on radio waves or mobile networks, and pointed to the fact that COVID-19 was spreading in many countries that did not have a 5G network? Apart from these, several other controversial rumors have been floated about the disease, complicating the fight against it. Apuke and Omar (2020) have assembled a broad catalogue of fake news about the virus from the Nigerian social media sphere. Below are some of the popular myths widely speculated about COVID-19 in Africa.

a. Blacks and People of Color are immune to COVID-19 because of melanin

One of the earliest lines of wishful misinformation about COVID-19 in Africa was that the virus does not kill Blacks or People of Color. This myth went viral when the first black man to contract the virus, Pavel Daryl Kem Senou, a Cameroonian Student in China, tested negative a few days later (Padayachee & Toit, 2020; Williams, 2020). Soon, it was widely speculated that Black and brown people were genetically resistant to the virus because melanin, the pigment which gives skin its color, provided extra protection (Williams, 2020). Although the claim has been debunked (Kerstcher, 2020), it continues to resonate in different settings across the continent. When the virus subsequently took its toll on the Western world, with the highest number of cases recorded in the US, Latin America, Europe, and Asia, the theory of black superiority and immunity to the virus continued to gain ground in Africa without any scientific basis. Not even the gradually rising figures of positive cases and fatalities across the continent could effectively put an end to this theory.

b. COVID-19 cannot survive in Africa's warm climate

Another widely circulated myth about the virus is its purported inability to survive Africa's warm climate (Padayachee & Toit, 2020; Puleo, 2020). The source of this speculation is published (non-peer reviewed) research by Wang, Tang & Feng (2020), who purportedly found that high surface temperatures and high humidity reduced the transmission of COVID-19. Although the validity of this study – which has not undergone the rigor of academic peer review – remains highly contested, it has been widely circulated in Africa. Even as the WHO mythbusters team and national agencies and experts have refuted the claim (WHO, 2020b), and even as the pandemic has ravaged Latin American countries with equally warm climates, such as Brazil (Castanheira, 2020), the speculation continues in several quarters across the continent.

c. Spraying alcohol and chlorine bleach on the body prevents COVID-19

With the recommendation that the use of alcoholic hand sanitizers kills COVID-19, it became widely speculated in several quarters that spraying alcohol and bleach will disinfect the body and kill the virus (Padayachee & Toit, 2020). The idea gained popularity in April when US President Trump suggested that injected disinfectant, such

as bleach, might kill the virus. He also proposed irradiating patients' bodies with UV light, a potential side-effect of which is skin cancer (BBC, 2020d). The WHO mythbusters team refuted this claim, and cautioned that the spraying of alcoholic substances and bleach can cause irritation and damage to the skin and eyes and other health problems (WHO, 2020b).

d. Drinking black tea first thing in the morning is an effective cure against COVID-19

This is another widely speculated COVID-19 myth that went viral on social media (Padayachee & Toit, 2020). AFP Fact Check (2020), however, debunked this claim**.** Experts maintain that "while drinking tea can be beneficial for one's health, it cannot be touted as a preventive measure or a treatment in the case of COVID-19".

e. Peppered soup with lime or lemon flushes out the virus

This myth trended mostly in Nigeria. It was speculated that taking peppered soup and lemon will flush out the virus from the human system, a speculation with no scientific basis (Padayachee & Toit, 2020).

f. Steam from neem prevents COVID-19

Another wide speculation held that inhaling or exposing one's face to steam from neem – a common medicinal tree in most African societies – can prevent COVID-19. This myth, which was widely speculated in Ghana, originating from the President of the Traditional Medicine Practitioners Association (GHAFTRAM), Kojo Odum Eduful (GhanaWeb, 2020). Like many other COVID myths, it lacks a scientific basis (Padayachee & Toit, 2020). BBC (2020e) has also reported speculation in Tanzania that inhaling steam generally is an effective treatment against the virus, a claim which is also said to be false.

g. Vitamin C tablets prevent COVID-19

Vitamin C has been widely promoted as a cure for COVID-19 (Padayachee & Toit, 2020). Rettner (2020) notes that although Vitamin C is very important to the human system, it is not been found to be a cure, nor does it provide prevention against the virus.

h. Having had malaria makes one immune to COVID-19

Padayachee and Toit (2020) also list this among the widely speculated myths on the virus that have no scientific basis. While malaria is a protozoan disease, COVID-19 is a viral disease, hence, having had the former does not make one immune to the latter. WHO (2020b) clarifies further that although it is not caused by bacteria, "some people who become ill with COVID-19 can also develop a bacterial infection as a complication." At the moment, no medical condition has been discovered to offer immunity to the virus as yet, as efforts to develop an effective immunization have attained an advanced stage in many countries across the globe.

i. COVID-19 is a disease exclusive to wealthy people and urban dwellers

With the concentration of COVID-19 cases in urban centers where most of its victims were wealthy, a theory developed that linked the virus to wealth, affluence, and urban centers. Thus, the poor rural dwellers considered themselves privileged and immune to the virus. It was simply dismissed in such quarters as an "illness for the rich." As the lockdown lasted to curb the virus, the rural dwellers went about their usual businesses unhindered. This caused them to disregard the safety guidelines and stipulated protocols such as social distancing, frequent hand sanitizing, use of face masks in crowded places, and clampdowns on crowded gatherings. Like the other myths, this has no scientific basis, as COVID-19 does not discriminate between the rich and poor, rural and urban dwellers, or any other stratification for that matter.

j. COVID-19 is a divine punishment for man's iniquities

There is speculation that the virus only affects sinners and is a punishment unleashed by God to purge the world of sinful elements. The Islamic State (IS), for instance, described the virus as God's divine retribution against China. Azman (2020) quotes pro-IS commentators as saying, "May God punish China with death as they had brought death to Muslims." "As China beats Uyghur Muslims, coronavirus is now beating China." "The virus is God's army that destroys the *kafir* (infidels)." Such sentiments were shared by many IS sympathizers (Mourad, 2020), although the virus was to soon extend its havoc beyond China. Very soon, Islamic nations such as Iran and Turkey, among others, became flashpoints of the pandemic with huge casualty figures. The Christian

community, specifically in Nigeria, had similar misconceptions. For instance, in Abia State, one of the 36 federating states of Nigeria, Governor Dr. Okezie Ikpeazu boasted that the state is immune to the pandemic because it is mentioned in the Bible. Asadu (2020) quotes him as saying:

> "… Abia is the only state that is mentioned in the Bible. We have a promise from God that none of these diseases will touch God's people. And I hold on to God's promise. We saw Ebola, it did not get to us. We saw monkey pox; it did not get to us. Even this one (coronavirus) will also pass us by …"

However, as the virus raged on in the country, the governor himself tested positive on the 8th of June 2020 (The Sun, 2020), rendering his claim baseless and utterly misleading. Abia state had recorded 807 positive COVID-19 cases with five fatalities (NCDC, 2020). In the final analysis, therefore, religious superstitions about the virus could be described as baseless and unfounded like, indeed, the other speculated myths and theories. Yet, they continue to circulate among religious circles regardless.

Other myths, apart from the above, have also been propagated about the pandemic across Africa. These pertain to modes of contracting the virus, of its spread and circulation, cure, and prevention, as well as safety measures. Collectively, they complicate, in no small measure, the task of containing the disease, and make the ensuing infodemic one of the major concerns of agencies, institutions, and frontline personnel engaged in fighting its spread.

3.4. Exploring alternative communication approaches: The imperatives of traditional communication systems

Communication scholarship in Nigeria has long established the relevance of traditional communication systems in reaching out to people in rural settlements. Variously described as African communication systems, trado-media (traditional media), oramedia (oral media), or folk media, among other names (Ngwu, 2017; Nwodu & Nwammuo, 2017), traditional communication systems have continued to serve the information and communication needs of rural citizens in Nigeria and throughout Africa. Wilson, cited in Ngwu (2017) describes traditional communication systems as the "continuous process of transmitting information, entertaining and educating the people, which are used in societies that have not been seriously affected by Western cultures and other external influences."

They are communication techniques that are deeply rooted in the people's cultures and ways of life and utilize local resources and talents to disseminate information to the local audience. Ugboajah, one of the pioneer indigenous communication scholars in Nigeria (Ngwu,

2017), states that traditional communication systems are "grounded in indigenous culture, produced and consumed by grassroots members of society, and reinforcing the values of society." In developing societies, traditional communication systems have comparative advantages over the modern mass media when communicating with people at the local level due to their inherent attributes of simplicity (in terms of encoding and decoding messages), cost effectiveness, availability, accessibility, popularity, and commonality. Ugboajah in Nwodu & Nwammuo (2017) notes that:

> "… African societies have virile and effective channels for transmission of news and information to the grassroots. The challenge facing policy makers and communication specialists in Africa would be the need to understand clearly what results the folk media could achieve for social mobilization and development …"

Based on this assumption, it is safe to assume that the use of traditional communication systems will be an efficient strategy to combat COVID-19 infodemic in Nigerian rural settlements. Over the years, traditional communication systems have been profiled, with their forms, types, techniques, attributes, strengths, opportunities, and limitations all documented in scholarly literature (Ngwu, 2017; Ugboajah, 1985; Wilson, 1991; Wilson, 1994). Their functions have also been documented, which are, perhaps, the same or closely related to those performed by the modern media such as information, entertainment, education, socialization, enlightenment, mobilization, and surveillance, among others (Wilson & Itek, 2017).

Traditional communication systems enjoy the goodwill and patronage of people at the grassroots. This, however, does not exonerate them of the numerous limitations or weaknesses such as lack of fidelity and credibility, lack of authenticity, local or limited coverage, sociocultural barriers, and lack of precision, among others. In terms of augmenting the communication channels to spread information on COVID-19 specifically, it would be most appropriate to scrutinize the various channels they harbour towards utilizing the best among them based on their strengths and weaknesses. It thus behoves experts using them for communication purposes to be cognizant of their individual peculiarities and properly work on the weaknesses to tame them for optimal results. The tables below contain a compilation of the various forms and types of traditional communication systems, their nature, and the kind of messages they convey, as documented in existing academic literature.

Table 1. Verbal forms of traditional communication

Type	Description	Content/message
Town crier	A messenger who moves around the community with his instruments (wooden gongs, earphones, or megaphones, to disseminate messages from the village chief or council of elders to community members)	News, information, and directives
Village square	Provides the avenue for village meetings for the dissemination of information, brainstorming, discussion, and debates on issues among community members, usually presided over by community elders or chiefs	Information, discussion, debates, and entertainment
Visitation	Outreach to family members, friends, community leaders et al., which facilitates crossbreeding of information among community members	Information, socialization, entertainment
Market square	Facilitates commercial activities among people of the community and provides room for informal sharing or spread of information about new products, ideas, and innovations	Advertising, information, and commercials
Traditional institutions/Palace	Custodians of custom that help to preserve cherished values and norms and transmit them to the people. The palace is always alive with people who come to visit and pay homage to the king, hence, facilitates free flow and sharing of information and ideas	Directives, information, socialization, and cultural transmission
Music dance and theatre	Demonstrative communication avenues that facilitate entertainment, convey messages and morals, and champions social crusading or attacks on social ills through composition of songs, staging actions/performances and demonstrations	Entertainment, information, and mobilization
Folklore	The art of storytelling that facilitates transmission of information from the aged to the younger ones	Entertainment, and cultural transmission
Ceremonies	Marriage, funeral, festivals, or annual get-together that attract people within the community to gather in one place either for marry-making, grief/mourning or celebration	Entertainment, socialization, and cultural transmission

Table 1 contains a compilation of verbal forms of traditional communication. These are typically communication endeavours or activities that involve the use of spoken words to create meaning, disseminate information and communicate feelings, emotions, desires, demands and or warnings etc. to the audience.

Table 2. Non-verbal forms of traditional communication

Type	Description	Content/ message
Idiophones	Use of talking instruments such as wooden gongs, metal gongs, calabashes etc. to disseminate information to community members	Information, and entertainment
Membranophones	Drums of varying sizes, shapes and forms made of wooden cylinders and covered with animal skin/hide at one end or both that produce sound when stroked	Entertainment, and information
Earophones	Sound producing instruments such as flutes and pipes made by creating holes in woods or rubber pipes	Entertainment, and information
Iconographic mode	Use of icons that help to communicate feelings, emotions, and desires such as leaf's, pets, pieces of clothes etc.	Information
Symbolography	The art of communication using signs and symbols, designs and drawings or patterns that convey specific messages to the audience	Information, and entertainment
Colour schemes	Use of colour or visual patterns to communicate messages such as love, grief, danger, warning, etc.	Information, and entertainment
Tribal marks/patterns	Marks on the face or skin that tell the tribe of a person, gender, or age bracket of an individual	Information, and cultural transmission

Table 2 presents the non-verbal forms of traditional communication systems. Unlike the verbal forms, the non-verbal forms utilise neither spoken nor written words, but instead, employ signs, symbols, non-verbal cues, sounds/tunes, and graphics etc. to communicate to the audience.

3.5. Using traditional communication channels to complement the fight against COVID-19 infodemic in Nigerian rural communities: An appraisal

Although considered primitive with several limitations compared to the modern mass media (Ngwu, 2017; Nwodu & Nwammuo, 2017; Wilson & Itek, 2017), these communication channels continue to enjoy the goodwill of, and satisfy the information and communication needs of the people at the grassroots. For this reason, they have been highly recommended by behaviour change communication experts as effective channels of communication for reaching out to people at the grassroots. For instance, Nwodu and Nwammuo (2017) submit that "traditional media play developmental functions, one of which is mobilizing grassroots support for active participation in developmental projects. They are therefore crucial to facilitating healthy development." Similarly, Ngwu (2017) submits that "folk media motivate

and mobilize people in a traditional setting. They are veritable tools for effective mobilization of the grassroots people for community and national development because they are long established, credible and acceptable to the people."

Songs or oral literature, for example, is one such way that traditional communication systems can be used to champion attitudinal change. Fortunately, Nigeria is blessed with talented traditional singers who compose wonderful songs from most of the issues around them – political, cultural, economic, social, and environmental etc. – that serve to entertain as well as educate the masses. Nyuidze (2003) in her analysis of songs of the legendary Danmaraya Jos- one of the most celebrated Hausa singers- documents rich themes and styles that run across the various songs touching on several aspects of people's lives, from the family to the higher societal structures. Many other artists of this calibre exist, such as Maman Shata, who used his songs to intensively spearhead the socioeconomic advancement of the Hausa people (Darma, 2018; Ladan, 2018). Ker (2015) also demonstrates how Tarker Golozo lived as the conscience of his people through his numerous songs that touched on political, economic, social, cultural, and agricultural issues, among others. Summarizing his impression on the artist, he notes that:

> "… Overall, there is no doubt that Tarker Golozo, through his songs, even after his death, has been helping to propagate many government policies in Nigeria. His songs have nevertheless helped to explain government policies to his audience, thus successfully mobilizing them to actively participate in government or community development projects. To be able to achieve these, the oral poet composed and sang songs on almost any topic of national interest, ranging from the Nigerian civil war to the various military and civilian regimes, and their respective programmes …"

Indeed, several other indigenous artists have continued with this noble cultural art that provides an audience with rich entertainment coated with information, education, socialization, mobilization, and transmission of values and norms, inter alia. Following the outbreak of COVID-19, many of them went trendy by composing songs modelled on the NCDC and WHO safety protocols of regular hand washing and sanitizing, social distancing, use of face masks, restrictions on movement, regular hygiene, and increased health consciousness, among other virus containment measures. The popularity of these songs by local artists at the grassroots would no doubt complement the quest to increase awareness about the pandemic. Governments (state and federal) and other relevant agencies could leverage these artists to boost awareness of the pandemic at the grassroots level. Similarly, other channels of traditional communication, such as the town crier, traditional rulers' palaces, local symbols,

and instruments, such as those listed in the tables above, could be harnessed to spread awareness about the pandemic at the grassroots, where they enjoy relative popularity.

This is not to exonerate some of the channels of communication at this level for their gross inefficiency in complementing the COVID-19 information strategy. For instance, channels such as the marketplaces, cultural dances and ceremonies, local theatre and folklore, the village square, and religious places of worship, etc., that call for crowded gatherings, fall short of requirements of communication channels to fight the pandemic, especially when there were serious restrictions on crowded gatherings. Notwithstanding this deficiency, this study submits that, given the strengths and weaknesses of the various traditional channels of communication, communication experts must carefully study and understand their *modus operandi* to effectively deploy them for more optimal results. This is crucial if the teaming population at the grassroots must be carried along in critical times with relevant information on the required course of actions and behavioural patterns to adopt.

4. Conclusion

Given the relevance of traditional systems for communication at the local level, this study concludes that to effectively combat the COVID-19 infodemic in Nigerian rural communities, stakeholders and communication experts must leverage the opportunities that they offer in this regard. This will help the ensuing campaigns to carry everybody along for more positive impact. This recommendation becomes necessary given the deficiencies of modern media platforms in Nigerian rural communities, and the need to effectively reach out to the people at that level. Given the peculiarities of Nigerian rural communities characterized by severe deprivation of the basic social amenities and modern information technologies, it is imperative that an inclusive campaign against COVID-19 infodemic adopt eclectic communication combo, with stakeholders utilizing the most appropriate channels at each level. This will certainly enhance the chances of success.

However, given the inherent weaknesses of the traditional communication systems, we recommend that special public health intelligentsia be mobilized and carefully trained on how to use them to downplay the weaknesses towards optimal results. Primary healthcare workers at the grassroots can also be trained on how to use these channels to spread healthy information and counter the numerous myths and conspiracy theories that are so widely tossed about on the pandemic at the local level. This recommendation is necessary to

effectively tackle the infodemic for positive attitudinal change towards defeating the virus and containing its devastating effects on humanity.

Author Contributions

Joseph M. Lucas and Tordue Simon Targema conceived the research idea. Tordue Simon Targema and Abubakar Jibril developed theory and performed computations. Tordue Simon Targema and Abubakar Jibril also verified the analytical methods. Elkanah Obadiah Sambo encouraged Bako Ali Istifanus to investigate the Public Health perspective that supplied the professional and technical guidance on COVID-19 and supervised the findings of this work. All authors discussed results and contributed to the final manuscript.

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