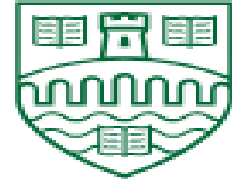


**UNIVERSITY of
STIRLING**



**UNDERSTANDING EFFECTIVE PUBLIC HEALTH COMMUNICATION
STRATEGIES IN A RURAL REGION OF A DEVELOPING ECONOMY: A CASE
STUDY OF COVID-19 COMMUNICATION IN RURAL NIGERIA.**

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Abstract

Effective public health communication is key in managing public health emergencies like the Covid-19 pandemic, particularly in rural, underprivileged parts of developing economies. Using the Covid-19 pandemic as a case study, the study investigated effective public health communication and explored effective public health communication strategies in rural regions of Nigeria from policy level professionals and community level actors' perspectives.

This was achieved by drawing upon the Integrated Framework for Effective Public Health Communication (IFEPHC) developed in the study through synthesis of various models for effective health communication, and utilising the deductive approach that incorporated an inductive element. It adopted a qualitative research design and used semi-structured telephone interviews to elicit information from 41 participants consisting of 12 policy level professionals (Group A) and 29 community level actors (Group B). The interview transcripts were subjected to thematic analysis using Nvivo software.

The study found that the LG adopted audience definition and message tailoring; multiple channels of communication (such as interpersonal communication, mass media, and indigenous native communication); the engagement of multiple stakeholders; M&E; and repetition as communication strategies. It further revealed that the majority of the study participants believed that these strategies contributed to the effectiveness of public health communication in rural Nigeria and the achievement of the LG's goals and priorities due to a notable reduction in infection and mortality rates, a perceived understanding of the Covid-19 messages by the villagers, and increased adherence to the Covid-19 protocols.

Despite these indicators, the study found that mistrust in government, paucity of Covid-19 information, hostility of villagers to public health communicators, among other challenges, influenced the effectiveness of public health communication among rural dwellers.

Finally, the study suggests that effective public health communication in rural developing economies such as Nigeria, can be achieved through careful and consistent application of the IFEPHC framework.

Keywords: Health communication, effective public health communication, health communication strategies, rural dwellers, health communication professionals.

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Glossary Of Terms

CDC	Center for Disease Control
DPHC	Director Primary Health Centre
ECDC	European Centre for Disease Control
FBOs	Faith Based Organisations
IFEPHC	Integrative Framework for Effective Public Health Communication
IHR	International Health Regulations
JEE	Joint External Evaluation
LG	Local Government
LGA	Local Government Area
MOH	Ministry of Health
MOI	Ministry of Information
M&E	Monitoring and Evaluation
NCDC	Nigerian Center for Disease Control.
NOA	National Orientation Agency
PTF	Presidential Task Force on Covid-19.
RCCE	Risk Communication and Community Engagement Strategy
SDGS	Sustainable Development Goals
TA	Target Audiences
UHC	Universal Health Coverage
U.S. DHHS	United States Department of Health and Human Services
UNESCO	United Nations Educational Scientific and Cultural Organisation
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organisation
WISH	World Innovation Summit for Health

CHAPTER ONE

Introduction

1.1 Introduction and Background

This thesis examined public health communication strategies in a rural developing economy, focusing on Covid-19 communication in rural Nigeria. It evaluated the strategies employed by the Local Government in Delta State to manage the pandemic in rural areas, aiming to understand the effectiveness and challenges of these campaigns as well as future public health lessons.

This chapter introduced the reader to the scope of this research, including its background, conceptual and theoretical perspectives on effective public health communication, the statement of the problem, aims and objectives, research questions, significance, research rationale, and the thesis structure.

1.2 General Background to the Study

Achieving health for all by 2030 is the main goal of WHO's Universal Health Coverage (UHC) and a key component of the United Nations' Sustainable Development Goals (SDGs). WHO (2021), while describing the basic functions of Universal Health Coverage (UHC), which was agreed upon in 1948 as an integral part of WHO's constitution, maintains that UHC is a means of ensuring that people and communities can use the promotive, preventive, curative, rehabilitative, and palliative health services they need, of sufficient quality, while also ensuring that the use of these services does not expose users to financial hardship. However, a recent report by the Director-General revealed that, very close to the 2030 target, "more than half of the people of the world are still not fully covered by essential health services, with a quarter of the world's population facing financial hardship due to out-of-pocket health spending" (WHO, 2023, p.1). This implies that a greater proportion of the world's population lacks access to meaningful healthcare and health services. This negatively impacts people's health outcomes as well as socio-economic development.

Public health emergencies and crises have the capacity to affect the attainment of UHC and decrease public health indicators. For instance, the WHO's report on Africa shows that Covid-19 disrupted the availability and access to health services, impacting the achievement of UHC in Sub-Saharan Africa, including Nigeria (WHO 2022). Furthermore, within two years, the Covid-19 pandemic reversed nearly a decade of progress in life expectancy at birth and healthy life expectancy at birth. Global life expectancy at birth dropped to 72.5 years in 2020, returning to the level it was in 2016, and further declined to 71.4 years in 2021, reverting to the level of 2012. Similarly, global healthy life expectancy decreased to 62.8 years in 2020,

returning to the level of 2016, and fell to 61.9 years in 2021, going back to the level of 2012 (WHO 2024). Although regional differences existed, all regions, including Africa, were affected.

Coronavirus (Covid-19) is the most infectious disease and public health crisis that emerged in 2019 (Al-Hanawi et al. 2020; WHO 2020). Beginning in Wuhan, Hubei province, it spread to almost all countries in the world, ravaging and posing significant health risks, challenges, and threats to humankind. Consequently, the World Health Organisation (WHO) declared this pandemic a public health emergency of international concern on January 30, 2020 (WHO 2020a). Statistics showed that the pandemic had an overwhelmingly devastating effect on lives. As of May 2023, its death toll amounted to 6,866,733 globally, with the United States constituting over 16% of the global death toll, reporting 1,161,164 deaths (Elflein 2024). In developing countries, the total death toll was 40,000 (WHO 2021), covering less than 1% of the total global death toll. Although data suggests that the Covid-19 death burden was higher in developed/high-income economies, studies show that underreporting and a lack of data on Covid-19 in developing countries obscured the devastating effects on these nations (Levin et al. 2022). Similarly, there are limited or no rural-urban Covid-19 statistics in developing countries. However, existing statistics in rural-urban reports show that the Covid-19 burden and impact were greater among rural communities and vulnerable groups, worsening existing inequality (Fadalla et al. 2023). Some of the measures that various governments implemented, such as lockdowns and movement restrictions, have economic and psychological effects on nations and their citizens (Bhat et al. 2020; Chinna et al. 2021; Chag et al. 2020; Adams-Prassl et al. 2022; Ononugbo et al. 2024; Safiyo et al. 2020).

Many countries are still grappling with the economic and psychological impacts, while those who survived continue to suffer from its side effects (Sia et al. 2023; Miguel & Mobarak 2022; Durowade et al. 2020). It was expected that the devastating effects of Covid-19 would be overwhelming for citizens of developing economies, especially those in rural regions. This is because rural areas in developing economies are characterised by a low standard of living, poor infrastructure (Aguilar & Guerrero 2020), a high prevalence of poverty, isolation, marginality, and lower human development (Allieu 2019).

The rural-urban imbalance in economic, social, and healthcare services leads to health inequality (Okeke & Okeibunor 2010; Nnabuihe et al. 2015; Efe 2013; Ajilowo & Olujimi 2007; Oku et al. 2017). The World Health Organisation (WHO) recognises that there are rural-urban health inequalities and further reveals that these health disparities result from weaker health systems in rural areas, along with adverse social and environmental determinants faced by the rural poor (WHO 2019). Corroborating this assertion, Ezeah et al. (2020) maintain that rural communities are especially at risk during public health crises due to their low

socioeconomic status and low literacy levels. However, this situation differs in the urban areas of Nigeria (which are characterised by high population density and developed infrastructure), as they seem to be more privileged and better protected than their rural counterparts. Furthermore, negligence, corruption, misallocation, and misappropriation of resources at the national, state, and local government levels (OXFAM 2021) exacerbate the inequality and the risks faced by rural communities. Therefore, health communication for rural areas will require a different approach.

Health communication is critical for managing public health crises and enhancing UHC. In this regard, Weder & Courtois (2022, p. 1-4) argued: “wider access to universal health coverage goes hand in hand with a mature culture of professional, reliable health communication” and that “within the context of Covid-19, effective public health communication has proven a key mitigating factor.” This was corroborated by other scholars in Nigeria (Olaoye et al. 2023; Igwe & Obeagu 2024). Health communication is critical because of its capacity to save lives and achieve an efficient resolution to health crises (Glik 2007; Finset et al. 2020). As such, effective public health communication is deemed one of the most vital and indispensable public health intervention strategies targeted at minimising morbidity and mortality linked with public health crises. These factors may explain the increasing interest among communication practitioners and researchers, as well as the unprecedented attention to health communication in recent times (Adesina et al. 2020; Olubunmi et al. 2016; Eze 2016).

Scholars agree that health communication has no generally accepted definition and define the concept differently (Oyama & Okpara 2017). Sixsmith et al. (2014) define health communication as the study and use of communication strategies to inform and influence individual and community decisions that enhance health. Airhihenbuwa (2000) believes that health communication is a social marketing strategy aimed at changing people's behavior and promoting the acceptability of health. Specifically, public health communication aims to improve the health and overall well-being of a community or population through communication; it encompasses any type of communication concerned with addressing health issues and challenges, using various strategic communication channels to encourage and promote healthy behavioral changes (Olubunmi et al. 2016). Therefore, public health communication is defined in this study as the use of various communication strategies to inform, educate, and positively influence behaviours, helping individuals make informed decisions toward enhancing public health. Providing effective public health communication is even more vital during health crises and emergencies, as experienced during Covid-19.

Consequently, during public health emergencies, the World Health Organisation (2017) stresses the importance of effective risk communication. Risk communication is an integral

part of any public health emergency response to save the lives of many people (Shrivastava et al. 2016; Husain 2019). This approach to health communication is necessary because “the situation is rapidly evolving and the need for information is particularly high” (WHO 2017, Husain 2019, p.7). According to WHO (2017), this means providing timely health information through channels that the target audience understands to make them aware of the health risks they face and the possible positive actions necessary to protect their lives. WHO (2017) also maintains that the health information would help countries or individuals facing public health crises to alleviate and cushion the effects of these crises on individuals and assist them in making informed choices to protect their health and that of their loved ones. It was on this basis that WHO provided Risk Communication and Community Engagement guidelines for managing Covid-19. However, while developing these health communication strategies and choosing media, health communication professionals should ensure they survey and understand their audiences to ascertain their needs, beliefs, current actions, social and physical environments, demographic information, cultural context, literacy, mental models, and any factors that could adversely affect their health information-seeking behaviors (WHO 2017; Suggs et al. 2015; U.S. DHHS 2004; Andrews et al. 2020).

1.2.1 Public Health Communication During Emergencies

Misinformation and disinformation are major challenges to public health communication, especially during an epidemic. This led to the declaration by Director-General Tedros Adhanom Ghebreyesus: ‘We’re not just fighting an epidemic; we’re fighting an infodemic.’ This was followed by a call on Member States and international organisations to take measures to counter misinformation and disinformation (WHO 2020a). An infodemic is characterised by an overabundance of information—some accurate and some not—which could lead to confusion and ultimately mistrust in governments and public health responses (WHO 2020b). According to WHO (2020b np), “Misinformation costs lives.” Without the appropriate trust and correct information, diagnostic tests go unused, immunisation campaigns (or campaigns to promote effective vaccines) will not meet their targets, and the virus will continue to thrive.

In Nigeria, similar challenges were experienced. They range from Covid-19 controversies as hyped by the media, to disbelief, and myths surrounding the Covid-19 pandemic. This was more severe in the rural areas. Supporting the above assertions, Akinyemi (2020) maintain that the majority of rural dwellers believe that Covid-19 is a “phony” (fake) and another avenue Nigerian governments and politicians embezzle public funds or taxpayer's money; Coetzee et.al. (2020) attribute these to the poor living conditions of those in the rural areas and poor health literacy, as those at the rural level are believed to have little or no access to accurate health information, as such, are likely unexposed to the reality of the risk of Covid-19

pandemic. The above reasons could be behind rural dwellers' lackadaisical, non-compliant behaviours, or other factors like the socio-economic inequalities between those in the urban-rural regions. In addition, Rhima (2020) revealed that the lack of basic infrastructure in rural areas is considered one of the major reasons for the paucity of Covid-19 information and safety measures.

Consequently, the underlying problem statement of this research centers on an aspect of health communication: 'communication strategies.' This study critically explores the effectiveness of public health communication in rural regions of developing economies from professionals' perspectives, using the Covid-19 pandemic health communication in rural local government in Nigeria as a case study.

The choice of a local government of Delta State Nigeria was predicated on the researcher's curiosity to understand how the Covid-19 public health messages and communications trickled down to the rural areas during the Covid-19 health emergencies due to the pre-existing knowledge of the researcher about the conditions of those at the rural areas giving the researcher's direct exposure and experiences, having lived in some of these rural areas of Delta State Nigeria for nineteen years. To ascertain whether the aforementioned socioeconomic inequalities previously stated in the preceding paragraphs between the urban and rural counterparts of Nigeria; the researcher's experienced high rates of disbelief, non-compliance, lackadaisical approaches towards the Covid-19 existence and safety measures, and scholarly revealed misconceptions and myths (mentioned above) surrounding the Covid-19 pandemic among those at the rural areas in the Local Government of Delta State Nigeria, were attributed to lack of effective public health communication by the local government.

Furthermore, the choice of local government (name withheld for anonymity purposes) which is the third-tier level of governance in Nigeria was predicated on the fact that the local government is the most veritable agent of developing rural areas; given their proximity to the rural dwellers and its vast knowledge of the needs, desires, aspirations, and preferences of rural dwellers (Odo 2014).

Therefore, it is imperative to evaluate the public health communication strategies employed by a local government in Delta State, Nigeria, as well as other relevant bodies, individuals, and organisations in managing the Covid-19 health crisis. Furthermore, despite the serious emphasis on the importance of health communication during a public health crisis and the substantial documentation of this field, it is surprising that few studies have been conducted regarding health communication strategies in sub-Saharan Africa (Olaoye et al. 2023) and specifically at the local government level in Nigeria. This present study aims to address the existing knowledge gap.

1.2.2 Background on Covid-19 and Public Health Communication in Nigeria: National Context

Nigeria is one of the most populous countries in Africa, often referred to as the “Giant of Africa” due to its large population, economy, and rich cultural heritage. It is a multi-ethnic and culturally diverse federation comprising 36 states and the Federal Capital Territory (FCT), which is divided into three regions: North, East, and West. The division of Nigeria into the North, West, and East was established in 1954 with the adoption of the 1954 Federal Constitution. Nigeria gained independence in 1960 as a federation for self-rule from British colonial rule while maintaining the three regions: North, West, and East (World Bank Organisation 2024). Nigeria formally became a Republic in 1963, with Dr. Nnamdi Azikiwe as the first President (Martin 2005). The country is divided into six geopolitical zones: North Central (which includes Benue, Kogi, Kwara, Nasarawa, Niger, Plateau, and the Federal Capital Territory); North-East (which includes Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe); North-West (which includes Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, and Zamfara); South-East (which includes Abia, Anambra, Ebonyi, Enugu, and Imo); South-West (which includes Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo); and South-South (which includes Bayelsa, Cross River, Rivers, Edo, Delta, and Akwa-Ibom). Additionally, Nigeria is rich in natural resources and exportable commodities such as gold, limestone, iron ore, aquamarine, lead-zinc, tantalite, oil and gas, and coal.

About 70% of Nigeria’s population lives in rural areas, which is above the global statistics of 45-55 for urban-rural distribution (United Nations 2019). This indicates that over 148 million Nigerians reside in rural regions. Statistics show that 63% of the population lives under multidimensional poverty, with high deprivations particularly evident in sanitation, housing, food insecurity, and access to healthcare. The situation is even more severe for rural dwellers, as 72% of them are poor compared to 42% of the urban population (National Bureau of Statistics 2022, p.5).

There has been a huge gap between urban and rural areas; a situation that is referred to by Ebo et al. (2012) as “the urban-rural dichotomy.” Furthermore, Ebo et al. (2012) maintain that there is a positive correlation between investment in ICTs and economic growth in urban areas, which, unfortunately, is not evident in rural areas of Nigeria. These statements imply that there are significant economic, socioeconomic, and sociocultural disparities between those in urban and rural areas in Nigeria, considering how they are grossly neglected and marginalised, especially regarding development projects (like health projects) and infrastructure (Ugwuanyi & Chukwuemeka 2013; Kamar et al. 2014). The negative effects associated with the urban-rural dichotomy are severely felt by those in rural areas of Nigeria, particularly in the health sector.

The Nigerian health care system, since its independence in 1960, has evolved over the years through numerous reforms aimed at addressing various public health challenges and committing to achieving Universal Health Coverage (UHC). UHC, as explained by the World Health Organisation, means that individuals and communities receive the health services they require without being subjected to financial hardships (WHO 2023). This step, regarded by WHO (2023) as one of the targets the nations of the world set when adopting the sustainable development goals (SDGs), seeks to protect citizens from bearing the consequences of paying for health services out of their own pockets.

Unfortunately, Nigeria is still lagging behind in achieving UHC. Statistics show that about 90% of people's healthcare expenditure is out-of-pocket (Aregbeshola & Khan 2018; Edeh 2022). This is troubling for a country where most (73%) of its citizens live in poverty (National Bureau of Statistics 2023). This implies that most Nigerians cannot access quality and affordable healthcare and are likely to be pushed into a deeper level of poverty due to healthcare expenses. The WHO's 2021 assessment reveals that Nigeria scored low in health service coverage and financial risk protection, ranking below 15 other Sub-Saharan countries (WHO 2022).

In response to achieving UHC, the Nigerian government established the National Health Insurance Scheme (NHIS) in 1999 as a tool to attain UHC; however, only 5% of the population (mostly in the formal sector) had enrolled from its inception until 2021 (Nigeria Health watch 2021). The National Health Insurance Authority (NHIA) replaced NHIS in 2022, focusing on supporting vulnerable groups through its Vulnerable Group Fund (Ipinnimo et al. 2022; Ipinnimo et al. 2023), yet not much progress has been made (Ipinnimo et al. 2022; Ipinnimo et al. 2023). To promote UHC in Nigeria, state governments were mandated to establish their own contributory health insurance schemes. As of January 2020, 34 states and the FCT had enacted social health insurance schemes into law, with Delta state singled out for outstanding execution of programs aimed at increasing enrollment of residents (Nigeria Health watch 2021).

The Delta State government established the Delta State Contributory Health Scheme in 2017 to ensure that every resident of Delta State has equitable access to quality and affordable healthcare services when needed and to provide quality and affordable healthcare to all residents of the state. The scheme is managed by the Delta State Contributory Health Commission (DSCHC) (Nigeria Health Watch 2021; DSCHC n.d).

The scheme has enrolled 1 million (17%) of its 5 million citizens from its inception to October 30, 2021 (Nigeria Health Watch 2021). As of January 2025, it has enrolled 2,174,876 citizens, distributed as follows: 1,977,724 (equity health plan), 163,630 (formal health plan), and 33,522 (informal health plan) (Delta State Government 2025). This represents 43% of the population, with the informal sector showing the lowest enrollment at 1.5%. However, enrollment in the

informal sector has not progressed as quickly as anticipated, limiting many residents' access to quality, affordable healthcare (Nigeria Health Watch 2021). Although the Delta State Contributory Health Scheme was a leading example in Nigeria (Nigeria Health Watch 2021), it did not provide disaggregated data to reveal the rural-urban distribution of enrollment in the scheme. The very low representation of the informal sector, which includes laborers, artisans, and traders, suggests that rural residents may not have been adequately covered by the scheme. However, UHC is much more than just enrolling in a health insurance scheme. Reports indicate enrollees' dissatisfaction with access to a wide range of healthcare services. Furthermore, studies have shown that unforeseen events, such as the Covid-19 pandemic, exacerbate urban-rural health-related indices (Fadalla et al. 2023; Marinacci et al. 2025). This may relate to the disruptions caused during such events. WHO's report in Africa indicates that Covid-19 disrupted the availability and access to health services, which impacted the achievement of UHC in Sub-Saharan Africa, including Nigeria (WHO 2022). Considering that 70% of Nigerians are rural dwellers, poor conditions in rural communities significantly contribute to Nigeria's lag in UHC attainment.

Public health communication has been linked to Universal Health Coverage (UHC) by scholars (Muscat et al. 2022; Weder & Courtois 2022). Effective health communication can enhance health literacy among rural communities where clear, consistent, and accurate information is provided to dispel misinformation and rumors. By doing so, there will be a better understanding and trust. These factors have the potential to increase healthcare use by villagers, which is a crucial objective of UHC. This was affirmed by Bagahizel (2019) and Weder & Courtois (2022). Bagahizel notes: "Reliable and timely Health Information is an essential foundation of public health action and health system strengthening... Better health information means better decision-making, leading to better coverage and better health." Transparent and credible health information fosters understanding and trust in the healthcare system and among healthcare providers, which increases the likelihood of potential users' engagement and involvement in the system. Furthermore, rural dwellers are more likely to adopt important health behavioral changes, such as good hygiene practices and adherence to vaccination. These practices reduce the burden of diseases, thereby alleviating the strain on weak healthcare systems in rural areas.

Generally, Nigeria, along with several other African countries, faces various public health crises and health communication challenges, including a high incidence of infectious and non-communicable diseases, as well as high maternal and infant mortality rates. Njidda et al. (2018) report that Nigeria has experienced outbreaks of Lassa fever, yellow fever, monkeypox, cholera, and other infectious diseases in the last four years. Furthermore, communicable and

infectious diseases, according to the National Center for Disease Control (NCDC 2019), are the major health challenges in Nigeria.

However, at the highest scale of these health emergencies was the Covid-19 pandemic, which ravaged not only Nigeria but many countries around the world. The first case of Covid-19 in Nigeria was reported on February 27, 2020. As of August 2, 2020, all 36 states and the Federal Capital Territory had reported at least one case of Covid-19, with a total of 43,841 confirmed cases and 888 deaths recorded (NCDC 2021). This number increased to 100,087 confirmed cases, with 18,699 active cases, 80,030 discharged cases, and 1,358 total deaths as of January 11, 2021. As of December 2022, there were 266,313 cases and 3,155 deaths, with Lagos State leading in the total number of cases and deaths, while Kogi State had the least, with only 5 cases and 2 deaths. However, Delta State recorded the highest number of daily cases (21) in December 2022, accounting for 60% of the 35 new cases reported (NCDC 2022). There were also more cases and deaths among males compared to females, and more cases among those aged 30 to 39, but more deaths among those over 50 years old (NCDC 2023).

However, there are no rural-urban statistics on the Covid-19 pandemic in Nigeria, contrary to what has been found in developed countries such as the USA (Cuadros et al. 2021; Department of Health and Human Relations 2022; Paul et al. 2020), Germany, and Italy (Bignami et al. 2024), as well as in some developing countries like India (Pandey et al. 2022) and Ethiopia (Abdella et al. 2021), among others. This type of disaggregated data enhances the understanding of infrastructural, social, and environmental factors of infectious diseases and pandemics, which are important not only for public health interventions (Pandey et al. 2022; Cuadros et al. 2021) but also for achieving health equity (WHO 2024). The WHO (2024) argues that equity-oriented health information, effective communication efforts, and strategic policy-making can significantly advance progress toward health and development goals, including the Sustainable Development Goals (SDGs).

Emergency or crises are characterised by uncertainties, rapidly emerging conditions, heightened public concern, fear, and panic (NCDC n.d, p.49). To manage these, the Nigerian government responded by implementing measures such as contact tracing, movement restrictions, lockdowns, the provision of testing centers, and the distribution of Covid-19 vaccines, among other efforts (NCDC n.d). However, one of the most essential aspects of any crisis situation is information. This is due to the speed with which events evolve and the demand for information, which can create gaps between the demand and the provision of information. When these gaps are not filled, people tend to make their own assumptions about the situation, which are often incorrect, leading to misconceptions and misinformation (NCDC

n.d). Misinformation refers to false information as judged by what experts agree is correct (Chinedu-Okeke et al. 2021).

Research has shown that one of the key challenges to public health communication is the spread of misinformation (Okereke 2021; Chinedu-Okeke et al. 2021). Misinformation negatively impacts public health emergencies, such as Covid-19. It can undermine public trust in health authorities, promote risky behaviours that contradict evidence-based preventive measures, and increase the likelihood of disease transmission, ultimately making it harder to control the pandemic (Scholars, Agbo et al. 2024; Chinedu-Okeke et al. 2021). Results from surveys conducted in urban areas of northern, western, and southern Nigeria in March 2020 revealed a significant amount of misinformation suggesting that, among other things, “Africans are immune, hot climates prevent spread, eating garlic cures it, and that it is a government-made weapon” (NCDC nd, p.19). Sharing their perspective on misinformation in rural Africa, Okereke et al (2021) noted that misinformation is prevalent in rural areas due to poor living conditions, low health literacy, limited access to accurate information, the influence of culture and religion, and political instability. This indicates that the circumstances in rural areas heighten the risk of misinformation among rural residents compared to urban residents, necessitating a more context-based approach to health communication.

In the past, the Nigerian government developed and implemented various public health communication strategies to address outbreaks and public health emergencies. This occurred in the case of Ebola and, more recently, the Covid-19 pandemic. Risk Communication and Community Engagement (RCCE) has been a common strategy developed at the national level in both cases. To support the development of RCCE strategies for Covid-19, the WHO provided interim guidance on RCCE in March 2020 (WHO 2020). The RCCE was also informed by WHO’s International Health Regulation IHR (2005), which recognises “risk communication as a critical pillar for a response using multilevel, multisectoral, and multifaceted risk communication capacity for public health emergencies” (NCDC 2023, p.24). The RCCE strategy developed by Nigeria’s National Centre for Disease Control (NCDC) to manage Covid-19 had the overarching goal to “strengthen, coordinate and deploy effective. RCCE strategies for responding to the COVID-19 pandemic at all levels, and more specifically to:

- Strengthen coordination and communication for an integrated RCCE system among stakeholders at national and sub-national levels.
- Develop and disseminate evidence-based, culturally appropriate messages for the Covid-19 response to audiences in Nigeria.

- Develop strategies, plans and guidelines for implementation, monitoring and evaluation of RCCE systems.
- Strengthen community-level implementation of the RCCE strategy.
- Strengthen integrated rumour management through effective communication surveillance.
- Improve and sustain cultural competence and health literacy for COVID-19 at all levels (NCDC n.d).

Some of the strategies outlined for use included public communication, community engagement, a campaign (captioned: Take Responsibility), dynamic listening, a rumor management strategy, multiple communication channels, a hotline for public case reporting, audience feedback, and monitoring and evaluation (M&E). Regarding misinformation, the Risk Communication and Community Engagement (RCCE) strategy is expected to address and dispel existing misinformation promptly through the use of multiple communication channels and respected, recognised authorities.

The RCCE is expected to be implemented at all levels, and committees have been established at the national, state, and local government levels to coordinate this implementation. All ministries, departments, and agencies (MDAs) have been deployed at the relevant levels. For instance, at the state level, the Ministry for Local Government and Chieftaincy Affairs was mandated to mobilise the local government chairmen and traditional rulers to ensure local government participation and engaged traditional rulers (NCDC nd, p.78). To implement the RCCE at the local government level, the LGA Multi-Sectoral Multi-Hazard Social Mobilisation Committee consists of the following members: Director of Primary Health Care (DPHC), health promotion officers, Local Government Immunization Officer (LIO), Disease Surveillance and Notification Officer (DSNO), Monitoring & Evaluation Officer (M&EO), National Orientation Agency (NOA) Community Mobilization Officers, Environmental Health Officers (EHO), traditional/religious leaders in the communities, Community Based Organisations (CBOs), Faith-Based Organisations (FBOs), Ward Development Committees (WDCs), Village Development Committees (VDCs), Civil Society Organisations (CSOs), and Community Influencers (CI). Among other things, this committee is to:

- Engage the concerned departments to deploy the approved risk communication Strategies.
- Distribute key Information, Communication and Education materials, and Behaviour Change Communication messages at the Local Government Ward Levels.

- Identify appropriate channels of communication for messages suitable for the target communities, taking into account their literacy levels and the need for translation into local languages to ensure acceptance and compliance with the RCCE messages.
- Work with various civil society organisations and groups in the communities to plan and implement risk communication and community engagement interventions for containment of Covid-19 in the communities.
- Track and report risk communication and community engagement interventions in the LGA to the State Risk Communication and Community Engagement Committee.

These suggest that local government plays a significant role in containing Covid-19 in rural communities. Scholars outside Nigeria have examined different dimensions of these roles (Machin 2023; Pradana et al. 2020; Sohel et al. 2022; Talabis et al. 2021). Common themes identified by Sohel et al. (2022) (Bangladesh) and Pradana et al. (2020) (Indonesia) include disseminating vital information to the local public about using masks, handwashing, sanitising, social distancing, and distributing essential relief materials. Conversely, Talabis et al. (2021) found through their analysis of existing data in the Philippines that local government units employed various approaches such as “Strict border control, early implementation of lockdowns, establishment of quarantine facilities, effective communication to the public, and monitoring efforts,” which “were the defining factors that helped these LGs curtail the harm that was brought by the pandemic.” This section examines the local government context for better understanding of the research area.

1.2.3 Background to the Case Local Government Area

The local government in Nigeria, like in most countries, is the third tier of government established to reach grassroots and rural communities. Similar to Nigeria’s overall population, 70% of Delta State's population consists of rural residents (National Bureau of Statistics 2022; Nwandu 2020). Delta State was formed in 1991 with 25 Local Government Areas (LGAs), and its capital, Asaba, is situated in the Oshimili South Local Government Area, which is also the headquarters of the local government. The state is home to three major ethnic groups: the Igbo, Itsekiri, and Urhobo, along with Ijaw and Isoko, making the local government a linguistically diverse community. Petroleum and natural gas are the primary natural resources of the state; however, about 75% of the local population mainly engages in agriculture and fishing (Nwandu 2020).

According to the 2006 census results, the population distribution of the 25 local governments ranged from 67,391 to 320,687 for Patani and Ughelli North, respectively. The case local

government has a population of 150,032. The state has a total population of 4,112,445 residents (Federal Government of Nigeria 2009).

Statistics from the Delta State government show that the average household in Delta State consists of 5.7 members, with a majority (81%) of households having six members or fewer. Data from the state government indicates that about 95% of Deltans pay for healthcare out of pocket, while only about 5% have any form of health security (insurance or retainership). The monthly income data suggests that most residents are living in poverty. The report reveals that monthly income levels range from an average of N25,000 for households in the poorest quintile to approximately N45,000 for households in the richest quintile (Delta State Government 2016).

Access to health facilities is also very high, with approximately 81.4% of Deltans living within a 30-minute distance of a health facility, which is higher than the national average of 67%. By level of care, 74% of all health facilities in the state are primary care facilities, while 23% are secondary care facilities. In terms of location, 61% of health facilities are situated in rural areas, while 39% are in urban areas (Delta State Government 2016).

The rural dwellers in Delta, particularly women, have been reported to possess low functional literacy and often rely on informal and interpersonal sources such as relatives and traditional healers for health information (Ekoko 2020). Furthermore, traditional or community media remain the most preferred and effective means of communication among rural dwellers in Delta State (Sonia 2008; Uzokwe 2014). Some examples of traditional and community media include town criers, the king, palace meetings, age-grade meetings, women's dance group meetings, the eke market square, festivals (iwaji ifejioku ulo and iwu), folklores, folk dances, moonlight meetings, the church, community elders, cooperatives, friends and relatives, and discussion groups (Sonia 2008; Uzokwe 2014). Moreover, most rural dwellers in the state face limited access to ICT due to the high cost of facilities, lack of access, unavailability of infrastructure, language barriers, minimal or no government support, lack of awareness, among other reasons (Ogboma & Esoswo 2008).

Delta State experienced a significant number of Covid-19 cases and deaths. After its first confirmed case of Covid-19 on April 7, 2020, the total rose to 1,803 by October 12, 2020, accounting for about 3% of all cases in Nigeria. As of December 2022, the state had recorded a total of 5807 confirmed cases and 112 deaths. The only data available at the local government level was from the early onset of the pandemic. This data indicated a total of 1,650 confirmed cases and 49 deaths in Delta State, with the local government area of Oshimili South reporting 515 confirmed cases and 11 deaths. This represents 31% of the total confirmed cases and 22.5% of the total deaths in the state, marking it as the highest among the 25 local government areas at that time. The range of confirmed Covid-19 cases was between 0 and 515, while the number of deaths ranged from 0 to 11. However, some local

government areas experienced a higher percentage of fatalities relative to their number of confirmed cases compared to the LG.

Doubts were raised about the involvement of local government in the implementation of the Covid-19 containment program by the federal government (Nzeadibe & Ejike-Aleji 2020; Aniche et al. 2021). This raises questions about how Covid-19 public health communication was managed at the rural community level and about the effectiveness of the strategies employed. Despite the World Health Organisation's declaration in May 2023 that Covid-19 was no longer a pandemic, it continued to pose a global health threat (WHO 2024). Therefore, understanding the effective public health communication strategies employed among disadvantaged groups during the pandemic is crucial for governments and institutions to enhance preparedness and response to future health emergencies.

1.3 Conceptual and Theoretical Perspectives on Effective Public Health Communication

In health communication, authors have rarely defined effectiveness; rather, they provided indicators of effectiveness. Nonetheless, Williams et al. (2023) presented a view of effective health communication strategy as a two-way process that involves clear messages delivered through appropriate platforms, tailored to diverse audiences, and conveyed by trusted individuals. This seems to focus effectiveness on the input and process dimensions of health communication.

There is limited literature on the concept of health communication effectiveness. However, some studies provide indicators of the effectiveness of health communication. For instance, Fish et al. (2017) defined the effectiveness of public health communication during smoke events as compliance with advisories in their systematic review. In other words, health communication is effective if the audience complies with the precautionary measures stipulated for their safety. In a study by Kashian and Mirzaei (2019) health communication effectiveness was measured by using perceptions of media effectiveness (the degree to which the media made shared understanding possible) and communication effectiveness (the extent to which the target audience realised/accomplished their communication goal). Other indicators of the effectiveness of health communication strategies included audience knowledge and awareness of the health issue being communicated, as well as compliance with guidelines provided by the health communicator (Omedo et al. 2014). This conception of effectiveness operates at the product dimension.

Several conceptions of the effectiveness of public communication focus on the input dimension, specifically what needs to be established for public health communication to work effectively. Among the popular frameworks is that provided by WHO (2017). According to

WHO (2017), effective public health communication is audience-centered, accessible, actionable, credible, trustworthy, relevant, timely, and understandable. Other scholars (Andrews et al. 2020; ECDC n.d; Schiavo 2013; Tulane University/School of Tropical Medicine 2021) expressed similar views. The criteria mentioned by these scholars, to varying extents, include partnership, message repetition, pretesting and revision, and monitoring and evaluation.

The audience-centered element is the central wheel upon which other elements revolve. In this regard, Bernhardt (2005, p.2052) emphasises that:

“Public health communication recognises that for programs to be both ethical and effective, information from and about the intended audience should inform all stages of an intervention, including development, planning, and implementation to ensure that the program reflects the audience’s ideas, needs, and values.”

Grounding health communication interventions and programs in audiences’ needs, perceptions, values, and culture can be understood through the lens of Chatman’s (1996) information poverty theory and Wilson’s (1996) information-seeking behavior. Firstly, to understand the audience, one must recognise the barriers they face in accessing health information and the factors contributing to their information poverty, including the cultural relevance of the information provided, as well as language and literacy (Chatman 1996). Secondly, understanding the information needs and seeking behaviors, along with the personal and contextual factors that influence them, is crucial knowledge about the audience that will enhance the effectiveness of other elements. This aligns with Wilson’s (1996) information-seeking theory.

This suggests that understanding the contexts and backgrounds of audiences is vital to effective public health communication. In this regard, some scholars believe that the effectiveness of health communication depends on context (Shah et al 2012; Viswanath et al 2022) and argue that health communication may be less effective for those living under the stress of poverty. Others (Karidakis et al. 2022). The National Academies of Sciences, Engineering, and Medicine (2023) maintain that public health crises like Covid-19 pose challenges in providing timely and accurate health information to culturally and linguistically diverse minority groups.

Using culturally appropriate health communication strategies has been recognised as an effective way to share health messages among these communities. However, the term culturally appropriate health communication is often used interchangeably with other concepts such as ‘culturally sensitive health communication’ and ‘culturally competent health communication,’ among others (Brooks et al. 2019). Offering insights from their work with a culturally and linguistically diverse minority group in Australia, Karidakis et al. (2022) noted that strategies leveraging the linguistic resources and cultural knowledge of intermediaries,

including family members, interpreters, and language-concordant healthcare workers, may be promising for effective public health communication and messaging for this group. This is in agreement with the National Academies of Sciences, Engineering, and Medicine's (2023) position that tailored and culturally appropriate health communication strategies are effective in minority and linguistically diverse communities. Expanding on this perspective, Falo (2023) identified culturally sensitive health communication as a key criterion for effective health communication. In practice, this involves employing culturally relevant imagery, examples, and metaphors, as well as collaborating with community leaders or representatives to align messages with the audience's cultural norms and values, thereby enhancing the message's impact. Based on experiences from vulnerable refugee communities in the US, Feinberg et al. (2021) observed that ineffective risk communication exacerbated long-standing health inequalities, suggesting that culturally and linguistically appropriate health communication is necessary to dispel cultural myths, social stigma, misinformation, and disinformation.

The different perspectives to understanding and measuring effective public health communication appears to be problematic. For instance, Fish et al. (2017) argue that the variability in the measures of the effectiveness of health communication strategies makes it difficult to identify strategies that best address a given situation; and Ceretti et al. (2022) called for future research attention on addressing this variability and coming out with unified measures of the effectiveness of campaigns and policies. It appears that incorporating a broader perspective to accommodate disadvantaged and culturally diverse communities into the conception of effective public health communication could provide a more comprehensive lens for understanding the concept. Therefore, in this study, effective public health communication is conceptualised as achieving positive health behaviours and outcomes among target audiences by sharing understandable, tailored, culturally appropriate, credible, accessible, and actionable health messages promptly through audience-centred and collaborative approaches, and continuous monitoring and evaluation to ensure impact.

1.4 Statement of the problem

Nigeria's lag in achieving Universal Health Coverage (UHC) significantly contributes to delays in realising the World Health Organisation's (WHO) UHC goals, both globally and regionally. The stark inequalities in healthcare services, particularly in rural Nigeria, exacerbate this challenge, as approximately 70% of Nigerians reside in rural areas. The disparity in access to healthcare between urban and rural communities in Nigeria remains a well-documented issue, with urban areas continuing to receive more attention and resources in healthcare interventions (Solanke & Rahman 2018; Eze & Chukwuma 2024; Ibinaiye et al. 2024; Nnadi et al. 2024; Nwankwo et al. 2022; Ilesanmi & Afolabi 2022; Ekoko 2020).

This imbalance in healthcare access becomes even more pronounced during public health emergencies, such as the Covid-19 pandemic, which has deepened existing urban-rural disparities in health outcomes and further undermined progress toward UHC (Fadalla et al. 2023; Marinacci et al. 2025; WHO 2022). In response, governments at various levels have implemented numerous measures to address these challenges, with public health communication emerging as an essential tool. Research consistently emphasizes that effective health communication is indispensable for managing health emergencies, as it ensures the timely dissemination of accurate information and promotes public compliance with health interventions (Finset et al. 2020; Glik 2007; Igwe & Obeagu 2024; Olaoye et al. 2023). Several studies in Nigeria have explored communication regarding public health during the Covid-19 pandemic, highlighting the role of various communication channels, trust, and knowledge in shaping public responses. For instance, Iwunna et al. (2022) emphasised the extensive reach and effectiveness of radio in disseminating Covid-19 awareness messages, particularly during emergencies. Similarly, Talabi et al. (2022) found that radio campaigns significantly influenced the adoption of preventive measures among residents in three western states, noting that while television initially informed audiences, radio proved more impactful in driving behavioral change. Egenti et al. (2022) also identified radio as the most effective communication channel; however, interpersonal sources like friends and family were critical among predominantly urban residents. Additionally, Olapegba et al. (2020) linked Nigerians' Covid-19 knowledge to the use of mass media, particularly radio and television. While these studies offer valuable insights, they largely fail to disaggregate findings by population context (urban vs. rural), leaving gaps in understanding media use patterns and the effectiveness of health communication in disadvantaged rural communities.

The few studies conducted in rural settings primarily focused on target audience perceptions and addressed isolated elements of effective health communication. For instance, Ojeka-John et al. (2023) highlighted the success of tailoring health messages to local languages (e.g., Yoruba) and utilising accessible media, such as radio, to reach non-literate populations. Similarly, Ezeah et al. (2020) demonstrated that interpersonal communication improved Covid-19 awareness and knowledge among illiterate rural dwellers, with source credibility playing a moderating role in influencing health behaviors. Abaneme et al. (2021) and Omoha et al. (2021) emphasised the importance of traditional media, such as town criers and indigenous communication methods, in disseminating Covid-19 information; however, challenges like limited resources (e.g., megaphones) hindered their effectiveness. Additional barriers identified in rural contexts include distrust, illiteracy, poverty, and restricted access to communication resources (Pepple et al. 2020; Ekohm et al. 2021). Despite these contributions, these studies primarily focus on the perspectives of target audiences, leaving a

critical gap in understanding the experiences and approaches of health communication professionals working in these contexts.

Consequently, there is an urgent need to explore the perspectives of policy-level professionals and community level actors—both those involved in health communication management and those responsible for delivering health messages on the ground. These professionals play a central role in designing, implementing, and evaluating communication strategies; yet their experiences, challenges, successes, and lessons learned during the Covid-19 pandemic remain underexplored. Furthermore, discussions on effectiveness in existing studies are often fragmented, lacking a comprehensive analysis of the various dimensions of effective health communication. This study aims to address these gaps by examining the perspectives of two key groups of health communication professionals: those at the managerial and decision-making levels and those working directly in the field. By doing so, the study seeks to develop a comprehensive framework for effective public health communication in rural Nigeria. This approach will contribute to the design of context-specific, sustainable communication strategies for future public health emergencies, particularly in disadvantaged rural communities in Nigeria and other developing economies.

1.5 Aim and Objectives of the Study

The study had three primary goals: to investigate what constitutes effective public health communication; to explore effective public health communication strategies in rural regions of developing economies from the perspectives of policy-level professionals and community level actors, using Covid-19 health communication in rural Nigeria as a case study; and to develop a framework for effective health communication in a rural setting of a developing nation like Nigeria. To achieve these goals, the study specifically examined the public health communication goals and priorities, the strategies employed in managing the Covid-19 pandemic in a rural, disadvantaged local government. It evaluated the effectiveness of the public health communication campaigns and strategies by the local government. It also considered the factors that influenced the implementation and effectiveness of these communication campaigns and strategies.

1.6 Research Questions

The following main and sub-questions guided this study:

1. What is effective public health communication?
2. How effective were the local government's public health communication campaigns and strategies in managing Covid-19 in rural areas?

- (a) What were the goals and priorities of the Covid-19 campaigns and strategies?
 - (b) What were the public health communication strategies employed by the Local Government in managing Covid-19 in rural areas?
 - (c) How effective were the public health communication strategies in achieving the overall goals of the local government as perceived by policy-level professionals and community level actors?
3. What factors influenced the effectiveness of communication strategies employed during Covid-19 by the local government?
 4. What challenges were encountered in implementing Covid-19 health communication? What future lessons for effective public health campaigns in rural areas of developing economies can be learned from the Covid-19 communication strategies in rural Nigeria?
 5. What framework for effective public health communication can be recommended for managing public health emergencies in rural communities?

1.7 Significance of the Study

This research is significant in the field of health communication because it provides valuable insights into what defines effective public health communication from professionals' perspectives in the context of rural developing economies, as it remains a growing field in Low Income Countries. According to Mheidly and Fares (2020), health communication is a rising field in Low Income Countries (LICs), with research in the field primarily focusing on disease prevention and disclosure.

First, the study addresses significant gaps identified in the literature by broadening its scope and examining a crucial aspect of health communication, specifically 'communication strategies'; this aspect appears under-researched in Africa and Nigeria (Olaoye et al. 2023). Secondly, the study provided valuable insights from professionals involved in health management and responsible for delivering Covid-19 health messages, whose firsthand knowledge and experiences contribute to the understanding of various communication strategies employed in rural developing economies during pandemics, as well as factors affecting effectiveness and challenges, including lessons for the future. This benefits future public health communication efforts by informing policy and practice.

Furthermore, the development of the IFEPHC model (see *figure 1*) represents a methodological contribution of the study with potential adaptability and application by public health communication professionals in similar rural contexts. This is because the IFEPHC model offers 11 characteristics for effective public health communication and can also serve as a practical tool for educating, training, and retraining staff in health ministries, local

governments, and other relevant organisations aiming to improve effective public health communication in rural areas.

1.8 Research Rationale

Though literature shows that Covid-19 effects and consequences are general phenomena across Nigeria, this study narrowed down to the rural local government of Delta State, Nigeria. Firstly, the choice of a rural area for this study fundamentally stemmed from the desire to understand how public health policies (at the state level) were communicated to local governments in the interior (rural areas). Rural parts of Nigeria are considered the most vulnerable and neglected due to government negligence and a lack of basic amenities (such as roads, clean water, electricity, good hospitals, and organised markets). This situation is further complicated by the socio-economic status and inequalities between rural and urban dwellers. This assertion is supported by Rhima (2020), who states that rural dwellers in Nigeria are the most vulnerable segment of our society, characterised by underdevelopment and limited access to basic amenities that could hinder their access to health information. Additionally, Rhima (2020) maintains that the extent to which Nigerians—especially those residing in rural areas—can use the information available on the Covid-19 disease is unknown.

1.9 Thesis Structure

The thesis consists of six chapters. Chapter 1 provided an overview of the study. Chapter 2 examined an overview of public health communication in several developing economies and Nigeria; public health communication strategies; effective public health communication and the effectiveness of public health communication strategies; criteria and characteristics of effective public health communication; a synthesis of core criteria for effective health communication; an Integrated Framework for Effective Public Health Communication (IFEPHC); theories for understanding effective public health communication in rural contexts; and a summary of the literature review.

Chapter 3 outlined the methodological design for the study, detailing the methods for data collection, analysis, and interpretation, along with the rationale for selecting each discussed methodology. Chapter 4 presented the research findings from participants in groups A and B. Chapter 5 offered a discussion of the analysed research results. Chapter 6 concluded by highlighting the key findings, significant contributions, research limitations, study implications, recommendations, the modified IFEPHC framework, and the overall conclusion.

CHAPTER TWO

Review Of Literature

2.0 Introduction

This chapter reviewed key relevant and related literature on health communication, the central field of this thesis. It comprises five sections. The first section provided an overview of public health communication in Nigeria, the second explored health communication strategies. The third section discussed the effectiveness of health communication, as well as synthesis of core attributes of effective health communication from various organisations and authors (WHO 2017; U.S. DHHS 2004; ECDC n.d; Schiavo 2013; Andrews et al. 2020; Suggs et al. 2015; Tulane School of Public Health and Tropical Medicine 2021) and the Integrative Framework for Effective Public Health Communication (IFEPHC), the fourth section discussed the theoretical lens for this study, and the fifth section presented a summary of the chapter.

2.1 An Overview of Public Health Communication in Some Developing Economies and Nigeria

Based on development indicators, the world economy was divided into three categories: developed countries (United States of America, Japan, Australia, New Zealand, Europe), economies in transition (the Commonwealth of Independent States and Georgia, South-Eastern Europe), and developing economies (Africa, East Asia, South Asia, Western Asia, Latin America, and the Caribbean). The average GDP per capita in 2022 for each category was \$45,445, \$6,721, and \$5,794, respectively (United Nations 2023).

Developing economies are characterised by low per capita real income, which leads to low savings and minimal investments, a high percentage of people living in poverty, significant variability in rural unemployment rates, a strong external dependence on developed nations, and low export volumes, among other characteristics (Majerova 2021; United Nations 2023). Additionally, weak risk communication systems have been reported in some developing countries, such as those in Southeast Asia (Ofrin et al. 2020).

Although Africa is categorised as a developing region, it lags behind other areas with an average GDP per capita of \$1,944, compared to East Asia's \$9,960, South Asia's \$2,078, Western Asia's \$12,599, and Latin America and the Caribbean's \$8,443. Additionally, instability in governance and leadership is most prominent among developing economies, particularly in Africa and Latin America (Arayssi 2020). According to Arayssi (2020) these continents "face problems of lack of transparency and accountability in a corrupt non-democratic political system, where the political system is serving a limited number of citizens

instead of maximising the public social good for the entire community. Consequently, governments and public institutions fail to provide quality public services or invest in strategies for promoting the overall development of all community members. For example, in Africa, within social services, even when funding reaches the public institution, the government expenditure prioritised wages over other costs, such as materials and equipment needed. As a result, public institutions such as hospitals and schools suffer from poor service quality.” These issues have implications for health communication.

Sharma et al. (2019), in their systematic review of gaps in health communication research, noted that health communication aims to disseminate health information and knowledge among individuals as well as society by improving health literacy. They identified differences between developed and developing economies regarding health communication. The authors reported that developed countries have formulated health communication strategies within the framework of behaviour change models and theories, which have produced effective results compared to those in developing countries, where various communication strategies are designed without considering the beliefs, cognitive behaviours, and attitudes of the masses. Consequently, the health communication strategies in these countries are ineffective, as they do not lead to health awareness. Reiterating their view, Olaoye and Onyenakeya (2023) observed that health communication strategies lack coherence and that crisis and risk communication strategies require better development. These strategies are poorly implemented due to inadequate funding, lack of capacity, and bureaucratic hurdles.

Africa, a continent filled with countries facing struggling economies and burdened by multi-dimensional public health challenges, requires the development and application of well-conceived and effective health communication strategies that align with the population’s cultural, demographic, and psychographic characteristics (Olaoye & Onyenakeya 2023). The authors identified the prevalent health strategies adopted on the continent as information, education, and communication (IEC), utilising mass media, and social media/ICT. Other strategies include communication campaigns or social marketing, entertainment education through theater, film, music, and songs, interpersonal communication, the involvement of community and religious leaders, and community engagement. Although public health communication is recognised as a critical and essential tool for addressing the health challenges faced by the continent, including Nigeria, its implementation appears minimal in Nigeria, as the federal government has paid little attention to it and other health campaigns (Olubunmi et al., 2016).

Nigeria is one of the countries categorised as developing, with approximately 213 million inhabitants (World Data 2024). It is often referred to as the “Giant of Africa” due to its large economy (WHO 2022; Inobembe et al. 2021), but it faces significant public health and

implementation challenges (Muhammad et al. 2017; Igwe & Obeagu 2024). According to Muhammed et al. (2017) these health challenges include infectious diseases, maternal/infant mortality, poor sanitation and hygiene, some vector diseases (living agents that transmit infectious pathogens like parasites and microbes to other living organisms), and non-communicable diseases. Public health implementation challenges encompass low health literacy levels, cultural and language barriers, limited access to information and technology, misinformation and rumours, and diverse sociocultural contexts (Igwe & Obeagu 2024).

The World Health Organisation (2022) attributes some of the health challenges to the country's geographical and developmental context. In a similar vein, Hile et al. (2022) reinforce the claim that Nigeria is facing an array of health challenges and argue that Nigeria needs not only clinical interventions but also social campaigns to influence people's behaviours, attitudes, and beliefs to achieve a healthy society. Consequently, scholars maintain that public health communication is vital to solving the problems and health challenges Nigeria grapples with (Hile 2022; Olubunmi et al. 2016; Onyama and Okpara 2017).

In the past, the Nigerian government developed and implemented various public health communication strategies to manage outbreaks and emergencies. This occurred during the Ebola crisis and more recently during the Covid-19 pandemic. Risk Communication and Community Engagement (RCCE) have been the common strategies used. To assist African governments in developing RCCE strategies, the WHO provided interim guidance on RCCE in March 2020 (WHO 2020). It was also derived from WHO's International Health Regulation IHR (2005), which recognises "risk communication as a critical pillar for a response using multilevel, multisectoral, and multifaceted risk communication capacity for public health emergencies" (NCDC, 2023, p.24).

Nigeria has not performed well in the Joint External Evaluation of International Health Regulations (IHR) implementation in recent years. The evaluation was based on each country's capacity to use:

- multilevel, multisectoral, and multifaceted risk communication capacity for public health emergencies;
- real-time exchange of information, advice, and opinions during unusual and unexpected events and emergencies so that information decisions can be made to mitigate the effects of threats and to support protective and preventive actions;
- mixed communication and engagement strategies, such as media and social media communications, mass awareness campaigns, health promotion, social mobilisation, stakeholder engagement, and communication engagement" (NCDC 2023, p.24).

Nigeria's aggregate scores on a 5-point capacity assessment were 2.0 and 3.0 for 2017 and 2019, respectively. Scores based on specific areas indicate that her weakest points in 2017 and 2019 were in risk communication systems, while her strength in 2019 was in “addressing perceptions, risky behaviours, and misinformation.” The report further revealed that although there was an improvement from 2.0 in 2017 to 3.0 in 2019 in three areas—namely, internal and partner coordination for emergency risk communication, public communication for emergencies, and community engagement with affected communities (NCDC 2023)—Nigeria is still underperforming in these areas overall.

Evidently, there are challenges in public health communication in Nigeria. In this regard, Akande et al. (2023) reiterated the findings of this report, observing that there is fragmentation in health service delivery and difficulties in successfully coordinating with various actors during public health emergencies. Scholars identified insufficient health data and fragmented data collection methods as challenges to public health communication (McGrail & Black 2005; Meribe et al. 2018). Consequently, these issues lead to delays in public health communication until adequate evidence is available (Akande et al. 2023). The implication of the above is that individuals in Nigeria, especially in rural areas, would not receive important public health information in a timely manner, given that public health communication professionals are trying to synchronise and gather adequate information from all fragmented sources (Akande et al. 2023), thereby increasing the chances that the public will fill the information void with rumours. A similar situation was reported by Meribole et al. (2018), indicating that Nigeria's National Health Management Information System policy falls short of WHO's 'Framework and Standards for Country Health Information Systems' due to a lack of governance mechanisms in the execution of the policy, along with the absence of a data management governance process. Given that critical health decisions rely on the availability and access to quality data, this represents a significant setback in health communication in Nigeria and other developing economies. The consequences of this were further highlighted by Nwakasi et al. (2022), who observed that the lack of adequate civil registration and vital statistics in the country suggests that the impact of the Covid-19 pandemic is likely to be underestimated. As a result, population-based public health measures aimed at controlling the infection may prove inadequate in stopping the spread of this highly infectious disease.

Another challenge in public health communication in Nigeria is effectively disseminating public health information to underserved populations, particularly since technology has transformed the way information is communicated. The delivery of health information by public health professionals is significantly enhanced by digital technology (Akande et al. 2023; Winters et al. 2020). This situation indicates that, due to significant disparities in health status and the stark rural-urban divide in education and social status (WHO 2021), along with 70% of

Nigeria's population living in rural areas (Akande et al. 2023), certain individuals—particularly those in rural regions—may be left behind due to poverty and the lack of biotech companies, electronic firms, and other hallmarks of the information age in these communities (Gariel Ajama Foundation 2022). Furthermore, Ojeka-John et al. (2023) argue that during public health emergencies, non-literate populations are particularly vulnerable due to their limited understanding of health risks. Similarly, Akande et al. (2023) maintain that illiteracy may hinder individuals' ability to obtain or process information, often depending on how that information is presented. Therefore, this raises concerns about how Covid-19 was managed, particularly in rural disadvantaged communities in Nigeria, given these challenges.

Covid-19 emerged in 2019 in Wuhan, China, and spread to nearly every country across the globe, leading to a significant global death toll. In Nigeria, the first case was recorded on February 27, 2020. Similar to strategies employed during previous health crises like Ebola, the Nigerian government adopted the RCCE strategy, guided by WHO (NCDC nd). The RCCE strategy, developed by Nigeria's National Centre for Disease Control (NCDC), comprises two components: risk communication and community engagement.

The World Health Organisation defines risk communication as the real-time exchange of information, advice, and opinions between experts, community leaders, officials, and people who are at risk, and it is an integral part of any emergency response (WHO 2017). Furthermore, WHO (2017) maintains that during epidemics, pandemics, humanitarian crises, and natural disasters, effective risk communication enables people at risk to understand and adopt protective behaviours. A similar definition was provided by Nigeria's NCDC (2023, p.13), stating that risk communication is the “real-time exchange of information, advice, and opinion between experts or officials and people who face a threat (hazard) to their survival, health, or economic or social well-being.” Therefore, the information required to keep people safe from the risk of getting the disease is vital. Risk communication was one of the core strategies used in Nigeria. The NCDC noted that risk communication has the capacity to “reduce transmission of disease to bring about reduction in threat and spread of the disease and enhance the risk reduction behaviours in the community.” (NCDC n.d, p.33).

Community engagement is another component of the RCCE. Barker et al. (2020) defined community engagement as involving individuals, groups, and structures in a specific catchment area of a community in decision-making, planning, designing, governance, and service delivery. Within the context of the RCCE for Covid-19 containment, the NCDC defined community engagement as “a strategic process with the specific purpose of working with identified groups of people to identify and address issues affecting their well-being. It seeks to engage the community better to achieve long-term and sustainable outcomes, processes, relationships, discourse, decision-making, or implementation” (NCDC n.d, p.33).

In the context of communicating risks (NCDC n.d, p.33), this involves engaging those affected in understanding the risks they face and involving them in response actions using approaches that are relevant, practicable, and culturally acceptable. These efforts will enable communities and individuals to make informed decisions, reducing health risks and mitigating the impact of the threats they face. A substantial body of research has been conducted on the use of community engagement strategies in developing countries (Ankomah et al. 2021; Anoko et al. 2019). Anoko et al. (2019) added that a one-size-fits-all approach to community engagement is likely to fail if engagement is not contextualised to the affected communities, due to the uniqueness of each community.

The Covid-19 Risk communication and Community Engagement strategy of the Nigerian government was set up to:

- strengthen coordination and communication for an integrated RCCE system among stakeholders at national and sub-national levels;
- develop and disseminate evidence-based and culturally appropriate messages for the Covid-19 response for audiences in Nigeria;
- develop strategies, plans, and guidelines for implementation, monitoring, and evaluation of RCCE systems;
- strengthen community-level implementation of the RCCE strategy;
- strengthen integrated rumour management through effective communication surveillance;
- Improve and sustain cultural competence and health literacy for Covid-19 at all levels (NCDC nd).

It employed several strategies, including public communication, community engagement, the campaign (caption: Take Responsibility), dynamic listening, a rumour management strategy, the use of multiple communication channels, a hotline for case reporting by the public, audience feedback, and monitoring and evaluation (M&E).

Studies on the use of RCCE for health emergencies in African countries have been growing (Adebisi et al. 2021; Zikargae 2020; Shigute et al. 2020; Chiakaan & Oruonye 2020; Sumo et al. 2019). For instance, Sumo et al. (2019), drawing from the experience of Ebola in Liberia, identified that risk communication and health promotion strategies were deployed in developing response plans and promptly disseminating key messages to affected communities to mitigate risks. Other strategies included engaging community leaders, partnering with the media, disseminating messages through community radios, actively monitoring community risk perceptions and compliance, managing rumours, and using mobile and interpersonal communication (IPC). Similarly, the systematic review by Adebisi et al. (2021) revealed that the majority of African countries have RCCE strategies to contain the

transmission and spread of the coronavirus. They further found that RCCE strategies in 13 African countries focused on training and capacity building, risk communication systems, internal and partner coordination, community engagement, public communication, addressing uncertainty, countering misperceptions, and managing misinformation. Furthermore, the factors challenging the government's preventive measures included distrust in government, misconceptions and myths, fear, inadequate health facilities, cultural, social, and religious resistance, stigmatisation, and apathy, among others, which were challenges encountered in the implementation of RCCE in these countries (Adebisi et al. 2021; Omaka-Amari et al. 2020). Apart from these, other challenges specifically reported in Nigeria included poverty, information overload, lack of awareness, and a lack of effective communication approaches (Chiakaan & Oruonye 2020).

Although one of Nigeria's RCCE's objectives was to "strengthen community-level implementation of the RCCE strategy," it is not yet known how the RCCE strategy was implemented at the grassroots level, how the rural context was considered, and how effective the strategies adopted were in achieving the goals of health communication. This is what this study set out to investigate.

2.2 Public Health Communication Strategies

Communication plays a vital role in public health. Its importance cannot be overstated in this study because it provides information and fosters healthy relationships and trust between public health communication professionals and audiences.

Today, as public health crises (epidemics, pandemics) are nearly unavoidable, the need for timely and effective health communication becomes increasingly crucial. This is especially true in languages and channels that people understand, trust, and use, as it aids in addressing health challenges that threaten their lives and well-being (WHO 2017), ultimately enhancing the well-being of individuals in rural areas of developing economies.

Definitions of health communication are neither simple nor brief (Goldstein & MacDonald 2015; Thompson et al. 2005) because they have multiple interpretations based on individual experiences and cultures (Thompson et al. 2005). Nevertheless, exploring these definitions is central to understanding this work.

2.2.1 Definition of Public Health Communication

The definition of health communication has been articulated by various authors from different perspectives. For instance, the Society for Health Communication (2017) defines health communication as the science and art of using communication to advance the health and well-being of individuals and populations, thereby emphasising the systematic and creative aspects

of health communication in raising health-related awareness. Likewise, the U.S. Department of Health and Human Services (2000) describes health communication as an art and technique and highlights three functions of health communication: to inform, influence, and motivate individuals, institutions, and public audiences about important health issues. The definition makes it clear that health communication targets not only the audiences specified for a particular public health campaign but also includes organisations and the broader public. In a similar vein, Schiavo (2013, p.5) defines health communication as a “multidisciplinary field of research theory and practice concerned with reaching different populations and groups to exchange health-related information, ideas, and methods, to help influence, engage, empower, and support individuals, communities, health care professionals, patients, policymakers, organisations, special groups, as well as the public to enable them to lead, introduce, adopt, or sustain health or social behaviour, and or practice towards improving good health.”

The New South Wales Department of Health (2006) describes health communication as having the capability to raise awareness of a health issue or concern and prioritise health issues on the public agenda. It further defines health communication as a “key strategy aimed at informing the public about health concerns and maintaining important health issues on the public agenda” (New South Wales Department of Health 2006), using communication strategies to inform and influence decisions and actions to improve health (Sonke et al. 2021). This highlights the action-oriented aspect of health communication in influencing target audiences’ behaviours, supporting the argument advanced by Parvanta and Bass (2018) that health communication contains three action words: engage, inform, and persuade, and that achieving these action words requires an employed practice strategy.

Furthermore, the Centers for Disease Control defines health communication as “the study and use of communication strategies to inform and influence individual decisions that enhance health” (Doyle et al. 2012, p. 3). This definition is considered very useful for this study, as it underscores the importance of using communication strategies to perform the various functions of health communication.

While several definitions of health communication exist, few definitions of public health communication are available. However, Bernhardt (2004, p. 2051) defined public health communication “as the scientific development, strategic dissemination, and critical evaluation of relevant, accurate, accessible, and understandable health information communicated to and from intended audiences to advance the health of the public.” This definition highlights the essential role of promoting public health and safety through creative communication strategies that inform, educate, motivate, influence, and support individuals in making informed health choices and adopting positive behaviour changes for health and well-being.

About the public, health communication is defined in this study as “the process of addressing public health crises/challenges by providing and disseminating health-related messages to people using appropriate communication strategies to inform, educate, empower, motivate, persuade, and influence them for a behaviour change through making positive health decisions and choices that promote healthy living.”

2.2.2. Public Health Communication Strategies

In the context of health, WHO (2006, p.67) defines health communication strategies as “a list of broad categories of strategies that could be adopted to bring about behavioural and social change.” Similarly, Nkanunye and Obiechina (2017) define health communication strategies as those plans adopted by the health educator and/or giver to inform and influence people to bring about behaviour change (knowledge, attitude). While Nkanunye and Obiechina provided a narrower perspective by focusing on the source of the communication (health educator/giver), the WHO’s definition was broader, perhaps because the provider of public health communication may not be restricted to only health educators or health services providers. The WHO’s definition also indicates that strategies are not limited to specific activities but encompass a broad range of choices and actions.

There are various and numerous public health communication strategies. The strategies commonly mentioned by scholars (Kreps 2003; Franjic 2020; Malikhao 2020; Mitic et al. 2012; Nkanunye & Obiechina 2017; Ugwuegede et al. 2021; Sokey et al. 2018) include mass/broadcast media, interpersonal communication, advocacy, social marketing, and new technology-mediated communication. The new technology-mediated communication is similar to the e-health communication strategy discussed by some scholars (Kreps 2003; Franjic 2020). According to Franjic (2020) e-health communication strategies have been identified as one of the health communication strategies, which include: online support groups; online collaboration communities; information tailored to computer technologies; computer-controlled in-home telephone counseling; biometric assessment and transmission; and patient-provider email contact.

In addition to these strategies, Nkanunye and Obiechina (2017) identified campaigns as a health communication strategy. This concept is synonymous with public education and awareness, as discussed by Mitic et al. (2012), or social marketing, as discussed by Hile et al. (2022) and Olaoye & Onyenakeya (2023). Indeed, campaigns and social marketing are used interchangeably by some scholars (Olaoye & Onyenakeya 2023) or viewed as an approach within each other. For instance, Hile et al. (2022) conceptualised health campaigns as an approach within social marketing.

Other strategies unique to Mitic et al. (2012) included health journalism, stakeholder relations, risk communication, and public information. In their intervention study, Ko et al. (2011) tested two health communication strategies: tailored print communication, telephone motivational interviewing, and a combination of the two.

Some scholars have discussed health communication strategies more broadly. For instance, Ugwuegede et al. (2021) identified three broad categories: primary, secondary, and tertiary health communication strategies. According to them, the primary category encompasses strategies developed to serve rural communities, using traditional and indigenous communication methods such as town criers and age-grade meetings, among others. Secondary health communication strategies focus on educating the audience about various health issues to enable them to make informed choices and live healthy lives. Tertiary strategies involve using broadcast media to reach a wider audience, including radio, television, public service announcements, newsletters, journals, billboards, posters, and social media. In the same vein, Malikhao (2020) named two broad categories: context-specific strategies and an integrated approach. The context-specific strategies for health communication include stakeholder empowerment, community engagement, monitoring and evaluation, participatory community media, advocacy, social marketing, and mass media. Conversely, the integrated approach encompasses behavioural change, mass advocacy, and participatory communication, among others, to be adopted at individual, group, community, and structural levels for various public health situations and issues. While other authors associate health communication strategies solely with channels of communication, Malikhao provided a broader conception, including monitoring and evaluation, communication engagement, and stakeholder empowerment. A similar suggestion was made by Chiakaan and Oruonye (2020). After identifying numerous challenges in Covid-19 risk communication in Nigeria, they suggested employing integrated marketing communication, which involves advertising (to create awareness and influence Nigerians), personal selling (face-to-face contact with Nigerians), public relations (to gain trust and credibility), sales promotion (media campaigns that include artists and communication experts to convey information persuasively), integrated media (to move beyond conventional channels to include social and traditional media), and engaging leaders (traditional, opinion, and religious leaders) to help raise awareness.

Some of the various health communication strategies identified by scholars in Nigeria (Nkanunye & Obiechina 2017; Ugwuegede et al. 2021; Olubunmi et al. 2016) include traditional and rural-based communication methods such as town criers and age-grade meetings, among others. However, there appears to be a conflict in the terminology regarding traditional communication. While Ugwuegede et al. (2021) define traditional media as those common to local communities, Malikhao (2020) classifies traditional media as radio and

television. In this study, traditional media refers to indigenous or rural-based channels of communication, such as town criers, age-grade meetings, and information sharing by community leaders, among other local channels.

Some of the health communication strategies identified by scholars will be discussed in the next section.

2.2.2.1 Health Campaigns

Gow et al. (2015, p.7) conceptualised campaign as “a limited duration activity that has a specific objective with respect to the needs of the community to whom it is directed.” Atkin & Rice (2013 cited in Zhao 2020, p. S11) defined communication campaign as “purposive attempts to inform or influence behaviours in large audiences within a specified time period using an organised set of communication activities and featuring an array of mediated messages in multiple channels generally to produce noncommercial benefits to individuals and society.” In the context of health, Wernette et al. (2020, p.1) defined health campaigns as “time-bound, intermittent activities that address specific epidemiological challenges, expediently fill delivery gaps, or provide surge coverage for health interventions.” In the field of public health, Al Ishaq et al. (2024) define campaigns as “organised efforts that aim to provide solutions to different health-related problems, including but not limited to smoking and the use of cigarettes, or the taking of vaccines and the taking right and balanced diets, among others.”

The definition provided by Atkin and Rice places communication activities at the center of campaigns, while Wernette et al. (2020) emphasise the health component of campaigns without addressing the communicative activities that are part of the “time-bound” and “intermittent activities.” Emphasising the essential role of communication in the effectiveness of health campaigns, Stephens et al. (2004) observed that health campaigns cannot succeed in changing individuals' behaviours without massive exposure of the target audience to campaign messages.

This distinction highlights the debate over whether a campaign is categorised as a health communication strategy, a health intervention, or a health communication intervention, as classified by the Rural Health Information Hub (2017), which identifies health campaigns as a form of health communication intervention. Conversely, some scholars (e.g., Dastmanesh et al. 2023) regard a health campaign as a type of health education intervention. Zhao (2021) distinguishing between communication campaigns, health education interventions, and social marketing, explains how these concepts are both interconnected and distinct:

...important differences exist. Some educational interventions are carried out entirely in clinical or institutional settings without necessarily engaging mass-reaching media. Social marketing programs... often involve marketing tactics beyond communication strategies... Health communication campaigns can

play a central or supportive role in health education and social marketing. But not all health education and social marketing programs include communication campaign activities.

It seems that the major distinctive feature of a campaign is the use of mass-reaching media. In this regard, Tench and Bridge (2021) observe that campaigns are typically shared via mass media to reach a high percentage of the population at a low cost per person. However, they cautioned that using mass media to disseminate campaign messages widely may render the messages inappropriate for certain segments of the audience, while others may not grasp the message due to its broad nature, resulting in unintended negative consequences. Hence, they recommended an element of message tailoring.

Hovland et al. (2021) is of the view that health campaigns are an essential component of preventive health effort that aims to improve health literacy in rural areas where rural dwellers lack access to health information and knowledge, as well as improve both local and global health by engaging in cross-cultural collaboration. Some of the empirical studies in developing countries, Nigeria inclusive, reported the effectiveness of health campaigns in increasing rural people's knowledge and attitudes about diverse health concerns (See Hovland et al. 2021; Dastmanesh et al. 2023)

While health campaigns have the advantage of targeting specific health needs, some scholars argue that the effectiveness of a health campaign or any health communication hinges on the approach and strategies used to convey the information to the target audience (Agha 2003). Most campaigns are classified based on the media channels used for the campaigns, such as mass media campaigns (Agha 2003; Igbinoba et al. 2020; Wogu 2018), social media campaigns (Chan et al. 2023; Allshaq et al. 2024), or based on health issues like malaria, polio, and Covid-19 campaigns, among others. They can also be categorised by the purpose of the campaign, such as vaccination awareness (Upfill-Brown et al. 2016).

One of the effective approaches used in developing countries, such as Tanzania and Zanzibar, is the door-to-door method, which involves house-by-house visits within a community by trained community or health volunteers to provide tailored health education or services (Desrochers et al. 2014; Abbas 2023). According to Abbas, the door-to-door intervention was perceived as helpful for promoting community engagement during campaigns. The effectiveness can be enhanced by providing resources and education to community health volunteers, engaging in regular supervision, and involving community leaders in the selection process of the volunteers.

2.2.2.2 Mass Media

Mass media have been defined differently by scholars. However, what is common in the definitions is that mass media are means of providing messages to the public using communication tools such as television, radio, newspapers, films, magazines (Ihsanudin et al.

2020; Okeya & Akinwande 2020), outdoor media such as billboards, and internet platforms like social media (Facebook and Twitter) and direct mail (Olubunmi et al. 2016).

Studies conducted prior to Covid-19 revealed the dominant preference and use of mass media such as radio, television, and print media (e.g., posters, leaflets, billboards, etc.) in disseminating health messages to the public (Ankomah et al. 2014; Agboola & Abdulrahman 2019; Fakolade et al. 2010; Igbinoba et al. 2020; Hill et al. 2007; Nelson & Salawu 2016; Nyiam and Ngwu 2020; Sokey et al. 2018). However, the positive perception and use depend on the type of mass media, whether print or non-print. It also depends on whether the print is pictorial or non-pictorial. For instance, Hill et al. (2007) conducted a study in the Kintampo District in Central Ghana that investigated the factors affecting the adoption and maintenance of weekly vitamin A supplementation among women and found that posters were one of the most preferred and perceived effective print media channels to help women remember to take their capsules because they were visual.

In contrast, the study by Agboola and Abdulrahman (2019) on the preferences for sources of maternal health information among women in the semi-urban Chanchaga Local Government Area in Niger State, Nigeria, revealed that conventional media (television) was the most preferred source of maternal health information among the respondents, while print media and the internet were less attractive to them. It also found that a language barrier was the reason the respondents reported that health information was not informative, and socio-economic factors influenced media use and preferences.

In addition to preferences and the use of mass media, some studies investigated the perceived effectiveness of conveying health information (Ankomah et al. 2014; Igbinoba et al. 2020; Nyiam & Ngwu 2020). For instance, Nyiam and Ngwu (2020) explored the effectiveness or ineffectiveness of the communication strategies employed by the Cross River State Ministry of Health in addressing the malaria pandemic in the state of Nigeria, using a survey design with a sample of 200 respondents, which included students, civil servants, traders, and farmers. They found that the communication strategies used to combat malaria in the state were effective and that mass media (especially broadcast media) played a significant role in the fight against malaria by sensitising the public. However, a significant proportion of the participants noted the importance of community channels. Therefore, the authors recommended that the government should enhance the use of indigenous communication methods alongside mass media to effectively reach rural dwellers.

A study by Igbinoba et al. (2020) examined a mix of literate and non-literate women in a state in western Nigeria to determine the frequency of mass media exposure and its influence on their maternal health awareness, among other aims. The internet was the primary source of maternal health awareness, followed by advertisements and campaigns, which were the most

common means of obtaining maternal health information. Although most participants were exposed to mass media only once a month, the study reported that mass media exposure had a significant influence on maternal health awareness. However, the study did not investigate preferences, exposure, and effectiveness across literate and non-literate participants or between urban and rural samples.

Another study examined the effects of mass media campaigns on the use of insecticide-treated nets among pregnant women in Nigeria by Ankomah et al. (2014). Based on their findings, they maintained that mass media are vital in addressing reproductive health issues due to their potential for wide audience reach and cost-effectiveness in reaching a larger audience. They further advocated for the expanded inclusion of mass media in community engagement programs. However, they were not specific about the types of mass media, whether print or non-print, the context of the study, whether rural or urban, and the literacy levels of the participants, as was common with most of the studies.

During the Covid-19 era, several studies highlighted the importance and effectiveness of mass media in conveying Covid-19 messages (Iwunna et al. 2022; Talabi et al. 2022). The most frequently mentioned medium was radio. Demonstrating the significance of radio during public health emergencies, Iwunna et al. (2022) found that through radio broadcasts, Nigeria's listeners received crucial awareness messages needed to avert the deadly impacts of Covid-19. The radio deserves recognition for promoting the effective response to the Covid-19 pandemic in Nigeria, as it contributed to the low casualty rates the country experienced in its fight against Covid-19. This indicates that radio, among other forms of mass media, serves as a valuable tool during public health emergencies.

A similar finding was reported by Talabi et al. (2022) in their study that examined public perceptions of the Nigeria Center for Disease Control's (NCDC) radio campaign messages in managing the Covid-19 campaign in three western states of Nigeria, using a survey design method. The research revealed that residents of the states reported exposure to radio campaign messages on Covid-19 preventive measures and that radio influenced their decisions to adopt these measures. However, they identified television as the first medium that informed them about Covid-19 preventive measures, though they did not specify the demographic characteristics of their audiences. The study also failed to mention whether their audiences were urban, rural, or semi-rural. This specification would have clarified the target audiences that television and radio influenced in their decisions to adopt Covid-19 preventive measures. Furthermore, the study recommends that behavioural change communication experts and public health officers at all levels leverage the reliability and reach of radio among target audiences to disseminate public health issues.

Although the findings reported above emerged from the study of the general population, some studies conducted with rural dwellers during Covid-19 confirmed these outcomes. However, the effectiveness of mass media such as radio stemmed from using the local language in the rural communities studied (Ojeka-John et al. 2023; Nyiam & Ngwu 2020). For instance, Ojeka-John et al. (2023) found that non-literate members of a rural community in Southwestern Nigeria highly rated the NCDC's use of radio jingles in the local language to disseminate Covid-19 messages, which helped them understand the information (See Understandable criterion).

The findings by Olapegba et al. (2020), like those of Nyiam and Ngwu (2020), show that television and radio are useful channels of communication during public health pandemics, especially in major towns and cities of Nigeria. They are also effective when used in rural areas along with local language of the people (Ojeka-John et al. 2023).

However, some studies have reported the ineffectiveness of mass media (Wogu et al. 2019). For instance, Wogu et al. (2019) found that a media campaign against female genital mutilation in rural Enugu State, Nigeria, was ineffective since the practice continued. This ineffectiveness was attributed to cultural values, poor network reception, unstable power supply, and inaccessible media. They recommended using channels that are reachable and accessible to rural people by adapting the media to Igbo culture.

2.2.2.3 Internet Based Media

In this modern age, the internet is the quickest way for people to stay informed (Obono 2020). Internet-based media are “digital/electronic media of communication that fundamentally use the internet, e.g., social media, web portals, e-mails” (Umaru & Adamkolo 2021, p.112). Some authors (Olubumni et al. 2016) categorise internet-based media as mass media, perhaps due to the presence of online newspapers and other conventional mass media forms on the internet. However, not all internet-based media are intended for public information.

Internet-based media serves as a vital source of health information that individuals need to make life-changing decisions regarding their health. Ugwu et al. (2024) observed that internet-based health information can also enhance disease prevention strategies and motivate individuals to take a more proactive approach toward their health. Research has demonstrated that social media has emerged as an essential platform for disseminating Covid-19 information by both the government and the public (Zhu et al. 2021; Aldamen & Abdallah 2024). In Nigeria, the NCDC and WHO websites were key sources for sharing information and relevant statistics about the pandemic.

However, Zhu et al. (2021) found that unofficial social media were the main sources of rumour and misinformation. Furthermore, people's use of internet-based media is dependent on some factors such as the educational level of the people (Sokey & Adisah-Attah 2017), the

availability of electricity and a strong network connection (Wogu et al. 2019; Ugwu et al. 2024) and other socio-economic factors such as financial constraints (Agboola & Abdulrahman 2019; Ugwu et al. 2024). As other scholars have argued regarding the use of a single health information medium, Obono (2020) holds that internet-based media can operate most effectively when integrated with traditional public health communication channels.

Most studies on the use of internet-based media have often focused on urban residents, educated individuals, and a younger population, most of whom were under 36 years old (Solo-Anaeto et al. 2021; Oyelami et al. 2013; Oladimeji 2024). These studies revealed significant usage of internet-based media, such as social media, for accessing health information, which the participants found beneficial (Oladimeji 2024). However, a study involving a sample of women from semi-urban areas (Agboola & Abdulrahman 2019) found that both internet and print media were less appealing as sources of maternal health information for these women. This suggests that user context (urban, semi-urban, or rural) is also an important factor influencing the preference, use, and effectiveness of internet-based media in health communication.

2.2.2.4 Interpersonal Communication

Manusov et al. (2020, p. 2) defined interpersonal communication as an interactive process that occurs between people as they exchange and create messages, collaboratively and interdependently, through an interwoven combination of verbal and nonverbal behaviour.

Olubunmi et al. (2016) distinguish between two forms of interpersonal communication in their definition, focusing on "either one to one or one to group communication." One to one could be peer to peer, spouse to spouse, or a health clinic worker to a client, while one to group could refer to a community-based outreach worker speaking with members of the women's cooperative society.

The interactive nature of interpersonal communication is what makes it effective. While justifying their choice of interpersonal communication for a community awareness and behaviour change intervention, Fink et al. (2018, p. 5) noted:

The process of raising awareness involves sharing relevant information while fostering conversations to ensure the interactive learning and dissemination of the knowledge and best practices. Developing an interactive and compelling communication strategy, which caters not only to individuals' reason but also to their perceptions and beliefs, is essential to ensure that better understanding of healthy behaviours eventually translates into practice.

An important aspect of interactivity is providing feedback. Regarding feedback, Dixit (2018) maintains that feedback engenders effective communication as it allows a sender to determine whether the message was accurately interpreted and understood by the receiver. This is due to the interaction between the sender and the receiver.

Earlier studies prior to the Covid-19 pandemic show that interpersonal communication sources were not only highly utilised in rural settings (Momodu 2002; Nwangwu and Ajama 2011; Emele 2018; Ekoko 2020; Sokey et al. 2018) but were also reported as the most effective (Momodu 2002). For instance, Momodu (2002) found that radio, television, and newspapers were the most available information sources in rural areas (Ekpoma, Edo state), but that rural dwellers relied more on informal information (trusted sources like family members, sons, and daughters) than on formal information (mass media).

Similarly, Emele (2018) reported that rural male adults preferred interpersonal communication when seeking information about prostate issues. Emele (2018) investigated the “health information behaviour of men in rural South-East, Nigeria, (Abia State, Enugu State, Imo State, Ebonyi State, and Anambra State, Nigeria) and explored the local socio-cultural aspects that relate to the provision of prostate cancer information.” The study employed a qualitative approach utilising 35 semi-structured interviews and five focus group discussions with men aged 35 and above. It found that the most preferred communication methods in the study areas are interpersonal sources and oral-based communication. (See Sessions on Audience-centeredness and credible/trusted for further discussions).

The positioning of interpersonal communication as a more effective approach to communicating health information to rural dwellers was emphasised by Isiaku and Yusuf (2013). Drawing from their study of perspectives on female genital mutilation (FGM) among residents in Lagos, Isiaku and Yusuf argued that campaigns and media-based channels, such as radio and TV jingles, talk shows, and print media including newspapers and magazines, are not appropriate for reaching rural communities. They contended that communication strategies suitable for addressing health concerns in rural communities, like female genital mutilation (FGM), include interpersonal communication supported by multimedia and participatory approaches. A participatory approach involves stakeholders such as health workers, policymakers, traditional rulers, and end-users of health information.

Studies conducted during the Covid-19 pandemic identified interpersonal communication as an effective health communication channel for Covid-19 messaging in rural settings. For instance, Ezeah et al. (2020) found in their quasi-experimental study that interpersonal communication improved Covid-19 awareness among members of a rural community in Ede-Oballa, Enugu State, Nigeria.

2.2.2.5 Traditional/Indigenous/Rural-based Media

Indigenous, traditional, or rural-based media refers to “any form of indogenous communication system which by virtue of its origin, and integration into a specific culture, serves as a channel for messages in a way and manner that requires the utilisation of values, symbols, institutions, and ethos of host culture through its unique qualities and attributes” (Ansu – yeremeh 1998

cited in Edet et al. 2015, p.85). Some indigenous communication media identified by scholars include town criers, folk songs, drumming, storytelling, and others (Abdulai et al. 2023; Edet et al. 2015).

Empirical studies have shown the popularity of indigenous or rural-based media in disseminating health information to rural communities in developing countries, including Nigeria (Abaneme et al. 2021; Akpan 2023; Abdulai et al. 2023; Ekohm et al. 2021; Omoha et al. 2021; Pepple et al. 2020). For instance, a case study conducted in Ghana by Abdulai et al. (2023) found that indigenous communication systems such as town criers, storytelling, and drumming provide an avenue for the indigenous people to share important information with rural communities in a language that is familiar, understandable, and incorporates ethical and moral values. As such, they recommended maintaining and using these systems to promote indigenous knowledge communication. This study included 25 participants selected purposively, comprising opinion leaders, priests, drummers/praise singers, chiefs, and sub-chiefs from Tolon District of Ghana. Semi-structured interviews were used for data collection, and qualitative content analysis was employed to identify the categories.

In Nigeria, specifically, several studies have supported the use of indigenous communication channels for disseminating information among rural dwellers. For example, Pepple et al. (2020) conducted qualitative research to understand the use of traditional news media for the Covid-19 awareness campaign in four different towns (Finima, Abalambie, Iwo-Ama, and Orosikiri) in Bonny L.G.A of Rivers State, Nigeria. The locals and paramount heads of each of the mentioned towns participated in the study through one-on-one interviews, involving a total of 20 respondents. The perception media theory was used as the framework for this study. However, the study did not specify the data analysis methods. Their findings underscore the importance of traditional newsmen in disseminating Covid-19 information and raising awareness among rural residents about the dangers and health implications of Covid-19. Nevertheless, Pepple et al. (2020) contend that these traditional newsmen, also referred to as town criers by other authors, require further training to enhance their overall sensitisation skills. Furthermore, Omoha et al. reported the underutilisation of this medium due to a lack of resources such as megaphones to amplify their voices.

Furthermore, Akpan (2023) found that traditional or indigenous media such as talking drums, folk songs, drama, festivals, town criers, and age-grade meetings were effective means of communicating with rural dwellers and recommended their use as a development package targeting the rural populace. The ease of deploying town criers and the trust members have within rural communities justifies the call for their use in reducing the spread of the Covid-19 virus.

Exploring various cases of public health communication in Nigeria, Olubunmi et al. (2016) reported on the dynamics of using public health communication strategies, including socio-

demographic factors and the nature of health issues. They discovered that while mass media is effective for reaching a larger audience, it has been ineffective as the sole strategy for achieving behavioural changes among those exposed to it. Additionally, they found that age and contextual factors influence the effectiveness of mass media, with television reaching teenagers and adolescents more effectively than the older population, while radio appears to be the most effective broadcasting option for reaching rural communities in Nigeria. Furthermore, they found that various interpersonal communication options, such as health worker to individual interactions and word of mouth from friends and relatives, are most suitable for enhancing healthy decision-making. They also determined that different community-based options, such as traditional, political, religious, and social institutions, are most appropriate for influencing decisions, especially on matters that challenge cultural, traditional, or religious values.

These highlight the need to employ multiple strategies and adapt them to the audience and health issues. The next section will examine empirical literature on the use of multiple strategies in public health communication.

2.2.2.6 Multiple channels

Studies prior to Covid-19 have also shown the adoption of multiple strategies for public health communication. For instance, Eze (2016) found that multiple strategies such as advocacy, social mobilisation, and program communication were utilised in polio immunisation campaigns, and that employing these strategies contributed to the campaign's success. The study used a mixed-method approach to evaluate communication strategies employed in polio immunisation campaigns in rural Kaduna and Sokoto States, Nigeria, as well as the extent of participation in the design and implementation of these strategies, the influence of demographic and socio-cultural variables, and knowledge on the acceptance and use of the polio vaccine. It also noted that the execution of the polio campaign strategies was low, while the adoption of multiple communication strategies was more effective in both states.

Findings from other developing countries, such as Ghana, suggest a need to use multiple channels for different categories of people. For instance, Sokey and Adisah-Attah (2017) found that while less educated individuals rely on interpersonal sources (family members), the more educated use the internet and television to access health information. Sokey and Adisah-Attah (2017) investigated health information-seeking behaviours and the barriers to health information seeking among rural dwellers in Ghana. The study employed a descriptive quantitative case study approach, utilising convenient and purposive sampling techniques to sample a total of 210 community members (107 males, 101 females) with varying levels of education from six different villages: Kodiabe, Ayikuma, Doryumu, Ayenya, Agomeda, and Dodowa, within the Shai Osudoku district of Ghana. Their findings revealed that respondents

with a higher level of education utilised the internet and television to access health information, while those with a primary education turned to family members for information (interpersonal). The findings also showed that many rural dwellers faced significant difficulties, including language barriers, the remote location of villages, and limited access to emerging technologies such as phones and television sets, in obtaining health information. Therefore, the authors recommend that guidelines and strategies for improving health information and reducing barriers to accessing health-related information should be designed (Sokey & Adisah-Attah 2017).

In the context of Covid-19 message dissemination, Egenti et al. (2022) evaluated the effectiveness of communication channels and campaign messages used in the fight against Covid-19 in Anambra State and Nigeria, employing a survey research design. The study's findings indicate that the Covid-19 campaign was quite robust in the state, and the messages were effective in managing and preventing the spread of the virus. Furthermore, the results show that friends, family, and colleagues were regarded as the most influential sources of information, while radio emerged as the most effective channel for communicating Covid-19 messages. This study involved a majority of urban dwellers (59.5%) and rural dwellers (40.5%), yet it did not explain why respondents perceived radio as the most effective communication medium. The study recommends that efforts should be directed towards strengthening these communication channels and developing new strategies for more effective information delivery and public health management in the future.

Olapegba et al. (2020) study assessed knowledge and perceptions about Covid-19 among the public in Nigeria during the initial week of the pandemic lockdown. The study adopted a cross-sectional survey using an anonymous online questionnaire to gather data from respondents. They also utilised purposive and snowball sampling techniques to recruit 1357 respondents aged 15 to 70 years from 180 cities and towns in Nigeria. The study revealed that traditional media (TV/Radio) are the most common sources of health information related to Covid-19. Furthermore, findings indicate that Nigerians possess relatively high knowledge about Covid-19, primarily derived from traditional media. Based on the study's findings, the authors recommend intensifying evidence-based campaigns to dispel misconceptions and promote precautionary measures.

Studies conducted in other developing countries have also reported the effectiveness of using multiple channels of communication. For instance, Boateng et al. (2023) carried out a systematic review of the communication strategies regarding Covid-19 in South Africa and Ghana. Their study analysed published data on Covid-19 from 2019 to 2020 to identify recurring themes. Findings from their study reveal that various inadequacies and challenges related to communication and media strategies aimed at addressing the spread of Covid-19

exist. The study also found that the governments of both countries and public health institutions utilised multiple mass media channels to convey Covid-19 messages and create awareness about the virus. It also recommends improving communication and media engagements between governments and stakeholders in both countries to enhance public awareness of the risks, threats, and outcomes associated with the virus. Additionally, the study emphasises the need to verify information about the Covid-19 pandemic from official government and health institution sources before disseminating it to the public, in order to curtail fake news, misinformation, and disinformation. Furthermore, the study advocates for the integration of indigenous communication strategies for engagement, as this would help address the challenges of mass media and increase public awareness about the pandemic in both countries. In other words, the study highlights the importance of employing a variety of communication channels, including those specific to a particular community, to improve public health awareness during emergencies.

A similar recommendation was made by Olaoye and Onyenankeya (2023), drawn from their systematic review of communication strategies in sub-Saharan Africa. Olaoye and Onyenankeya (2023) problematised the public health communication strategies used. They reported that in some countries, specific strategies are employed to address particular health issues, while a combination of strategies is utilised in others. Furthermore, in certain countries, the strategies were unclear, and implementation was improvised, sometimes misapplied, or hindered by bureaucratic red tape and incompetence. The prevalent strategies are primarily those prescribed externally with minimal input from the beneficiaries. They suggested that employing a holistic or multi-pronged health communication approach that is context-specific and participatory could enhance the acceptance of health messages. Similarly, Mheidly and Fares (2020) argued that a unique health communication strategy is necessary for minority populations and individuals of different classes, ethnicities, and races. They recommended a direct health communication strategy and further advocated for more research and development in health communication to uncover strategies aimed at different populations as well as those that have proven effective.

Scholars have argued that the effectiveness of public health communication depends on the effectiveness of the communication strategy employed (Olubunmi et al. 2016). In the next section, the effective aspects and effectiveness of public health communication are explored.

2.3 Effective Public Health Communication and Effectiveness of Public Health Communication Strategies

The definition of effective public health communication and the effectiveness of public health communication involve two distinct yet related conceptions. Firstly, effective public health

communication is viewed as an input element, while effectiveness is regarded as a product or outcome concept. For instance, Williams et al. (2023) defined effective health communication strategy as a two-way process that involves clear messages, delivered via appropriate platforms, tailored to diverse audiences, and shared by trusted people. This provides what may be described as inputs or ingredients for effective communication.

On the other hand, some conceptions of effectiveness relate to outputs or outcomes of health communication efforts. These could be drawn from definitions of effectiveness provided by some authors. For instance, Bridges (2003, as cited in Alasomuka 2021, p. 572) defines effectiveness as the attainment of an institution's objectives and goals. It was also conceptualised as the extent to which an activity fulfils its intended purpose or function (Lin & Shariff 2008). Furthermore, according to Demirel and Kabasakal (p.87), effectiveness is the degree to which goals are achieved. A similar definition was provided in the context of policy evaluation where Cedefop (2020, p.163) defines effectiveness simply as “the extent to which a policy attains its objective”. Effectiveness was also perceived as the degree to which planned activities are realised and planned results achieved (Berkmerghagen 2004). While the first four conceptualize effectiveness from the perspective of the product or outcome of a process, the last looks at effectiveness as the successful execution or implementation of planned actions (process) and the achievement of the goals or objectives (product).

Within health communication, authors sparsely defined effectiveness; instead, indicators of effectiveness were offered. However, some studies provide indicators of the effectiveness of health communication. For instance, Fish et al. (2017) in their systematic review define the effectiveness of public health communication during smoke events as compliance with advisories. In other words, health communication is effective if the audience complies with the precautionary measures stipulated for their safety. In a study by Kashian and Mirzaei (2019) health communication effectiveness was measured by using perceptions of media effectiveness (the degree to which the media made shared understanding possible) and communication effectiveness (the extent to which the target audience realised/accomplished their communication goal). This presents two measures: perceived understanding, which relates to the input dimension, and goal accomplishment, which relates to the output or outcome.

Other indicators of the effectiveness of health communication strategies include audience knowledge and awareness of the health issue being communicated, as well as compliance with guidelines provided by the health communicator (Omedo et al. 2014). Regarding compliance with guidelines in the context of the Covid-19 pandemic, it relates to the target audience's adherence to Covid-19 protocols needed to prevent the spread of the disease—such as social distancing, handwashing, wearing face masks, receiving the Covid-19 vaccine, getting tested for Covid-19, and self-isolating when infected, as outlined by WHO (2020).

Regarding the COVID-19 vaccine, studies show significant vaccine hesitancy among Nigerians, particularly health workers (Adejumo et al. 2021; Nomhwange et al. 2022). Consequently, a study by Abubakar et al. (2022) sought to determine the health communication strategies that could be used to enhance the uptake of COVID-19 vaccination, revealing that communication messages highlighting personal health risks associated with Covid-19, combined with a visual display of the vaccination process by an influential opinion or community leader, would reduce suspicion regarding the Covid-19 vaccine and ultimately lead to its acceptance. Earlier findings from a systematic review of vaccine uptake by Bish et al. (2011) found that perceptions of vaccination as effective, as well as perceived risk and worry about contracting the infectious disease, were associated with stronger intentions and higher vaccination uptake. A recent study by Chiakaan and Shadrach (2023) conducted in Taraba State, Nigeria, found that fear of vaccine side effects, rumours, and mistrust in the government suggested that audience segmentation, tailored messages, and the use of multimedia could promote vaccine acceptability.

Nevertheless, Fish et al. (2017) argue that the variability in the measures of the effectiveness of health communication strategies makes it difficult to identify strategies that best address a given situation. Regarding this problem, Ceretti et al. (2022) called for future research attention to addressing this variability and developing unified measures of the effectiveness of campaigns and policies.

2.3.1 Attributes of Effective Public Health Communication

Several organisations and scholars have identified various attributes of effective health communication. The guiding principle for effective public health communication was combined in this study to form an integrative framework that served as a theoretical lens through which the case study was understood. Furthermore, WHO (2017) criteria were firstly reviewed alongside other criteria for effective health communication by different organisations and scholars because WHO is believed to be responsible for providing leadership on global health matters, shaping health research agenda, setting norms and standards, and articulating evidence-based health policy options (WHO 2017). WHO (2017) provided six principles of health communication, namely, accessible, actionable, credibility and trust, relevance, timely and understandable. Other criteria by organisations and scholars were partnership, repetition, pre-testing and revision, and monitoring and evaluation. Although WHO (2017) did not discuss audience-centred as a stand-alone principle, it pervaded WHO's six principles as well as the discussions of other organisations and scholars. Therefore, a total of 11 elements of effective public health communication formed the Integrated Framework for Effective Public Health Communication (IFEPHC). This was discussed in turns, drawing from literature on general

best practices by the organisations and scholars in health communication, including empirical studies in rural Nigeria.

2.3.1.1 Accessible

The first principle for effective communication by WHO (2017) is the "accessible" principle. This principle entails careful consideration of the possible means available to target audiences for receiving health information, including those with whom the health information is discussed. This is important because target audiences depend on their ability to access needed health information to protect and improve their health. Consequently, health communication professionals should consider the channels that audiences can access and prefer for receiving and seeking health information, including channels that encourage two-way communication to support the overall objectives of the public health campaign. They also emphasise the importance of ensuring that people with disabilities can find and use the health information they need.

In addition, scholars and organisations have, from various standpoints, supported the principle mentioned above for effective health communication by WHO (2017). For instance, Schiavo (2013) highlights the importance of making health information available to people with disabilities as recommended by WHO (2017) when she states that health communication messages need to be "key-group-specific and tailored to channels that allow the most effective reach, including among vulnerable and underserved groups". The idea of tailoring channels and messages has earlier been highlighted by scholars (Airhihenbuwa & Obregon 2000; Noar et al. 2009) as a means of facilitating optimal reach and relevance as well as an avenue for enhancing impact and recall of health information. The need to tailor health communication to reach rural communities was also reported by Aljassim and Ostini (2020). Noar et al. (2009) observed that different approaches can be used to tailor messages, and the efficacy of any tailoring strategy depends on the approach employed.

Similarly, the European Centre for Disease Prevention and Control (n.d) supports this point in their "reach and availability" attribute by highlighting the importance of ensuring that health communication content reaches and is accessible to a large number of people in the target population.

Similarly, the U.S. DHHS (2004) supports the above principle when they discussed the need for health communicators to "consider the best time to reach target audiences, including preparing messages accordingly." This underscores the importance of targeting audiences when they are available with appropriate channels to facilitate their access to necessary health information. Suggs et al. (2015) WISH AD framework, highlights the significance of accessibility for health communication effectiveness by emphasising the need for understanding all aspects of communication channels and where to reach target audiences.

This means that target audiences can access health information when it is provided through suitable channels and placed in locations that the target audiences can reach. Andrews et al. (2020) discussed the need for health communicators to focus on the form of communication during the “form phase” of the principles for effective health communication to enable easy understanding.

Furthermore, Tulane University School of Public Health and Tropical Medicine (2021) identified crafting messages specifically as one of the tips for effective health communication. They emphasised the importance of using research-based strategies to shape messages and campaign materials. This promotes accessibility of health messages to the target population. From the views of organisations and authors on accessibility, it is essential to note that the central point is for health information to successfully get to intended audiences through careful consideration of a mix of communication channels that the target audiences have access to; places where the audiences can easily access needed information. This relates to message reaching the target audience wherever they may be.

WHO (2017) was the only organisation that emphasised the importance of a two-way communication and the need for resources to develop messages for specific channels accessible to target audiences. These points were not mentioned by Schiavo (2013), U.S. DHHS (2004), ECDC (n.d), Suggs et al (2015), Andrews et al. (2020), and Tulane University School of Public Health and Tropical Medicine (2021).

Some authors (Dikotla et al. 2020; Zhu et al., 2021) have found that rural communities often have limited access to health information and that several factors hinder their ability to obtain it. Dikotla et al. (2020) identified illiteracy and a lack of knowledge regarding appropriate sources of information, which can lead to misconceptions among rural residents. On the other hand, Zhu et al. (2021) found that age, education, employment status, and income were factors affecting access to information among rural residents in China.

In summary, to achieve the ‘accessible’ attribute, public health communicators should:

- Use channels that are suitable and available to the target audience
- Use channels preferred by the target audience
- Use places easily reachable by the target audience
- Use a 2-way communication channel
- Tailor channels to the target audience.

2.3.1.2 Actionable

WHO (2017) outlined “Actionable” principle as the second principle for effective communication. This entails health communication professionals having an appropriate and clear understanding of their target audiences’ knowledge, attitudes, and behaviours to enable them to create messages that address barriers and obtain desired actions.

Various organisations and scholars support the above principle. For instance, ECDC's (nd) "cultural competence attribute" of effective health communication; U.S DHH's (2004) "define the intended audiences" effective attribute of health communication; Schiavo's (2013) "evidence-based" element of health communication; Suggs et al. (2015) WISH AD framework's "DO phase"; Andrews et al's (2020) "get to know the audience" principle for effective health communication; Tulane University School of Public Health and Tropical medicine's (2021) "get to know the intended audiences" tip for effective health communication campaigns, highlight the importance of conducting preliminary research to learn about the intended target audiences.

In summary, to achieve effective public health communication, health communicators should:

- Create message to address target audience's barriers
- Use behaviour change campaign
- Communicate emergencies
- Provide resources
- Provide clear instructions
- Be credible

Empirical studies reveal the challenges and barriers to health communication among Nigerian audiences, especially among rural dwellers, which must be addressed to achieve the 'actionable' element of effective health communication. Oku et al. (2017), in their qualitative study, explored the "factors that affect the delivery of a vaccination communication in two states, Bauchi and Cross Rivers, Nigeria." A total of 15 key informants (stakeholders) were engaged in interviews using a semi-structured interview guide; however, the study failed to mention the respondents' demographics (sex, age) and did not apply a theoretical framework. Data were transcribed verbatim and analysed thematically. The study reports that funding constraints, human resource factors (health worker shortages, training deficiencies, poor attitudes of health workers and vaccination teams), inadequate infrastructure and equipment, and weak political will were the major barriers and facilitators affecting vaccination communication delivery in Bauchi and Cross River States, Nigeria. Their study also revealed that political support, engagement of traditional and religious institutions, and the use of organised committees are among the factors that facilitate communication activities in the two states (Bauchi and Cross Rivers, Nigeria). Thus, Oku et al. (2017) recommend that policymakers and program managers should understand the barriers and facilitators affecting the delivery of vaccination communication in Nigeria to implement effective and efficient communication interventions.

Similarly, Muturi and Mwangi (2011) reported that low literacy and the lack of an educational component in HIV/AIDS mass media messages were barriers to the success of HIV/AIDS

awareness campaigns. A qualitative study was conducted using focus group discussions in rural Kenya to understand the perspectives of older adults on HIV/AIDS prevention strategies. The study reports inadequate involvement of older adults in the fight against HIV/AIDS and a lack of understanding of HIV/AIDS messages, despite national HIV/AIDS awareness campaigns that emphasised behaviour changes and promoted testing and condom use, due to low literacy among members of rural communities and the lack of an educational component in mass media HIV/AIDS messages.

2.3.1.3 Credible and Trusted

WHO (2017) outlined “credible and trusted” principle as the second principle for effective communication. According to WHO (2017) the credibility of the health communicator is a vital factor in determining whether the audience will act on the message. In other words, credibility and trustworthiness motivate audiences. Fogg and Hsiang (1999 cited in Liu et al. 2023, p.2000) defined credibility as “the extent to which information is perceived believable, true, or factual.” Beyond the question of whether information is factual, the source of information is crucial in accepting it as factual or not, a concept referred to as “source credibility.” Source credibility is an aspect of credibility that signifies the extent to which an audience perceives a source of a message as “having relevant knowledge, skill or experience and trusts the source to give unbiased, objective information” (Belch & Belch 2003, p.168). Furthermore, source credibility reflects the trustworthiness of the person or group who created or conveyed a message, which is essential to the public (Shah & Wei 2022).

WHO furthermore encourages accuracy and transparency in communication (openness and honesty), and coordinate with partners as this enables messages to reach more audiences uniformly and access more channels to disseminate consistent messages.

Regarding transparency, (Ball 2009) noted that some indicators of an organisation's transparency are the availability of information, the ease of obtaining information by the public, and signals of trustworthiness.

Organisations and Scholars (U.S. DHHS 2004; Schiavo 2013; ECDC n.d; Andrews et al. 2020; Suggs et al. 2015; Tulane School of Public Health and Tropical Medicine 2021) have revealed the importance of credibility and trust; thus, supporting “trust and credible” principle for effective communication. However, some of these organisations and scholars did not use the exact phrase as WHO (2017).

Schiavo's (2013) “health communication builds relationship” element of health communication; Tulane School of Public Health and Tropical Medicine's (2021) “consider the pros and cons of partnership” tip for effective health communication highlight the importance of partnership among key stakeholders and organisations, which WHO (2017) recommends as an essential component of any communication that helps boost credibility and trust. They support WHO's

(2017) view on partnership to ensure public trust by emphasising the need to build positive relationships among stakeholders, organisations, and government, as strong relationships foster long-term trust. (Schiavo 2013) are almost inevitable for the success of most health campaigns (Tulane University School of Public Health and Tropical Medicine 2021). Furthermore, emphasising partnership as a crucial element of trust and credibility allows communication professionals to coordinate with other sources, especially those considered trustworthy by target audiences, as this enhances the believability of messages and extends beyond the organisation's target audiences to include the audiences of their partner organisations.

Similarly, ECDC (n.d.) in their "reliability" attribute for effective health communication; U.S. DHHS (2004) in their "create messages effectively"; and Suggs et al. (2015) in the "Do phase" support WHO's (2017) point on "trust and credibility" by highlighting the importance of public health communication professionals utilising credible sources and/or channels of information to enhance public health message acceptance, again emphasising the need for partnership. In summary, for effective public health communication, credibility and trustworthiness should be achieved through:

- Transparency in the delivery and messages
- Technical Accuracy of messages
- Use trusted sources
- Consistency & Reliability

In the rural context of Nigeria, few studies have linked credibility and trust to the channels through which Covid-19 messages were disseminated to rural communities. For instance, studies have shown that the perceived effectiveness of health messages was due to the delivery of credible messages through interpersonal channels (Ezeah et al. 2020) and traditional media, such as town criers (Abaneme et al. 2021). Ezeah and his colleagues conducted a quasi-experimental study involving a simple random sample of 470 non-literate participants in rural Ede-Oballa, Nsukka Local Government Area of Enugu State, Nigeria. The study examined the main effect of interpersonal communication and the moderating role of source credibility on participants' awareness and knowledge of Covid-19. It was found that both groups (treatment and control) had low awareness of Covid-19 at baseline; however, the treatment group reported higher awareness post-treatment. The study further indicated that source credibility moderated the influence of interpersonal communication on the health behaviours of rural dwellers. Consequently, it recommends using interpersonal communication to raise awareness and improve knowledge in rural communities, considering issues like illiteracy and low socio-economic status, as well as engaging interpersonal sources that are viewed as credible by rural community stakeholders.

Similarly, another study by Abaneme et al. (2021) identified trust and acceptability of traditional rulers as reasons for covid-19 awareness among rural dwellers. Abaneme et al. (2021) revealed that the rural residents of Ebonyi state were aware of the virus and were compliant with the safety rules and measures. It further revealed that they relied on traditional media like the town crier for health information. The participants attributed their Covid-19 awareness to their trust and acceptance of traditional leaders. The study employed a survey research design, utilising a questionnaire as the primary instrument for data collection. A total of 95 respondents (both males and females) were engaged in the study through in-depth interviews. Likewise, a number of studies conducted on the general population in Nigeria reveal similar findings. For instance, Adeitan et al. (2021) adopted the Elaboration Likelihood Model (ELM) to examine the relationship between the perceived credibility of information sources and the adoption of Covid-19 preventive strategies among residents in Southwest Nigeria. The study employed an online survey and in-depth interviews as the research designs. Convenience and purposive sampling methods were used to select 259 respondents and ten participants aged 18 years and above. Findings from the study show that expertise and trustworthiness determine the credibility of information sources, while television is perceived as the most credible source of information. Findings also indicate that a significant relationship exists between the perceived credibility of information sources and the adoption of preventive measures. Furthermore, the results of the study reveal the importance of engaging trusted and credible sources of information to disseminate public health messages, as they positively influence the target audience's behaviours.

A study by Sato (2022) evaluated the relationship between trust in government and the Covid-19 vaccine hesitancy using Afrobarometer survey for data on trust in government and the Covid-19 National Longitudinal Phone Survey (NLPS) for data on Covid-19 vaccine hesitancy merged by strata. Findings from the study show that distrust in government was strongly associated with Covid-19 vaccine hesitancy including the negative perceptions that the vaccine was not safe, and concerns about the side effects of the vaccine were also found as reasons for refusal. Consequently, the study concludes that distrust in government is an important predictor for vaccine hesitancy in Nigeria, therefore, the study calls for policy makers to be cautious when it comes to strategising for Covid-19 vaccine distribution, especially in places where trust in government is weak.

In a similar vein, Nnama-Okechukwu et al.'s (2020) study explored knowledge of Covid-19 and compliance with preventive measures among community members in Anambra State, Nigeria, using in-depth interviews. The study sourced information from 36 individuals, including household heads aged 48 years and older and 6 children aged 13-17 years. The study's findings show that the majority of respondents believed that the Covid-19 pandemic is more of a hoax than a reality and that this poor understanding negatively impacted their

compliance with preventive measures to curb the virus's spread. Therefore, the study recommends disseminating accurate information to ensure compliance with preventive measures. The findings of the study suggest that the majority of respondents lack trust in the government, which leads them to interpret the messages as a hoax rather than reality.

2.3.1.4 Relevant

WHO (2017) outlined “relevant” principle as the fourth principle for effective communication. This states that health communication will be effective when target audiences believe and feel that public health information and guidance pertain to them and their loved ones. Furthermore, for health communication professionals to help their target audiences perceive health information as relevant and applicable, it is essential to first have a deep understanding of the audiences’ needs, preferences, demographics, situations, backgrounds, and context. In other words, health communication professionals must know their audiences (WHO 2017; ECDC n.d; U.S. DHHS 2004; Suggs et al. 2015; Andrews et al. 2020; Schiavo 2013; and Tulane University School of Public Health and Tropical Medicine 2021). Consequently, public health communication professionals must learn about the socio-demographic information and socio-political environments of their audience (WHO 2017; Schiavo 2013; Tulane University School of Public Health and Tropical Medicine 2021; Suggs et al. 2015; Andrews et al. 2020; and ECDC n.d); understand what the target audiences are hearing about the health issues that could hinder their understanding of the health information and how it applies to them, including misinformation (WHO 2017; Andrews et al. 2020; Suggs et al. 2015; and Schiavo 2013).

In addition, to ensure that public health messages are considered relevant by the target audiences, organisations and authors maintain that health messages must be target specific (WHO 2017; Schiavo 2013; U.S DHHS 2004); listen to audiences and dialogue with intended audiences (WHO 2017; Andrews et al. 2020; and Schiavo 2013); as well as motivate the audiences (WHO 2017).

More so, to make target audiences perceive health information as relevant, health communication professionals must understand if the target audiences feel that they are at risk and if they think there are solutions as to how to reduce the risks (WHO 2017); including how they react to public health crisis (Suggs et al. 2015; and Andrews et al. 2020).

There is also a need for public health communication professionals to understand if target audiences have experienced such a health crisis in the past to enable them to use the experiences as reference points for message development and materials (WHO 2017; and Schiavo 2013).

Using culturally appropriate health communication strategies has been identified as an effective approach to sharing health messages among such communities. However, the concept of culturally appropriate health communication has been used interchangeably with

other concepts such as ‘culturally sensitive health communication’ and ‘culturally competent health communication’ among others (Brooks et al. 2019). Sharing perspectives from working with one of these culturally and linguistically diverse minority groups in Australia, Karidakis et al. (2022) noted that strategies based on the linguistic resources and cultural knowledge of intermediaries such as family members, interpreters, and language-concordant healthcare workers may hold promise for effective public health communication and messaging for this group. This aligns with the National Academies of Sciences, Engineering, and Medicine’s (2023) position that tailored and culturally appropriate health communication strategies are effective among minority and linguistically diverse communities. Expanding on this view, Falo (2023) describes culturally sensitive health communication as one of the criteria for effective health communication. In practice, it involves using culturally appropriate imagery, examples, and metaphors, as well as collaborating with community leaders or representatives, which aligns the message with the audience’s cultural norms and values and enhances its impact. Drawing from experiences among vulnerable refugee communities in the US, Feinberg et al. (2021) observed that ineffective use of risk communication worsened long-standing health inequalities and suggested that culturally and linguistically appropriate health communication is required to dispel cultural myths, social stigma, misinformation, and disinformation.

Summarily, relevance can be attained by:

- Listening to the target audience
- Tailoring messages to the target audience
- Motivating the target audience
- Making messages applicable to the target audience and their loved ones

One of the ways of achieving the relevance of a message to the target audience is tailoring messages. An experimental study by Haumer et al. (2021) demonstrated how tailoring messages can enhance message relevance and promote behaviour change. A study conducted in a German university revealed several significant negative effects of the change in communication that addresses certain personality types with the wrong messages. Specifically, employees with extroverted, conscientious, and open personalities exhibited weak employee engagement when exposed to change messages that were not aligned with their personalities. Extroverts react strongly negatively to messages tailored for conscientious and neurotic personality types, while employee engagement is reduced for conscientious personalities when they are exposed to messages tailored for extroverts. Similarly, messages tailored for conscientious personality types had a negative effect on the employee engagement of open personalities.

In Nigeria, Ojeka-John et al.’s (2023) study showed how language tailoring was able to enhance non-literates’ understanding of Covid-19 message (See *Understandable* section).

2.3.1.5 Timely

WHO (2017) outlined “timely” principle as the fifth principle for effective communication.

This principle states that public health communication professionals must provide health information, advice, and guidance to target audiences in a timely manner, especially when they are receptive to guidance and action (WHO 2017; ECDC n.d; Suggs et al. 2015; and Andrews et al. 2020).

Furthermore, the need for the provision of timely information to target audiences rapidly during a public health crisis is fundamental to effective public health communication because it helps the organisation communicate what is known about the crisis to their target audiences first (WHO 2017); as well as reduce and fill any information gaps (Andrews et al. 2020).

Despite the importance of making public health information and guidance available to target audiences when they are most receptive to such information to enable them to make informed health-related decisions needed to protect themselves and their loved ones, only WHO 2017; ECDC n.d; Suggs et al. 2015; and Andrews et al. 2020 highlighted this point as important for effective public health communication. Schiavo 2013; U.S. DHHS 2004; and Tulane University School of Public Health and Tropical Medicine 2021) did not include “timely” as an important factor for effective public health communication.

To achieve the “timely” principles for effective public health communication:

- Avail the message on time
- Send messages when Target audience is receptive

Although limited empirical studies have been devoted to assessing the timeliness of health information in developing nations, findings from a few studies in China and the USA address this issue. For instance, a study conducted by Zhu et al. (2021) in rural China reported that the failure of official social media channels to manage the Covid-19 information explosion and provide timely, sufficient information led to an increased reliance on non-official social media channels, where rumours and unverified information about Covid-19 circulated. The authors employed a mixed methods approach to identify the factors affecting accessibility to and reliability of health information in rural China during the Covid-19 pandemic.

Another study by Holroyd et al. (2020) in predominantly Black Baltimore, United States, found that one theme identified from participants’ perspectives on the health authority’s role in communicating recommendations during health emergencies was a lack of timely alerts regarding outbreaks, which may be attributed to their limited awareness of the disease itself. This qualitative study involved a sample of 25 residents from whom information was gathered through in-depth interviews. Other findings included challenges associated with providing clear and complete information, as well as trust issues.

2.3.1.6 Understandable

The sixth principle for effective communication by WHO (2017) is the “understandable” principle. This entails simplifying technical terms and ensuring that health messages are presented in formats and styles that are easily comprehensible by their target audiences (WHO 2017; ECDC n.d; Andrews et al. 2020; and Suggs et al. 2015); using simple languages, visuals (WHO 2017; Suggs et al. 2015). Furthermore, to ensure easy understanding of health messages by the target audiences, WHO (2017) recommends the use of multiple languages and the need for public health communicators to tell real stories. A process that Schiavo (2013) refers to as “health communication being creative in support of strategy”.

Having reviewed the six core principles for effective communication by WHO (2017), there is a need to go beyond WHO’s (2017) core principles and review other attributes of effective health communication by different authors and organisations which are not covered by the WHO six principles for effective health communication and are considered important elements relevant to the present study.

In addition to WHO’s principles, several other authors and organisations discuss “repetition” as an important attribute of health communication because it helps reinforce the impact of health information with a given target audience and reach a new generation (ECDC n.d; Suggs et al. 2015; WHO 2017). This means that public health communication professionals should endeavour to use preferred communication channels that are suitable for the target audiences to communicate and repeat health messages over time, to aid internalisation. This approach enables the public health information to reach others that the messages did not initially reach. Summarily, the actions required to be taken to achieve the “understandable” criterion include;

- Transmit messages in formats and styles easily comprehensible to the target
- Use simple and plain languages to convey messages
- Use Visuals
- Use multiple languages
- Use familiar language
- Tailor language to target audience.

Prior to Covid-19, scholars have recommended using the audience’s local dialect to enhance understanding of health messages. In their study of a rural community in Edo, Nigeria, (Momodu 2002; Oladeinde et al. 2015) found that rural communities have low literacy levels and diverse dialects that should be utilised for them to understand the health messages being communicated.

Empirical studies from the beginning of Covid-19 in 2020 have demonstrated that health communicators’ actions to achieve audience understanding of Covid-19 messages made the

awareness creation successful. Some studies found that the use of local language and radio jingles enhanced non-literate audience's understanding (Ajaero et al. 2023; Leader 2020; Ojeka-John et al. 2023). For instance, Ojeka-John et al. (2023) using a cross-sectional mixed method research design and purposive sampling methods, investigated the extent to which the Nigeria Centre for Disease Control communicated the risk of Covid-19 disease to those non-literate (unable to read or write) population during a public health campaign in South-West Nigeria adopting the risk communication theory. A total of four hundred and twenty respondents were selected from six towns in rural Lagos. The findings of the study show that NCDC awareness creation of the Covid-19 pandemic among the non-literate population was analysed from three jingles in the Yoruba language and nine flyers were designed for Covid-19 dissemination from NCDC websites. The result show that the awareness creation for non-literates in the South-west achieved significant success because of the medium used. Findings show that messages were communicated in local languages (Yoruba) and majority (60.4%) of audience rated radio highly and health workers (19.8%) as channels that created understandable messages on Covid-19 safety protocols among rural dwellers in South-western Nigeria.

The findings of this study indicate that non-literates in Nigeria, particularly in rural areas, can understand health messages tailored to their local languages, which could lead to significant success in raising awareness. However, the study critiques NCDC's communication strategies, arguing that NCDC has fallen short in effectively communicating Covid-19 risks to non-literates in the Southwest. The jingles primarily reiterated the Covid-19 safety protocols and symptoms, emphasising compliance without adequately educating the public about the severity and dynamics of the disease. Additionally, NCDC supplemented graphics and symbols regarding Covid-19 with English text, making it challenging for non-literates to understand. Therefore, the study recommends that public health agencies should educate the non-literate population about the nature of the disease, focusing on more than just creating awareness of the outbreak. This education should be strategic, context-specific, and evidence-based. Effective context-specific awareness creation can be accomplished through grassroots mechanisms, which is the original purpose of local government.

While Ojeka-John et al. (2023) studied radio jingles in Yoruba, Ajaero et al. (2023) examined radio jingles in multiple languages, including Igbo. The study was conducted in Imo State, Nigeria. It found that radio jingles in Igbo and other languages, such as English, helped the public understand the message more effectively. Notably, Ajaero et al.'s (2023) study included factors that could moderate the effects of jingles. They discovered that using radio jingles in multiple languages, including Igbo, facilitated the understanding of Covid-19 messages among residents of Imo State, but the results varied across age groups and levels of exposure to the jingles.

These findings suggest that one of the pathways to understanding Covid-19 messages among the public was the frequency of exposure, which is similar to repetition of message for reinforcement. The repetition attribute of effective communication is discussed in the next section.

2.3.1.7 Repetition

Despite the importance of repetition in public health communication, few authors and organisations have highlighted it in their framework for effective communication (ECDC n.d; Suggs et al. 2015; WHO 2017). Andrews et al. 2020; Schiavo 2013; U.S. DHHS 2004; and Tulane University School of Public Health and Tropical Medicine 2021 did not emphasise or mention its importance in effective public health communication.

To make public health communication effective through applying repetition criterion or principles, the following has to be done:

- Repeat the message to reinforce
- Repeat to reach the unreached
- Repeat over time

The efficacy of message repetition has been reported by some studies, most of which were conducted outside Nigeria. For instance, Jang and Park (2018) investigated the effects of repetitive information communication through multiple channels on prevention behaviour using a sample of 1,036 participants in an online survey collected during the 2015 Middle East respiratory syndrome (MERS) outbreak in South Korea. The study found that repetitive communication about a health crisis heightens individuals' perception of the severity of a crisis and the potential ways they may be affected.

Another study by Morgan and Cappella (2023) examined the effect of repetition on the perceived truth of tobacco-related health misinformation among 1,436 U.S. adults. It was found that individuals tend to believe repeated statements more than novel statements, a phenomenon known as truth by repetition. The authors further revealed that individuals' perception of the truth of any information increases upon the second encounter.

Other studies conducted in Nigeria during Covid-19 have shown that jingles, which are repetitions of short health messages, have proven effective, especially when they are in the local language of rural dwellers (Ojeka-John et al. 2023; See Understandable criterion).

However, while other studies investigated repetitions in audio messages, a study by Mukenge (2021) in Zimbabwe assessed the effectiveness of repetitions used as lexical devices in ten Population Services International (PSI) Zimbabwe HIV and AIDS posters. It examined 10 HIV

and AIDS posters, finding that there was an overuse of repetitions and redundancy, and it recommends minimal use of repetitions.

2.3.1.8 Pretesting and Revising

Pretesting and revision have been identified as essential attributes for effective health communication by organisations and scholars (U.S DHHS 2004; ECDC n.d; Suggs et al. 2015; Schiavo 2013; and Tulane University School of Public Health and Tropical Medicine 2021). For instance, U.S DHHS (2004) identified “pretest and revision of messages and materials effectively” as one of the characteristics of effective health communication campaigns. According to U.S. DHHS (2004), health communication professionals should select pretest methods that are suitable for the campaign's budgets and timeline; pretest messages and materials with individuals who have the same qualities as the intended audiences, including selecting a few messages to pretest. In support of the above, organisations and scholars maintain that engaging in pretesting will aid public health professionals in refining health messages as needed to strengthen campaign materials, as well as formulate acceptable guidelines, performance measures, review criteria, and technology assessments (Suggs et al. 2015; ECDC n.d.).

Several other scholars have examined the importance of pretesting health communication materials before execution (Willoughby and Brickman 2021; Domigan et al. 2015; Whittingham et al. 2008). For instance, Whittingham et al. (2008) emphasise the critical importance of timing in pretesting campaign materials, highlighting that determining the effectiveness of strategies and materials before the large-scale implementation of a campaign is highly advantageous. This is particularly relevant given the substantial costs involved in executing large-scale campaigns. Willoughby and Brickman (2021) echo this sentiment, emphasising that effective health message design requires thorough pretesting to ensure that potential audiences perceive communication efforts as acceptable.

However, Whittingham et al. (2008, p.218) underscore that the benefits of pretesting depend on allocating sufficient time to incorporate necessary improvements based on pretest results before the campaign's implementation. They argue that "an experimental pretest of public health campaign materials in their developmental phase is both wise and advantageous, of course, only if [emphasis added] the pretest is planned well ahead of the scheduled implementation deadline so that changes to the materials can still be made if findings of the experimental pretest suggest doing so." This emphasises that the effectiveness of pretesting is directly linked to early and proactive planning, allowing for meaningful refinements.

Nevertheless, there are situations when people forego pretesting. One such circumstance is during emergencies. According to John Hopkins University (2020), during emergencies, doing without pretesting may be even more common as key information needs to be conveyed

quickly and on time. A number of factors are known to constrain the pretesting of health communication strategies and materials, including time and financial constraints (John Hopkins University 2020; Whittingham et al. 2008) and the taken-for-granted belief that the designed materials and strategies will be appropriate and suitable for the target audience (John Hopkins University 2020).

There appears to be little empirical literature on the pretesting of large-scale public health communication in developing economies. Most studies are in developed economies such as the USA. One such study was Whittingham et al.'s (2008) experimental pretest of the storyline of a television commercial intended for a national safe sex campaign launched by the Dutch National Institute for STI & AIDS Control, with the main aim of preventing STIs. The target population consisted of young people aged 13 to 19, from whom a volunteer sample of 185 was obtained from two schools. The study revealed gender differences in the likeability of the television storyline based on credibility, goodness, and appeal to peers, with no gender difference in the likeability of slogans; both genders preferred the explicit and potentially controversial slogan over the others. The results were reported to be useful for the practical improvement of the communication materials. They further identified challenges, such as determining at what stage of the production of the community materials to implement the pretest, given the time and cost involved in completing the television storyline and pretesting it.

Another study in the USA by Domigan et al. (2015) pretested a health communication campaign developed for reducing distraction during driving among college students in the USA. It utilised central interviewing techniques to ascertain students' perspectives on the efficacy of the messages. The data were analysed both quantitatively and qualitatively, and the findings revealed that the students understood, believed, found the messages appealing, and thought the campaign discouraged distracted driving. Several themes emerged from the qualitative analysis, including recommendations for brighter colors and the use of more intense graphics, among others.

Another study by Guevarra et al. (2021) conducted in Manila, Philippines aimed at developing and pretesting interpersonal communication materials for primary health-care workers to prevent and control noncommunicable diseases. The authors outlined the seven steps in the process, namely, mapping available health communication materials, identifying needs, developing the material, pretesting, finalising, printing/producing, and orienting users on the material. The needs assessment stage involved utilising village-level health care workers known as barangay health workers (BHWs) or community health workers (CHWs) within the local government area to ascertain their interpersonal communication needs regarding the prevention and control of noncommunicable diseases.

The pretesting of the material flipchart involved an iterative vetting process of expert reviews and stakeholder consultations. For the first part, the panel consisted of experts from the Department of Health, the WHO, and the Manila Health Department. They were consulted regarding the content, layout, and graphics of the IPC material. This process was repeated multiple times until a consensus on the content, layout, and graphics was achieved. Each time a round of review returned with comments from the experts, we returned to the development phase to incorporate feedback and revise the material accordingly. In the second phase, we conducted two focus group discussions with the BHWs and two with community residents to gather their insights and comments on the developed IPC material, specifically regarding the texts, statements, messages, and illustrations. The input from the participants was documented and utilised to revise the material. Key insights from the development and pre-test of the interpersonal health communication materials included the needs assessment, which provided information on the type of material needed by community health workers and offered insights into possible content that should be included. The target audience identified the flipchart format as the most appropriate, useful, and feasible for health communication material in the field. Second, the various pretesting methods used proved essential in determining the correct amount of information to include in the flipchart. Involving stakeholders from the inception helps build a sense of ownership and ensures the material can be used meaningfully.

Although the reviewed studies provide valuable insights into the importance, methods, and challenges of pretesting health communication materials, there is a gap in research on the pretesting of health communication materials in developing economies and under emergency situations such as the Covid-19 pandemic.

2.3.1.9 Monitoring and Evaluating

Monitoring and evaluating health communication have been identified as important attributes for effective public health communication. The importance of monitoring and evaluating public health communication activities and campaigns has been discussed by various organisations and authors (WHO 2017; U.S. DHHS 2004; Andrews et al. 2020; Suggs et al. 2015; Schiavo 2013, and Tulane University School of Public Health and Tropical Medicine 2021). This means that public health communication professionals must assess and evaluate their public health communication activities and strategies after implementation to determine what works as planned and identify areas that require adjustments for their health communication campaigns to be effective.

For instance, WHO (2017), although it did not identify evaluation as a core principle for effective communication, highlights evaluation as an important communication function necessary at all levels of the organisation. In addition, the U.S. DHHS (2004) emphasises the

importance of public health communication professionals conducting an evaluation immediately after a campaign is implemented (Andrews et al. 2020). Furthermore, Tulane University School of Public Health and Tropical Medicine (2021) disaggregates evaluation into process and outcome evaluation, arguing that process evaluation after public health campaigns provides valuable insights into the extent to which a campaign has adhered to plans, and outcome evaluation measuring how messages reach target audiences, and with what impacts.

Studies in developing nations generally have shown significant challenges in monitoring and evaluation, such as deficiencies in data generation, teams working in silos, and inadequate resources, both human and material (Chaulagai et al. 2005; Kimaro et al. 2005; Kioko 2017; Thiam et al. 2013). For instance, Chaulagai et al. (2005), drawing from health information systems in Malawi, attributed the challenges of poor production of health data to weak monitoring and evaluation systems and data generation.

2.3.1.10 Partnership

The importance of “partnership” for every successful public health communication, as highlighted by several authors and organisations (Schiavo 2013; Suggs et al. 2015; WHO 2017; U.S. DHHS 2004; ECDC n.d.; Tulane School of Public Health and Tropical Medicine 2021), has established it as a vital criterion for effective public health communication, particularly in rural and marginalised areas of developing economies like Nigeria. These regions face numerous challenges, including scarce human resources, funding constraints, ineffective supply chains, weak governance, training deficiencies, inadequate infrastructure and equipment, and accountability issues (Oku et al. 2017; National Health Care Development Agency 2014).

However, Tulane University School of Public Health and Tropical Medicine (2021) argues that despite the role partnership plays in effective public health communication, there is a need for a thorough consideration of the drawbacks of partnerships (e.g., undesired compromises and less control) before forming them. As such, public health communication professionals need to set clear guidelines regarding roles when engaging in partnerships. In other words, despite the benefits of collaboration in public health communication, organisations need to be aware of the chosen partner organisations before agreeing to partner with them, including being explicit about the roles each partner organisation will carry out to avoid confusion and disagreements.

Additionally, ECDC (n.d) and Andrews et al. (2020) support WHO’s (2017) point on consistency of public health messages and transparency by highlighting the need for public health messages to be kept up to date and consistent, as well as for messages to be transparent to help prevent disunity. In other words, there is a need for organisations and their

partner organisations to agree on the health information they intend to disseminate to their target audiences and be consistent with them to boost credibility. This is because, when organisations and partner organisations fail to speak as one, they confuse their target audiences and lose their trust. So, organisations must be consistent and transparent to build trust and credibility.

Consistent with the foregoing position, Jafari et al. (2021) observe that community engagement, acceptance, and partnership are critical to building community trust and sustaining health gains. They argued that collaboration is vital at all levels: community, local, regional, and national for the success of RCCE.

Numerous studies in Sub-Saharan Africa demonstrate that partnership is crucial for the dissemination of health messages and enhancing positive health behaviour (Gregson et al. 2013; Ekohm et al. 2021; Isiko 2020; Meiring et al. 2019). For instance, Gregson et al. found that grassroots organisations contributed to an increased uptake of HIV Testing and Counselling services in Zimbabwe, showing that partnerships with grassroots organisations can garner community support to enhance HIV testing in Sub-Saharan Africa. Similarly, in Uganda, Isiko (2020) reported that religious leaders helped sensitise and mobilise the public on Covid-19 safety measures. In Malawi, Meiring et al. (2019) found that stakeholder engagement at the community level was effective in building trust, mobilising community participation, and raising trial awareness of the health intervention. Meiring et al. learned that: “Local leaders provided a channel to disseminate information and answer questions. Community trust in, and accessibility to, local leaders helped reassure the public” (p. S151).

In Nigeria, Ekohm et al. (2021) explored traditional rulers’ experiences in the fight against Covid-19 in rural communities using a qualitative approach and in-depth interviews to elicit data from eight Nigerian traditional rulers. The study reveals that traditional rulers used town criers to raise awareness among rural dwellers about the Covid-19 pandemic, and that the protective measures recommended during the peak of Covid-19 pandemic led to increased economic hardship for rural people in Nigeria. Additionally, doubts about the existence of the virus and widespread poverty were identified as the major hindrances to the Covid-19 fight. The study therefore recommends and calls for collaboration between traditional rulers and the government to ensure that free protective equipment is made available to the rural poor. It also recommends collaboration among traditional rulers, youths in the community, and religious leaders in the fight against infodemics through continuous community education and awareness raising. Put differently, Ekohm et al.'s (2021) study highlights the indispensability of cooperation during public health campaigns between relevant agencies for effective public health communication.

2.3.1.11 Audience-Centred

Furthermore, it is important to note that the effectiveness of any public health communication relies on the health communication professionals' understanding of the following: target audiences (WHO 2017; ECDC n.d; U.S DHHS 2004; Schiavo 2013; Suggs et al. 2015; Andrews et al. 2020; Tulane University School of Public Health and Tropical Medicine 2021); audiences' educational levels and health literacy (ECDC n.d; Suggs et al. 2015; Andrews et al. 2020); audiences' environment, including social (beliefs/cultural), physical, and political factors (U.S DHHS 2004; Schiavo 2013; Tulane School of Public Health and Tropical Medicine 2021; Andrews et al. 2020; Suggs et al. 2015); audiences' demographic information (ECDC n.d; Suggs et al. 2015); audiences' psychosocial information (Suggs et al. 2015; Andrews et al. 2020); audiences' perception of relevant health risks (WHO 2024); existing programs and lessons learned (Schiavo 2013); obstacles and/or challenges in addressing specific health issues and mitigating the adoption of health protection actions or policies (WHO 2017; Schiavo 2013); audiences' trusted media sources (Suggs et al. 2015); audiences' disabilities and abilities (ECDC n.d); as well as audiences' behaviours (Andrews et al. 2020; Tulane School of Tropical Medicine 2021).

Since health communication primarily considers the audience, particularly in an audience-centered approach, health professionals must ensure they learn as much as possible about their audiences, including their literacy levels. This knowledge enables them to develop, create, and provide health information in formats that help target audiences find, understand, and use information and services to inform their health-related decisions and actions. This aligns with the position held by Tulane University School of Public Health and Tropical Medicine (2021) that a research-based public health community should be the norm in health communication practice.

The above points highlighted by organisations and scholars suggest that for health communication to be actionable, health professionals must have a clear understanding of their target audiences' characteristics, the knowledge, attitudes and behaviours to create messages that address barriers and encourage them to take recommended steps (WHO 2017). Thereby, making "audience centeredness" an important criterion for effective health communication. Schiavo (2013) discusses this as health communication being people-centered, when she maintains that health communication is a long-term process that starts and finishes with individuals' needs and preferences.

These suggest that understanding audiences' contexts and backgrounds is vital to effective public health communication. Some authors believe that the effectiveness of health communication depends on context (Shah et al. 2012; Viswanath et al. 2022; Karidakis et al. 2022; National Academies of Sciences, Engineering, and Medicine 2023). This also entails using culturally appropriate health communication strategies, which have been identified as

effective approaches to sharing health messages among such communities. However, the concept of culturally appropriate health communication has been used interchangeably with other concepts such as ‘culturally sensitive health communication’ and ‘culturally competent health communication,’ among others (Brooks et al. 2019). Sharing perspectives from working in one of these culturally and linguistically diverse minority groups in Australia, Karidakis et al. (2022) noted that strategies based on the linguistic resources and cultural knowledge of intermediaries, such as family members, interpreters, and language-concordant healthcare workers, may hold promise for effective public health communication and messaging for this group. This supports the National Academies of Sciences, Engineering, and Medicine’s (2023) position that tailored and culturally appropriate health communication strategies are effective among minority and linguistically diverse communities. Building on this view, Falo (2023) suggests that culturally sensitive health communication is one of the key criteria for effective health communication. In practice, it involves using culturally appropriate imagery, examples, and metaphors, as well as collaborating with community leaders or representatives, which enhances the message’s alignment with the audience’s cultural norms and values and increases the impact of the message.

Drawing from the experiences of vulnerable refugee communities in the U.S., Feinberg et al. (2021) observed that the ineffective use of risk communication exacerbated long-standing health inequalities and suggested that culturally and linguistically appropriate health communication is essential to dispel cultural myths, social stigma, misinformation, and disinformation.

Drawing from these reviews, to achieve an ‘audience-centred’ health communication and effective health communication, health communicators should:

- Know and understand their Target Audience
- Design & deliver messages adapted or tailored to:
 - needs
 - perceptions
 - preferences and
 - situations and backgrounds (cultural, religious, educational etc) of the target audience.

Knowing, understanding, designing, or adapting messages to suit the needs, perceptions, and preferences of the target audience as elements of audience-centered public health have been explored by scholars in Nigeria. Studies prior to Covid-19 show that rural areas have particularities that health communicators must consider in their communication efforts (Momodu 2002; Nwangwu & Ajama 2011; Eze 2016; Ekoko 2020). For instance, Momodu (2002) research revealed that illiteracy was a major barrier to the information needs of rural dwellers in Edo State. Therefore, they relied more on informal information (trusted sources

like family members, sons, and daughters) than formal information (mass media) due to a lack of trust and fear of dictatorship. Momodu (2002, p. 409) observed that participants were generally “very skeptical of the information they get from the radio, television, and other mass media. To them, information from these sources is not only unreliable but also suspected to be often dictated by the government’s selfish interest.” Furthermore, Momodu (2002) noted that poverty and language barriers were problems among the participants. Poverty makes radio and television unattainable for most participants, and the different ethnic groups with various dialects mean that no single local language can be used to disseminate information in the area.

Similarly, Nwangwu and Ajama (2011) found that the lack of accessible health facilities, poverty, insufficient road access, and a deficiency of trust and confidence inhibit health information-seeking among rural women in Ondo State and their adherence to health advice. However, unlike Momodu’s (2002) findings, most participants owned and used radios more than any other devices, yet they prefer to seek health information from interpersonal sources such as friends, family, and chemist shops, which Momodu described as informal sources. While Nwangwu and Ajama (2011) investigated the health information needs, sources, and information-seeking behaviour of women living in a rural palm plantation community in Ondo State, Momodu (2002) studied both men and women in a rural village in Edo State.

A similar study found that interpersonal sources of information and oral-based communication were the most preferred sources of information for men in rural Southeast Nigeria. Emele (2018) investigated the health information behaviour of men in rural SouthEast, Nigeria, (Abia State, Enugu State, Imo State, Ebonyi State, and Anambra State, Nigeria) and explored the local socio-cultural aspects that relate to the provision of prostate cancer information. The study employed a qualitative approach utilising 35 semi-structured interviews and 5 focus group discussions with men aged 35 and above. It found that the most preferred communication methods in the study areas are interpersonal sources and oral-based communication. The findings also indicate that culture and religion play an important role in shaping the health information behaviour of men.

Like Nwangwu and Ajama (2011) and Momodu (2002), Ekoko (2020) found that rural, non-literate women (unable to write and comprehend health messages) relied mainly on interpersonal sources for health information, which she attributed to their low literacy. Ekoko’s (2020) study was a quantitative study that investigated the health literacy of rural women in Uzere, Otorho-Abraka, and Asaba-Ase, Delta state, Nigeria. The study employed the survey method and the random sampling technique, engaging a total number of 205 women aged 20 and above. The study reports that most women (84%) in the three surveyed towns lacked functional literacy (the inability to read and write). In comparison, 75.7% were unable to interact and communicate (exhibiting low communicative and interactive literacy). It further

revealed that they preferred interpersonal sources of health information to government sources.

In their study of communication and the influencing factors of health communication acceptance, Eze (2016) found that multiple strategies, such as advocacy, social mobilisation, and programme communication, were used for polio immunisation campaigns and that the use of multiple strategies contributed to the campaign's success. It was further found that demographic and sociocultural factors, such as culture, beliefs, and attitudinal issues, influenced the acceptance and use of the polio vaccine in Kaduna and Sokoto states, Nigeria. The study recommends the use of multi-dimensional communication strategies including engaging health practitioners, religious leaders, opinion leaders, traditional leaders, victims, and parents in the fight against socio-cultural impediments to facilitate maximum success in immunisation campaigns against polio in Nigeria.

Studies in other developing nations highlighted the role of audience literacy in health communication. Abdullah and Zakar (2020) explored health literacy levels among rural and urban populations from two districts of Punjab (Rawalpindi and Rajanpur) in Pakistan through their qualitative study, focusing on its relation to general well-being. Using a purposive sampling method, they engaged 20 respondents from diverse backgrounds (no further demographics mentioned) in the study via in-depth interviews. The data collected were thematically analysed. Findings from the study reveal that a low level of health literacy prevails in rural areas, while urban areas show a different case. Additionally, the study found that health literacy is directly connected to well-being, although several cultural and religious misconceptions about health also impact individuals' overall well-being. In this light, the study recommends comprehensive and tailored programs for community mobilisation and the advancement of health literacy.

Studies reveal the existence of doubt and misconceptions regarding diseases among rural communities in developing countries before and during Covid-19 (Osungbande et al. 2011; Olowokere et al. 2018). For instance, Osungbande et al. (2011) identified themes of misconceptions, cultural beliefs, and an inadequate health system as challenges to the success of health interventions in Nigeria. Osungbande et al. (2011) conducted a cross-sectional study to investigate the myths, misconceptions, and misunderstandings about epilepsy in the rural town of Otu, located in the Itesiwaju local government area of Oyo State, Nigeria. A total of 365 participants from three communities were interviewed: 160 from Ilesan, 120 from Ibise, and 85 from Iwoye, with ages ranging from 18 to 74 years and including both males and females. Data were gathered through face-to-face interviews using a semi-structured questionnaire. There was no further mention of the theoretical framework or the method of data analysis. The study reports that although a majority of respondents were aware of epilepsy and knew someone with the condition, very few demonstrated correct knowledge

of its causes due to local misconceptions about its origins, modes of transmission, and preventive measures. Similarly, Olowokere et al. (2018) conducted a quantitative study investigating knowledge, perceptions, access, and utilisation of HIV counseling and testing among 300 pregnant women aged 15 to 44 years, including married, single, divorced, and widowed individuals, as well as those with primary, secondary, and tertiary education, along with the uneducated in rural communities of Osogbo town, Nigeria. The study employed a cross-sectional survey using a questionnaire to gather information. Data were analysed using descriptive statistics, but no theoretical framework was provided for this study.

It revealed that although over half of the respondents had a good understanding and perception of HIV counseling and access to HIV testing, most of them held misconceptions about mother-to-child transmission of HIV.

Studies from other developing nations show that there were doubts concerning Covid-19. Manda's (2021) study in rural Chintechi, Malawi, which involved rural residents of different educational levels to ascertain how they perceived and navigated Covid-19 amidst the infodemic, found that the majority of the respondents doubted the existence of Covid-19. However, the results from the second-stage study showed that respondents stopped doubting because they had seen and/or heard about the deaths of prominent people they knew in their locality. Therefore, it was noted that only evidence of pandemics getting closer to home may change people's attitudes and behaviours.

These studies emphasise the importance of understanding the audience and the vital role of audience-centered health communication, especially in meeting the unique needs, perceptions, and preferences of rural populations in developing countries. They identify barriers to health communication, including illiteracy, poverty, distrust in formal or government information, low health literacy, misinformation, and language diversity, among others. Furthermore, they demonstrate that rural audiences prefer interpersonal sources (e.g., family, friends, community leaders, chemists) and oral-based communication over mass media or government channels, often due to trust issues or communication barriers.

Information about the rural populace is expected to drive an audience-centered public health communication design and implementation that is accessible, actionable, credible, trustworthy, executed in partnership, relevant, timely, understandable, repeated, pretested, revised, and monitored and evaluated.

Table 1 below shows these eleven attributes of public health communication.

CORE ATTRIBUTES FOR EFFECTIVE HEALTH COMMUNICATION	WHO (2017)	ECDC (n.d)	U.S. DHHS (2004)	TULANE UNIVERSITY SCHOOL OF TROPICAL MEDICINE (2021)	SCHIAVO (2013)	SUGGS ET AL. (2015)	ANDREWS ET AL. (2020)
Audience-centred							
Accessible							
Actionable							
Credibility and Trust							
Partnership							
Relevance							
Timely							
Understandable							
Repetition							
Pretesting and Revision							
Monitoring and Evaluation							

Table 1- A Synthesis of Core Criteria for Effective Health Communication

Key: X (Green) shows organisations and authors that aligned with WHO's (2017) core principles for effective communication. Y (Yellow) shows additional criteria that were not specifically identified by WHO. Note that WHO (2017) impliedly highlighted the importance of partnership, repetition, and evaluation in effective communication, hence the colour yellow appearing under the themes.

Z (Red) shows organisations and authors that did not highlight or recommend criteria for effective health communication.



Figure 1- Integrated Framework for Effective Public Health Communication (IFEPHC)

(WHO, 2017; ECDC, n.d; U.S. DHHS, 2004; Tulane University School of Tropical Medicine, 2021; Schiavo, 2013; Suggs et al., 2015; Andrews et al., 2020)

The above diagram (see: *Figure 1*) shows the eleven core criteria identified in this study to form the integrative framework for effective public health communication (IFEPHC) that serves as a model guiding this study. This framework is an elaborative approach that places audience

centred as the foundation upon which every other identified criterion for effective public health communication is built. This entails having a thorough understanding of the target audiences for any public health campaign, that is, understanding their needs, preferences, perceptions, situations, and backgrounds, including the factors that influence their behaviours. It also means that every public health communication strategy and decision must be tailored to the specific audience to ensure the campaign's relevance.

In addition to this important criterion, several other elements (timely, accessible, relevance, understandability, repetition, actionable, partnership, trust and credibility, pretesting and revision, monitoring and evaluation) enhance the audience-centered criterion.

Having identified and/or synthesised the core attributes and elements of effective health communication from organisations and authors (see, WHO 2017; U.S. DHHS 2004; ECDC n.d; Tulane University School of Public Health and Tropical medicine 2021; Suggs et al 2015; Andrews et al. 2020; and Schiavo 2013), the researcher conceptualises effective public health communication as achieving positive health behaviours and outcomes among target audiences by sharing understandable, tailored, culturally appropriate, credible, accessible, and actionable health messages promptly through audience-centred and collaborative approaches, and continuous monitoring and evaluation to ensure impact.

Several concepts discussed by organisations and authors on effective health communication principles and criteria, as well as the disadvantaged rural context in Nigeria, resonate with various information theories, such as Wilson and Chatman, which will be explored in the next section.

2.4. Theories for Understanding Effective Public Health Communication in Rural Context

Numerous theories have guided the investigation of health communication. This study explored public health communication in rural Nigeria using two theories. These theories (Chatman's information poverty theory and Wilson's information behaviour model) align in several ways with both the rural context as the empirical site for this study and the Integrated Framework for Effective Public Health Communication (IFEPHC). Each of these theories will be discussed in subsequent session.

2.4.1 Chatman's 1996 theory of information poverty

Encapsulating the above description of information poor by Childers and Post (1975), Chatman describes a person unwilling to solve an information need as living in an impoverished (small) information world. Chatman (1996, p.197) notes that when hindered from seeking information "...we engage in self-protective behaviours to keep others from sensing

our need. These behaviours are meant to hide our true crisis to appear normal and to exhibit acceptable coping behaviours”.

Chatman’s discovery of the four critical concepts that serve as a basis for defining an impoverished lifeworld was a result of the various studies that examined the information world of poor people (Chatman 1996). As observed by Shepperd 2013) this series of studies conducted by Chatman gave rise to the development of the “Theory of Information Poverty”, portrayed in “the impoverished Lifeworld of Outsiders”.

This theory of information poverty which the author impliedly discussed the differences between insiders and outsiders in information studies is based on four concepts: secrecy (shielding individuals from unwanted intrusion from whatever source, whether positive or negative means); deception (entails an intentional attempt to engage in activities in which an individual’s reality is consciously distorted i.e. providing false and misleading information to hide one’s true condition to appear better off or coping more successfully than the reality); risk-taking is consideration of costs/risks associated with sharing/seeking information. Furthermore, in explaining the risk-taking concept, Chatman highlighted the importance of trust. As observed by Chatman: “in everyday discourse, for people to benefit from information received from outsiders, there needs to be some aspect of trust associated with the source” (1996, p 196). In other words, people especially those who live in a small world (insiders) accept and act on messages they believe are from credible sources; and situational relevance which entails intentionally ignoring potentially helpful sources of information because sources provided by outsiders are not valued by insiders. These concepts according to Chatman (1996) were borne out of anomalies. As observed by Chatman “anomaly is like the grain of sand that gets into the system and causes irritation and refocusing of energy that something new is produced. It presents intellectual dilemmas for scholars and occurs because a researcher knows that something is going on and the patterns of behaviour indicate unexpected relationships” (1996, p.194).

As Shepperd (2013) observes: Chatman’s studies and theories rely on an understanding of insider and outsider status” (nd, p 5); a body of work within the sociology of knowledge and its meaning in light of knowledge awareness, acquisition, definition, and use (Chatman 1996).

The insiders are described as those groups of persons that share a set of common cultural, social, and religious perspectives, as such, their behaviours and approaches to the world are defined and shaped by these commonly shared norms. They also define those things considered essential to pay attention to and those things that are not important (Chatman 1996). As averred by Becker (1973) insiders act appropriately while outsiders deviate somehow from the collective standards. Put in another way, insiders understand the modus

operandi of their world and act accordingly, but outsiders fail to act accordingly because they do not comprehend the modus operandi of those in the inside world. As argued by Chatman (1996), information barriers between those in both worlds could be attributed to the doubt that insiders have regarding the ability of outsiders to comprehend their world, as such, such feelings of non-comprehension lead to a condition of secrecy and protection by (insiders). Thus, shielding themselves from needed resources. The author later described disadvantaged people as people who care about the immediate present and the very recent past, unable to plan in the same way as more advantaged people (referred to as a “limited-time horizon” p.440).

As a result of the four identified concepts, six propositions were identified by Chatman which constitute her “Theory of Information Poverty” as well as describe an “impoverished world” (Chatman 1996, pp 197-198). Below are Chatman’s six propositions:

Proposition 1: People who are defined as information poor perceive themselves to be devoid of any source that might help them.

Proposition 2: Information poverty is partially associated with class distinction. That is, the condition of information poverty is influenced by outsiders who withhold privileged access to information.

Proposition 3: Information poverty is determined by self-protective behaviours which are used in response to social norms.

Proposition 4: Both secrecy and deception are self-protecting mechanisms due to a sense of mistrust regarding the interest or ability of others to provide useful information.

Proposition 5: A decision to risk exposure about our actual problems is often not taken due to a perception that negative consequences outweigh benefits.

Proposition 6: New knowledge will be selectively introduced into the information world of poor people. A condition that influences this process is the relevance of that information in response to everyday problems and concerns.

As argued by Lingel and Boyd (2012) although many have adapted Chatman’s construct of information poverty to form ideas about the information needs of marginalised people, including those with HIV/AIDS (Veinot 2009), queer youth (Harmer 2003), individuals with disabilities (Gibson and Martinn 2019), and intimate partner violence survivors (Westbrook 2008), to name a few, Chatman’s theory of information poverty has faced criticism for focusing too narrowly on circumstances of marginalisation while overlooking a broader information landscape (Jaeger & Burnett 2010). In this context, recent work by Gibson and Martin (2019),

which critiques deficit views of information poverty that emphasise individual behaviours, calls for more attention to the structural inequalities that contribute to these behaviours.

Nevertheless, Chatman's Theory of Information Poverty underscores the barriers marginalised groups face in accessing and using information, highlighting secrecy, mistrust, and relevance as critical factors encapsulated in IFEPHC. By integrating the IFEPHC model into their design and implementation of health communication campaigns for disadvantaged rural audiences described in Chatman's theory, health communicators can eliminate the identified barriers. Subsequent sections will explore how the IFEPHC model and this theory align with the perspectives of health communication implementers at the grassroots level.

2.4.2 Wilson's Information behaviour model

The 1981 study on information behaviour by Wilson examined the various processes and phases individuals encounter when trying to satisfy an information need. This process also encompasses how individuals perceive that need and when the information is utilised. Wilson (2006) asserted that when extracting needed information, there is a possibility that an individual might either succeed or fail, resulting in satisfaction or dissatisfaction.

Wilson's model has continuously evolved since the 1981 proposition (Wilson 1999). For instance, the 1999 model incorporated Folkman's stress coping theory to emphasise users' decisions to seek information (Wilson 1999) and Bandura's (1977) risk-reward theory to clarify how an information user chooses which source to consult. Wilson's 1999 model is illustrated in Figure 2.

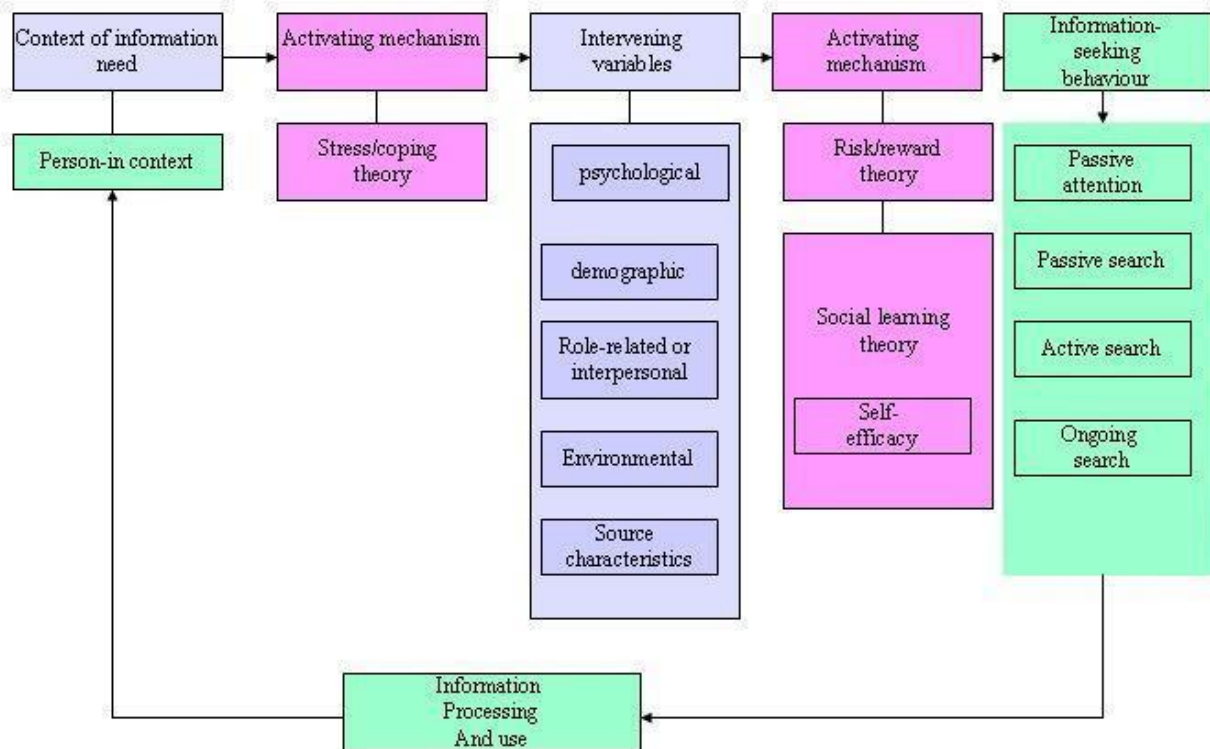


Figure 2. Wilson's revised general information behaviour model (Wilson and Walsh 1996)

The model conceptualises the cycle of information-seeking activities from the phase of “information need” to the phase of “information use” (Niedzwiedzka 2003). As noted by Wilson (2000, p. 53), the model has been regarded as the “global model... of the information behaviour field” because it depicts the person in context who develops an information need. The person-in-context then proceeds (or is impeded) to engage in some form of information-seeking behaviour and information use, looping back to the information need (Emele 2018).

As observed by Wilson (1999), “the diagram has been simplified by showing the intervening variables at only one point, whereas at least some of the variables may intervene between context and activating mechanism, between activating mechanism, and information-seeking behaviour and information processing and use” (p.569). In other words, this model is a robust model that reveals the cycle of information seeking actions from the phase of information need to the phase of information use, passing through some identifiable variables. These variables will include context and activating mechanisms (kick-off mechanisms), information seeking behaviours, and information processing.

As summarised by Ford (2015), Wilson's 1996 model of information behaviour includes an activating mechanism (stress/coping model) that mediates between the information seeker and the decision to seek information. The model recognises that personal variables may include demographic, physiological, cognitive, and affective factors. It also features another

stage of the activating mechanism, which involves determining the nature of an individual's information need and acting to satisfy it (Risk/Reward theory, social learning theory). The model expands the types of information seeking to include both passive and active methods. Furthermore, the model extends beyond information seeking to accommodate other aspects of information behaviour, such as information processing and use. Finally, the model includes a feedback loop, allowing information processing and use to feed back into the context in which an information need is generated.

This revised model illustrates the cycle of information activities, beginning with the emergence of an individual's information need and continuing until the point at which information is actively used. It also includes the intervening variables that influence information behaviours and the mechanisms that trigger them (Niedzwiedzka 2003).

The model is based on two key propositions. The first proposition is that information needs are a secondary type of need that arises from a set of primary needs in everyday life; the second proposition addresses various personal and external barriers encountered by users during information search and acquisition (Beverley et al. 2007).

Wilson's (1996) model identifies contextual and cognitive factors that determine three crucial aspects of information seeking: search initiation and continuation; source preferences; and search completion.

More so, Given et al. (2016) summarise this model as follows:

As a complex model that invokes explicit theories at points to explain why some needs require information seeking more so than others (stress/coping theory, from psychology); why some sources of information are used more than others (risk/reward theory, from consumer research); and why individuals may or may not pursue a goal successfully, based on their perceptions of their efficacy (social learning theory, from psychology) (p.163).

Summarising Wilson's 1996 model, Kundu (2017) maintained that the core principle of this model is that for information needs to be satisfied, 'information processing and use' becomes an indispensable part of the feedback loop as shown at the very bottom of the model.

Furthermore, Given et al. (2016) describe the "activating mechanism" (stress/coping theory, risk/reward, social learning theory, and self-efficacy) in Wilson's model as motivators that drive a person to search for a specific piece of information, including how they search for it and to what extent?

The stress/coping theory, as defined by Folkman (1984) is "the relationship between the person and the environment that the person appraises as taxing or exceeding his or her

resources and as endangering his or her well-being” (p. 840). This suggests that individuals may cope with their stress emotionally or focus on the sources of their stress (Al-suqri 2015).

The stress/coping theory considers people’s inclinations towards threats and diverts their attention from those threats. Therefore, the revised Wilson’s 1996 model positions stress/coping theory as the activating mechanism for the entire process of seeking information (Al-suqri 2015).

According to Kundu (2017) the activating mechanisms are psychological factors explained by different theories and propel the user to proceed with the information-seeking process.

In a similar vein, Niedzwiedzka (2003) revealed that what Wilson meant by "activating mechanisms" in stress/coping theory is that not all information needs compel a person to seek information and that the level of an individual's stress will determine the motivation to seek information.

As revealed in Wilson’s 1996 model, these activating mechanisms are largely influenced by several intervening variables, which range from psychological and demographic (age, sex, education) to role-related (social status), environmental, and source characteristics (credibility, reachability). These “intervening variables” suggest that their impact may be supportive of information use as well as preventive (Wilson 1999, p 256).

This model also considers the four crucial aspects of search behaviours: passive attention, passive search, active search, and ongoing search. As summarised by Niedzwiedzka (2003), the first (passive attention) refers to the passive absorption of information from the environment. In other words, it involves receiving and assimilating information without active response or resistance; the second mode (passive search) describes occasions when a particular type of behaviour leads to the acquisition of information that seems relevant to the individual; the third (active search) occurs when a person actively seeks out information; the fourth phase (ongoing search) involves the individual continuously searching to update or expand an area of information.

As observed by Kundu (2017) Wilson’s identification of various characteristics of human behaviour models in his 1996 model draws attention to the interrelated nature of information behaviour theory. Kundu (2017) also noted that the model incorporated Elli’s behavioural characteristics of information-seeking (active search and ongoing search).

Although Wilson referred to his 1996 model as a macro-behaviour model that accommodates other theoretical models of behaviour, making it a richer source of hypotheses and further research, some scholars (Niedzwiedzka 2003; Foster 2004; and Godbold 2006) expressed

reservations about its sequential process, maintaining that information behaviour may be a back-and-forth process instead of how it was depicted by Wilson in his model.

This review of Wilson's model presented the researcher with the opportunity to grasp and understand the various factors contributing to human information-seeking success or failure when individuals urgently need information and seek to obtain it from several sources within the general context of this study (health information). In other words, Wilson's 1996 information model enhanced the researcher's understanding of several intervening variables (psychological, environmental, interpersonal, demographic) and activating mechanisms (risk reward theory, social learning theory, self-efficacy) that influence the choices people make regarding information sources and information-seeking behaviour.

In summary, Wilson's Information Behaviour Model provides a lens for understanding how individuals navigate the cycle of information-seeking, influenced by variables such as context, stress, trust, and relevance. These factors emphasise the importance of understanding and knowing the audience element of IFEPHC. Other attributes of effective health communication align with this model by addressing barriers such as accessibility and credibility, leveraging activating mechanisms like actionable, relevant information, and fostering ongoing engagement through partnership, repetition, and monitoring & evaluation.

CORE ATTRIBUTES FOR EFFECTIVE HEALTH COMMUNICATION (Policy-Level Professionals and Community-Level Actors Dimension)	CHATMAN'S THEORY OF INFORMATION POVERTY (Audience Dimension)	WILSON'S INFORMATION BEHAVIOUR MODEL (Audience Dimension)
Audience-centre: Effective public health communication is heavily dependent on health communication professionals' understanding of their target audiences. *Know and understand your Target Audience (TA) *Design & deliver messages adapted to: -needs -perceptions -preferences and -contexts/situations/background	Aligns with the audience's perception of their information poverty and "insider – outsider" divide based on cultural, social and religious perspectives: Audience knowledge and understanding of these contextual, situational and backgrounds factors help address information poverty	Aligns strongly with Person-in-Context and Intervening Variables: "Person in context" who develops an information need. Information behaviour is not isolated but occurs within a specific environment and situation for the individual. Intervening variables , such as psychological, demographic (age, sex, education), role-related (social status), and environmental factors, influence the entire information behaviour process. The audience-centred approach in health communication mirrors this by requiring communicators to have a deep understanding of the very factors Wilson identifies as influencing information behaviour.

Accessible Effective health communication must be accessible, meaning target audiences can readily find and use the information. *Channels suitable & available to TA *Channels preferred by TA *Places easily reachable by TA *2-way communication channel *Tailor channels TA		Aligns with Intervening Variables (Source Characteristics, Environmental) and Search Behaviour): Intervening variables include environmental factors and source characteristics, such as credibility and reachability. The accessibility of information in the health communication context directly relates to the reachability and availability of sources within the user's environment, influencing their ability to engage in information seeking behaviour and their source preferences. The ability to access information (or barriers to access like illiteracy or lack of channels) directly impacts the viability of certain information-seeking paths in Wilson's model.
Actionable: Health communication should be actionable, meaning messages are created to address audience barriers and encourage desired actions. *Create message to address TA's barriers *Use behaviour change campaigns *Communicate emergencies *Provide resources *Provide clear instructions *Be credible	Aligns with Risk and Self-protection which are barriers: Creating messages to address target audience's barriers and encourage action involves overcoming potential perceived risks associated with action.	Aligns with Information Processing and Use and Barriers: "Information processing and use" is essential for information needs to be satisfied. The model also explicitly recognises "personal and external barriers" that users encounter during information search and acquisition, as well as intervening variables that can be "supportive of information use as well as preventive." Designing actionable messages in health communication directly addresses these barriers and aims to facilitate effective information processing and use, enabling the audience to take recommended steps.
Credibility and Trust: Credibility and trust in the content of the message and the source are fundamental for audiences to accept and act on health messages *Technical Accuracy *Transparency *Consistency & Reliability	Aligns with the importance of trust for people to benefit from information from outsiders: Mistrust regarding the interest or ability of others to provide helpful information is a reason for secrecy and deception. Insiders accept messages from sources they believe are credible.	Aligns with Intervening Variables (Source Characteristics) and Search Behaviour (Source Preferences): Source characteristics (including credibility) as crucial intervening variables that influence the information-seeking process. The perceived credibility of a source is a significant factor determining source preferences. The emphasis in health communication on using trusted sources directly

		corresponds to the importance of source credibility as an intervening variable and determinant of source preferences in Wilson's model.
Partnership: Partnership with trusted stakeholders (like community leaders, religious leaders, traditional rulers, grassroots organisations) is vital for reaching audiences, building trust, coordinating messages, and overcoming resource barriers. *Partner with stakeholders & other organisations *Use sources deemed credible by TA to boost believability *Disseminate a consistent message among partners		Aligns with Source Characteristics and environmental intervening variables: Partnership directly influences the source characteristics (credibility, reachability) and environmental intervening variables in Wilson's model, enhancing the effectiveness of information delivery and increasing the likelihood of successful information seeking and acceptance by leveraging trusted channels and overcoming contextual challenges.
Relevance: Public health information is effective when target audiences perceive it as relevant and applicable to themselves and their loved ones. *Listen to TA *Tailor message to TA *Motivate TA *Make messages applicable to TA & loved ones	Aligns with Situational Relevance: New knowledge is selectively introduced, influenced by its relevance in response to everyday problems and concerns.	Aligns with Information Need and Activating Mechanisms: When health information is perceived as relevant, it is seen as potentially addressing a felt need (primary or secondary) or helping to cope with a stressful situation, thereby triggering these activating mechanisms and propelling the user towards information seeking and use.
Timely: Providing information on time, particularly during crises when the audience is receptive, helps fill information gaps. *Avail message on time *Send when the TA is receptive		Aligns with environmental or contextual factor for activating mechanisms: Although timely is not an explicitly mentioned concept in Wilson's model, timeliness can be seen as an environmental or contextual factor influencing the activating mechanisms (e.g., timely crisis communication impacts stress/coping) and potentially the success of information seeking by ensuring relevant information is available when the need is most pressing.
Understandable: Health messages must	Aligns with the difficulties outsiders have in comprehending the world of	Aligns with Information Processing and Use:

be understandable, using simple language, appropriate formats, visuals, and multiple/local languages, often tailored to the audience's literacy levels and cultural context to ensure comprehension. *formats & styles easily comprehensible to TA *Simple/plain languages *Visuals *Multiple languages *Familiar language *Tailor language to TA	insiders	Information processing and use. A message that is not understandable cannot be effectively processed or used by the individual to meet their information need or change their behaviour. The health communication imperative to make messages comprehensible directly supports the successful execution of the information processing and use phase in Wilson's model.
Repetition: Repeating messages reinforces their impact, reaches broader audiences, and aids in internalisation and recall. *Repeat the message to reinforce *Repeat to reach the unreached *Repeat over time		Aligns with moving from Passive to ongoing search to facilitate information process and use: Repetition of message exposure influences information seeking behaviour (especially passive attention and ongoing search) and can facilitate information processing and subsequent use.
Pretesting and Revision: Pretesting messages and materials with target audiences before implementation allows for improvements to ensure effectiveness. *Pretest messages and materials *Improve message and materials if necessary		Aligns with Person-in-context, activating mechanisms and potential: This process attribute directly supports achieving attributes like accessibility, understandability, and relevance, thereby increasing the likelihood that the communication will successfully engage the user through the stages of information seeking, processing, and use. It helps predict how the message will interact with the audience's context, activating mechanisms, and potential barriers.
Monitoring and Evaluation: Monitoring and evaluating communication activities assesses their adherence to plans and their impact on reaching and affecting target audiences. *Monitor the message dissemination. *Evaluate to improve or check outcome/impact		Aligns with Feedback Loop for Information use into the contexts of information need: This attribute provides crucial feedback on whether the communication successfully navigated the audience's information behaviour journey (seeking, processing, using). It helps determine if the communication achieved the desired outcomes related to information use and the context of need.

Table 2: Alignment of Attributes of Health Communication with Chatman's and Wilson's Theories

As presented in Table 1 IFEPHC, Chatman's and Wilson's theories diverge in their focal points (information poverty in a social context, effective communication strategies, general information behaviour modeling). However, they share significant similarities regarding the

critical factors that influence whether information is sought, accessed, understood, trusted, and acted upon. Barriers, trust, relevance, the role of context, individual characteristics, and internal motivations are themes that resonate across all three. The researcher intends to explore how the IFEPHC and these two theories align with the perspectives of policy-level professionals and community level actors on the strategies adopted for managing Covid-19 health communication in rural Delta State and the effectiveness of those strategies.

2.5 Summary of Literature Review

This chapter presented a conceptual, theoretical, and empirical review of several scholarly works related to the field of health communication, which were considered relevant to the study. The examined works by organisations and scholars provide a foundation that was utilised later in the study to interpret and analyse the findings.

Health communication focuses on the dissemination of relevant health information and messages using appropriate communication strategies to inform, promote, educate, motivate, influence, and support individuals in making informed decisions about their health and adopting positive behaviour changes. This chapter also revealed that effective health communication requires certain criteria to be met (*see Table 1 and Figure 1 IFEPHC framework*).

Chatman's theory and Wilson's information behavior model served as lenses for the researcher to understand perspectives on health communication during Covid-19 in a rural setting in Nigeria.

The reviewed empirical studies, particularly during pandemics in Nigeria and other developing countries, were integrated into the IFEPHC from various perspectives to enhance understanding of the Framework. Some of these studies were audience-centered, focusing on how effective public health communication was from the audiences' viewpoint; others concentrated on the communication channels used for health information dissemination and their effectiveness; some examined the health information needs, information-seeking, and behaviours of audiences, especially in rural areas; while very few studies (i.e., Ojeka-john et al. 2023) explored effective public health communication from the perspective of health communication professionals, which is the main thrust of the present study.

Although most of these studies were not conducted from the perspective of public health communication professionals, as previously stated, but from various angles, the common interests identified from reviewing the empirical literature focus on how health communication messages are disseminated, received, and acted upon by the target audiences for effectiveness. Furthermore, the researcher observed several recurring themes in some of the reviewed empirical works. These common themes are successful use of mass media

(television and radio, newspapers) for disseminating health-related information (Ojeka-john et al. 2023; Boateng et al. 2023; Agboola & Abdulrahman 2019; Nyiam & Ngwu 2020; Olapegba et al. 2020; Adeitan et al. 2021; Egenti et al. 2022; Talabi et al. 2022; Iwunna et al. 2022; Nwangwu & Ajama 2011; Oladeinde et al. 2015; Momodu 2002); reliance on interpersonal communication sources such as health workers, family, friends, opinion leaders, and religious leaders; and the use of indigenous methods specific to certain groups, like traditional town criers (Ezeah et al. 2020; Oku et al. 2017; Egenti 2022; Emele 2018; Nwangwu & Ajama 2011; Ekoko 2020; Momodu 2002; Ojeka-john et al. 2023). Indigenous communication methods were also highlighted by various authors (Abaneme et al. 2021; Omoha et al. 2021; Pepple et al. 2022; Ekohm et al. 2021). Different authors have recommended incorporating indigenous communication methods (Boateng et al. 2023; Agboola & Abdulrahman 2019; Nyiam & Ngwu 2020).

Regarding the factors and barriers to effective health communication in Nigeria from the perspective of target audiences, particularly in the rural areas that this study focuses on, several themes emerged from the reviewed studies, including illiteracy, poverty, language barriers, misconceptions, lack of trust and confidence in health information sources, as well as cultural beliefs (Oladeinde et al. 2015; Eze 2016; Momodu 2002; Abdullah & Zakar 2020; Sokey & Adisah-Attah 2017; Muturi & Mwangi 2011; Abdulraheem & Parakoyi 2009; Nnama-Okechukwu et al. 2020; Sato 2022; Osungbade et al. 2011; Adejumo et al. 2020). Additionally, from the perspective of the study participants, barriers to health information delivery and communication in Nigeria included lack of human resources, shortages of health workers, training deficiencies, inadequate infrastructure, and mistrust, as evidenced in some studies (Oku et al. 2017; Eze 2016). Other notable themes identified in the reviewed empirical literature and suggested by scholars included tailoring health messages in accessible languages and formats; ensuring the credibility of health information sources; and the timeliness of health messages (Abdullah & Zakar 2020; Oladeinde et al. 2015; Ojeka-john et al. 2023).

In addition to the differences in subject coverage from the literature reviewed, only Ojeka-john's (2023) study examined effective health communication from health professionals' perspectives. This focus on a gap in the existing literature makes this work important and aims to contribute to the body of knowledge.

The researcher also observed that most empirical studies were conducted without theoretical frameworks. The few studies that employed such frameworks (Nyiam and Ngwu 2020, used the communication persuasion model; Nwangwu and Ajama 2011, used Johnson's Comprehensive Model of Information Seeking (CMIS); Pepple et al. 2020, used the perception media theory; Emele 2018, used Johnson's Comprehensive Model of Information Seeking (CMIS); Eze 2016, used health belief model, multi-step flow theory, knowledge gap

hypothesis; and Ezeah 2020, used source credibility theory) did not examine public health effectiveness using frameworks for effective health communication. This study, therefore, attempted to fill the gap by integrating several criteria for effective health communication from organisations and authors (WHO 2017; ECDC n.d; U.S DHHS 2004; Tulane University School of Public Health and Tropical Medicine 2021; Schiavo 2013; Suggs et al. 2015; and Andrews et al. 2020) and developed the IFEPHC framework, which was used as a theoretical framework in analysing the findings of this study.

Finally, to bring the research questions into perspectives with the literature, research question one (what is effective public health communication?) has been answered by the literature review -particularly the insights from IFEPHC. However, how the conception aligns with health communication in rural context will be explored and presented in later chapters. To deepen the understanding of what constitutes effective public health communication, this study explored the strategies employed (e.g., single versus multiple strategies, specific versus diverse communication channels) and the challenges (low literacy, misconceptions, mistrust in government) faced in designing and implementing public health communication in rural community. Through these explorations, conducted from the perspective of IFEPHC, the researcher aims to propose a framework that can serve as a guide for effective public health communication in similar settings.

CHAPTER THREE

Methodology

3.0 Introduction: Overview

This chapter discussed the decision-making process, the theoretical and methodological foundations of this research, the data analysis methods, and the ethical considerations behind this thesis. According to Flick (2002) decisions regarding research process selections are necessary and made at all stages, from choosing the theoretical lens to approach a study, to selecting the appropriate methods for data collection and analysis, and presenting results or study findings. Burns (1997) maintains that a research process is a systematic investigation within a study context, in which data are collected, analysed, and interpreted to understand, describe, and predict phenomena.

Thus, the primary aim of this chapter was to situate my work within a specific research paradigm, while also presenting my research methodology, methods, and providing justifications and rationale for my choices. This includes demonstrating their appropriateness in addressing the main objectives of the study and answering the research questions posed in this study.

To successfully achieve the intention outlined in this chapter, it is worth reiterating the research objectives and questions of this study.

3.1 The research aims and research questions

The study had three primary goals (*See Section 1.5 Aim and Objectives of the study*). To achieve these goals, the study specifically examined the public health communication goals and priorities, the strategies employed in managing the Covid-19 pandemic in a rural, disadvantaged local government. It evaluated the effectiveness of the public health communication campaigns and strategies by the local government. It also considered the factors that influenced the implementation and effectiveness of these communication campaigns and strategies.

This research aim could not be isolated from the mainstream trends of effective health communication. The study draws upon the developed Integrative Framework for Effective Public Health Communication IFEPHC (*see: Table 1 & Figure 1*) as a theoretical framework, addressing the study's research questions (*See Section 1.6 Research Questions*).

3.2 Research Paradigm and Research Approach

A paradigm or worldview is a fundamental set of beliefs that guide actions and provides a general orientation toward the world and the nature of research held by a researcher (Guba 1990). This perspective influences how one perceives social reality (Bryman 2016). In other words, a researcher's study design is shaped by the selected theoretical perspective. Thus, it is essential to identify it (Cresswell & Cresswell 2017).

There are various and conflicting classifications of research paradigms (Guba et al. 2011). Sheppard (2019) identifies five research paradigms: positivism, interpretivism, social constructionism, critical realism, and postmodernism. Others (e.g., Ryan 2018) identified positivism, constructivism/interpretivism, and critical theory. However, the positivist and interpretivist paradigms appear in most of the classifications.

Interpretivism was chosen as the philosophical perspective for this study. Interpretivist philosophy holds that reality and social actors are interconnected, and social actors significantly influence reality. Interpretivists argue that a research object cannot be separated from the researcher due to its highly subjective nature (Creswell 2014). In contrast to the positivist ontological perspective, which asserts that there is a single, objective reality unaffected by human perceptions and biases, interpretivists believe that multiple realities are shaped by the subjective perspectives of social actors (Onwuegbuzie 2002; Bryman 2016; Saunders et al. 2019). Furthermore, interpretivists maintain that reality and social actors are inseparable; therefore, social actors have a substantial impact on reality, and a research object cannot exist apart from the researcher due to subjectivity (Creswell 2014). These points collectively summarise the interpretivist ontological perspective.

This ontological perspective has implications for the epistemological perspective, which centers on the nature of knowledge and how knowledge of the world can be acquired (Hodgkinson-Williams 2006; Potter 2016). Drawing from the interpretivist's ontological perspective, knowledge that can be acquired is subjective and involves strategies different from those applied in the natural sciences (Bryman 2016, p.26). In addition, Creswell and Creswell (2018) observed that the interpretivist approach assumes individuals develop their subjective understanding of specific objects or things through experiences. Therefore, individuals construct meaning based on their social experiences, as knowledge and reality are constructed through interactions between individuals and their cultural context (Trainor & Graue 2014; Gichuru 2017). This highlights the centrality of contexts in the interpretations people give and the meanings others bear in different circumstances.

Interpretivism in research offers several advantages. It enables the researcher to develop an understanding of the situation being investigated by interpreting the meanings that research subjects assign to their social world (Pickard 2007; Saunders et al., 2011; Creswell 2013).

This enables researchers to uncover “surprising findings,” especially from the viewpoint of those outside the research context (Bryman 2016, p.27), and allows them to accurately understand and effectively conceptualise human experience when studying reality within its context (Cohen et al. 2013).

However, the use of the interpretivist lens has some pitfalls. For instance, Cohen et al. (2011) argue that one of the limitations of interpretivism is that the researcher aims to understand the knowledge of phenomena within the complexity of the context rather than generalising these results to other people and contexts (Cohen et al. 2011), thereby, leaving a gap in verifying the validity and usefulness of research outcomes by using scientific procedures. The second criticism of interpretivism is that its ontological view tends to be subjective rather than objective (Mack 2010). Therefore, research outcomes are influenced by the researcher’s interpretation, belief system, thought processes, and cultural preferences, which can introduce significant biases.

Several strategies could be adopted to mitigate some of these shortfalls. One of these is to use a theoretical framework to guide the analysis of extensive and varied data obtained from interviews (Reeves et al. 2008) and to provide contextual information sufficient for naturalist generation by offering more details on the phenomenon of interest, particularly in case studies (Hammersely & Foster 2000). Consequently, this study employs the IFEPHC framework (see *Figure 1*) as a lens through which the phenomena will be observed (deductive), while also addressing the limitations by allowing the exploration of new insights and ideas on the subject matter (inductive).

3.2.1 Rationale underpinning Interpretivist research paradigm

The interpretivist research paradigm formed the philosophical stance for this study because the researcher believed that the nature of the subject matter—namely, what constitutes effective health communication in rural Nigeria—is best suited for inquiries that delve deep and explore the richness and depth of human experiences. Since the study aims to examine effective public health communication in rural Nigeria by exploring the experiences and perspectives of public health communication professionals in the selected LG during the Covid-19 pandemic, interpretivism was considered an appropriate paradigm for this research. The use of a theoretical framework offers focus for the researcher while permitting the emergence of new ideas from the participants’ perspectives (Anfara & Mertz 2014).

Furthermore, since interpretivism offers the chance to deeply understand social phenomena and the social and cultural factors influencing them, and considering that rural Nigeria encounters unique challenges (poverty, illiteracy, lack of trust, language barriers, culture, beliefs, funding constraints, human resource factors, and fragmented sources of information)

that affect public health communication practices (see Ojeka-John et al. 2023; Gabriel Ajama foundation 2022; Momodu 2002; Ekoko 2020; Ezeah 2020; Omoha et al. 2021; Eze 2016; Oku et al. 2017), adopting an interpretivist approach will grant the researcher the flexibility and freedom to explore how these factors influence health communication professionals' understanding and perceptions of effective communication and practices.

Additionally, this choice stems from the fact that the interpretivist philosophical paradigm provides the researcher with a greater opportunity and freedom to engage, inquire, explore the “why” and “how”, and extract multiple meanings and interpretations of the subject matter from the study participants first hand, yielding robust and nuanced insights into the study phenomenon.

3.3 Qualitative Research Approach as Methodological Choice

The study adopted a qualitative research approach. According to Merriam and Tisdell (2015) the essence of the qualitative research method is to understand how people make sense of their lives and experiences, including understanding phenomena from the participants' perspectives (Merriam 2002). This implies that it aligns well with the interpretivist paradigm. Zahle (2021) argues that interpretivism is commonly associated with a qualitative approach, which seeks to explore the world by investigating how humans interpret reality (Trainor & Graue 2014; Thanh & Thanh 2015). This means that a researcher's use of qualitative methods allows access to multiple perspectives and rich data, supporting in-depth exploration of the complexities surrounding the subject matter. Although the above summarises the core element of a qualitative approach, there are numerous methods associated with this approach. However, the case study was the chosen method for this study.

3.4 Case Study Approach

A qualitative case study research approach was adopted for this study. A case study is one of the most widely used and accepted types of qualitative research methods in the social sciences (Bloomberg & Volpe 2022) and is a preferred strategy when the research interests include ‘how’, ‘why’, and ‘what’ questions (Yin 2018). Creswell (2007) conceptualises case study research as a qualitative approach that allows the researcher to explore a bounded system (a case) or multiple bounded systems (cases) over time, through detailed and in-depth data collection that involves various sources of information, such as observation, interviews, audio-visual materials, documents, and reports. Yin (2018, p.15) defines a case study as “... an empirical method that investigates a contemporary phenomenon (the “case”) in depth and within its real-world context.” While Creswell's definition hints at the types of case studies and the multiple modes of data collection, Yin (2018) emphasises the importance of deep

engagement with the case and the nature of the setting in a case study. The choice of a case study qualitative approach arises from the researcher's interest in gaining deeper insights into the subject matter for a better understanding of the complexities and contextual factors that the researcher believes influence public health communication in rural Delta State, Nigeria. One advantage of the case study approach is its ability to provide in-depth information on the case being studied through a variety of data sources (Creswell 2018; Yin 2018).

There are various case study designs. Creswell (2007) identified the single instrumental case study, the collective or multiple case study, and the intrinsic case study. In contrast, Yin (2018) discussed four major designs: single holistic case, multiple case study, single embedded case, and multiple embedded case study. Stake (1995) provides further clarification on the types of case studies, stating that an intrinsic case study focuses on understanding the specifics of a given case. In contrast, an instrumental case study (which the present study adopts) emphasises understanding the phenomena more generally to provide insight into the research problem that can lead to the refinement of theory.

The study employed an embedded single case study design. An embedded single-case study is a case study design in which more than one unit within a given case is examined to understand the single case (Yin 2018; Gutterman & Fetters 2018). The embedded case study design involves studying not only the main case (e.g., an organisation) but also sub-units within the main case. In this study, a local government area in Delta State served as the primary unit of analysis, while professionals in the local government and field professionals in one community within the selected local government area represent another unit of analysis.

3.5 Case Selection

The case for this study was selected using extreme case purposive sampling. Extreme case purposive sampling involves choosing a case due to its significant value compared to other potential cases regarding the phenomenon of interest or background information (Jahnukainen et al. 2010). This selection process included choosing a local government from the 25 based on its position in the Covid-19 statistics. The chosen local government reported the highest number of Covid-19 cases while also having one of the lowest percentage of deaths due to Covid-19 in Delta State. Delta State ranks third among the South-South states, with the highest Covid-19 case numbers in Nigeria, following Edo (7,686 cases), Bayelsa (1,310 cases), Rivers (16,555 cases), Cross River (821 cases), Akwa Ibom (4,656 cases), and Delta (5,363 cases).

The study used a purposive sample for selecting the case because it is the most appropriate sampling technique for qualitative research. Merriam (2002, p.179) notes that "... the case to

be studied should not be randomly selected but selected purposefully so that the individual, community, site, process, and or another confined system to be studied is selected because the researcher has an interest in the characteristics it exhibits.”

The choice of this local government was also made because it was considered relatively safer for conducting this research compared to the other five geopolitical zones in Nigeria (especially the Northern and Western parts), which were deemed unsafe for this study due to insecurities and dangers posed by Boko Haram, Fulani herdsmen, banditry, kidnappers, unknown gunmen, and general terrorism. The local government is predominantly rural, and language was not a barrier for the researcher’s ease of interpretation. There is homogeneity in customs and traditions, as their customs and traditions are almost the same in the local government area. Therefore, the researcher is fairly familiar with the customs, traditions, language, and lifestyle of the selected local government, as well as reasonably acquainted with the terrain due to her educational training during secondary school.

Additionally, one town within the selected local government area (LGA) was chosen for the study due to its remoteness, evidenced by its distance from the local government headquarters (with an estimated travel time of about one hour and twenty minutes). The community suffers from a lack of essential services, including health facilities and information services. As a result of the scarcity of health resources and travel difficulties, rural residents often develop apathy toward seeking beneficial health measures from the few facilities available in the area (Rural Health Information Hub 2017). This was one of the reasons for selecting this town. Similar to many rural communities, this town experiences low functional literacy and frequently relies on informal and interpersonal sources for health information, such as relatives and traditional healers (Ekoko 2020). Furthermore, traditional or community-based media remains the most favoured and effective form of communication among these rural populations (Sonia 2008; Uzokwe 2014). Examples of traditional and community media include town criers, local leaders, palace meetings, age-grade meetings, women’s dance group gatherings, the village market, festivals (such as iwaji, ifejioku ulo, and iwu), folklores, folk dances, moonlight meetings, churches, community elders, cooperatives, friends and relatives, and discussion groups (Sonia 2008; Uzokwe 2014). In addition, many rural residents in the state encounter limited access to ICT due to various challenges, including high costs, insufficient infrastructure, language barriers, minimal government support, and low awareness levels (Ogboma & Esoswo 2008).

Furthermore, the researcher understands the terrain because she is from Delta State and, consequently, knows how to navigate the selected areas of study. Additionally, safety was of utmost importance to the researcher, as she could not venture beyond the chosen local government area of Delta State due to concerns about kidnappers, marauders, ritualists, and robbers (Nzubechukwu et al. 2022; Okpaga & Eme 2012).

This safety concern also led the researcher to focus on South-South Nigeria instead of other Western and Northern regions of Nigeria.

3.5.1 Participant selection

The study adopted a purposive or judgmental sampling method, in selecting 41 participants at the local government level. This consists of 12 Group A participants and 29 Group B participants. The participants for this study initially were meant to be grouped into A, B, and C groups.

Group A (GA) and B (GB) participants were drawn from the multi-sectoral multi-hazard social mobilisation committee as provided by the NCDC's Risk Communication and Engagement (RCCE) strategy for Covid-19. This committee is comprised of people at the Local Government management level (GA) solely in charge of decision-making concerning the Covid-19 communication strategies and design formulations, and those from community-level involved in the delivery of messages (GB).

For Group A, each participant in this group provides varying viewpoints based on his/her roles and experiences in managing Covid-19 pandemic. For instance, GA professionals were chosen for their specialised knowledge, skills, and first-hand experiences in formulating, implementing, and evaluating health communication campaigns, strategies, and interventions during public health crises like the Covid-19 pandemic, which is the focus of this study. Additionally, these participants were selected for the study because the researcher believed that engaging them would enhance the validity and credibility of the research findings. The researcher also wanted to ascertain the effectiveness of public health communication during the Covid-19 pandemic, and the best people to get this information from were policy level professionals who were directly involved in decision-making, hence the choice of this group of participants.

Group B consists of community-level actors who were members of the multi-hazard social mobilisation committee involved in outreach roles and face-to-face interactions with villagers in the chosen community. (GB participants were selected because they were regarded as the most suitable group to reach the grassroots, due to their outreach roles. This group provided insights on the communication strategies used by the local government, how the Covid-19 messages were disseminated in the villages, the implementation challenges, and the effectiveness of the adopted strategies.

Group B differed from Group A in that it consisted of members from the villages, which the researcher could not access. They include the community leaders, religious leaders, market leaders, and village heads, among others.

Information was elicited from these groups via telephone semi-structured interviews.

The third group, Group C, consists of villagers from the chosen community who were the main target audience. These characteristics informed the researcher's choice of this group.

Although the state, local government, and town were initially selected due to their relative safety compared to other areas in Nigeria, on November 1st, 2022, during the data collection period, insecurity spread to that part. Since the researcher could not reach them by phone as she could reach groups A and B, the group was removed from the study (See figure 3 below for the foreign travel advice-Gov.uk as of November 1st, 2022).

Summary

Still current at: 1 November 2022

Updated: 26 October 2022

Latest update: Updated to advise against all but essential travel to the Federal Capital Territory, including the city of Abuja



 [Download map \(PDF\)](#)

The Foreign, Commonwealth & Development Office (FCDO) advises

Figure 3. The Foreign, Commonwealth and Development Office

This led to the immediate expansion of the number of participants in group B. This was to enable the researcher to have a better understanding of the phenomenon under study by engaging and speaking to multiple distinct groups who directly interacted with the villagers. This, therefore, made the total number of group B respondents for the study twenty-nine (29). The sample size for the group B respondents was determined through data saturation. That was, after careful examination and analysis of the data collected from the interviews, the researcher noticed that the respondents were no longer providing substantially new information regarding the phenomenon under study.

According to Saunders et al. (2018), saturation has attained widespread acceptance as a methodological principle in qualitative research. With its origin in grounded theory (Glaser and Strauss, 1967); saturation is now widely accepted across a variety of qualitative research

approaches (Saunders et al. 2018). Scholars provide different descriptions of saturation. For instance, Given (2015) describes saturation as the point at which additional data do not lead to any new emergent themes. Similarly, Fusch and Ness (2015) believe that saturation is attained where there is enough information to replicate the study; when the ability to obtain additional information has been reached; and when coding is no longer visible. Additionally, Fusch and Ness (2015) argue that the researcher's inability to attain saturation affects the impact on the quality of the research conducted. More so, failure to reach data saturation hampers content validity (Bowen 2008; Kerr et al. 2010).

The criteria for selecting participants were their respective designations and the roles each participant plays at the management level in public health communication within the chosen local government. Therefore, the researcher believes that their involvement in the current study will yield rich and robust data regarding the subject matter due to their firsthand knowledge and experience. Additionally, participants were selected to achieve representativeness across the 12 identified third-sector multi-hazard social mobilization committee groups within the local government.

The choice of the purposive sampling method for selecting participants aimed to assist the researcher in identifying and choosing initial participants for the study based on certain predefined criteria relevant to the study's aims and objectives, as well as its research questions. This aligns with the definition of the purposive sampling method, which involves the researcher making decisions about study participants based on specific criteria. These criteria may include, but are not limited to, an individual's knowledge of the phenomenon, capacity, and willingness to participate in the study (Oliver 2006). Purposive sampling is defined as the deliberate selection of settings, persons, or events for the valuable information they can provide, which may not be obtainable from other options (Tashakkori & Teddie 2003a). As Bernard (2017) claims, purposive sampling is best implemented using the key informant technique.

In addition, the researcher integrated the snowball sampling technique with purposive sampling to enable wider access to other potential participants who were not initially recognised and/or identified. The integration of the snowball sampling technique was also driven by the various advantages of combining both sampling methods to aid in sample size selection (Noy 2008). According to Bryman (2016) the snowball sampling technique allows the researcher to sample a small group of people considered relevant to the research questions, and these sampled participants can propose other participants whom they believe have had the experiences and possess the characteristics deemed relevant for the study. In the context of this study, recognising the advantage of employing the snowball sampling technique as noted by Bryman (2016), sampled participants proposed other potential

participants who they felt had the necessary experience and possessed the required characteristics for the study, helping to mitigate the issues of potential respondents shying away from the study in the absence of familiar or trusted referrals.

The study employed methodological triangulation by incorporating groups of participants with diverse perspectives on achieving the study's goals and objectives. This approach was to ensure the credibility of the findings, provide a balanced account to reduce bias, and gain a more nuanced understanding of what constitutes effective public health communication in rural Nigeria. Below is a concise table summarising participants, roles, and descriptions.

Group	Description	Example Roles
A	Government-affiliated policy level professionals in management in the local government	Director Primary Health Care (DPHC); Health Promotion officers; National Orientation Agency (NOA); Community Mobilisation Officers; M&E Officers.
B	Community level actors professionals/Nongovernmental	Traditional Rulers; Faith-Based Organisations (FBOs); Community-Based Organisation Representatives (CBOs); Community Influencers; Development Committees; Nurses at the Primary Health Centres; Community Health Experts; Non-Governmental Organisations (NGOs) Fieldworkers; Town Criers; Traditional Healers; Community Orientation Officers; President Generals.

Table 3- Participant's Selection Table

3.6 Method of Data Collection

The qualitative semi-structured interview research method was used in the study for data collection. This choice reflects the researcher's interest in deeply exploring health communication professionals' perspectives, knowledge, and experiences regarding effective health communication in rural areas through one-on-one discussions. This approach enables the researcher to engage thoroughly with the subject matter, utilising semi-structured telephone interviews that permit follow-up questions, probes, and comments, as well as offering participants the flexibility to discuss the topic in depth.

Although focus group discussions in qualitative research are considered suitable for evaluating the outcomes of health care interventions (Dyas et al. 2009) and are an effective way to assemble individuals from similar backgrounds and experiences to discuss a specific topic of interest through group interactions, Zacharia et al. (2021) did not adopt this method of data collection for confidentiality purposes. The sensitive nature of the subject matter and the

likelihood of participants feeling uneasy in responding to questions due to security issues in Nigeria at the time of the planned fieldwork influenced the choice of one-on-one semi-structured interviews.

For security reasons, other methods such as observation and the use of documents were also not added. Observation, which entails researchers immersing themselves in the natural setting to enable them to collect data about people, processes, and cultures by observing participants' behaviours or phenomena of interest (Kawulich 2012); and record observations, was also not used in the present study because the researcher could not travel to the chosen area of study for security issues. The security development at the time of planned fieldwork was a major reason for not adopting the data collection method, as the researcher feared that she might be at risk of traveling and living within the local government and observing participants for an extended period.

3.6.1 Qualitative semi-structured Interviewing

Scholars define a qualitative interview as a valuable method for collecting data that involves conversation and interactive discussions between the interviewer (the researcher) and the interviewees (participants) about the research topic. This process helps the researcher gain insight into people's perceptions, understandings, and experiences of a particular phenomenon (Bryman 2012; Ryan et al. 2009). Creswell (2014) identifies the following types of qualitative interviews: one-on-one or face-to-face, telephone interviews, and email interviews; while Bryman (2016) identifies two major types: unstructured and semi-structured interviews. The unstructured type is also referred to as an in-depth interview.

Scholars agree that in-depth interviews (unstructured) are deemed most favourable for collecting data on individuals' personal histories, perspectives, and experiences, particularly when sensitive topics are being explored, and they are also regarded as the most common format of data collection in qualitative research (Mack et al. 2005; Jamshed 2014).

Although in-depth interviewing allows researchers to gain insight into people's lives, histories, and experiences, this method is more than a simple conversational interaction and requires substantial knowledge and skill from the interviewer (Ryan et al. 2009).

Scholars view a semi-structured interview as a guided interview, featuring prepared questions that can be adjusted in sequence, with new questions added based on the responses provided by the interviewee (Zhang & Wildermuth 2006 cited in Ramli et al. 2014).

A semi-structured interview allows for the collection of relevant contextual information and enables probing of participants, which helps clarify or further understand their meanings regarding their experiences. Additionally, a semi-structured interview aids in collecting rich

and well-detailed data (Saunders et al. 2011). The researcher prepares some questions in advance, guided by themes, and key questions may vary from one interview to another.

The researcher conducted semi-structured qualitative telephone interviews to elicit responses from groups A and B. This meant that before the telephone interviews, the researcher created an interview guide based on the research questions and IFEPHC. (The interview guide for both groups A and B is presented in Appendices D & F). Although the IFEPHC guided the interview, the questions were key questions designed to elicit in-depth discussion. For instance, the statement: "Tell me about the key risk communication and community engagement campaigns and strategies adopted and/or designed in your local government area in the management and control of the Covid-19 pandemic in the Local Government." And the follow-up question: "Why the choice of the strategies?" allow participants to discuss all strategies adopted and also provide reasons for each. The researcher would be able to determine whether elements of IFEPHC were present in their narratives when they explained their reasons for adopting each strategy. This approach prevents the researcher from pre-empting responses and allows the participants' perspectives to emerge. Furthermore, the researcher was not limited to the questions in the interview guide, nor were the interviewees required to answer in a specific manner. This is because responses to key questions determine the follow-up questions the researcher asked. The researcher was able to introduce relevant questions that were not covered in the interview guides, and interviewees had leeway in how to respond to the questions asked (Bryman 2016). Thus, there was flexibility in the asking and answering of questions that allowed new and unexpected perspectives to emerge from the interaction.

The choice of semi-structured telephone interviews was because telephone one-on-one interviews are a widely accepted research technique for gathering valid and reliable data (see Saunders et al. 2011; Silverman 2013; Flick 2009; Denzin and Lincoln 2011), and the researcher couldn't travel for safety reasons. This aligns with Bryman's (2016) justification for using telephone interviews, as he argues that they are particularly useful for dispersed groups and when interviewer safety is a concern. Moreover, the researcher found the semi-structured telephone interview method appropriate because it is conversational (Saunders et al. 2011; Denzin and Lincoln 2008), allowing for the elicitation of information about the subject in a more conversational manner.

Additionally, the researcher conducted one-on-one telephone interviews with participants from both Group A and B, averaging two to three interviews daily. This was primarily due to the participants' availability during working hours, influenced by the nature of their jobs. Therefore, the interviews were scheduled for morning hours (9 am - 11:30 am) or in the afternoon following lunch breaks (2 pm - 4:30 pm), with each interview lasting between 55 and 60

minutes. The interviews were digitally recorded with the participants' permission to facilitate verbatim transcriptions of the discussions.

Although some issues, such as the inability to observe body language and the possibility of poor network connectivity, were associated with qualitative and technology-mediated interviews (Bryman 2016), the researcher attempted to address these concerns. The inability to observe the body language of respondents was mitigated by starting the interviews with small talk to ease tension and make participants feel relaxed and comfortable. Additionally, participants were informed of their right to decline any questions they felt uncomfortable with and to discontinue at any time without permission from the researcher. The issue of connectivity was improved by using a direct mobile line with sufficient airtime rather than relying on the WhatsApp call used in the pilot study. The lessons learned from the pilot study are discussed in the next section.

3.6.2 Piloting the Study

The design included a pilot study. Van Teijlingen and Hundley (2002) describe a pilot study as a mini study that the researcher conducts before the main study to pretest research instruments like an interview schedule, to identify potential flaws or limitations within the interview design that allow necessary modifications to the major study. It is regarded as one of the crucial stages in the research project, aimed at enabling researchers to identify potential problem areas and deficiencies in the research instruments and protocols before their implementation during the full study (Lancaster et al. 2004; Kraemer et al. 2006). Furthermore, Majid et al. (2017) maintain that piloting for interviews is important because it helps researchers test the questions and gain some practice in interviewing, including strengthening interview protocols (Castillo-Montoya 2016); this should be done before a researcher embarks on the major study (Harding 2013).

Therefore, conducting a pilot study was important in this study to pretest the data collection interview instruments for the following reasons:

- To examine and ascertain the appropriateness of the proposed interview instruments, proposed interview procedures and/or protocols.
- To help build the researcher's confidence in conducting the proper research before fully embarking on the proper interviews, including gaining some practice in interviewing and acquiring relevant skills such as proper time and people management.
- To save time and money. This pilot study was helpful because it enabled the researcher to ensure that everything went smoothly to prevent critical mistakes.

For the pilot study, six (6) policy-level professionals at the management level and six (6) community level actors in another local government were selected purposefully. They were selected for the pilot study because they had insight and experience in health communication in Nigeria.

The researcher notified these participants about the intention to conduct the pilot study over the phone. The researcher informed them of the reason for the pilot study, obtained their consent to participate, and obtained permission to take notes and digitally record their responses.

The researcher engaged the respondents via phone calls. Participants chose the interview times to suit their schedules. Based on their preferences, the interviews were done between 9 am – 12 pm, and from 5 pm – 8 pm, and lasted for 40-50 minutes.

During the interviews, participants were given the opportunity to express themselves and clarify their opinions. When the researcher encountered difficulty understanding their responses, she requested that they repeat their answers, enabling a clearer grasp of their views. This was also supplemented by probing questions. At the end of each interview, the researcher thanked every participant for their support and cooperation.

The pilot study helped the researcher to understand the importance of engaging in small talks at the start of every interview before introducing the actual interview questions.

In addition, the researcher noticed that the use of WhatsApp calls (which some of the participants preferred) did not work efficiently because the network became unstable and affected some of the digital recordings. To mitigate this problem, the researcher had to purchase adequate “top-up” credit to enable her to make direct calls to the participants without limitations. This was also used for the main interviews with participants. During the pilot study, the researcher failed to probe, which would have helped uncover some important ideas. The researcher noted this omission and improved on it in the main interviews.

3.7 Method of Data Analysis

The method of data analysis for the qualitative data was deductive and inductive thematic analysis. According to Braun and Clarke (2006) thematic analysis is a flexible method for identifying, analysing, and reporting patterns (themes) within data, which can be done deductively or inductively. The deductive aspect involves having a priori codes which could be developed from theory, literature, or research questions, while the inductive aspect entails generating codes and themes from the data (Braun and Clarke 2006; Bingham 2023).

This approach to thematic analysis is considered suitable for analysing the qualitative data generated by this study because it allows for the application of the theoretical framework while remaining open to new ideas that may emerge from the data (Freedey and Muir-Cochrane

2006; Bingham 2023). A combination of deductive and inductive methods also alleviates the limitations of using only the deductive approach, which tends to diminish the rich description of the overall data (Braun and Clarke 2021), as well as the risk of losing focus on the study due to the extensive data and multiple, diverse interpretations when applying the inductive approach (Bingham 2023).

Bingham (2023) provides a five-phase method for deductive-inductive qualitative data analysis, namely, organising the data; sorting data into relevant topical categories; open/initial coding; identifying patterns, themes and findings; applying theory and explaining findings. While the first two phases involve the deductive component, the 3rd and 4th involve the inductive, and the 5th phase is a mix of deductive and inductive (Bingham 2023).

On the other hand, Braun and Clark (2006) provide a six-phase inductive approach to thematic analysis which involves: getting familiar with the data by reading and making notes; generating initial codes; generating themes; revising the identified themes; defining and naming themes; and Writing Up.

The deductive and inductive approach to qualitative data for this study integrates the first two of Bingham's (2023) five-phase deductive and inductive qualitative analysis method into Braun and Clark's (2006) five phases (excluding the first phase, which has elements of Bingham's 1st and 2nd phase). This is because these two phases help in getting familiar with the data by getting preliminary knowledge of the data and noting crucial points in the data (Bingham 2023; Saunders et al. 2023). Bingham's analytic process is open to such integration for she holds that the entire process or parts of it can be used in other qualitative analytic methods such as thematic analysis, discourse analysis among others (Bingham 2023). Therefore, the process of this deductive-inductive thematic analysis consists of six phases; organising and sorting of data. This deductive phase was constituted by collapsing the phase two deductive phases of Bingham (2023) which is the deductive phase and integrating it into the five inductive phases proposed by Braun and Clark (2006).

After the semi-structured interviews were conducted, those conducted in other languages of the participants (Igbo and Pidgin English) were translated into good English language, and interview recordings were fully transcribed. Afterwards, the full transcripts were produced, edited, and used to build the Nvivo project. The process of analysis is discussed in the subsequent sessions.

3.7.1 The deductive component (organising and sorting the data)

The first phase of the thematic data analysis involved developing attribute and topic codes to organise and sort the data, which allows the researcher to become more familiar with the collected data and note first impressions (Bingham 2023). This process enhances data

management and facilitates the inductive phase. It included applying attribute coding (e.g., age, educational level, etc.) to gather background information (See appendix H). Afterward, the researcher proceeded to topical coding, further categorising segments of the interview transcripts based on the research questions and sub-questions. These created the parent codes (See appendix L for topic codes), enabling the researcher to concentrate on the relevant segments of the data to support the inductive phase of the analysis (Bingham 2023).

3.7.2 The Inductive component

The second phase (which is the first phase of the inductive component) was generating open/initial codes. After the sorting of the data in Nvivo, the researcher concentrated on the topical categories. Each topical category was read, and codes were applied based on the researcher's understanding of the participants' views (See appendix I) for a sample of the product from this phase).

The third phase is generating themes. The researcher sorted different codes within the data set into different identified themes and collated all relevant coded data extracts from the transcripts within the identified themes. At this stage, some codes deemed irrelevant were sifted out and stored separately (See appendix K for sample of product from this stage).

The fourth phase is revising identified themes. According to Braun and Clarke (2012) this stage involves conducting a recursive review of the candidate themes about the coded data items and the entire dataset. At this stage, themes were refined and where necessary, combined, separated or removed. To achieve this, the researcher re-read data associated with each theme to ascertain whether they supported the identified one or whether some data needed to be removed. For instance, the "peer strategy" and "direct information dissemination" were aggregated into "interpersonal communication" because they appeared to be related to interpersonal communication (See appendix L). The themes were closely examined to ensure that the theme was appropriate and worked in the context of the entire data set (Maguire and Delahunt 2017).

The fifth phase is defining and naming themes. After successfully reviewing potential themes and discarding unwanted themes, as well as collapsing themes into sub-themes, themes were named and described. This implies identifying what each theme signifies (Braun & Clark, 2006; Byrne 2022).

The sixth phase is writing Up. This was the final stage of the analysis. At this stage, the researcher had to weave together the analytic narrative and the data extracts, and the research question (Braun & Clark 2006). This was presented in the next chapter.

3.8 Ensuring Qualitative Research: Strategies for Ensuring Trustworthiness

In the positivist research paradigm, the quality of research is primarily evaluated through validity and reliability, whereas in qualitative research, trustworthiness serves as the central criterion for quality assessment (Ahmed 2024; Lincoln and Guba 1985 cited in Nowell et al. 2017, p.3). Lincoln and Guba 1985 conceive trustworthiness as a way for researchers to convince themselves and consumers that their research findings are worth paying attention to. This can be achieved by four criteria: credibility, transferability, dependability, and confirmability. In this study, two aspects of these criteria as they apply to this research are discussed below:

3.8.1 Credibility

Credibility as a trustworthiness criterion focuses on establishing a match between the constructed realities of participants and the realities represented by the researcher (Guba and Lincoln 1989 cited in Sinkovics et al. 2008, p.699). In the context of thematic analysis, it addresses whether the theme identified by the researcher aligns with the participants' narratives. This can be achieved by staying close to the data and amplifying participants' voices through meaningful quotations, while also maintaining transparency throughout the data analysis process (Shava et al. 2021). In this study, the procedure for data analysis was documented, and participants' voices were made evident by providing quotations that support each identified theme.

Triangulation refers to a research strategy that involves addressing a research question from two or more angles to converge and cross-validate findings from various sources (for example, different data sources) (Hewson 2006, p.180). Carter et al. (2014) defined it as the use of multiple methods or data sources in qualitative research to develop a comprehensive understanding of phenomena aiming for "convergence of information from different sources" (Carter et al. 2014). Patton (1999 cited in Carter et al. 2014, p.545) identified four types of triangulations in qualitative research: method triangulation, investigator triangulation, theory triangulation, and data source triangulation.

In this study, data triangulation was adopted to enhance the credibility component of trustworthiness. According to Carter et al. (2014) data source triangulation refers to the collection of data from different types of people, including individuals, groups, families, and communities, to gain multiple perspectives and validation of data. This same conception was shared by Crowe et al. (2011) that data triangulation (the use of multiple sources of data) has been advocated as a way of increasing the internal validity of a study. To achieve this, the themes generated from the analysis of interview transcripts from the two groups (A & B) were analysed separately and then merged to identify the common and unique themes. By

comparing the responses from the two groups, a deeper understanding of the research questions can be gained, and the researcher ensured that the findings were not limited to a single group's perspective or biased.

3.8.2 Transferability

The notion of generalisation as a quality criterion in research has been linked to positivist research (Polit & Beck 2010). However, some scholars distinguish between types of generalisation that can be applied to positivist research and those applicable to interpretivist and qualitative research (Firestone 1993; Carminati 2018). Firestone identified three types of generalisation: statistical generalisation (making inferences from a sample to a population based on a representative sample); analytic generalisation (generalising a particular set of results to a broader theory by providing evidence that supports or does not support the theory); and case-to-case transfer, which was later called transferability “reader generalisability” (Sinkovics et al. 2008). Carminati (2018) argued that whatever type a researcher uses demands that the researcher specifies his or her research philosophy, makes a decision on whether generalisation is the aim of the research, and clarifies what type of generalisation the researcher wishes to establish if generalisation is the aim of the research.

Transferability is the criterion mainly used in qualitative research (Polit & Beck 2010; Firestone 1993) and is preferred in qualitative studies (Carminati 2018). This is because it aligns well with interpretivist philosophy, which prioritises understanding human experiences and behaviour over predicting and generalising causal relationships.

Transferability can be achieved by researchers providing detailed descriptions of the research context, which enables readers to determine whether the findings can be applied to their own contexts (Sinkovics et al., 2008; Sahl & King, 2020). In this study, the researcher provided an in-depth description of the context, the participants' characteristics, and a thick description of the findings to facilitate transferability.

3.9 Ethical Consideration

Ethical considerations are deemed necessary in any research project, beginning with the conception of the research topic, identification of research questions, data collection, and data compilation and analysis (Bryman 2016; Hadland 2020).

According to Aguinis and Henle (2002) the focus of ethics is on providing guidelines for researchers, the evaluation and revision of research, and the establishment of enforcement mechanisms to guarantee ethical research. Ethical research, therefore, is research that strictly complies with the ethical guidelines by organisations like Institutional Research Boards for the

integrity of the research to be maintained throughout to ensure that all study respondents are protected from any harm (Onwuegbuzie & Collins 2007).

Toepoel (2017) maintains that there are a number of ethical obligations to the study respondents including: (i) confidentiality, anonymity, and privacy i.e., respondents' rights to know who will have access to their data (confidentiality); ensuring that no result will be traced back to the respondent (anonymity); and allowing respondents choose how much information they wish to divulge and withhold some without being coerced into saying everything the researcher wishes to know (privacy); (ii) informed consent: this means that every respondent has the right to informed consent which should explicitly inform the respondents their rights to decline and withdraw participation at any time; include a description of the study and purpose; and expectations from participants; (iii) deception: although deception is seen as disrespectful to the respondents' privacy and freedom of participation and going against the principle of informed consent (Toepel 2017; Sharpe et al. 1992); researchers sometimes unavoidably deceive their participants to enable them test their hypothesis; (iv) debriefing: researchers are obliged to debrief their study respondents after the completion of the survey to reveal the actual reason for the research in order to undo possible negative effects.

While ethical research can vary across countries, in Nigeria, where this study is conducted, there are basic principles of research ethics that researchers must adhere to. Failing to meet these essential ethical principles may lead to research being criticised and rejected by concerned individuals such as supervisors and the ethics committee (Lund Research Ltd 2012). Each of these fundamental principles is discussed in turn, with their importance highlighted in this study.

Minimising the risk of harm: certain types of harm that participants are sometimes subjected to in research include physical harm, psychological harm, and invasion of privacy. Researchers often overlook harm; instead, they focus on reducing the risk of harm to their study participants (Lund Research Ltd 2012). Therefore, to ensure that this risk of harm was minimised while conducting this research and that ethical principles were adhered to, the researcher first formally approached study participants by distributing invitation/information sheets through an intermediary, specifically a communication facilitator within the local government. These letters explained the study's objectives and the participants' roles in the study; thus, ensuring that participation was voluntary and free from any form of coercion.

Obtaining an informed consent form: According to Fisher and Anushko (2008), the informed consent requirements require prospective participants to be provided with all relevant information, including the purpose, duration, and procedures of the study, their rights to withdraw, the contact person for questions regarding the study, and any incentives for participation. Thus, informed consent forms detailing sufficient information about the research topic and the expectations from the respondents were made available for the respondents to

enable them to understand the purpose of the study, the methods being used, the possible outcomes of the study, and to also understand their rights to discontinue at any point. As such, the openness of the research intent was crucial to achieving this. The researcher used the informed consent form to inform participants of their right to withdraw from the study at any time. The researcher also tried not to leave out relevant information that could influence whether consent would be granted or not. Furthermore, during the interviews, the researcher ensured that she reminded participants of their right to discontinue the interview at any time they felt necessary.

Protection of confidentiality and anonymity: the researcher explained to the interviewees that the information they provided would be treated as confidential and anonymous by detailing who could access the information they provided for the study. To ensure anonymity, the researcher ensured that no direct identifiers linking data to participants were included. Instead of using personal and identifiable information, the researcher assigned pseudonyms (for instance, GA ECO1 and/or GB ECO 1) to participants. The researcher handled identifiable documents containing participants' information carefully and secured them by storing respondents' information on a locked USB stick, accessible only to the researcher. Furthermore, the researcher intentionally removed the name of the local government area used in the study to further enhance the anonymity and confidentiality of participants.

To minimise the risk of harm to the study participants, the researcher avoided deceptive practices when designing the research. In addition, the study ensured that storage and data protection were considered, including compliance with all the compulsory University of Stirling ethical requirements. To ensure proper management of all obtained data, the researcher stored study data in a secured location i.e., the researcher's personal computer. This was done after the researcher organised the interview transcripts and saved them.

Furthermore, before commencing fieldwork, the researcher applied to the University of Stirling ethical review board for approval to research human subjects. This was to ensure that the research was conducted in accordance with the appropriate ethical and legal standards. The board scrutinised this application form, and the researcher was asked to amend it to ensure it met the required standard before proceeding to the field. These amendments were made, and with the supervisor's supervision and approval, the application was resubmitted to the ethics board. This application was successful on September 2, 2022, and the researcher was permitted to proceed to the field (See Appendix A: *Ethics Approval Form*).

CHAPTER FOUR

Data Analysis: Findings/Presentation

4.0 Introduction

This chapter is organised into three sections. The first section presented the background information and themes for Group A, while the second section provided the background information and themes for Group B. The final section synthesised themes from both groups, highlighting the similarities and differences.

4.1 Group A Data Presentation and Findings

This section provided background information and thematic analysis from Group A interview transcripts. This group comprises policy-level professionals at the LGA's management level. The first part of this section presents the background information in Table 4 below, while the second part outlines the themes.

Demography	Category	Frequency N=12
Age Group	20-30	1
	35-39	4
	40-44	1
	45-49	1
	50+	5
Educational Level	University	5
	Master's Degree	4
	PhD	3
Designation	Health Communication Professionals at the managerial level	10
	Local government health officers at the managerial level	2
Language	Igbo	12
Roles in public health communication	Campaign Design & Management	9
	Monitoring & Evaluation	3

Table 4- Background Information for Group A participants

Regarding the age range of the participants, the largest age group consisted of 5 participants aged 50 years and above, followed by 4 participants aged 35-39. In terms of educational qualifications, most participants (5) indicated that they held a first degree. This is followed by 4 participants who had Master's degrees (MA) and 3 with PhD. The language of all the participants is Igbo. The participants' public health communication roles range from campaign design and management (9 participants) and monitoring and evaluation roles (3 participants).

4.2 Presentation of GA Themes/Findings

The themes derived from the Group A interviews are presented in this section. This presentation is guided by the research questions.

4.2.1 Goals and Priorities of the Local Government's Public Health Communication during Covid-19 *(Interview Question 1, Appendix C)*

When GA participants (Policy-Level Professionals) were asked the above question, the following themes emerged: public sensitisation and awareness creation about Covid-19 (n9); providing understandable messages to the audience (n6) and safety of the populace (n3).

(a) Public sensitisation and Awareness Creation

The majority of GA participants (n9) believed that one of the major concerns of the local government during the Covid-19 pandemic was to create awareness of the pandemic in the local government, and they discussed public sensitisation and awareness about Covid-19 as one of the goals and priorities of the local government. One GA participant commented:

"...primarily we were concerned with sending [Covid-19] information across to all ... it was our goal to give accurate and responsible information about Covid-19."- Eco 4, (age) 50+, M&E officer (GA).

Another participant said: "The local government's health communication goals were to raise the awareness level of the populace regarding the virus and to educate the populace on preventive ways..."- Eco 12, (age) 50+, Environmental Health Officer (GA).

The campaign through which awareness was created was designed at the federal level and sent for adaptation at the local government level. For instance, the Covid-19 campaign titled "Take Responsibility" emphasising social distancing; washing of hands under a running tap and use of sanitisers; use of face masks; coughing into the elbow; and movement restrictions were described by a participant:

"...NCDC came up with the "Risk Communication Community Strategy" entailing "Take Responsibility". It entails sensitisation about the existence of Covid-19 and for them to take responsibility for their actions and inactions concerning how they

go about their normal lives; how to prevent the Covid-19 from affecting them.”- Eco 6, (age) 35-39, Public Health Officer (GA).

Another participant reaffirmed the point on sensitisation and discussed the campaign messages that were disseminated to the villagers:

“We had to go down to the necessary nitty-gritty of hand washing using soap to scrub your hands, all the corners and at the edges at least you wash your hands, scrub your hands for almost 30 seconds...Then wearing face masks was troublesome, you know that wearing face masks will stop you from getting enough oxygen, but of course, that was one of the fundamental steps. Another one was crowd avoidance... Then the two-meter rule avoidance. These were the things, the campaigns we were driving down to the grassroots as developed by the National Centre for Disease Control (NCDC).” - Eco 4, (age) 50+, M&E Officer (GA).

(b) Provision of an Understandable Message to the Audience

Providing understandable messages to the audience was also identified as a priority by some of the participants (n6). This translates to disseminating Covid-19 campaign messages that would be understood by the target audiences to ensure effective communication. This was described by one of the participants: “We aimed to ensure that the messages [Covid-19 messages] were clear in a way that the public would understand and be carried along.”- Eco 2, (age) 35-39 Primary Healthcare Officer, (GA).

(c) Safety of the public

Keeping the community safe from Covid-19 was another priority for the local government. This was discussed by some participants (n3). One said: “The goal was to try in any way possible to make sure that [Covid-19] does not come into the local government and to ensure it is eliminated if it comes. They tried to ensure people were safe.” - Eco 8, (age) 50+, Health Promotion Assistant (GA).

Another participant presented a more elaborate conception of safety as a priority to the local government:

“Our priority was to ensure that the community stays safe by informing them of the severity of Covid-19, by informing them of the reality of Covid-19...to ensure that they stay safe first... that they use their face masks, they avoid staying in a cluster, to stay at a distance from each other. Then the ultimate thing is to ensure that people do not get in contact with the virus.” -Eco 3, (age) 40-44, Secretary to the LG (GA).

Ensuring safety seems to be the local government's goal and priority, which can be accomplished through the first two immediate communication priorities.

4.2.2 Public Health Communication Strategies Adopted During Covid-19 *(Interview Question 2, 3, 4, 5: See appendix C)*

In adapting the Covid-19 awareness campaign to the grassroots level (rural villages), these strategies and actions were implemented: multiple communication channels (n12), engagement and involvement of community leaders and stakeholders (n12), monitoring and evaluation (n12), and audience definition and message tailoring (n4).

(a) Use of Multiple Communication Channels

The responses regarding strategies for implementing the Covid-19 campaign revealed multiple communication channels (n12). This involves utilising various communication channels to convey the Covid-19 message to the villagers. These included: mass media (n9); interpersonal communication (n7); and indigenous native communication methods (n4).

Mass media

The majority of the GA participants (n9) discussed mass media such as broadcast media (radio, television) and print media (flyers, billboards, posters), as the communication channels adopted by the local government. For instance, one participant commented on the use of radio and its affordability:

“So, we used different communication media like the more affordable radio, and we had a few television outings because they were expensive; many people were no longer watching television in Nigeria, except a few. But we used more radio than we used television, and we used some newspapers...”- Eco 11, (age) 50+, Health Promotion and Advocacy Officer (GA).

Apart from broadcast media such as radio and television, flyers printed in various languages were also used: *“So, we concentrated more on what people could see with their eyes: flyers, small flyers in English, pidgin, Igbo language, Urohbo language”-Eco 4, (age) 50+, M&E NOA Officers/DBO (GA).*

Another participant also commented on how the Information, Education, and Communication (IEC) materials were tailored and designed by the local government:

“They supplied health information to health information officers, who came up with IEC materials... posters, stickers, because they were the professionals from the health sector, they gave us the relevant information that we needed to put out there in the public domain. So, when they gave us this information, we did the IEC materials.”- Eco 10, (age) 45-49, Director DBO (GA).

The reasons for the use of flyers with visuals discussed by participants are presented below:

➤ *Understanding and recall*

One of the participants believed that the use of flyers with visuals was for better understanding and recall of information received:

"We made use of audio-visuals... flyers that had images of persons wearing nose masks, persons observing social distancing, and persons washing their hands under running water. With these, we created mental pictures they would not forget. When you looked at the flyers, you saw the images, even if you had heard messages, looking at the picture made you easily remember." -Eco 7, (age) 20-30, M&E Officer (GA).

Interpersonal Communication

Interpersonal communication was another theme. This involved face-to-face exchange of information by word-of-mouth for clarity. This was expressed by the majority of GA participants (n7). According to a participant:

"...there are other things like the use of flyers, but sometimes the flyer is for those that can read and understand, that was why I emphasised the use of mouth, because it gets to more people that don't understand the message on flyers." - Eco 3, (age) 40-44, Secretary to the LG (GA).

According to GA participants, word of mouth involved the influential members of the community whom the villagers trusted, believed, and accepted messages from.

- *Credibility and trust, interactivity and feedback, and understandability for employing interpersonal communication sources.*

One GA participant discussed credibility and trust of sources as a reason for choosing influencers, trusted voices, and opinion leaders for the health communication campaigns in the rural areas, and commented:

"... one reason we involved influential members of the community was because they are members of their communities. They were well respected. We believed that using them would make the average people in the village understand, trust, accept the messages, and use the messages for effective health management, particularly during the Covid-19 pandemic." -Eco 6, (age) 35-39, Public Health Officer (GA).

Another participant asserted that using health workers and information officers for Covid-19 message implementation enhanced clarity and commented:

"... so, the health educators worked closely with information officers, while the health educators showed the way and how to navigate the terrain. The information officers oversaw information dissemination, ensuring they attended to the villagers who wanted clarification because they came out and asked questions." -Eco 10, (age) 45-49, Director DBO (GA).

Indigenous Native communication methods

Several GA participants (n4) discussed native indigenous communication methods, like town criers with gongs (i.e., recognised percussion instruments made of metals that produce sounds when struck in the villages), as one of the communication strategies to ensure credibility.

“... for the level of people in this community, you didn’t need to use a foreigner to speak to them; you needed to use the town criers with gongs. These messages from these town criers resonate well with the inhabitants because they trust them. Thus, credibility was very important and is still essential in delivering the Covid-19 messages...” -Eco 4, (age) 50+, M&E NOA Officer/DBO(GA).

One participant discussed the reason for the use of indigenous methods. According to participant, they were used because they had been effective in past health campaigns:

“...we looked at getting town criers who could go to different homes, the hinterland. We couldn’t print the Covid-19 messages in the language of the people, but we interpreted the messages in the mother language and passed them to the town criers... then we got megaphones and had those who used the native gong to inform the people about the [Covid-19] health message. Yes, we have typically adopted these strategies in the past, and we also attained results. We believed these were the best ways of getting many people in the community to accept the Covid-19 messages.” - Eco 2, (age) 35-39, Primary Healthcare Officer (GA).

Another GA participant corroborated the same point regarding native indigenous communication methods. They also discussed how credible sources can influence and change perceptions among the villagers, providing further justification for the local government's preference for these native indigenous communication methods. Participant commented:

“... I think one of the most effective strategies or media we used was their local communication media, that is, the gong system of disseminating information called ‘ogene’, what we call in English gong. So, they were paid to use those gongs to communicate the spread of the [Covid-19] virus, the dangers, and the realities.”- Eco 11, (age) 50+, Health Promotion & Advocacy Officer (GA).

➤ *Believability*

The desire to have the villagers believe the Covid-19 message amid the misconceptions drove the use of native/indigenous channels of communication. This was demonstrated in this narrative:

“One of the problems people had was that some believed Covid-19 was not real and that it didn’t exist. Some called it a white man’s illness. Some used slang like ‘bacteria are not in Africa’. ‘We are strong because we eat fufu.’ So, that predisposition made a lot of villagers not to take the Covid-19 serious, and to communicate to them to believe that it is real, we used this natural village gong people that would speak their language, that would use their vocabulary, their adages, their idioms to communicate to them that it is real. So, it was very effective.” -Eco 11, (age) 50+, Health Promotion and Advocacy Officer (GA).

(b)Engagement and Involvement of multiple stakeholders

The majority of the participants (n9) discussed the involvement of community leaders and stakeholders as a key step taken by the local government in the Covid-19 public health communication campaign. This involves engaging distinguished community members (such as religious leaders, market leaders, and age grade leaders, i.e., individuals who oversee specific age groups in a community) in the design and implementation of the Covid-19 campaign. For instance, one participant commented on why the stakeholders were involved:

“... It was not a usual or government’s fight; it was not a health workers’ fight; it was a fight that involved the community. We involved the community leaders to work with us, to understand what we were saying, which was to get information across to the community.”- Eco 5, (age) 35-39, Healthcare Officer (GA).

The Covid-19 health information in rural areas was grouped into three major categories: health professionals and workers in health centres (n7), influencers and trusted voices (n6), and the National Orientation Agency & NGOs/NPOs (n1). They are discussed further.

Health Professionals/workers from health centres

Health professionals and health workers in the health centres and hospitals were part of the implementers of health information dissemination during the Covid-19 campaign:

“We included the community health workers who work with primary health centres; the doctors that are posted in the primary health centers.” -Eco 12, (age) 50+, Environmental Health Officer (GA).

Influencers and trusted voices in the communities

Individuals in the communities whose words the community members believe and accept because they have gained significant credibility over time. The use of this category of people was obvious from the narrative of one of the GA participants:

“We used local people, the opinion leaders in the local government or the public health systems, public health centres, and opinion leaders, sometimes market women to go through communities and villages with public address system to make announcements by way of communication to the people. We also used religious leaders, the churches, the mosque to be able to drive the campaigns home...” -Eco 3, (age) 40-44, Secretary to the LG (GA).

Another participant expanded on the qualities of this group of people; they reach the heart of the villagers, the villagers respect and listen to them, and they can understand the Covid-19 message and can pass the message to the villagers: *“...we had people that reached their hearts - people they respect and listen to-their religious, market and traditional leaders to talk to them, to convince them. We talk to them so they can understand the message and pass it on to the people.” -Eco 1, (age) 35-39, DPHC, (GA).*

There were efforts to get as close to the people as possible by involving people very close to

villages, such as the village, family, and compound heads:

“We also used village heads, family heads, and compound leaders who use the opportunity of village meetings, family and compound meetings while maintaining social distance to educate the people about Covid.” -Eco 2, (age) 35-39, Primary Healthcare Officer (GA).

Involvement of NPOs and NGOs

Other organisations involved in the implementation of the Covid-19 health communication were non-profit organisations (NPOs) and non-government organisations (NGOs). A participant described these groups:

“The other persons we included were the community health workers and doctors who work with primary health centres; and then the national orientation agency that is sent down to the local government from the federal structure; and then other volunteer organisations from World Health Organisation, UNICEF, being sponsored by these organisations to help provide education and relief materials where necessary.” -Eco 12, (age) 50+, Environmental Health Officer (GA).

The reasons for the choice of engaging multiple stakeholders as a strategy

The reasons for involving influencers and trusted community voices were three: Credibility and trust (n4), accessibility (n4) and solution to language barrier (n2),

➤ *Credibility and Trust*

Credibility and trust, again, was discussed by GA participants as a reason for engaging multiple stakeholders, especially influencers and trusted voices within the villages. This relates to the believability and trustworthiness of the source of information. Influencers, opinion, and community leaders were involved because they have this quality. In the words of one of the participants:

“The choice of community-based organisations like market unions, ward leaders, political ward leaders, religious leaders, family heads, village heads, president generals of various communities and traditional rulers, and their cabinets, is that these people live within the communities; understand the culture of the community; understand their languages; and the community members believe and trust them.” -Eco 6, (age) 35-39, Public Health Officer (GA).

“The community has so much trust in these people, they see them as people who have been telling the truth, so they tend to trust whatever messages or information they are passing across to them.” -Eco 3, (age) 40-44, Secretary to the LG (GA).

The reverence for community and religious leaders and the tendency to obey the information were demonstrated in this narrative: “... the members of the community looked up these individuals for [Covid-19] information. When information comes from Obi, it is final: “Go and do what you have been told”. ” -Eco 4, (age) 50+, M&E NOA Officer/DBO(GA).

➤ *Accessibility to villagers*

A participant indicated that gaining access to people regarding their residence and language accessibility were issues that needed resolution. This was addressed by engaging community members, as they know how to locate the villagers.

“Accessibility: How do you access the people that are involved? Delta State is a coastal state, so you have some living in the waterline areas. We had to consider the accessibility of your movement and access to their language. We designed methods to ensure that we would confront those issues. So, accessibility in terms of communication and physical contact.” -Eco 4, (age) 50+, M&E NOA Officer/DBO (GA).

Accessibility was also reported as a factor in engaging health professionals. From the responses of the participants, two significant reasons for selecting health professionals and workers in health centres were the accessibility to villagers (n3) and clarity of messages (n1). This suggests that the health professionals and workers in the health care centres are approachable due to their friendliness and capacity to communicate health information to the villagers. This was described by a participant:

“We used the healthcare implementors because they are the people, the environment, and the communities are familiar with and used to. But coming to a new community will be different, but when you use what the community is used to already. It will be easier. It was easier to pass the information and helped in curbing the spread of Covid-19.” - Eco 5, (age) 35-39, Healthcare Officer (GA).

Another dimension to healthcare centres accessibility was having the facility for contacting the centres during emergencies using the emergency numbers: *“These primary health centers were accessible to the people and in the primary health centers, they access them and they can obtain required information about their health and there are also emergency numbers the people can easily call.”-Eco 6, (age) 35-39, Public Health Officer (GA).*

This implies greater access to health professionals not only through visits to the centres but also through calls.

Accessibility was also associated with the involvement of religious leaders. Making the message reach the people was one of the reasons for involving the religious leaders: *“We also used religious leaders, the churches, the mosque to be able to drive the campaigns home to the people.”-Eco 3, (age) 40-44, Secretary to the LG (GA).*

➤ **A solution to the language barrier**

Language barrier occurs when people of different languages attempt to communicate with each other. Within the context of Igbo speaking community, speaking English language to those who mostly cannot speak or write in English Language constitutes a language barrier: *“...it will amount to throwing a bucket of water on a hard rock when you speak high-sounding English for persons who don’t understand you. So, we had to consider ease of communication at different levels.”-Eco 4, (age) 50+, M&E NOA Officer/DBO (GA).*

This informed their choice of community-based leaders who were familiar with the people and the language. According to a participant: *“...we had language barriers, and these opinion leaders within the community speak the language of the people. Why we used these opinion leaders was that the people saw these opinion leaders as part of them.”* -Eco 3, (age) 40-44, Secretary to the LG (GA). It was through familiarity with the people and their language that this group of actors was able to assist in breaking the language barrier.

(c) Monitoring and Evaluation

Monitoring and evaluation (M&E) were also strategies adopted during the implementation of the Covid-19 awareness campaign (n12). Participants discussed the reasons for monitoring and evaluation, which were to ascertain campaign effectiveness (n11) and identify areas for improvement (n7).

➤ To ascertain campaign effectiveness

The majority of GA participants (n11) believed that M&E was done by the LG to ascertain effectiveness. For instance, a participant commented on monitoring:

“... yes, they were monitored. The reason for monitoring was that most of the activities on [Covid-19] prevention were carried out by the local government. However, to prove the effectiveness of the preventive measures, monitoring had to be conducted.”-Eco 12, (age) 50+, Environmental Health Officer (GA).

Another GA participant corroborated the above point on ascertaining campaign effectiveness and narrated how they monitored and evaluated:

“...yes, they were monitored and evaluated. One of the ways they were monitored and evaluated was that people visited local health centres and checked the number of individuals who visited primary health centres to seek information about Covid-19. Additionally, there was an increase in the number of people observing Covid-19 protocols, such as wearing facemasks, washing hands, and ensuring water was available for handwashing. One of the reasons we engaged in monitoring and evaluation was to determine if the messages reached the targeted population and how effectively they utilised the information. It was not sufficient to merely send messages; we needed to know if these messages reached the target population, whether they understood them, and what behavioural indicators demonstrated their understanding of these messages...”-Eco 6, (age) 35-39, Public Health Officer (GA).

➤ Identify areas for improvement

In addition, the majority of GA participants shared that the local government engaged in the M&E of the Covid-19 campaigns and strategies to identify areas for improvement. This means ascertaining what worked best, what did not work, and what needed improvement. For

instance, one GA participant commented on the reason for engaging in monitoring and evaluation:

“... we had a monitoring team and we also had monitors in every post who provided information on activities daily ... The reason for the evaluation was to enable them to know where to improve and make corrections where needed” - Eco 8, (age) 50+, Health Promotion Assistant (GA).

(d) Audience definition and message tailoring

Several GA participants (n4) discussed audience definition, consideration of audience literacy (12), and message tailoring (n4) as one of the key Covid-19 health public communication strategies by the local government. This entails defining the Covid-19 campaign audiences and tailoring the messages to suit the target audiences, and aid understanding. The tailoring of the message involves personalising the language used in delivering the message to suit different languages and the villagers' ability to read and write.

Regarding audience definition, a participant commented:

“... you can't do anything without understanding the audience; the audience is very important. By getting to know your audience, you will learn what to use, who to use, and how to use them. The fact that we had those who were lettered [educated], those who were semi-lettered [semi-educated], and those who were not lettered at all [uneducated]. Thus, we needed to design our strategies to suit all groups.” -Eco 4, (age) 50+, M&E NOA Officer/DBO (GA).

Evidence obtained from all the participants (n12) revealed that health literacy was a factor that they considered while developing and disseminating health communication campaign messages:

“The primary factor considered was health literacy, which entailed individuals' ability to understand health information and their capacity to seek this information from appropriate sources. As a result, some messages were left in the original English as provided by the federal government, targeting those who are health literate and educated. Other content—merely a change in language—was translated into the Igbo dialect of the local government to ensure understanding for those who are not health literate.” -Eco 6, (age) 35-39, Public Health Officer (GA).

Several factors that could hinder health literacy were considered: illiteracy/low education level (n9); language diversity (n7); beliefs (n3); the ability of the villagers to understand the messages (n3); misinformation (n2); and mistrust in government (n1).

➤ *Illiteracy/education level*

The illiteracy/education level of the villagers was discussed by the majority of GA participants (n9) as a factor for considering audience health literacy. According to a participant: *“Yes, we considered the fact that some of them in the rural areas were not literate.” -Eco 2, (age) 35-39, Primary Healthcare Officer (GA).*

Another participant also elaborated on the point on illiteracy/education level and discussed measures applied by the local government to address the illiteracy/education level of the villagers during the Covid-19 campaign planning, and commented:

“...not delivering something when you don't know if it was understood or not. The important thing was to consider that the local government is more rural, and the educated individuals migrate to urban areas. So, what we have is mostly uneducated and elderly people, making literacy a very significant factor here. That was why most communication was done in ways the villagers understood, specifically in their local dialect.”-Eco 12, (age) 50+, Environmental Health Officer (GA).

➤ *Language Diversity*

The majority of GA participants (n7) also discussed language diversity as a factor for considering audience health literacy. This entailed considering the diverse languages the villagers speak, because the local government comprises individuals from different parts of Nigeria who speak and understand several languages. Ensuring that Covid-19 messages were created in languages the villagers were familiar with. For instance, one GA participant commented:

“... yes, health literacy is important because if the audience understands you, the message you give them would be effectively utilised. So, we delivered the health messages in a manner they would understand. We considered the language that conveyed this [Covid-19] information to them. Most of the people we met, some of whom we spoke to were more comfortable with the Igbo language, so we spoke to them in Igbo.”-Eco 7, (age) 20-30, M&E Officer (GA).

Another participant discussed language diversity and measures applied by the local government to ensure successful communication of the Covid-19 messages:

“...it was not everybody that understood the language... in this local government, our common language is Igbo. We have Hausas, Ibos, Yorubas here. So, we had language barriers here. So, we used interpreters who disseminated to people of various tribes living here... language was the major problem we faced” - Eco 8, (age) 50+, Health Promotion Assistant (GA).

➤ *Beliefs*

Belief was another factor that several GA participants (n3) discussed for audience health literacy consideration. This has to do with what the villagers in the community are convinced of and/or accept as true, real, or in existence. One GA participant commented:

“People have so many superstitions... people don't believe that Covid-19 exists, they believe that it is fake, and that Covid-19 is a scam. People have many superstitions that when you take the vaccine, you will die, or have madness.” - Eco 1, (age) 35-39, DPHC, (GA).

Another GA participant shared villagers' already known beliefs and accepted norms, which influenced their decisions about Covid-19 message acceptance and adherence, and commented:

“...the villagers believed in traditional medicine, which they were used to getting leaves, putting them together. In some locations, we saw these herbs work for them... it got to a time in our local government where what they knew was that when you were down with symptoms, you would drink your lime, your turmeric. Their belief and culture worked for them at that period...” -Eco 5, (age) 35-39, Healthcare Officer (GA).

➤ *Ability of the villagers to understand the messages*

Several GA participants (n3) further discussed the ability of the villagers to understand the messages as a factor for considering audience health literacy. For example, one participant narrated steps taken by the local government to ensure that villagers understood the Covid-19 messages, and commented:

“... that is what literacy is all about: convincing and showing individuals what instructional materials are used in education. The concepts you cannot explain verbally should be expressed through design, flyers, or even dramatisation. You must involve some individuals to dramatise why the Covid-19 strategies must be implemented. Therefore, the health literacy of the people you discussed health with is paramount, ensuring you do not waste time addressing everyone when only about 10% have received your message. Thus, the community's health literacy level was considered crucial and significant.” -Eco 4, (age) 50+, M&E NOA Officer/DBO (GA).

Another GA participant corroborated the above point on understandability and commented:

“... yes, it was considered [audience health literacy]. It was a factor to consider, hence the translation of these messages into local Igbo dialect. The messages were translated to the language of the people of the local environment.” -Eco 6, (age) 35-39, Public Health Officer (GA).

➤ *Misinformation*

Some GA participants (n2) discussed villagers' misconceptions about the Covid-19 pandemic caused by false information as a factor in considering audience health literacy. One GA participant shared the misconceptions the villagers had about the Covid-19 pandemic and commented:

“...then the misconception they had about the virus. So much false information was in the air. For instance, people were considered dead already when they got infected with Covid-19.” - Eco 8, (age) 50+, Health Promotion Assistant (GA).

Another GA participant explained the nature of the misconception people held about the Covid-19 vaccine and commented: “People had many misconceptions [about Covid-19 vaccine] that when you take the vaccine, you will die or have madness.” -Eco 1, (age) 35-39, DPHC, (GA).

➤ *Mistrust in government*

One GA participant (n1) discussed villagers' mistrust of the government as an assessment factor for considering audience health literacy.

“...on the issue of trust, rural dwellers never believed in the government; many felt that it was a creation [Covid-19] of the federal government to find a way to collect money from the United Nations. Facilities were not sent down to the people from the federal government the way they ought to be. There had been total neglect of the people in the rural areas from the federal government to the state government, and then down to the local government. Many people felt that Covid-19 wasn't genuine, that the government had designed another method of enriching themselves. So, trust—the issue of trust—was very cardinal when you consider the factors.” -Eco 4, (age) 50+, M&E NOA Officer/DBO (GA).

Given the literacy issues explored, the local government tailored the message. One of the participants describes how the tailoring was done:

“...for people who were lettered [educated], we didn't have any problem telling them the messages that were transmitted to us from the Centre for Disease Control through the state to the local government... but with some people who were half-educated, we also felt very comfortable designing some languages, and some of the strategies in a language they would understand. For that group [the semi-educated group], we used good English for some and a mixture of good English and Pidgin English for others. For the last group... persons who didn't understand English or even Pidgin English, we had to go down to the translation of these messages into Igbo language, because the local government is an Igbo-speaking area.” -Eco 4, (age) 50+, M&E NOA Officer/DBO (GA).

➤ *Understandability*

Two of the GA participants felt that understandability was one of the reasons for language tailoring (using local, familiar, and multiple languages) in the implementation of key health communication campaigns and strategies within the rural areas:

“...we recorded Covid-19 messages in their language so that they would understand them. So, we used their local people to make them understand. So, it was not a matter of you just going and speaking pidgin, or good English telling them Covid is real. They would keep hearing but not understanding. We went to the point of making it [Covid-19 messages] in their local dialect.” -Eco 1, (age) 35-39, DPHC, (GA).

Further steps taken by the local government to tailor the Covid-19 messages effectively to ensure comprehension included:

Use of jingles and pre-recorded messages in multiple languages

Some of the participants (n4) discussed the use of short songs in different languages that can be memorable to draw and capture the attention of the audience: *“...we had the jingles produced in the language of this area so that the messages will sink, then we had the one of pidgin English so that non-indigene would also benefit from the information that was being put out there.” -Eco 10, (age) 45-49, Director DBO (GA).*

This was corroborated by another participant who provided more details on how jingles were used:

“... we also had jingles in the relevant areas; I mean, we used jingles to attract attention. We continue to use jingles, and even unconsciously, people comply. Therefore, we consider jingles a convenient means of communication to ensure that the right messages reach the intended audience.” -Eco 4, (age) 50+, M&E NOA Officer/DBO (GA).

Translation and use of interpreters

The translation of Information, Education and communication (IEC) materials was reported by some participants (n3). This could be to domesticate the strategies developed at the federal level:

“So, some of the messages were translated into Igbo language because the local government is basically an Igbo-speaking part of Delta state, and some of these messages were translated into Igbo language. Posters were printed, and some were retained in English as the local government got them from the state and from the federal government. Those are made for those who can read and write, and those who have some level of literacy, but some posters were designed with the language of the immediate environment to transmit these messages to the people.”-Eco 6, (age) 35-39, Public Health Officer (GA).

However, there were different experiences by different implementers/actors, which gave rise to the translation of the messages to other languages, different from Igbo:

“When we explored the Igbo language, we also discovered individuals from other tribes, such as the Urhobo people, who traded at the market but were not Igbo. We needed to translate into Urhobo by employing people who could provide direct translation.” -Eco 4, (age) 50+, M&E NOA Officer/DBO (GA).

In addition to translating IEC materials, interpreters were also used to directly convey the Covid-19 messages to the villagers facing language barriers.

“It is not everybody who understands the local government’s language. Our common language is Igbo, yet we have Hausas, Igbos, and Yorubas here. So, we have faced language barriers. We used interpreters who helped disseminate information to people of various tribes living here.”- Eco 8, (age) 50+, Health Promotion Assistant (GA).

Another participant supported the experiences narrated by the above participant:

“When using the English language to communicate, we found that the few people we met were not conversant in the language. We arranged for someone in their locality who could interpret whatever we said in their local dialect.”-Eco 5, (age) 35-39, Healthcare Officer (GA).

Use of simple language

Some participants (n2) indicated that plain, easy-to-understand language was used to disseminate the Covid-19 message:

“...the message is written in simple language, Igbo, pidgin English, and even in English. The content of the message and the use of simple language as a medium for disseminating these messages made it easy for people to understand and effectively use them.”-Eco 6, (age) 35-39, Public Health Officer (GA).

Another participant reiterated simple language: “We tried as much as possible to adopt strategies that won’t be difficult for them to assimilate. “First, we added simple communication language.” -Eco 7, (age) 20-30, M&E Officer (GA).

4.2.3 Effectiveness Covid-19 Health Communication: Goals Satisfactorily Achieved

(Interview Question 6a: See Appendix C)

The majority of GA participants (n8) believed that the level of achievement of the goals was satisfactory and that they met the federal government’s guidelines: “Yes, they were achieved because we can beat our chest and say we tried to a satisfactory level, because it led to a decrease in the mortality rate.” -Eco 6, (age) 35-39, Public Health Officer (GA).

However, few participants (n2) provided mixed responses. Participants felt that the level of achievement was somewhat adequate and that there was room for improvement. They revealed that the federal government’s guidelines on Covid-19 were partially met. For instance, one GA participant commented:

“...there is always room for improvement, you cannot say it is Uhuru because we recorded some deaths. We always try to be a better version of who we are today. You can never say you had 100% success in what I have done, but you always keep striving to do better than yesterday. So, there is room for improvement.” -Eco 10, (age) 45-49, Director DBO (GA).

Another GA participant commented on partly meeting the federal government’s guidelines and attributed this to a lack of funds:

“...yes, we met the guidelines to some extent, if not for the funding issue. We had no funding from the local government, so we were asked to make do with what we had. Yes, we know the local government should be autonomous in Nigeria, but they are not. So, in terms of funding, we tried our best to adhere to the federal government’s guidelines. I believe that we did our utmost; yes, we met the guidelines to some extent.”-Eco 9, (age) 50+, M&E Officer/DBO (GA).

Furthermore, one GA participant (n1) felt that the level of achievement was unsatisfactory and that the federal government’s guidelines were not met. He attributed his response to a lack of funds, beliefs, disbelief in the existence of Covid-19, and insufficient campaign sustainability. For example, GA respondent commented:

“...no, level of achievement was not satisfactory. Finance was a very big issue. Another important reason was traditional belief; it was difficult to let people change their ancestors’ beliefs. The other reason was the fact that at that level of local government, sick people were not treated, and as such, many of them found it difficult to believe that there was anything like Covid-19 because they were not

seeing people being treated.” -Eco 2, (age) 35-39, Primary Healthcare Officer (GA).

Indicators of effectiveness (Interview Question 6b: See Appendix C)

When GA participants were asked to share the key indicators for the effectiveness of the campaigns and strategies adopted by the local government, the following themes emerged: adherence to Covid-19 protocols (n11), reduced Covid-19 mortality and infection rates (n5), and understanding of the Covid-19 message (n2).

i) Adherence to Covid-19 protocols

The majority of GA participants (n11) discussed adherence to Covid-19 protocols as an indicator of the effectiveness of the campaigns and strategies adopted by the local government.

“...we saw a decline. People were no longer willing to be disobedient to [Covid-19] laid down rules. We saw people wearing their masks voluntarily; you didn't have to force them.” -Eco 10, (age) 45-49, Director DBO (GA).

ii) Reduction in Covid-19 mortality and infection rate

Several GA participants (n5) also discussed the above as an indicator of the effectiveness of key campaigns and strategies. One participant commented: *“We discovered that the rate of [Covid-19] infection dropped in the local government.” -Eco 4, (age) 50+, M&E NOA Officer/DBO (GA).*

Another GA participant commented:

“We recorded a reduction in symptoms and spread, which indicated villagers' social distancing and observance of Covid-19 prevention and management protocols.” -Eco 5, (age) 35-39, Healthcare Officer (GA).

iii) Understanding of Covid-19 message

The villagers' understanding of the Covid-19 message communicated to them was seen as an indicator of the effectiveness of the public health communication strategies by some participants (n2). One participant commented:

“It was effective because people understood the messages. People knew that if they behaved carelessly, they could be affected. People followed the instructions given and avoided all that needed to be avoided according to the Covid-19 health message.” -Eco 3, (age) 40-44, Secretary to the LG (GA).

The concluding sentences demonstrated that comprehending the message is not only an indicator of effectiveness but also a crucial component for compliance with Covid-19 prevention protocols.

The participants identified the factors that influenced the effectiveness of the Covid-19 health communication. The next section elaborates on these.

Factors influencing effectiveness

One factor associated with the effectiveness of health communication is the partnership with trusted community influencers and leaders (n2).

(i) Partnership with trusted community influencers and leaders

Some participants (n2) attributed the effectiveness of the strategies to the partnership between trusted community leaders and influencers. They believed that villagers listened to and complied with the established Covid-19 rules because the local government leveraged existing relationships and engaged trusted community influencers and other organisations, thus increasing the acceptance and credibility of the Covid-19 messages among the villagers. One GA participant commented:

“...there is an increased number of responses to our messages. For instance, the leaders in the community came to the council to inquire how they could help in passing the Covid-19 messages to their people... We also have some political leaders who were eager to partner with us on disseminating the messages such as the councillors in wards [villages] who came to us and solicited to partner with us.” -Eco 2, (age) 35-39, Primary Healthcare Officer (GA).

The mitigating factors identified by those who felt the achievement was not satisfactory were:

(i) Lack of funds

One participant felt that the level of achievement was partially satisfactory, while another, who commented that the campaign was unsatisfactory, identified a lack of funds as a contributing factor. “...yes, to some extent we met the guidelines, if not for the issue of funding. We had no funding from the local government, we were asked to make do with what we had.” -Eco 9, (age) 50+, M&E officer (GA).

The other participant reiterated that “finance was a huge issue.” -Eco 12, (age) 50+, Environmental Health (GA).

(ii) Audience (dis)beliefs

One of the participants attributed the non-satisfactory achievement of the goals of Covid-19 message dissemination to the audience's traditional beliefs and lack of belief in the existence of Covid-19:

“One other important reason was traditional belief, it was difficult to let people change what their ancestors believed in, and then the other reason was the fact that at that level of local government, sick people were not treated in the local government, as such, many of them found it difficult to believe that there was

anything like Covid-19 because they were not seeing people being treated.”-Eco 12, (age) 50+, Environmental Health (GA).

4.2.4 Challenges Experienced in Covid-19 Campaign implementation (Interview Question 7: See Appendix C)

When GA participants were asked the key challenges they experienced in the Covid-19 campaigns, the following themes emerged: lack of human and material resources (n10); misconception (n3); beliefs (n3); language barrier (n2); vaccine hesitancy (n2); lack of trust in the government (n1); and hostility (n1).

➤ Lack of human and material resources

The majority of GA participants (n10) discussed the lack of human and material resources as a challenge experienced in the Covid-19 campaign. For instance, one GA participant commented on the lack of adequate personnel, facility, and funding:

“...our health care is not the way it is supposed to be, we are lagging in terms of personnel, facility, it was a challenge... we also had inadequate funds. Being a developing country, we lacked the funds to adequately fund this campaign and to adequately take care of the people during the wake of the pandemic.” -Eco 6, (age) 35-39, Public Health Officer (GA).

➤ Misconception

Several GA participants (n3) discussed misconception as a challenge. For instance, one GA participant commented:

“...people believed that if you took the Covid-19 vaccine, you would lose potency and wouldn't be able to sleep with your wife again. So, that superstition about Covid-19, was one major key challenge, that if you took the vaccine, you won't have an erection again and you would die. There were so many stories around it. So that was the major challenge.” -Eco 1, (age) 35-39, DPHC (GA).

➤ Beliefs

Several GA participants (n3) discussed villagers' long-standing convictions and/or practices upheld by villagers within the communities that affect their behaviours about the Covid-19 campaigns. For example, one GA participant commented: *“We live in a very ignorance-filled society here, so ordinarily people are quite ignorant, and they have their cultural beliefs” [GA Eco 11].*

➤ Language Barrier

Some GA participants (n2) discussed the language barrier as a challenge. For instance, one GA participant commented: *“One challenge was the language barrier which we were able to surmount by using people at the community level to interpret.” -Eco 9, (age) 50+, M&E Officer (GA).*

➤ *Lack of trust in government*

One GA participant (n1) discussed the issue of lack of trust in government as a challenge. For instance, GA participant commented: *“People did not trust the government because government at various levels had disappointed the people, so that lack of trust was there [as a challenge].”* -Eco 6, (age) 35-39, Public Health Officer (GA).

➤ *Hostility*

Another challenge discussed by one GA participant (n1) was the hostility of the villagers towards the health information officers. Specifically, the unfriendliness of the villagers towards the public health communication professionals in the selected local government. The GA participant commented:

“During the Covid-19 campaign, we had so much hostility, people were very hostile to us. Initially, they didn't believe there was anything like Covid-19, they didn't believe it was real, and then to some others, they cursed us and said “na una go carry am” [meaning, you people will be infected]. “Na una family go carry am” [meaning, your family members will be the ones affected by Covid-19 not us]. And because we know that they don't know any better, we don't take offence. So, you have to take your time to explain to them that it's in their own best interest to adhere, listen, receive the information, use the information and also help to propagate the information to people who are not in the immediate environment where you are interacting with them.” -Eco 10, (age) 45-49, Director DSBO (GA).

➤ *Covid-19 Vaccine hesitancy*

One other GA participant (n1) discussed the challenge of Covid-19 hesitancy by the villagers, that is, reluctance and/or refusal to go for the Covid-19 vaccine despite it being made available in the communities. One GA participant commented:

“... the key challenge we experienced was people not coming out for their second doses of the [Covid-19] vaccine. The home addresses were also a problem, people hardly gave out their right home addresses. We then switched to demanding phone numbers, which we verified by calling the persons on the spot.” -Eco , (age) 50+, Health Promotion Assistant (GA).

4.2.5 Suggestions for Improving Future Public Health Communication (*Interview Question 8: See Appendix C*)

When participants were asked to suggest areas of improvement to aid effective health communication in rural Nigeria during public health pandemics, the following themes were discussed: improved human and material resources (n6); improved trust and transparency (n3); no suggestions (n3).

➤ *Improved human and material resources*

Six GA participants out of the twelve GA participants discussed the need for improved human and material resources within the local government. One participant commented:

“... I think there should also be strategies on the ground to increase the number of health workers, you cannot manufacture them during emergencies, it takes time to get health workers and train them. So, it is always better to train health workers ahead of time, have them on the ground, so that when they are needed, you will not have to start recruiting and training at the wake of pandemics.” -Eco 12, (age) 50+, Environmental Health (GA).

Another GA participant discussed the importance of cooperation from other organisations by providing enough funds and commented:

“... I think the government would have provided more funding, honestly; or rather, seek from good-spirited individuals and organisations or enter into agreements with other organisations so that when such situations come, they will support them to fight this kind of pandemic.” -Eco 11, (age) 50+, Health Promotion and Advocacy Officer (GA).

Another GA participant also commented on the need for improved health infrastructure within the local government:

“... one major factor that can help is if the local government or the people that are involved, quickly, adequately put infrastructure in place which will include the primary health centres and the wards. Each community is supposed to have a health ward before the primary health centre. If those infrastructures were on the ground, it would have been easier to mobilise and be able to effectively cover the areas of communication during any pandemic at all not just the Covid pandemic.” -Eco 12, (age) 50+, Environmental Health (GA).

➤ *Improved trust and transparency*

Some GA participants (n3) discussed the need for improved trust and transparency. For instance, one participant commented:

“... you know if it is feasible looking at what the economy of the country is like; I feel they could have applied the palliatives [food stuff, PPE, money provided by the government and free-spirited individuals to help alleviate immediate suffering of the villagers as well as improve the standard of living] earlier, though it came later. Even the way the palliatives were given, some did not get, some got, it was appalling sincerely, and that also affected the trust of the people on the government. So, the government owes the people the duty of being sincere in carrying out programmes.” -Eco 2, (age) 35-39, Primary Healthcare Officer (GA).

Another GA participant also commented on the benefits of being transparent:

“Then you discover that the rate of Covid-19 vaccination was very low, and it increased over time when some traditional rulers took the vaccine and the villagers observed. After one week, he did not die; he is not blind, and he is not impotent. So that started gaining acceptability by people...” -Eco 4, (age) 50+, M&E NOA Officer/DBO (GA).

4.3. Group B: Presentation of Themes and Findings

This section covered the results from the interview transcripts of Group B participants (community level actors). It is divided into two sub-sections. The first section presented the background information of the participants in Table 5 below, while the second section displayed and discussed the themes that emerged from the interview transcripts.

Demography	Category	Frequency N= 29
Age Group	20-30	
	35-39	9
	40-44	7
	45-49	5
	50+	8
Education Level	University	24
	High School	3
	College	2
Language	Igbo	28
	Hausa	1
	Yoruba	-
Academic Qualification in Health Communication	Yes	3
	No	26
Designation	Traditional Ruler	1
	Nurses at Primary Health Centre	4
	Group Leaders	
	President Generals	6
	Religious Leaders	1
	NGO Fieldworkers	5
	Community Influencers	6
	Community Health Experts	2
	Community Orientation Officers	2
	Others	1
Role In Covid-19 Management	Covid-19 Message Dissemination via – Interpersonal Communication	1
	Fixed loudspeakers @ places of Worship/markets	
	Motorised Campaigns	15
	Use of megaphones	5
	Distribution of Print materials	
		1
		1
		7

Table 5- Background Information for Group B Participants

Regarding the age range of the participants, the largest age group consisted of 9 participants aged 35-39, followed by 8 participants aged 50 years and above. 7 participants were between 35-39, and 5 participants were aged 40-44.

In terms of educational background, most of the participants (24) had university as their highest educational qualification, while participants with high school and college degrees as their highest educational qualifications made up 3 and 2 of the group, respectively.

In terms of the language of the participants, 28 were Igbos while only 1 was Hausa. The language of all the participants was Igbo.

Regarding academic qualification in health communication, 26 had no academic qualification in health communication, while 3 had an academic qualification in health communication.

Most of the group participants (6) were either group leaders or NGO fieldworkers. Religious leaders constituted 5 of the group. This was followed by nurses at primary health centres who made up 4 participants of this group. An equal percentage, 2 of the participants were either community health experts, community influencers, or traditional/community leaders. Community orientation officer and other category were made up of 1 participant respectively. Regarding roles played in Covid-19 health information dissemination, the majority (15 participants) disseminated information through interpersonal communication – house-to-house, group discussion and one-on-one. This was followed by 7 participants who disseminated health information by distributing print materials such as flyers, leaflets, and brochures. About 5 participants were involved in Covid-19 health information using fixed loudspeakers at places of worship/markets. Those who disseminated health information through motorised campaigns or street-to-street campaigns using megaphones and traditional means of communication made up 1 participant each.

To obtain a more comprehensive understanding of principles for effective health communication in rural Nigeria and gain unbiased and diverse insights into the subject matter, group B participants (community level actors) were involved in the interviews. Themes from the group B interview are presented.

4.3.1 Public Health Communication Strategies Adopted during Covid-19 *(Interview Question 1, 2 & 3: See Appendix E)*

Although community level actors were not asked the local government health communication goals, their responses show that it was to create awareness on the ways to prevent the spreading of the disease. The themes that emerged from interview question 1, 2 and 3 are presented.

Covid-19 awareness campaign

The majority of participants (n25) revealed that the goal of the local government was to create Covid-19 awareness campaign. The campaign messages were about washing hands under running water and using hand sanitisers; crowd avoidance; social distancing; wearing face masks; movement restrictions and lockdowns by the local government. For instance, one participant commented:

“... the local government’s campaigns as seen were majorly on the fight against Covid-19. The Covid-19 precautionary and safety measures- hand washing under running taps for 30 seconds; avoiding crowds and crowded places; wearing of face masks; use of hand sanitisers to disinfect hands in the absence of water. These were the basic Covid-19 campaign messages that they campaigned about” -Eco 18, (age) 50+, NGO Fieldworker (GB).

Another participant discussed the Covid-19 environmental regulation messages by the local government and commented:

“... government officials and health officials came with their vehicles to disseminate information concerning Covid-19, they told us that there would be lockdowns and market closures to forestall the spread of the disease and that everybody would be at home.” -Eco 4, (age) 40-44, Trader/Market Leader (GB).

Group B’s responses on the health communication strategies employed by the local government during Covid-19 revealed some themes (use of multiple communication channels (n20), tailoring of languages (n9) and repetition of Covid-19 messages (n8), and engagement and collaboration with multiple stakeholders (n6).

(a) Use of Multiple Communication Channels

The majority of GB participants (n20) discussed the employment of multiple communication channels by the local government as part of the Covid-19 public health communication strategies. GB participants discussed mass media (radio, television, flyers, billboards, posters) (n16); interpersonal communication (word-of-mouth campaign with the use of health workers and nurses, influencers, opinion leaders, and trusted voices, use of volunteers) (n16); and indigenous native communication methods (town criers with gong) (n10) as the communication channels used by the local government. This theme had been identified by GA participants (see section 4.2.2.a). They also discussed several reasons for employing these multiple communication channels.

Understandability of the message, reason for using posters and billboards (print media)

One GB participant commented on mass media aiding easy understanding (n5) and discussed how this was achieved using posters and billboards:

“...it would show them how to use such preventive methods like washing hands, how to use a facemask, for them to wash their hands thoroughly these were what were contained in the posters and billboard we distributed to the villagers...”-Eco 28, (age) 45-49, NGO Representative (GB).

Interactivity and feedback as reasons for using interpersonal communication

Interactivity and feedback relate to using a communication channel that provides room for interaction and feedback during public health campaigns. This was offered as a factor that

influenced the choice of interpersonal communication (n8). Some attributes such as direct questions, direct answers, use of local language, reading of facial expressions and direct contact were highlighted as qualities of interactivity and feedback.

For instance, one GB respondent commented:

“... I also think that the interpersonal, that is house to house was very effective because it allowed us to interact with the person to proffer solutions, advice, or feedback. You get direct feedback but that of radio, you don't get feedback. I think that was very effective because you get them in their various homes or when you gather them like focus group discussions.” -Eco 9, (age) 50+, NGO Executive Director (GB).

Another GB participant also in buttressing the above point, believed social media (Facebook) was chosen as a preferred choice of communication by the local government to boost Covid-19 campaign message dissemination within the communities because it aided a two-way conversation [interactivity and feedback]. participant commented:

“But in my local assessment, social media was most effective. Facebook was good because through the comment sections, you understand the minds of people, what they know about Covid-19, what their needs are, what their fears and concerns are, and you would provide them with answers. So, the feedback process made it very effective, unlike the traditional means of communication like radio, TV, and print where you only receive and not comment.” -Eco 24, (age) 40-44, NGO Fieldworker (GB).

Furthermore, another GB participant who believed that interactivity and feedback make sensitisation of health messages easier, commented: *“The fact that they also get to ask questions makes the sensitisation easier and they got answers to questions that they were confused about.” -Eco 18, (age) 50+, NGO Fieldworker (GB).*

The interactivity and feedback made many participants (n13) identify it as the most effective channel.

Accessibility using Interpersonal communication methods

In addition to the reasons provided by GB participants for the choice of interpersonal communication methods, accessibility (n5) was a sub-theme revealed by GB participants for the interpersonal communication method being the most effective. For example, GB participants commented on accessibility which entails how much access to the Covid-19 information being disseminated the audience had and how easy it was for participants to reach the target audiences using phones. Participants identified two aspects of accessibility that they considered in terms of audiences' inability to obtain Covid-19 information from search engines and social media platforms, and accessibility in terms of easily reaching the target audiences due to lockdowns. The first respondent talked about the first aspect of accessibility:

“It was through phone calls because many market women do not know how to operate the WhatsApp messaging system. The phones most of our members were using were the types that did not support WhatsApp Messenger. So, it was

through phone calls that we disseminated the Covid-19 messages to our members.” -Eco 3, (age) 50+, Trader/Market Leader (GB).

The second aspect of accessibility was elaborated on by another respondent. That is, accessibility in terms of easily reaching the target audiences without barriers and/or restrictions:

“...phone, handphone, so most times if you wanted to reach anybody, there was no office set up apart from the medical personnel that were in their duty posts. Every other job declined so everybody was home. So, the phone was the closest thing you could use to reach anybody then.” -Eco 8, (age) 35-39, Pastor (GB).

Easy to access villagers as reason for using the mobile phone

Another GB participant commented on easy reach for the choice of interpersonal communication method (n3). One of the participants commented:

“... [The phone] was the easiest way to get them because most people were afraid of coming together during the Covid-19 pandemic, you would not call anybody for service and the person would answer you for any program. So, the phone was the easiest way to reach anybody whether far or near.” -Eco 8, (age) 35-39, Pastor (GB).

GB participant (n1) also discussed the use of interpersonal communication methods because of their effectiveness in past public health campaigns. This means that interpersonal communication methods were used in the past and proved effective in rural public health communication. According to one participant:

“We also visited churches and schools and spoke to the leaders and provided them with some printed materials we got from the Government to help disseminate to their members. We also engaged in door-to-door campaigns, sensitising people, and sharing leaflets...The sole reason why we chose these communication channels was because we had employed them in the past and they worked. The fact that these people see us face to face demonstrating these things, makes conviction easy. The fact that they also get to ask questions makes the sensitisation easier and they get answers to questions that they are confused about. And from past campaigns, the feedback process is very effective in campaigns.” -Eco 18, (age) 50+, NGO Fieldworker (GB).

Ease and familiarity as reasons for Indigenous native communication channels

Furthermore, other channels of communication like indigenous native communication methods were used because of their ease and speed of communication (n6).

On the familiarity with the villagers, one of the participants said: *“Those were our easiest ways of disseminating these messages and the people were used to them.” -Eco 12, (age) 50+, Trader/Market Leader (GB).*

(b) Tailoring of language as a strategy

Another theme that emerged from the discussion with GB, which was discussed by GA participant (see section 4.2.2.d), was the tailoring of language to suit the rural dwellers. These were discussed in these words by one of the participants:

“At the level of our organisation, what we did because we wanted the message to get to the grassroots, was that we communicated to the people with the very general language that they understand. We communicated with our Igbo language which is our general language because there is a mix of people from other places. We used pidgin and then when needed we used the normal English language, but we made sure we spoke to the people in the languages they understand most, and we required people who could communicate in all those languages.” -Eco 19, (age) 35-39, NGO Fieldworker (GB).

One of the participants' responses showed that translators were engaged so that the language gap could be closed as discussed by GB Eco 19: *“...basically [we communicated] with the local dialect. For those who could not understand English, we used translators.” -Eco 17, (age) 35-39, NGO Fieldworker (GB).*

The use of local dialect was perceived as the most effective means of communicating the Covid-19 message when asked what the effective media were:

“It was the use of local dialect because most people in the local government understand local dialect or pidgin, rather than English so it was more effective and you feel like part of them when you use their dialect rather than English, it feels that you are part of the community.” -Eco 17, (age) 35-39, NGO Fieldworker (GB).

➤ *To aid understanding as reason for using local dialect*

Participants discussed the use of local familiar dialect as a means of aiding Covid-19 message understanding and commented:

“... it was the use of local dialect because most people in the local government understood local dialect or pidgin, rather than English, so it was more effective, and you felt like part of them when you used their dialect rather than English.” -Eco 17, (age) 35-39, NGO Fieldworker (GB).

Furthermore, some of the GB participants (n3) discussed other tailoring strategies they engaged to ensure that the Covid-19 messages disseminated to the villagers effectively reached the audiences and in ways that they would understand them.

Translation and use of interpreters

One GB participant revealed that tailoring languages within the communities to suit the villagers by translating and using interpreters and commented: *“We used local language and translated the messages from the federal government or state government in their local language so they could understand the information.” -Eco 27, (age) 35-39, Health Promotion Officer (GB).*

Apart from translating the messages received from the federal government, implementers in the field had to engage interpreters among the villagers to pass the message to the people. *“...the first time we went there, we didn’t even know how to speak their language, so we engaged an interpreter from among them.” -Eco 26, (age) 45-49, Health Officer (GB).*

Use of Jingles

This theme relates to the repeated playing of pre-recorded short songs or messages that contain information regarding Covid-19. Regarding the use of this strategy, one of the participants narrated:

“There is a regular jingle now running almost on all radio stations about Covid-19. That one is going deeper and deeper in the household, pushing the message down... It is NCDC or federal government but bringing it down to communities or local government, they are all paid jingles.” -Eco 9, (age) 50+, NGO Executive Director (GB).

(c) Use of Repetition

Some of the participants' (n8) narratives show the theme of message repetition. This has to do with repeating Covid-19 risk prevention messages to the rural dwellers. Regarding the use of this strategy, one of the participants commented:

“Yes, we kept on communicating the messages to the people, because some people never believed that there was Covid-19 ab-initio. Some people believed it was political, and some people believed that the government brought it so they could embezzle money, so we kept on reaching out to them making them believe and understand that there is Covid-19 which is preventable. So, these were the reasons why we kept on reaching out to them often and repeatedly.” -Eco 25, (age) 35-39, Community Orientation Officer (GB).

Another participant further discussed more precisely the messages that they were repeatedly giving the people and the reason for the use of the repetition strategy:

“I repeatedly talked to them about the need to wear their facemasks, to avoid distance. The reason for repetition is that I wanted them to be equipped with necessary Covid-19 information; understand, comprehend, internalise and be able to recall the messages so they can help tell others; to enable the message to get to everybody especially those that did not get the message before. Also, there was a need for repetition of messages so that people will see the importance of the health message, be persuaded, and change behaviour.” -Eco 23, (age) 45-49, Health Assistant (GB).

➤ (Dis)belief in Covid-19 existence as a reason for the repetition

The participant's belief in the existence of Covid-19 and the disbelief of the villagers were the reasons for the use of repetition. One GB respondent commented on belief and disbelief in the reality of Covid-19:

“It is because of my belief that Covid-19 is real and that one needs to be very careful, especially on a health basis. Yes, I think I believe that Covid-19 is real but again a lot of people did not believe that there is anything like Covid-19; people were sceptical about it. People said it is a white man's disease and should not bother them.” -Eco 9, (age) 50+, NGO Executive Director (GB).

Another GB participant corroborated the above comment and provided further reasons why the villagers did not believe in Covid-19 existence, and commented:

“... yes, we kept on communicating the messages [Covid-19 messages] to the people, because some people never believed that there was Covid-19 ab initio. Some people believed it was political, and some people believed that the government brought it so they could embezzle money. so we kept on reaching out to them and making them believe and understand that there was Covid-19 which is preventable. So, this was the reason we kept on reaching out to them often and repeatedly.” -Eco 25, (age) 35-39, Community Orientation Officer (GB).

➤ *To prevent Covid-19 Spread as a reason for repetition strategy*

One GB participant commented on the reduction of Covid-19 spread: *“So that the people would be aware, and the disease would not spread” [GB Eco12]*. In reaffirming the above point, one other GB participant described the importance of cleanliness to reducing Covid-19 spread and why this point was most regularly communicated to the villagers, and commented:

“You know most times there are certain health problems that come from dirty environment and our local place, most people around this place are very comfortable with such [dirty environment]. People now became very aware that if the environment was not clean there could be every tendency that they could contract such [Covid-19], so that was the most important information we passed because they are villagers who are rural occupants...”-Eco 8, (age) 35-39, Pastor (GB).

Another GB participant also discussed crowd avoidance and proper use of face masks as means of reducing Covid-19 spread and why they were regularly communicated to the villagers, and commented:

“...according to the WHO Covid-19 can be contracted through the sweat of an infected person, so if you fail to maintain social distance and embrace an infected person, through the sweat of that person, you can be infected. Also, the use of facemask, if you are not wearing your facemask, if an infected person coughs it will be transmitted to the person. So, to avoid those things, I had to communicate these basic two Covid-19 protocols to them.” -Eco 27, (age) 35-39, Health Promotion Officer (GB).

➤ *Persuasion and Behaviour change as reasons for repetition strategy*

One GB participant shared that Covid-19 messages were regularly and repeatedly communicated to the villagers because they needed to change the perceptions villagers already had regarding the Covid-19 pandemic, and commented:

“Again, there was a need for repetition as people over time after hearing a particular message for a long time would be persuaded and could change an already preconceived perception. For those people who doubted the reality of Covid-19, we felt that repetition of these messages would leave them with no option but to change their behaviour and do the right thing. We believed that repetition would make people change their belief and shift their traditional grounds and change their mentality.” -Eco 24, (age) 40-44, NGO Fieldworker (GB).

Another GB participant felt that repetition had been effective in past health campaigns in promoting behaviour change, and commented:

“...for persuasion, repetition helped the messages sink into people as well as convince them on the reality of Covid-19; again, we found from experience that repetition was very effective in promoting behaviour change as people are left with no options than to yield positively.” -Eco 18, (age) 50+, NGO Fieldworker (GB).

➤ *Understanding, recalling and retention as reasons for repetition strategy*

Understandability was one other reason discussed by GB participants for repeating Covid-19 messages as repetition leads to fuller and deeper knowledge of the Covid-19 messages. One GB participant commented: *“...I kept on repeating all the Covid-19 messages. The reason for repetition was that I wanted them to be equipped with necessary Covid-19 information, understand, comprehend, and internalise.” -Eco 23, (age) 45-49, Health Assistant (GB).*

Another GB participant commented on recall and retention as a reason for repeating Covid-19 messages: *“...they needed to hear this information to enable them to retain Covid-19 messages, and to enable them to remember easily. We believed that if health messages were repeated often, people would easily remember them and act on them.” -Eco 18, (age) 50+, NGO Fieldworker (GB).*

➤ *Wider coverage as a reason for repetition strategy*

GB participants further revealed that Covid-19 messages were repeated because of wider coverage. That is, enabling Covid-19 messages to get to all and sundry, especially those who did not receive the Covid-19 information the first time. For instance, one GB participant commented: *“It was important, we did so because you didn’t know who had received the information or not, so with repetition, messages were spread to many people.” -Eco 24, (age) 40-44, NGO Fieldworker (GB).*

(d) Engagement and involvement of multiple stakeholders (NGOs, Community Leaders/influencers, and Religious Leaders).

GB participants also revealed the use of engagement and collaboration with stakeholders such as government officials, health personnel, non-government organisations, community leaders, influencers, and religious leaders [n6]. GA participants also identified this theme as one of the strategies (see section 4.2.2.b). They provided reasons for its employment.

➤ *Credibility and Believability as reasons for the involvement of influencers and community leaders*

Regarding the reasons for the engagement of multiple influential members of the communities in the dissemination of Covid-19 information, one of the participants said:

“...use of influencers/opinion leaders helped because of trust issues. People normally doubt, but they got motivated and persuaded even convinced when they saw people that they know doing something new.” -Eco 18, (age) 50+, NGO Fieldworker (GB).

Another GB respondent believed the local government engaged community influencers for the Covid-19 message dissemination because of the doubt the villagers had in the existence of the Covid-19 pandemic, and commented:

“People doubted the Covid-19 existence, so the LG wanted to create that awareness and convince people that Covid-19 is real; and that there were certain strategies formulated to ensure its prevention and management (hand washing, crowd avoidance, use of face masks and hand sanitisers, coughing into elbows, general lockdowns), using several health communication strategies like the use of local influencers- community heads and volunteers within the communities for Covid-19 message dissemination.”-Eco 24, (age) 40-44, NGO Fieldworker (GB).

Another participant in buttressing the above point (credibility), discussed the indispensability of influencers and leaders in any public health campaign and commented: *“...yes, because you cannot succeed without these people [influencers and leaders]. So, you have to go through these people so that you can get the community members to accept what you are telling them.”-Eco 26, (age) 45-49, Health Officer (GB).*

4.3.2 Villagers' Health Information Sources (Interview Question 4: See Appendix E)

Group B participants were also asked to discuss where they feel the villagers obtain health-related information and the difficulties they experience in obtaining the information. All group B participants (n29) responded to this question and revealed the following themes (information sources): public health institutions (n22); interpersonal communication sources (n17); mass Media (n9); local government Headquarters (n6); Ministry of information (n2); outposts (n1).

(i) Public health institutions & Outposts

Public health institutions (primary healthcare centres- clinics, maternities; secondary healthcare centres-general hospitals) were discussed by the majority of GB participants (n22) and health outputs (n1) as where the villagers visit to obtain Covid-19 information from interpersonal sources because of proximity of public health institutions to the villagers, and because they are considered as right sources of health information. For instance, one GB participant commented:

“...we had health centres close to them because that's grassroots health outfit. In the health centres, they have nurses and other trained health personnel there and visiting doctors. So, that's the channel the Ministry of Health used to make sure that this information [Covid-19 information] got to the grassroots because almost every community has a health centre.”-Eco 16, (age) 45-49, Religious Leader GB).

Similarly, one other GB participant explained the rationale for people's visits to health centres because they are considered the right sources of public health information due to the presence of trained health personnel, and commented:

“... Covid-19 information can be sought by the community through the state health workers in the community, specialist health officers, when this is achieved, you don't have to get information from any other place again. This is because the state health officers or the specialised health workers were the only persons who could tell them the signs and symptoms of the disease [Covid-19], and what to do if they tested positive for Covid-19...”-Eco 26, (age) 45-49, Health Officer (GB).

One GB participant (n1) shared that the villagers get Covid-19 information from outposts [some designated areas where the local government mounted health information officers and community influencers to sensitise the villagers about the Covid-19 pandemic, management and preventive measures]. For instance, one GB participant commented:

“We created some outposts in strategic points apart from maternities and clinics where people were sensitised...”-Eco 25, (age) 35-39, Community Orientation Officer (GB).

(ii) Communication channels- Interpersonal Sources, Mass Media

Several GB participants (n17) again, spoke about communication channels as sources where the villagers obtained Covid-19 information from. Participants discussed influencers/trusted voices such as opinion leaders, social media, friends and families, NGO fieldworkers, and phones as the interpersonal sources from which the villagers obtain Covid-19 information.

Mass media were also discussed by some GB participants (n9) as the source where villagers obtain Covid-19 information. GB participants talked about radio, television, and print materials (billboards, posters, fliers).

These themes had already been discussed by GA and B participants as one of the multiple communication channels employed by the LG.

(iv) Government Establishments

Some GB participants (n6) also share that the villagers go to the local government headquarters to obtain Covid-19 information or the Ministry of Information (n2). For instance, one GB participant revealed that the villagers obtain Covid-19 information from the local government headquarters because they were the first points of call: *“They also have government lines which they can call at any time to get their queries sorted, so the first point of call is always the local government outlet for getting that information.”-Eco 19, (age) 35-39, NGO Fieldworker (GB).*

Some other GB participants (n2) shared that the villagers get Covid-19 information from the Ministry of Information. For instance, one GB participant commented: *“They got from government information outfit, the ministry of information that from time to time dished out government information to the public on Covid-19...”-Eco 2, (age) 45-49, Canon/Religious Leader (GB).*

No specific reasons were provided by participants as to why participants obtained Covid-19 information from the Ministry of Information.

The overwhelming perception of the GB participants was that the villagers get health-related information such as Covid-19 from healthcare centres and health outposts. This was followed by interpersonal sources.

4.3.3 Barriers to Villagers Covid-19 Information Seeking

GB participants also spoke about the difficulties the villagers encounter while trying to obtain Covid-19 information and revealed the following themes: unsteady electricity supply (n5); financial difficulties (n5); language barrier (n4); low literacy(n4); complexity of public health messages (n4); paucity of Covid-19 messages (n1). Four participants felt that the villagers did not experience any sort of difficulties in obtaining Covid-19 information.

(i) Unsteady electricity supply

Some GB participants (n5) shared that the unsteady electricity in Nigeria is among the difficulties the villagers experience while obtaining Covid-19 information. This has to do with villagers' inability to obtain and/or access Covid-19 information because of a lack of electricity to power their electronic gadgets like radio, television, and phones. For instance, one GB participant commented:

"... well, difficulties would have come from not having electricity to power their television and radio because of the epileptic power distribution in our country. I think we had that challenge because when you don't charge (power) your phone, you can't plug in your television, and you can't get information. These were the basic challenges they had and still have." -Eco 11, (age) 45-49, Public Health Practitioner (GB).

Another GB participant also commented: *"lack of electricity supply was a big challenge for those that depended on Televisions, radios, even phones." -Eco 23, (age) 45-49, Health Assistant (GB).*

(ii) Financial difficulty

Some GB participants (n5) also discussed financial difficulty as a challenge villagers experience whilst seeking Covid-19 information. That is, the participants thought that those villagers who are financially disadvantaged experienced difficulties obtaining Covid-19 information. For example, one GB participant commented: *"Lack of funds was one other problem they had in the sense that if you don't have money to go to the hospital you may not get [Covid-19] information from the hospital." -Eco 27, (age) 35-39, Health Promotion Officer (GB).*

Another participant commented: *"Some complained of finance to get to the health centres [and obtain Covid-19 information]." -Eco 20, (age) 50+ Religious Leader (GB).*

(iii) Language barrier

Some GB participants (n4) discussed the language barrier as a difficulty. This means villagers' inability to obtain Covid-19 information due to language diversity. One participant commented:

“... there were some who did not understand English language properly, so, most times, the communication, the mode of communication, language was a barrier because even some of them could not pronounce the name Covid-19.” -Eco 21, (age) 35-39, NGO Fieldworker (GB).

Although healthcare centres were the major source of health information, villagers revealed that the languages used by the professionals were also reported to be a barrier: *“...there were those that could not get clarification on Covid-19 due to language barrier... in those hospitals, we have doctors from all over the places not necessarily from here [the local government].” - Eco 13, (age) 40-44, President General (GB).*

(iv) Low literacy and Message complexity

The low literacy level of some villagers was also discussed as a difficulty by some GB participants (n4) in obtaining Covid-19 information. One GB participant commented:

“...most of them could not read. Even when you try to teach them and give them numbers to call, they could not read, and they didn't understand...”-Eco 17, (age) 35-39, NGO Fieldworker (GB).

Another GB participant commented: “Illiteracy was also a problem [in obtaining Covid-19 information].” -Eco 24, (age) 40-44, NGO Fieldworker (GB).

Another difficulty discussed by some GB participants (n4) was the complexity of public health messages. This means villagers inability to obtain Covid-19 health information because they found the messages too complex to comprehend. For instance, one GB participant linked the issue of illiteracy with the complexity of public health messages and difficulty in understanding: *“Illiteracy was also a problem, most people did not understand some of these messages, because they complained that the messages were too complex for their comprehension.” - Eco 24, (age) 40-44, NGO Fieldworker (GB).*

Similarly, one GB participant also explained the nature of public health message complexity and commented: *“Another difficulty was the fact that the people did not get much clarity simply looking at posters and billboards...” -Eco 18, (age) 50+, NGO Fieldworker (GB).*

(v) The paucity of Covid-19 messages

One other GB participant (n1) again, discussed the paucity of Covid-19 messages as a difficulty the villagers encountered and commented: *“Yes, the [Covid-19] information was not available... if somebody was infected, the information about where to go was not there, therefore creating additional fear, apprehension, and anxiety.”-Eco 9, (age) 50+, NGO Executive Director (GB).*

These themes drawn from the perspectives of group B participants suggest that the villagers may be categorised as poor in health information and health literacy. The difficulties enumerated by group B participants imply that they were aware of the barriers to the villagers' (their target audience's) access to health information.

4.3.4 Covid-19 Health Communication as Effective (*Interview Questions 5: See Appendix E*)

To further understand effective public health communication in rural Nigeria and the contributory factors, GB participants were asked to discuss the effectiveness and/or ineffectiveness of the public health communication campaigns and strategies adopted by the local government.

Twenty GB participants (n20) said yes to the public health communication campaigns and strategies being effective, four GB participants (n4) answered partly effective, four GB participants (n4) answered no, while one response was vague (unconfirmed position).

The majority of GB participants (n20) out of the twenty-nine GB participants said yes to the public health communication campaign and strategies being effective. For instance, one participant commented: "...yes, it was very effective." [GB Eco7]. Another participant affirmed: "...I think it was effective." -Eco 19, (age) 35-39, NGO Fieldworker (GB). This suggests that health communication was perceived as largely effective.

However, some GB participants (n4) who believed that the communication campaigns and strategies were partly effective commented: "*I would say that they were not all that effective* [GB Eco17], while another corroborated: "...they tried, no doubts, from our experience, the Covid-19 campaigns did not get across to all in the local government area. Some persons we talked to during the campaigns did not get the messages."-Eco 18, (age) 50+, NGO Fieldworker (GB).

GB participants (n4) believed that the public health communication campaigns and strategies by the local government were ineffective and discussed inadequate material/human resources (n3); and non-transparency on the part of government (n1).

For instance, one GB participant felt that the lack of funds made the campaign ineffective and commented:

"The strategies were ineffective because there was insufficient funding, and the strategies [Covid-19 campaign strategies] were not sustainable." -Eco 23, (age) 45-49, Health Assistant (GB).

Another GB participant felt that the ineffectiveness of the communication strategies and campaigns was due to inadequate trained human resources and commented:

“There were not enough health communication workers who were there at the local government, and there was no training. There were supposed to be regular training, but these things were not there.” -Eco 9, (age) 50+, NGO Executive Director (GB).

One other participant (n1) discussed non-transparency on the part of the government as a reason for ineffectiveness and commented:

“...if I must say, I don't think the local government's Covid-19 campaign and strategies were effective or useful, because we did not see the effectiveness, even seeing those that were infected was not possible, we were afraid, but we didn't confirm the existence of Covid-19. What we only heard was that this person was infected, and that person was with Covid-19, but we did not see the people infected with Covid-19.” -Eco 4, (age) 40-44, Trader/Market Leader (GB).

Indicators of Effectiveness of Public Health Communication Strategies

The indicators of effectiveness of the local government's health communication strategies were identified by the participants who perceived it as effective and those who said they were partly effective. These indicators are discussed.

Those GB participants who felt the public health communication strategies attributed this to compliance with Covid-19 safety measures; Reduction in infection and death; and Villagers' Understanding of messages.

Compliance with safety measures was also reiterated by mixed-opinion responders as an indicator of villagers' understanding of health messages delivered to them:

“...I won't say hundred per cent but some of them understood because they tried to protect themselves, and some tried to comply with the rules. Some of them who were not literate enough still believed that [Covid-19] is not real...” -Eco 25, (age) 35-39, Community Orientation Officer (GB).

This implies that understanding can be a key ingredient for effective communication.

Understanding of health messages delivered is an indicator of the effectiveness of health communication. Group B participants were asked if they thought that, in general, the villagers they interacted with during the Covid-19 pandemic understood public health information. Twenty-six out of the twenty-nine participants answered this question. Out of the twenty-six participants that answered, several participants (n17) answered in the affirmative, some participants (n6) provided mixed responses while a few others (3) answered no. Responses from the three categories are discussed.

Several GB participants (n17) answered in the affirmative that villagers have an understanding of health messages delivered to them. For example, one participant who answered in the affirmative commented: *“Yes, they understood the health messages given to them.” -Eco 26, (age) 45-49, Health Officer (GB).*

Some of the participants (n5) identified the villagers' compliance with the Covid-19 safety measures (wearing of face masks, social distancing, increased vaccine intake, and participation in Covid-19 related programs and/or sensitisation) as indicators of their understanding of the message:

"... I think so because we measured the level of compliance, and we saw in most parts that the level of compliance by citizens to the directive to safety was quite high. That showed that the message got to them, and people complied with the measures during Covid-19. If they did not understand, I don't think the level of compliance recorded would have been that high." -Eco 19, (age) 35-39, NGO Fieldworker (GB).

Although most of the participants (n17) felt the villagers understood the Covid-19 messages, some others had mixed responses (n6) suggesting that some understood while some others did not understand: *"...yes and no. Some people do and a good number of people do not. The ones that understand can..."-Eco 18, (age) 50+, NGO FieldWorker (GB).*

This same position was affirmed by another participant: *"...okay, I will not say in general that they understood the message rather some of them understood the message while some of them did not..." -Eco 27, (age) 35-39, Health Promotion Officer (GB).*

There were a few participants (3) that outrightly held that the villagers did not understand the health message delivered to them: One of the participants simply responded: "No, no they did not" (GB Eco4], while another participant responded similarly but added the literacy dimension: *"Not at all, and I believe this because of their level of literacy." -Eco 29, (age) 40-44, Religious Leader (GB).*

Factors Influencing the Effectiveness of LG's Health Communication Strategies

Some GB participants attributed the effectiveness of the Covid-19 messages to several factors. These include message simplification (n7); education/literacy level (6); collaboration and partnership (n5); provision of materials (n2); tailoring and simplifying language(n2); use of multiple channels (n1).

Factors for Ineffectiveness of LG's Health Communication Strategies

Complexity (n2); mistrust of government (n1), and paucity of covid-19 information from government (n1).

➤ Simplicity vs Complexity of message

This includes all the necessary steps taken by the government to ensure that the public health messages (Covid-19 messages in the study context) were understood by the villagers without difficulty. This involves using local dialects and pictures. A participant captured it this way:

“...yes, [they understood public health messages because of] the way the messages came to them because the messages were taken to them using their languages... so they understood.” -Eco 26, (age) 45-49, Health Officer (GB).

The same participant also commented on the use of pictures:

“...they understood, in the sense that it was not only oral communication but also through pictorial messages. So, when they saw the pictures, maybe stage 1, 2, 3, nobody would tell them; they had a sense, and they could interpret these pictures...so they understood.” -Eco 26, (age) 45-49, Health Officer (GB).

On the other hand, participants who had mixed responses regarding villagers' understanding of the message cited the complexity of Covid-19 message as a factor for ineffectiveness:

“...those who did not understand could not understand these messages. The messages were not clear and simple enough for them to understand, the messages did not resonate with some of them in terms of language because the local government did not provide these messages in different languages that were familiar to many.” -Eco 18, (age) 50+, NGO Fieldworker (GB).

With regards to the complexity of public health messages, participants who felt that the Covid-19 messages were not understood by the villagers reported:

“...one reason I felt the people of the local government did not understand public health messages was because of the ways these messages were disseminated to them. Some messages were very difficult to interpret, and that was one of the major issues.” -Eco 23, (age) 45-49, Health Assistant (GB).

➤ *Education/literacy level*

Some GB participants (n6) believed that villagers understood Covid-19 messages due to the education of the villagers. For instance, one GB participant commented: *“In the local government especially the place I operated, most of them were learned [educated]. So, yes, they understood the importance of the health education we gave them.” -Eco 22, (age) 35-39, Nurse (GB).*

Another GB participant also commented: *“People that have formal education understood [public health messages] easily.” -Eco 28, (age) 45-49, NGO Representative (GB).*

Those who had mixed responses also identified education level as a factor that could influence understanding of the messages:

“...yes and no. Some people do and a good number of people do not. The ones that understand can. By this I mean, they can read and understand health messages especially in English and in their local dialect... I think this also has to do with their education level...” -Eco 18, (age) 50+, NGO Fieldworker (GB).

This was elaborated upon by another respondent who provided the differences in understanding and recall of Covid-19 messages by educated and non-educated villagers:

“Some of them understood the message while some of them did not. The reason being that some were educated that even when you give them the information, in the past month they would still remember it but for some who were not educated if you tell them about public health messages, they would understand it at that point, because you used their local dialect you cannot use English... but after like one or two days they would forget...”-Eco 27, (age) 35-39, Health Promotion Officer (GB).

These suggest that participants who operated at locations where villagers were educated would likely get more villagers who understood the Covid-19 message than those who worked in villages with less educated/literate people.

➤ Collaboration and partnership

The collaboration among different stakeholders such as the NGOs, government, community-based organisations and other organisations contributed to the effectiveness of the Covid-19 management strategies (n5): A participant who was a member of an NGO said:

“...I think it was effective... they got help from other NGOs, mine inclusive, [that] helped in making it effective. The local government did its bit, and other non-governmental organisations supported it. That made it effective overall.”-Eco 19, (age) 35-39, NGO Fieldworker (GB).

The collaboration from different organisations and individuals was expounded on by another participant:

“...I think that their communication methodologies and applications were effective... reason was because, the Covid-19 pandemic troubles, anxiety and fears compelled everyone to do something. People were committed to developing solution points, in developing how things could be better. So, I think that was what the [local government] did, they worked hand in hand with the Covid-19 team...”-Eco 24, (age) 40-44, NGO Fieldworker (GB).

Some GB participants discussed the involvement of influencers/trusted voices like opinion leaders (which was a form of interpersonal communication) as a reason for effectiveness.

“...I feel it was effective. The fact that they made use of community-based leadership, community religious leaders, opinion leaders, market leaders, religious organisations. I think it was effective because these community-based influencers commanded so much respect within the community. They influenced a lot of people, so when a piece of information came from them people tended to take it very seriously.”-Eco 18, (age) 50+, Religious Leader (GB).

Another participant while noting that the campaign was partially effective commended the inclusion of other non-governmental organisations (NGOs) and the trusted influencers in the

communities: “...they tried, no doubts, but for the help of other NGOs and influential persons in the communities.” -Eco 18, (age) 50+, NGO Fieldworker (GB).

➤ *Provision of Materials*

Some other GB participants attributed their answers to the provision of adequate material resources by the local government. For example, one GB participant commented:

“...I can tell you they were very effective because the government provided materials and because the government made the Covid-19 test and treatment free. Were it not for the free tests, some of my members who had no money to pay for the tests would not have done that. That was another aspect that made the campaign effective.” -Eco 15, (age) 35-39, Union Leader (GB).

However, a participant who believed the campaign was partly effective reported that:

“In some areas, we heard people saying that although the [local government] came, the materials they shared were not enough and some areas did not get it at all. I think they were not so effective.” -Eco 17, (age) 35-39, NGO Fieldworker(GB).

➤ *Tailoring and Simplifying of Language*

Some participants (n2) discussed the influence of language simplification and language difficulty as factors that influenced the effectiveness of Covid-19 strategies. “We used local languages and translated the Covid-19 messages as adopted from the federal government or state government in their local language because they understood what the information was all about.” -Eco 27, (age) 35-39, Health Promotion Officer (GB).

Contrary to this position, another participant discussed language difficulty as a reason for partial effectiveness: “To some extent, they were effective because some [villagers] said that the messages were not communicated in languages they could understand.” -Eco 18, (age) 50+, NGO Fieldworker (GB).

➤ *Use of multiple channels*

One GB participant discussed the use of multiple channels of communication as a reason for effectiveness and commented:

“...I could tell you they were effective because they used multiple channels in communicating Covid-19 issues. Multiple channels in the sense that churches were talking about it, radios were talking about it, televisions were talking about it.” -Eco 18, (age) 50+, NGO Fieldworker (GB).

Other factors that affected the effectiveness of public health communication in the local government, as revealed by the GB participants were:

➤ *Mistrust in the government*

Some GB participants discussed mistrust in government as a reason for the ineffectiveness

of campaigns and strategies: *“...to some extent, they were effective. They tried, no doubt, but the campaigns were not fully effective. Some neglected the messages because they did not trust the government and anything that came from them...”*-Eco 18, (age) 50+, NGO Fieldworker (GB).

➤ *The paucity of Covid-19 information from the government*

With regards to the paucity of public health information, one GB participant shared that the villagers could not understand the health messages because the local government failed to provide public health information to the villagers as well as teach the villagers what they were expected to do in the wake of Covid-19. *“Nobody went to the communities to tell or teach villagers what they needed to know; it was just hearsay. I mean the local government was supposed to educate people about what was on the ground [Covid-19 pandemic] but they did not do it.”* -Eco 4, (age) 40-44, Trader/Market Leader (GB).

4.3.5 Challenges Experienced in Covid-19 Health Communication (Interview Question 6: See Appendix E)

GB participants were also asked to talk about the challenges they encountered during the public health communication campaigns and strategies in the local government. Participants discussed the following themes: inadequate human and material resources (n19); disbelief in Covid-19 existence (n16); hostility of the Villagers (n5); resistance to change (n5); misconception (n2); non-adherence to Covid-19 safety protocols (n2); mistrust trust in Government (n2); language barrier (n2); fear and information avoidance (n1).

Among the themes discussed by GB participants, some of the implementation challenges highlighted by GA participants included inadequate human and material resources, misconceptions, hostility from the villagers, mistrust of the government, and language barriers (see section 4.2.4).

The rest are presented in turn:

(a) Disbelief in Covid-19 existence

Several GB participants (n16) discussed disbelief in the existence of Covid-19 as a challenge. This according to participants posed a big challenge to the implementation of the public health communication campaigns and strategies because the villagers did not believe that Covid-19 existed. For instance, one GB participant shared that the villagers doubted the existence of the Covid-19 pandemic due to unsubstantiated claims and commented: *“Some members do not believe in the existence of Covid-19 due to the fact they did not see people dying from Covid-19 like in the western world as portrayed in the media.”*-Eco 12, (age) 50+, Trader/Market Women Leader (GB).

(b) Resistance to change

Some GB participants (n5) discussed resistance to change as a challenge. One participant said: *“People didn’t want to accept what they were not used to.”-Eco 23, (age) 45-49, Health Assistant (GB).*

Similarly, another GB participant commented on the issue of norms and traditions as reasons for refusing new ideas and resisting changes and commented: *“People loved their norms and traditions and didn’t want new things introduced...” -Eco 24, (age) 40-44, NGO Fieldworker (GB).*

(c) Non-adherence to Covid-19 safety protocols

Some GB participants (n2) discussed the challenge of non-adherence to Covid-19 safety protocols. This entails the refusal by the villagers to abide by the Covid-19 safety protocols. One GB participant commented:

“...the key challenge was that our task force closed by 6 pm and some of our members that operated in the evening and at night noticed that some union members did not obey these protocols at night because we were not there to checkmate them...”-Eco 15, (age) 35-49, Union Leader (GB).

(d) Fear and information avoidance

Fear and information avoidance were challenges one GB participant (n1) discussed. This entails the villagers intentionally avoiding Covid-19 information because of fear. For example, one respondent said: *“Fear and information avoidance were challenges, people were scared and avoided [Covid-19] information.” -Eco 5, (age) 40-44, Community Influencer (GB).*

4.3.6 Suggestions for Improvement (Interview Question 7: See Appendix E)

GB participants also suggested areas for improving Covid-19 public health communication. The majority of participants (n20) discussed the following themes: improved human and material resources (n16); involvement of relevant agencies and stakeholders (n4); and transparency (n4). Some participants (n8) responded that they had no suggestions for improvement, while one participant (n1) did not answer this question and provided no specific reason for not answering.

Improved human and material resources and transparency were themes also addressed by GA participants.

Involvement of relevant agencies and stakeholders was only discussed by GB participants.

(a) Involvement of relevant agencies and stakeholders

Some GB participants (n4) discussed the need for the involvement of relevant agencies and stakeholders. One GB participant suggested the need for collaboration and commented:

“...I think from the inception there were some challenges because before the National Orientation Agency of the government media was allowed to participate

in the process, it was challenging for people to access Covid-19 information when the Ministry of Health was only involved in information dissemination, but when they incorporated the media, the radio station, the television to be part of the work, the challenges were now surmounted, various stakeholders should be engaged” -Eco 11, (age) 45-49, Public Health Practitioner (GB).

4.4. Summary/Comparison of Themes Between Group A and Group B Participants

Groups A and B have several similarities and differences. These are presented in table 5 below.

Table 6 presents the similarities and differences in themes between the two groups.

Themes	GA	GB	Common Responses/Themes	Unique Responses/Themes
Goals and Priorities	Covid-19 Sensitisation/Awareness Safety of the Populace Provision of understandable message	Covid-19 Sensitisation/Awareness	Covid-19 Sensitisation/Awareness (GA & GB)	Safety of the Populace Provision of understandable message (GA)
Public Health Communication Strategies	Multiple Communication Channels- Mass Media; Interpersonal; and Native Indigenous Methods.	Multiple Communication Channels- Mass Media; Interpersonal; and Native Indigenous Methods	Multiple Communication Channels- Mass Media; Interpersonal; and Native Indigenous Methods (GA & GB).	
	Audience Definition/Tailoring (use of jingles/pre-recorded messages; Translation and use of Interpreters; Use of simple languages).	Audience Definition/Tailoring (use of jingles/pre-recorded messages; Translation and use of Interpreters; Use of simple languages).	Audience Definition/Tailoring (use of jingles/ pre recorded messages; Translation and use of Interpreters; Use of simple languages). (GA & GB)	
	Engagement of multiple Stakeholders	Engagement of multiple Stakeholders	Engagement of multiple Stakeholders (GA & GB)	
	M&E (Ascertain campaign effectiveness; identify areas for improvement)			M&E (Ascertain campaign effectiveness; identify areas for improvement) (GA)
		Repetition (Understandability; Dis(belief; Prevent Covid-19 spread; persuasion and behaviour change)		Repetition (Understandability; Dis(belief; Prevent Covid-19 spread; persuasion and behaviour change) (GB)
Effectiveness/indicators	Adherence to Covid-19 protocols Reduction in Covid-19 mortality & infection rate Perceived understanding of Covid-19 messages	Adherence to Covid-19 protocols Reduction in Covid-19 mortality & infection rate Perceived understanding of Covid-19 messages	Adherence to Covid-19 protocols Reduction in Covid-19 mortality & infection rate Perceived understanding of Covid-19 messages (GA & GB)	
Influencing factors for effectiveness	Partnerships with trusted influencers	Partnerships with trusted influencers		

		Tailoring/message/ language simplification Use of multiple channels Education & Literacy level Provision of human/materials	Partnerships with trusted influencers (GA & GB)	Tailoring/message/ language simplification Use of multiple channels Education & Literacy level Provision of human/materials (GB)
Factors for ineffectiveness	Lack of funds Villagers' (dis)beliefs	Inadequate human/material resources Paucity of Covid-19 information Mistrust in Government Complexity of messages	Inadequate human/material resources (GA & GB)	Villagers' (dis)beliefs (GA) Paucity of Covid-19 information (GB) Mistrust in Government Complexity of messages (GB) Villagers' Disbelief (GA)
Implementation Challenges	Lack of human/material Resources Misconception Beliefs Language Barrier Hostility Mistrust in Government Covid-19 vaccine hesitancy	Lack of human/material Resources Misconception Beliefs Language Barrier Hostility Mistrust in Government Resistance to Change Non Adherence to protocols	Lack of human/material Resources (GA&GB) Misconception (GA&GB) Beliefs (GA&GB) Language Barrier (GA&GB) Hostility (GA&GB) Mistrust in Government (GA&GB)	Covid-19 vaccine Hesitancy (GA) Resistance to Change (GB) Non Adherence to protocols (GB)
Suggestions/lessons for Improvement	Improved human/material resources Improved transparency	Improved human/material resources Improved transparency Involvement of relevant agencies/stakeholders (GB)	Improved human/material resources (GA&GB) Improved transparency (GA&GB)	Involvement of relevant agencies/stakeholders (GB)
Barriers to information seeking		Financial difficulty Language Barrier Unsteady Electricity Supply Low Literacy & Message Complexity Paucity of Covid-19 message		Financial difficulty Language Barrier Unsteady Electricity Supply Low Literacy & Message Complexity Paucity of Covid-19 message (GB)
Villagers Information Seeking Sources		Public health institutions/outposts Interpersonal Sources Mass Media Government Establishments		Public health institutions/outposts Interpersonal Sources Mass Media Government Establishments (GB)

Table 6: Groups A and B's Common and Unique Responses/Themes

CHAPTER FIVE

Discussion Of Findings

5.0 Introduction

This chapter synthesised the findings of this thesis. Before discussing the theoretical linkages of the findings to the developed IFEPHC framework, and other possible communication theories (where applicable), including addressing gaps in the literature, this chapter first examined the primary aims of the research.

It further discussed the implications for future research and examined the impact of this research on policy and practice.

5.1 Aims and Objectives

The study had three primary goals (*see section 1.5*). To achieve these goals, the study specifically examined the public health communication goals and priorities, the strategies employed in managing the Covid-19 pandemic in a rural, disadvantaged local government. It evaluated the effectiveness of the public health communication campaigns and strategies by the local government. It also considered the factors that influenced the implementation and effectiveness of these communication campaigns and strategies.

The findings of the study were synthesised and discussed in line with the research questions and the sub-questions posed in the study (*See section 1.6 Research Questions*).

5.2 Effectiveness of Public health communication campaigns and strategies employed by the Local Government in managing Covid-19 in rural areas

5.2.1 Goals/objectives and priorities for the public health communication during Covid-19

The study found that the local government's overarching goals and priorities were to conduct public awareness campaigns and sensitisation about the virus, provide clear Covid-19 messages, and ensure the safety of the rural population from the pandemic. These goals align with the aim of health communication outlined by Muturi (2005), which is to enhance target audiences' knowledge and understanding of health-related issues and to improve health status.

The nature of the health communication goals, especially in the context of health risks like the Covid-19 pandemic, aligns with WHO's (2017) communication goals, which should be to provide information, advice, and guidance to key audiences in order to encourage necessary

actions that will protect the health of individuals, families, communities, and nations as a whole.

The need for goal setting in health communication is emphasised by Schiavo (2013), who notes that establishing behavioural and social objectives early in the design of health communication interventions is imperative. The local government's goals facilitate the evaluation of the effectiveness of the health communication strategies aimed at managing Covid-19 among its rural residents.

The Covid-19 public awareness campaign focusing on the risks of Covid-19 and mitigation protocols (Take Responsibility campaign) was identified as a significant goal of the local government. This effort aimed to ensure that additional objectives like raising public awareness, providing clear messages, and ensuring the safety of the population were met. The choice of an awareness campaign as an overarching goal aligns with the WHO's (2018) observation that health campaigns are key communication strategies for delivering health interventions to various segments of the population, particularly those facing health emergencies. Consequently, this objective is consistent with best practices suggested for addressing health issues in Nigeria (Hile et al. 2022) as a means of managing its health challenges. There are perceptions that health campaigns represent a strong strategy for fostering positive health behaviour change (Chan 2023; Zhao 2020). Beyond these theoretical frameworks, previous studies (Dastmanesh et al. 2023; Hovland et al. 2021) indicate that health campaigns effectively enhance rural populations' knowledge and attitudes toward various health concerns. However, some scholars argue that the success or effectiveness of a health campaign relies on the approaches and strategies used (Agha 2003).

There were specific Covid-19 campaign messages discussed by study participants (see *section 4.2.1 a*). Evidence of the Covid-19 awareness campaign, which was the primary goal of the local government, involved creating and disseminating specific Covid-19 messages and information in response to the Covid-19 pandemic. This was revealed by both Groups A and B participants and aligns well with the 'timely' attribute established in the IFEPHC (see: *Figure 1*). This emphasises the importance of urgent and instructive information during health emergencies, particularly when needed by target audiences. The study's findings regarding the timely creation and dissemination of Covid-19 information/messages also correspond with a previous study by Crawford and Okigbo (2014), which highlighted the need for consistent messages that the audience can understand and embrace to address health-related issues.

5.2.2 Effectiveness of Public Health Communication- Achievement of Covid-19 Communication Goals

This study found that most participants believed the LG's goals and priorities for Covid-19 communication were met, and achievement was satisfactory. This finding was consistent across GA and GB participants. Indicators of effectiveness were identified in the study (see *Section 4.2.3*).

It was found that an indicator of the effectiveness of the Covid-19 health communication strategies was villagers' adherence to Covid-19 protocols because participants reported that the villagers understood the Covid-19 messages and knew the consequences of behaving carelessly which would amount to them being infected; and as a result of their adherence, the local government recorded noticeable decline in villagers' non-compliance to set Covid-19 laid down rules i.e., people wore their masks and used their hand sanitisers voluntarily; and increased vaccine intake by the villagers. These views were expressed in *Section 4.2.3 (i & iii)*.

Additionally, the study reported that the effectiveness was attributed to the villagers' perceived understanding of the Covid-19 messages, which led to a remarkably increased adherence to the Covid-19 safety protocols.

This appears to contradict the reported number of Covid-19 confirmed cases at the local government level, as published by the state government, and raises questions about the villagers' perceived adherence to Covid-19 safety protocols. This concern is amplified by findings indicating fear and apprehension regarding Covid-19 information among the villagers, including a deliberate avoidance of such information. However, this latter finding aligns with previous observations that fear is a common phenomenon and a significant challenge during health emergencies (Adebisi et al. 2021; NCDC n.d; Omaka-Amari et al. 2020). This is why audiences' strategies for managing fear should be understood and employed in public health campaigns (Witte & Roberto 2009). According to the authors, individuals with health-related fears may engage in defensive avoidance, denial of the threat, or reactance (rejecting intervention messages as manipulative). In other words, it could be argued that disbelief in the existence of the Covid-19 pandemic and the villagers' avoidance of Covid-19 information, as found in the study, were strategies some villagers adopted to mitigate their perceived fear of the pandemic. This may help explain some of the strategies participants used in managing Covid-19 to achieve effective health communication, as reflected in their perceptions. The perceived effectiveness supports the gradual strengthening of Nigeria's risk communication, as reported by annual assessments of Nigeria's RCCE (NCDC 2023).

Regarding the apparent contradiction between the perceived notable decline in infection and mortality rates and the data from the Delta State Government website on Covid-19 status, which indicate that among the 25 local government areas, one local government recorded the highest number (515) of Covid-19 cases, the highest number (485) of discharged cases, and the highest number (11) of deaths, some possible explanations are offered. Firstly, this could be due to the effect of a time lag. The statistics from the Delta State Government may reflect earlier periods of non-compliance that the researcher did not address during interactions with participants, and which participants might not have considered in their perceptions. Secondly, basing the subjective perceptions of effectiveness on a limited number of participants while focusing on a rural community in Delta, as opposed to the statistical data, which reflects the broader reality of all local governments—potentially including populations less covered by communication efforts—could account for the apparent contradiction. Thirdly, studies show that Nigeria faces the problem of inadequate civil registration and vital statistics, with a lack of death certification (Nwakasi et al. 2022). The issues of insufficient health data and fragmented data collection methods (Mcgrail & Black 2005; Meribole et al. 2018), which lead to underreporting or even overreporting, may explain the apparent mismatch between perceived reductions in the mortality rate and the statistics. Finally, the decision to drop the third proposed group of participants (the villagers) due to security challenges in Nigeria led to a reliance on the perceptions of health communicators in the local government. Those mostly recruited by the local government may have introduced bias. Rather than bias, the participants' perception of reduced Covid-19 mortality due to communication efforts in the villages may stem from the initial high estimation of Covid-19 mortality in African countries, including Nigeria, given the weak healthcare system.

The finding relating to increased Covid-19 vaccine intake as a sign of adherence to Covid-19 protocols was also consistent with the views expressed by Abubakar et al. (2022), who noted that vaccination messages highlighting the personal health risks associated with the novel coronavirus may encourage vaccine uptake. However, this finding contradicts previous studies that reported vaccine hesitancy among health workers in Nigeria (Adejumo et al. 2021; Nomhwange et al. 2022). This suggests that while villagers may take the vaccine due to the risks associated with Covid-19, health workers may be more hesitant as they need to weigh the risks of being infected with the disease against the risks of taking the vaccine, which the villagers may not be aware of.

Additional finding is that villagers' understanding of the consequences of non-adherence to the Covid-19 protocols was the reason for their compliance, suggesting that the villagers perceived themselves to be susceptible to the Covid-19 virus, hence, their engagement in self-protective behaviours. This is in line with the position held by Bish et al. (2011) that certain

level of perceived susceptibility is needed to drive target populations into taking required actions.

It also aligns with Chatman's (1996) concept of 'situational relevance,' which holds that whatever is of interest to the information-poor or information-disadvantaged group is considered useful in response to some concern or problem. In the context of this study, it meant that the villagers adhered to Covid-19 protocols set by the government because they found them understandable and relevant to their Covid-19 health concerns. Understanding and relevance also strongly align with the IFEPHC as essential elements for effective communication.

5.2.3 Health communication strategies employed in the Management of Covid-19

Several public health communication strategies were identified by GA and GB participants for managing Covid-19 (see sections 4.2.2 & 4.3.1). From the different public health communication strategies contained in the listed above sections, employed by the local government, it is evident that the local government adopted a combination of strategies in the Covid-19 awareness campaign. This finding is in tandem with other studies carried out in developing countries (Olaoye & Onyenakeya 2023; Boateng et al. 2023) which revealed that combination of health communication strategies is employed in some countries while some specific public health communication strategies are used to solve specific health issues.

The findings reveal that the local government employed multiple public health communication strategies, indicating it has adopted not only various methods but also a holistic and/or multi-pronged health communication approach, which aligns with Olaoye's and Onyenakeya's (2023) suggestion.

Furthermore, previous literature show that there appears to be various health communication strategies that are targeted towards health behaviours or positive outcomes, these common strategies include information, education, and communication IEC (Adebisi et al. 2021); mass media and social media/ICT (Agboola & Abdulrahman 2019; Ugwuegede et al. 2021); communication campaigns or social marketing (Atkin & Rice 2013; Hile et al. 2022; Olaoye & Onyenakeya 2023); interpersonal communication that employs community and religious leaders (Sumo et al. 2019; Isiko 2020); community engagement (Ankomah et al. 2021; Zikargae 2020); M&E (Malikhao 2020).

Examining the various public health communication strategies, it becomes clear that some strategies employed by the local government—such as interpersonal communication, mass media, community engagement, and M&E—are already established public health communication strategies that have been used to promote positive health behaviour outcomes throughout sub-Saharan Africa.

These findings are discussed in turns:

(1) Audience Definition and Tailoring Strategy

Audience definition and tailoring strategy was a theme unique to Group A participants, perhaps because they were more at the managerial level, while Group B participants were at the grassroots or implementation level.

Defining audiences fosters knowledge and understanding of the audience, which is central to health communication. This step taken by the local government, aligns with the 'audience centered' attribute of effective public health communication established in the IFEPHC (see: *Figure 1*), which emphasises the need to identify and characterise the target audiences of any public health campaign to understand their needs, preferences, perceptions, situations, and backgrounds.

It was found that an aspect of the audience's characteristics that was known to health communication professionals which informed their designing and delivering of Covid-19 message, was their health literacy and the several challenges to their health literacy, such as low education, language diversity; villagers' ability to understand messages; cultural beliefs; misconceptions; and mistrust in government. GA participants in general agreed that health literacy was considered and that it was an essential factor. Participants discussed the importance of information simplification based on tailored languages and the use of interpersonal communication. These findings are consistent with previous studies and further highlight the importance of tailored outreach in rural communities (Aljassim & Ostini 2020; Ojeka-John et al. 2023).

Although the policy-level professionals discussed the importance of considering health literacy, they did so in general terms without further discussion about specific health literacy techniques. They also did not address the health literacy needs at either the workplace or in the communities. This suggests that policy-level professionals in the local government are confined to basic functional aspects of health literacy, which raises important questions for future health literacy policy and practices in rural disadvantaged Nigeria.

Furthermore, the importance of message tailoring for the effectiveness of public health campaigns, due to the perceived low literacy level of the villagers, was also expressed by participants in Section 4.2.2 (d).

The step taken by the local government to consider the audience's health literacy in message design and delivery aligns with the recommendation by Han et al. (2013) that addressing health literacy is vital in implementing health interventions. Regarding the factors influencing health literacy, Xie et al. (2019) argue that those disadvantaged in health literacy due to

demographic and situational factors, such as educational level, age, and distance to health institutions, should receive greater attention in health education and promotion efforts.

Consequently, the local government's knowledge and consideration of the health literacy of the villagers resulted in the use of various strategies such as tailoring the Covid-19 health communication messages and languages in line with some of the identified factors such as low education level, language diversity of the community, cultural beliefs, and their psychological dispositions (mistrust in government, misconceptions) as the participants reported.

The study found that one of the activities that the local government used during the campaign was Covid-19 jingles, which were in multiple languages. Several researchers (Ajaero et al. 2023; Leader 2020; Ojeka-John et al. 2023) have reported findings that suggest that using jingles can be effective to varying degrees in bringing about cognitive and behavioural health changes. For instance, the study by Leader (2020) found that the use of jingles in rural areas of Rivers State in Nigeria helped change people's behaviour regarding Covid-19 for the better since this was found to be persuasive and informative. What is striking about Ajaero et al.'s (2023) study is their inclusion of factors that could moderate the effects of jingles. They found that using radio jingles in multiple languages, including the Igbo language, facilitated the understanding of the Covid-19 messages among residents of Imo state in Nigeria, but the result was different across age groups and intensity of exposure. It would seem, therefore, that the local government's use of jingles in multiple languages was based on its antecedents and the potential for effecting similar and even more positive outcomes for the Covid-19 campaign in rural Delta, Nigeria. However, the result will depend on the audience characteristics and frequency of use.

Another finding was the tailoring of messages in terms of language by translating and interpreting information, education, and communication materials into the local language using simple, natural language. This finding aligns with the 'understandability' attribute of effective communication in the IFEPHC (see *Figure 1*). Using plain language means converting technical information into messages that a non-expert audience (in the context of this study, the villagers) can understand easily.

The implication of the proactive steps taken by the LG to ensure that messages were designed and formulated in forms that aided easy comprehension, given the nature of the target audience in terms of educational level, access to information through television due to non-availability and the cost of television (economic factor) and language diversity, showed that the LG factored in the demographic and environmental status (social and economic situation) that would have hindered the villagers' access to Covid-19 information and successful information seeking, which according to Wilson 1996's model of information seeking behaviour

are some of the demographic and environmental intervening variables that affect an individual's information behaviour positively or negatively (Wilson 1999).

The study participants reported that the villagers began to comply with several laid down rules and regulations regarding Covid-19 because the participants believed that the villagers understood the Covid-19 messages that were disseminated in the local government due to language/message tailoring and simplification by translating Covid-19 messages to local familiar languages, with the influential members of the communities that are conversant with the spoken languages of the communities, to aid easy understanding. These practices have been recommended for effective communication (WHO 2017; U.S-DHHS 2004; Schiavo 2013; ECDC nd) and have been found effective by researchers. Haumer et al. (2021) for instance, found that tailoring messages to the personality type of employees improved employees' engagement for change. Although this study was conducted in a different context, it is relevant to this one because the central theme is tailoring the message to the audience's relevant characteristics and situations.

Although participants reported that the consideration of audiences' literacy level led them to tailor the messages and languages to suit them, which they attributed to the effectiveness of the campaign, findings from some GB participants show that low literacy, language barrier and the complexity of Covid-19 messages posed a significant challenge to the effectiveness of the public health campaign as some of the villagers were unable to understand the Covid-19 messages. These were expressed by some GB participants in section 4.3.3 (iii, iv).

While the study adds to the literature by providing useful insights into the factors for effective public health communication, the contradictory findings from some GB participants suggest that the strategy of tailoring messages and simplifying language to the levels of the villagers may not have been fully effective. Therefore, the study calls for further research on rural dwellers' perspectives regarding literacy and the complexity of public health messages, as this would help address the inevitable gap and/or limitation of the study.

Furthermore, the local government's initiative to define audiences and tailor messages was also revealed as a means of ensuring that the Covid-19 messages were considered relevant by the target audiences; thus, aligning with the 'relevance' attribute incorporated in the IFEPHC. It also addresses barriers and achieves desired actions, making campaigns actionable. By doing so, the 'actionable' attribute of the IFEPHC (see: *Figure 1*) was met.

The findings regarding audience definition are consistent with existing literature. For instance, according to Rice and Atkin (2012), audience definition would improve message efficiency and effectiveness, especially if message content, form, style, and channels are tailored to the attributes and abilities of subgroups. In a similar vein, regarding audience definition and message tailoring, several authors have highlighted the importance of tailored messages and/or campaigns. For example, Noar et al. (2009) and Airhihenbuwa and Obregon (2000)

found that message tailoring facilitates optimal reach and enhances both impact and recall. Furthermore, evidence from a previous study by Chiakaan and Shadrach (2023), conducted in Taraba State, Nigeria, showed that audience segmentation and tailored messages helped promote vaccine acceptability. This finding is also in line with earlier research by Spencer-Thomas et al. (2012), which attributed the huge success of health campaigns to a targeted audience strategy in message dissemination. On the other hand, non-identification and segmentation of the audience have the weakness of being vague, open to different interpretations, and out of context, which makes achieving the desired behavioural outcomes difficult and almost impossible (Hickman 2020). This progress was attributed to the communication campaign being targeted. Despite the importance of targeted campaigns through proper formative research, audience definition and tailored messages are not without limitations (Tench & Bridge 2021).

The study revealed that other public health communication strategies that were adopted by the local government by both participants were the adoption of various communication channels and the engagement with multiple stakeholders. These were discussed below:

(2) Use of multiple channels and methods in Covid-19 campaigns

The theme of using multiple channels in the Covid-19 campaigns was common among the two groups of participants (see sections 4.2.2. a & 4.3.1. a).

Interpersonal Communication

Interpersonal communication emerged as a major channel for health communication during the Covid-19 pandemic among the two groups of participants. The forms of interpersonal communication reported by both groups included communication via word-of-mouth campaigns utilising public health workers, practitioners, volunteers, village heads, influencers, opinion leaders, religious leaders, and trusted voices.

The findings are also consistent with previous studies that have found interpersonal communication sources to be the most preferred sources of public health campaigns in rural Nigeria. For instance, Egenti et al. (2022) revealed that interpersonal sources like family and friends were considered the most potent sources of health information; the study by Ekoko (2020) revealed reliance on informal sources like health providers, and traditional healers; and Omoha et al. (2021) call for the use of interpersonal forms of communication.

However, several previous studies in rural Nigeria have found other communication methods to be the most preferred sources of information among health professionals and rural target audiences. For instance, Oladeinde et al. (2015); Ojeka-John et al. (2023) found that radio is the most preferred source of health information among rural target audiences. Although this finding runs contrary to the finding of the current study, which found interpersonal sources as mostly preferred sources, it is still consistent with the aspect of the present study that

discussed radio as one of the mass media channels used in the study.

Mass Media

Another common finding among the two groups was the use of mass media to disseminate Covid-19 health messages. Some mass media used included broadcast media such as radio, television, and social media, as well as print media like flyers, billboards, and posters. This finding aligns with similar studies conducted in rural contexts in Africa (See Nwangwu and Ajama 2011; Nyiam & Ngwu 2020; Sokey & Adisah-Attah 2017; Nelson & Salawu 2016), which reported that mass media served as sources of public health sensitisation and information, recommending their use to improve public health awareness.

Indigenous native communication methods

The use of indigenous communication methods is one of the major findings common among the two groups. This aligns with previous studies, highlighting the significance of indigenous and/or traditional media in health communication (Abaneme et al. 2021; Akpan 2023; Edet et al. 2015). African traditional media, including talking drums, folk songs, drama, festivals, town criers, and age-grade meetings, are recommended as a development package targeting rural populations. This is because some methods, such as town criers, are readily deployable in rural areas to curb the spread of viruses. Rural dwellers have historically relied on traditional town criers, fostering belief and trust in this source (Akpan 2023). The findings also echo those of Abaneme et al. (2021), who investigated the awareness of the Covid-19 virus among rural residents. They emphasised the role of traditional/indigenous media in health crisis communication, revealing that most rural respondents relied on traditional media, such as town criers, for health information, attributing this reliance to their trust and acceptance of traditional rulers.

The policy-level professionals (GA) and community level actors (GB) reported that the local government used multiple channels of communication as a public health communication strategy to reach their target audiences. This strategy of using multiple communication channels of communication by the local government to ensure that the Covid-19 messages were available to the target audiences by using suitable, preferred, available channels of communication to the target audiences, corroborates with the 'accessible' attribute incorporated in the IFEPHC (see: *Figure 1*) that advocates for the careful consideration of channels suitable, preferred and reachable to the target audiences of any public health communication.

Furthermore, the use of multiple communication strategies, as the study found, aligns with the findings from a synthesis of health communication strategies in several developing countries by Boateng et al. (2023), which showed that the governments of South Africa and Ghana

utilised various mass media channels to convey Covid-19 messages. Additionally, the local government's use of multiple communication channels was consistent with the recommendations from the Nigeria Centre for Disease Control (NCDC) Covid-19 Risk Communication and Community Engagement (RCCE) framework, which stipulated the use of diverse channels for disseminating Covid-19 messages.

This finding supports previous studies that revealed the use of individual communication methods in rural Nigeria for public health information. For instance, Ekohm et al. (2021)'s study in Nigeria revealed the employment of town criers to raise Covid-19 awareness; Oladeinde et al. (2015) found in their study in rural Edo, Nigeria, that mass media (television) was the most popular source of Lassa fever information; while the study by Egenti et al. (2022) identified interpersonal sources like family, friends, and colleagues, as well as the radio, as the communication channels used in the Covid-19 campaign.

The findings of the present study, along with the previous studies mentioned, suggest that while the use of individual communication methods in rural developing economies remains crucial and effective, the combination and adoption of multiple communication methods may significantly enhance the effectiveness of public health communication. This is because one communication channel can address the limitations of another in meeting the communication needs of target audiences, as well as considering other community-specific factors such as cultural norms, literacy levels, accessibility to information sources, and preferences. Moreover, there may not be a one-size-fits-all approach to public health information. This underscores the importance of audience-centeredness as an 'attribute' of effective public health communication.

Reason for the choice and preference of communication channels

Interpersonal Communication

Interpersonal communication, which falls under the social and mobilisation communication approach recommended by NCDC (n.d.), emerged as one of the major channels used in Covid-19 health communication among the two groups of participants, GA and GB. It served as a valuable means for villagers to obtain health information. The choice of interpersonal communication and its perceived effectiveness compared to other identified channels can be attributed to several reasons: feedback and interactivity; understandability (also a reason for the choice of mass media); credibility and trust (which influenced the selection of native indigenous methods); the success of the channel in past public health communication campaigns; and easy reach and accessibility.

The wider reach was the reason for choosing mass media and indigenous native communication methods. These reasons, where applicable, are discussed together.

- *Feedback and Interactivity*

The present study found that the capacity to aid clarity of the Covid-19 message was one of the reasons for the use of interpersonal sources. This is achieved through feedback and interactivity derived from interpersonal interaction between the villagers, health workers and officers and their clarification of grey areas. The findings regarding interactivity and feedback, as revealed by GA and GB participants aligned with the 'accessible' attribute for IFEPHC that emphasises the need for communicators to consider channels that promote two-way communication between them and the target audiences.

Feedback, interactivity, and message clarity were found to be reasons revealed by group B participants for the use of interpersonal communication sources, especially face-to-face communication during the Covid-19 campaign implementation. This aligns with Dixit's (2018) view that feedback fosters effective communication, as it enables the sender to determine whether the message was accurately interpreted and understood by the receiver. This is because of the interaction between the sender and the receiver. This appears to be the motivation for health professionals' choice of face-to-face interaction with villagers.

It was found that the capacity to enhance the clarity of the Covid-19 message, ensuring understandability, was one of the reasons identified for the choice of interpersonal communication by some study participants. This is achieved through feedback and interactivity derived from interpersonal interactions between the villagers and health workers and officers, along with their clarification of gray areas. This reason for choosing interpersonal communication supports the 'accessible' attribute of effective public health communication, which emphasises the need for two-way communication.

- *Credibility and Trust*

Participants from GA and GB also discussed credibility and trust as reasons for choosing interpersonal communication along with indigenous methods of communication.

Credibility refers to the degree to which a message or information is considered believable, true, or factual (See Liu et al. 2023). This appears to address message or information credibility. Another aspect of credibility relevant to this discussion is source credibility, which refers to the extent to which an audience perceives a source of a message as "having relevant knowledge, skill or experience and trusts the source to give unbiased, objective information" (Belch & Belch 2003, p. 168). These concepts imply believability and trustworthiness of a message or the messenger.

The study found that involving multiple stakeholders within the communities—such as health professionals, community leaders, religious leaders, influencers, and town criers whom the villagers know, respect, and trust—positively impacted credibility and message acceptance in the Covid-19 campaigns. This finding, revealed by both GA and GB participants, highlights

the importance of interpersonal communication methods for disseminating Covid-19 messages, including face-to-face interactions in churches, villages, home visits, and community centers.

Furthermore, the study participants reported that the involvement of these 'trusted voices' stemmed from the villagers' belief in the messages conveyed by them. In doing so, they ensured that the Covid-19 messages and information relayed to the villagers were current and factual, as well as perceived as reliable given the individuals selected for implementation. This finding aligns with Wilson's (1996) model, where he discussed source characteristics as intervening variables. Additionally, the consideration and inclusion of credible interpersonal sources, trusted, believed, and accepted by the villagers for the implementation and dissemination of Covid-19 messages and strategies, supports what Chatman (1996) describes as the risk-taking aspect of the information poverty theory, which emphasises the importance of trust as the foundation for people's willingness to accept information from outsiders. In other words, individuals, particularly those living in close-knit communities (insiders), tend to accept and act on messages they perceive as coming from credible sources (outsiders).

The implication of the findings concerning the information poverty theory is that the lack of trusted and credible sources for disseminating Covid-19 messages in rural localities could lead to negative behavioural outcomes among the target audiences. This situation would result in ineffective public health communication if these credible sources were not involved in sharing the Covid-19 messages. This suggests that trust is a crucial element that must not be overlooked in any public health campaign, particularly in rural areas where specific norms, values, and beliefs influence individuals.

The use of credible and trusted sources of information by the local government aligns well with the 'credible and trusted' attribute incorporated in the IFEPHC that emphasises the need for reliability and transparency.

This indicates that the trustworthiness and credibility of information sources play a crucial role in the effectiveness of public health communication campaigns, impacting message believability and acceptance.

This factor is an important aspect of effective public health communication and aligns with the recommendations made by Eze (2016) that call for the use of interpersonal sources regarded as credible among rural community stakeholders.

The study further revealed that the engagement of these various trusted voices in the communities stemmed from the villagers' likelihood of believing the messages they conveyed. It was also found that credibility and believability were key reasons for the choice and use of the indigenous medium, achieved due to the familiarity and closeness of town criers to the villagers, as well as their use of the local dialect. Some participants also considered the

indigenous communication method to be the most effective for disseminating Covid-19 prevention and management messages and strategies to rural areas because they viewed it as the easiest way to reach many villagers.

This step by the local government is also supported by what Wilson discussed in his 1996 model of information behaviour as source characteristics in the intervening variables.

This finding aligns with the 'credibility and trust' attribute of effective public health communication, which emphasises that the credibility of a health communicator is crucial in determining whether the audience will act on the message. Additionally, this highlights the connection between 'credibility' and "actionable" criteria for effective public health communication, including the essence of 'partnership' for every successful public health intervention, where trust is a major influencing factor.

This suggests that public health communication professionals in the local government understood the essence of considering the above-mentioned criteria for effective public health communication.

The findings also are consistent with previous studies that found that the employment of credible and trusted sources for public health interventions significantly enhanced public health communication acceptance and behaviours by target audiences (see Ezeah et al. 2020; Abaneme et al. 2021; Omoha et al. 2021; Adeitan et al. 2021; Nyiam and Ngwu 2020).

Previous studies have also highlighted the importance of engaging credible and trusted sources of information in rural Africa during a public health campaign (see Sokfa et al. 2022; Adeitan et al. 2021; Ezeah et al. 2020). Furthermore, a study by Nnama-Okechukwu et al. (2020) revealed that the majority of the study respondents believed that Covid-19 pandemic is more of a hoax than reality due to a lack of trust in the government. This finding could be adjudged to be the reason behind the local government's choice of credible and trusted sources of information, as the employment of credible and trusted sources in the villages for the Covid-19 information dissemination would boost trust, and message acceptance, as well as lead to positive behaviour change.

Although professionals reported engagement of various trusted stakeholders in the communities for the implementation of the Covid-19 campaigns, to bolster message believability and acceptance, as well as viewed this step as a positive step towards the attainment of their set goals and objectives which informed their perceived reported indicators for effectiveness (Covid-19 message understanding by the villagers; adherence to Covid-19 protocols; and reduction in infection and mortality rate), the challenges of misconception and disbelief in the existence of the Covid-19 pandemic (unique to both GA and GB), hostility (unique to GA and GB), vaccine hesitancy and resistance to change (revealed by GB), mistrust in government (unique to both GA and GB), non-adherence to Covid-19 (revealed by GB participants), misinformation (raised by GB participants as a difficulty faced by villagers) as

the study found, raise doubts to these claims by the policy-level professionals and community level actors health.

For instance, the study revealed that one of the indicators for the perceived effectiveness of the communication campaigns and strategies was the understanding of the Covid-19 messages by the villagers which led to the reduction in infection and mortality rate within the local government (another indicator for effectiveness). This is directly challenged by the revelations of misconceptions and disbelief in the existence of the Covid-19, as documented by both GA and GB participants.

In furtherance of the argument, and concerning the use of trusted interpersonal sources from the communities by the policy-level professionals and community level actors to bridge the challenge of lack of trust in government, findings relating to the hostility of the villagers towards the policy-level professionals and the community level actors, as discussed by GB participants who directly interacted with the villagers suggest that the steps taken by the local government to ensure believability and acceptability of public health messages by adopting credible sources may have been effective but not solely effective, as the study participants reported that the villagers still had doubts in the government and did not believe in the existence of the Covid-19 pandemic.

Also, the challenge of non-adherence to the Covid-19 safety protocols and messages, as discussed by GB participants stands as the clearest contradiction against the complete effectiveness of the communication strategies and campaigns and could be attributed to the lack of trust in the government. The reported adherence to Covid-19 safety protocols and reduced infection and mortality rates as indicators for effectiveness are largely questioned by this contradictory response by some GB participants who directly interacted with the villagers. This suggests that the strategy of engaging influential stakeholders from the community for trust, believability, and acceptability of the messages might not have worked effectively in real life, because participants still felt that there was a need for improved transparency by the government and this was identified as one of the recommendations by both GA and GB participants. This was expressed by a participant in section 4.2.5.

This relates to the government allowing its practices regarding Covid-19 to be visible, open, and accessible to the audience. This finding is consistent with O'Malley et al.'s (2009) assertion that government authorities often fail to portray transparency when communicating health emergencies. Similarly, lack of transparency and accountability in government has been highlighted as one of the problems facing leadership in the African continent (Arayssi 2020). Some of the indicators of openness, as it relates to policy, are the availability of information, the ease of obtaining information by the public, and signals of trustworthiness (Ball 2009). It implies that where there is a lack of transparency, there is unworthiness,

unreliability, and a lack of trust. The finding is also consistent with Andrews et al. (2020) point regarding the consistency of public health messages and transparency by highlighting the need for public health messages to be kept up to date and consistent, as well as for messages to be transparent to help prevent disunity.

The suggestion for improved transparency of the government by the participants suggests a lack of trust in the government and could have also contributed to the reported challenge of disbelief in the existence of the Covid-19 pandemic.

Trust in information sources is considered an essential element of IFEPHC, which contributes to the attainment of the 'actionable' attribute of effective communication. It is believed that when people trust information, they are more likely to act on it than when they do not trust the source. This was supported and highlighted by organisations and scholars (see U.S. DHHS 2004; Schiavo 2013; ECDC n.d.).

This is consistent with previous studies. For example, a study by Sato (2022) evaluated the relationship between trust in government and the Covid-19 vaccine hesitancy using Afrobarometer survey for data on trust in government and the Covid-19 National Longitudinal Phone Survey (NLPS) for data on Covid-19 vaccine hesitancy merged by strata, found that distrust in government was strongly associated with Covid-19 vaccine hesitancy including with perceptions that the vaccine was not safe, and concerns about the side effects of the vaccine were also found as reasons for refusal. Consequently, the study concludes that distrust in government is a crucial predictor of vaccine hesitancy in Nigeria. Therefore, the study calls for policymakers to be cautious when strategising for Covid-19 vaccine distribution, especially in places where trust in government is weak. In a similar vein, Nnama-Okechukwu et al. (2020) study that explored knowledge of Covid-19 and compliance with preventive measures among community members in Anambra State, found that the majority of respondents believed that Covid-19 pandemic is more of a hoax than reality, and that this poor knowledge negatively affected their compliance with preventive measures to curb the spread of the virus.

Nwakasssi et al. (2022) averred that public trust has the potential to impact compliance with the government's directives and public health interventions. There appears to be a large-scale health initiative generally faced with public suspicion, which adversely affects effective public health communication (Ozawa & Stack 2013).

These challenges revealed in the present study, which have been argued to contradict the indicators for the perceived effectiveness of public health communication, as reported by the majority of study participants, suggest a significant gap in the strategy of engaging various stakeholders and/or trusted members of the communities. This gap may have stemmed from a failure by the local government to sufficiently address regional issues (literacy level, language differences) or from a more general problem of mistrusting information sources especially the government, which was discussed as one of the implementation challenges in

the present study, thus, indicating that the strategy used was not as successful as study participants revealed.

The same issue of mistrust in the government has been reported in previous studies to have negatively influenced compliance with health interventions among Nigerians (Omaka-Amari et al. 2020; Eze 2016) and has been responsible for the failure of polio immunisation campaigns in Nigeria in 2003 (Eze 2016). Furthermore, a study by Nnama-Okechukwu et al. (2020) revealed that the majority of the study respondents believed that Covid-19 pandemic is more of a hoax than reality due to a lack of trust in the government. The consequences of a lack of public trust were highlighted by Jegede (2007), who maintained that where public trust is eroded, rumours are bound to spread, thus leading to rejection of health interventions. The implication of Jegede (2007) findings to the misconception and disbelief in the existence of the Covid-19 pandemic by the villagers is that they filled the information void with rumours because their trust in the government was eroded, hence, their disbelief in the existence of the Covid-19 pandemic as well as misconceptions which could be as a result lack of information.

From the standpoint of IFEPHC, the credibility and trust attribute were threatened by a lack of trust in the government, the organisation from which the information emanated. In the same light, WHO (2017) makes the connection between 'credibility' and 'actionable' principles when they observed that an organisation's reputation is a key factor in whether the audience will act on the organisation's advice and guidance. The more decision-makers trust an organisation, the more likely they will believe and act on the information communicated by the organisation. In other words, the findings from the study provided evidence of the local government not achieving an effective Covid-19 campaign in the communities (by some villagers' refusal to take the Covid-19 vaccine and rejection of the newly introduced safety measures) because of a lack of trust in the government.

Additionally, the challenges of hostility, vaccine hesitancy, and resistance to change contradict and question the perceived understanding of Covid-19 messages and adherence to Covid-19 safety protocols. These reported reactions by the villagers could be interpreted as indications that the Covid-19 messages were not accepted by some villagers and/or that the messages were contrary to the villagers' accepted norms, beliefs, and values, hence the hostility, hesitancy, and resistance to change. The above challenges of the study also provided evidence of secrecy in Chatman's (1996) information poverty. According to Chatman (1996), secrecy entails guarding oneself against unwanted exposure.

The implication of this to the findings of the study (hostility, Covid-19 vaccine hesitancy, and resistance to change) was that the villagers engaged in secrecy (by being hostile towards the local government staff because they were sceptical about messages that came from the local government; refusal to behaviour change; and Covid-19 vaccine hesitancy) because they

considered these as unwanted intrusions and perceived these expected lifestyle changes to have negative consequences (due to the misconceptions they had about the Covid-19- participants believing that taking the Covid-19 vaccine would render men impotent and would not be able to sleep with their wives again) that would outweigh the benefits of adhering to the Covid-19 recommended safety measures by the government which included recommended Covid-19 vaccine intake.

This simply put, meant that the villagers, who in the context of this study, were regarded as the insiders, shielded themselves from unwanted intrusion (introduction of new Covid-19 policies) by the government who in this study is viewed as outsiders, and clung to their known and acceptable ways of life, and manner of curing ailments, as they believed that the required behaviour change benefits would have adverse effects.

Again, this highlights the importance of trust in any public health campaign, thereby corroborating Chatman's information poverty theory, which posits that trust is one of the key elements. According to Chatman, "in everyday discourse, for people to benefit from information received from outsiders, there needs to be some aspects of trust associated with the source" (1996, p 196).

In the same vein, analysing the findings from the perspectives of Wilson's (1996) information-seeking behaviour model, and looking at some of the attributes of psychological intervening variables (attitude towards innovation, and system of value) as advanced by Wilson (1996), it was evident in the study that these challenges of misconceptions and superstitious beliefs, resistance to change, and hesitancy to Covid-19 vaccine intake were some of the intervening variables that posed challenges in the local government towards the effectiveness of the Covid-19 campaign. This also brought to the fore the importance of conducting initial research to learn about and understand your target audiences and their system of values in every public health communication strategy.

Another public health communication strategy employed by the local government based on trust and credibility is the engagement of multiple stakeholders, which will be discussed in the subsequent section.

- *Easy Reach*

Mobile phone as a tool for interpersonal communication was also identified in the study as a means of easily reaching the target audiences despite the lockdowns imposed by the local government (easy access to the villagers). This step was considered beneficial by some GB participants because, as reported by participants, it enabled them to reach target audiences without barriers. See section 4.3.1 (a).

In other words, the use of mobile phones for disseminating Covid-19 messages made accessibility to the villagers easy. This finding is consistent with the 'accessible' attribute of effective public health communication in the IFEPHC, which emphasises the importance of identifying the right mix of channels, as it helps empower audiences with the required information to make informed decisions. This finding implies that the community level actors within the local government, having considered the limitations created by the imposed lockdowns, identified mobile phones as the right communication channels for the dissemination of the Covid-19 messages within the communities.

Despite the steps taken by the local government to address the issue of inaccessibility to the target audience and ensure the effective circulation of messages, the study still found a paucity of Covid-19 messages as one of the difficulties villagers encountered when seeking Covid-19 information. This suggests that the use of mobile phones by the local government public health communication to ensure that they surmounted the challenges caused by the lockdowns imposed on the local government in the wake of the Covid-19 pandemic may not have been as effective as they envisaged.

This difficulty regarding the scarcity of Covid-19 information, despite the steps taken by the local government, could have stemmed from the unstable electricity supply, as noted by GB participants as one of the challenges the villagers faced while seeking Covid-19 information, or from inadequate network connectivity, as identified by Sokey et al. (2018) as a challenge in disseminating health information in rural communities.

Furthermore, the above argument underscores the importance of the actionable attribute of effective public health communication, as outlined in the IFEPCH, which emphasises the need for public health communication professionals to reinforce benefits and overcome barriers. This involves designing communication materials and activities at individual and community levels to address the obstacles (WHO 2017). Since mobile phones were found useful in enhancing accessibility to Covid-19 information, such barriers as lack of connectivity and electricity can be mitigated by the provision of solar energy, mobile phones, and increasing internet bandwidth at a subsidised rate for the rural poor.

- *Wider Reach as a reason for the choice of mass media*

The study also found that the radio (a form of mass media communication method) was used in the villages for purposes of accessibility and broader reach. That is, policy-level professionals and community-level actors employed them to disseminate Covid-19 messages because they can permeate the nooks and crannies of the local government.

Specifically, some of the study participants highlighted radio as a medium with extensive coverage that permeates every aspect of the community, regardless of the availability of

electricity, thus keeping people in the hinterland (the remote areas of the local government) informed about health issues. This aligns with findings reported in other studies (Okeya and Akinwande 2020), which indicate that radio's affordability, ease of use, and wide coverage make it an appealing medium for rural dwellers. Furthermore, these findings align with previous studies that established the effectiveness of mass media in enhancing people's knowledge of health problems and encouraging behavioural changes in health communication campaigns (Nyiam and Ngwu 2020; Fakolade et al. 2010; Talabi et al. 2022). They also recommend adopting health communication strategies that include traditional mass media (radio, television, and newspapers) to realise health-related campaigns (Igbinoba et al. 2020). For instance, Ankomah et al. (2014), in their study on the effects of mass media campaigns on the use of insecticide-treated bed nets among pregnant women in Nigeria, maintain that mass media is vital in addressing reproductive health issues due to its potential for wide audience reach and cost-effectiveness in reaching a larger audience. They further advocate for the expanded inclusion of mass media in community engagement programs.

Although mass media was effective in the present study due to its wide coverage, as reported by some study participants—especially the radio—it not only permeates the nooks and crannies of communities, but it is also inexpensive to purchase, operate, and maintain. However, this differed from the findings of Wogu et al. (2019), which found a media campaign against female genital mutilation in rural Enugu State, Nigeria, to be ineffective due to cultural values, poor network reception, inconsistent power supply, and inaccessible media. Media was viewed as unreliable and influenced by the government's selfish interests (Momodu 2002) and was perceived as appropriate primarily for individuals with high levels of education, especially television (Sokey & Adisah-Attah, 2017). According to Abdulai et al. (2023) the grassroots of society are considered to lack the impact of modern mass media not due to competency issues, but rather because of infrastructural gaps or constraints such as electricity, internet services, and other basic resources in rural communities that hinder the effective use of such mass media.

The step by the local government implies that the use of radio as a mass media tool was to surmount the problems of epileptic power supply, and internet services, which was not just identified by Wogu et al (2019) and Abdulai et al (2023) studies, but also revealed in the present study as one of the problems the villagers experienced whilst seeking the Covid-19 information.

This also means that the effectiveness of mass media, especially radio, is not only due to its low cost or ability to reach wider audiences but also to several other factors, such as cultural barriers and inadequate infrastructure, that contribute to the effectiveness of mass media in rural developing economies.

Furthermore, the implication of Sokey and Adisha-Attah (2017) study for the present study underscores the need for policy-level professionals and community-level actors to identify their target audiences and understand their educational backgrounds, particularly in regions where illiteracy and poverty are seen as challenges. This highlights the importance of an audience-centered approach in effective public health communication.

Some participants in this study may appreciate the use of mass media due to the combination with other sources.

- *Understandability as a reason for the choice of mass media*

One reason identified in the present study for choosing print media like flyers and billboards is their visual capabilities, which aid better retention and understanding. The local government's initiative to visualise and practicalise Covid-19 messages aimed to make them more understandable for the villagers. The evidence supports the importance of using visuals in public health communication campaigns for easy understanding, aligning with the 'understandable' attributes of effective public health communication. This is because the study found that visual messages make information easier to comprehend and have the potential to reach individuals of all literacy and education levels. Moreover, people are more likely to understand messages presented in their local familiar languages (WHO 2017). Public health communication professionals must ensure absolute clarity about the message by keeping it simple and using language and visuals that are easy to process (Suggs et al. 2015).

The findings of the study regarding the importance of print media, because of their visual capacities (flyers and billboards) in every public health communication, aligned with similar previous studies. For instance, Hill et.al (2007) conducted a study in Kintampo District in Central Ghana which investigated the factors affecting the adoption and maintenance of weekly vitamin A supplementation among women and found that poster was one of the most preferred and perceived effective print medium channel to help women remember to take their capsules because it was visual. In contrast, the study by Agboola and Abdulrahman (2019) found that the print media and internet were less attractive to the women in Chanchaga as a source of maternal health information because of socio-economic factors like lack of financial capacity to purchase newspapers even when they are available and that the TV was the most preferred maternal health information source.

This suggests that, while print media like posters and billboards were seen as effective by some study participants because they help visualise messages and assist target audiences in retaining important health information, there are challenges. One of these challenges may arise from the target audiences' inability to afford them due to their economic status, particularly in disadvantaged rural areas.

By this, public health communication professionals should invest time in considering the economic context of their target audiences to ensure that appropriate and affordable communication methods are selected. This thereby highlights the importance of the audience-centred attribute of IFEPHC, which advocates for the need to consider target audiences' needs, perceptions, situations/backgrounds, and context.

- *Effectiveness of interpersonal communication channels and indigenous native communication channels in past public health communication campaigns.*

Another reason given by GB and GA participants for the choice and use of interpersonal and indigenous communication was their effectiveness in the past. This indicates that the local government utilised these communication channels for the Covid-19 campaigns in the communities because they had been effective in previous public health campaigns.

The finding regarding interpersonal communication as the most effective communication channel aligns with the findings by Ezeah (2020), which revealed that interpersonal communication was effective in delivering the Covid-19 campaign messages. Furthermore, previous studies have highlighted and discussed the use of interpersonal communication in public health awareness creation and campaigns (Ezeah et al. 2020; Prilutski 2010). Van den Putte et al. (2011) further emphasised the importance of interpersonal communication as a major campaign objective. Moreover, the study by Isiaka and Yusuf (2013) on female genital mutilation (FGM) in Lagos State recommended employing interpersonal communication techniques because they proved effective and promoted two-way communication to address the practice of female genital mutilation in traditional rural communities in Nigeria. Other forms of interpersonal communication, such as word-of-mouth from health workers to individuals, as well as from friends, relatives, and chemists, are preferred (Emele 2018; Nwangwu and Ajama 2011; Olubunmi et al. 2016), and have shown to support positive health decision-making (Olubunmi et al. 2016).

However, studies show that interpersonal communication via political and religious leaders can also mar the success of health campaigns. For instance, Jegede's (2007) study on the polio campaign in Northern Nigeria (Kano, Zamfara and Kaduna states) unravelled that these reliable interpersonal sources aborted the vaccination effort by urging parents to prevent their children from receiving the vaccination shots. These leaders inferred that the vaccines might contain HIV, carcinogenic substances, and anti-fertility drugs like oestradiol hormone.

A possible explanation for the perceived effectiveness of interpersonal communication methods may be traced to community level actors' (implementors) alignment with rural dwellers' preference for interpersonal sources of health information, such as influencers and trusted voices, opinion leaders, friends, social media, families, and NGO fieldworkers, above all other sources (See section 4.3.2 Villagers' health information sources). This finding agrees

with previous studies that highlighted the value of interpersonal communication and showed that public health information aimed at behavioural changes was most effectively disseminated and received through interpersonal sources, rather than other forms of communication such as mass media. For instance, studies conducted in Sub-Saharan Africa revealed the significance of interpersonal sources in public health campaigns. In Ethiopia, Shigute et al. (2020) discovered that risk communication and community engagement task forces, comprising health extension workers, were established to reach rural areas with inadequate transport and communication linkages to sensitise them about the Covid-19 pandemic. In Uganda, a study by Isiko (2020) found that religious leaders played a key role in sensitising and mobilising the target audience regarding Covid-19 safety measures. In Zimbabwe, the study by Gregson et al. (2013) revealed that women and burial societies influenced positive participation in HIV testing, counseling, and the prevention of mother-to-child transmission.

Another study by Onyemenam (2016) on family planning motivation in Malaysia found that family planning-related information was better received by the target population from interpersonal sources rather than through mass media. Similarly, Asfaw et al. (2019) in their study conducted in the Jimma Zone of Southwest Ethiopia aimed at exploring sources of health information for safe motherhood implementation research project interventions, found that the illiteracy of most rural mothers created difficulties in their understanding of complex messages from mass media, leading to a preferred choice for interpersonal interactions.

Additionally, the finding regarding the use of indigenous native communication due to its effectiveness in past campaigns aligns with previous studies that underscore the significance of indigenous communication methods for disseminating information in rural communities of Africa. The study by Abdulai et al. (2023) revealed that indigenous communication systems, such as storytelling, town criers, and drumming, offer a means for indigenous people to share important information with rural communities in a language the locals are familiar with and understand, while also conveying ethical and moral values. Therefore, they recommended maintaining and using these methods to promote indigenous knowledge communication.

Ugwuegede et al. (2021) maintain that the Indigenous native communication methods are strategies that are developed to serve the rural communities and use traditional communication, such as town criers, and age-grade meetings, among other methods.

(3) Engagement with Multiple stakeholders

Engaging and involving multiple stakeholders, such as health professionals, community leaders, influencers, trusted voices, religious leaders, family heads, and non-governmental organisations, was a common theme among the two groups interviewed. The study argued that this step taken by the local government aimed to ensure that the Covid-19 health

recommendations aligned with the social and cultural norms of the villagers and that their participation increased adherence to the Covid-19 protocols, as reported by the majority of GA and GB participants. This was attributed to the fact that the villagers accepted and regarded the Covid-19 messages from these influencers and opinion leaders very seriously, respecting the trust and authority these individuals commanded within the communities.

The evidence of the importance of involving credible sources of information in every public health campaign for trust, which leads to message acceptance and positive behaviour changes, aligns well with the 'credible and trusted' attribute of effective communication in the IFEPHC, which espouses trust as an important factor for effective communication. According to WHO (2017) the more the target population trusts the organisation, the more likely they are to believe and act on the information communicated by the organisation. They further maintain that communicators must ascertain whether organisations are perceived by the audience as trusted on health issues and how they can align with them. The implication of the above assertions by WHO (2017) for the study was that the local government, by engaging opinion leaders and influencers within the communities (religious, traditional, union, and market leaders), had conducted initial research to ascertain the various institutions and individuals that were perceived by the villagers as trusted.

This finding aligns with the study by Eze (2016) which recommends that adopting multiple communication strategies, such as involving influential community members during public health campaigns, is crucial. Influential members are part of the communities, so they understand the socio-cultural challenges that may hinder successful public health campaigns, particularly in rural areas. This approach is significant for obtaining everyone's commitment to the implementation and success of public health communication, especially during health crises.

This step by the local government regarding the engagement of multiple stakeholders aligns with the 'partnership' attribute in the IFEPHC (see: *Figure 1*) which emphasises the importance of corroborating with key stakeholders such as experts, community leaders, officials and people who are at risk as an essential part of emergency response to boost the design and dissemination of public health communication campaigns.

Community engagement, acceptance and partnership are critical to building community trust and sustaining health gains at the local level (Jafari et al. 2021), and could attract more acceptance of and commitment to health messages (Olaoye & Onyenakeya 2023). The adoption of this strategy by the local government suggests that these strengths and benefits were understood and pursued.

Also, this practice by the local government is in line with the recommendation by Ekohm et al. (2021) who found that in an environment where doubt of existence of Covid-19 exists

collaboration is needed among the government, traditional rulers, the youth, and the religious leaders to raise awareness among the rural dwellers.

This, concerning the finding of disbelief in the existence of Covid-19 as the study found from some GB participants as one of the implementation challenges, means that the local government, having encountered such challenge of disbelief, engaged multiple influential stakeholders within the community to boost trust and message acceptance.

The findings of the study regarding stakeholders' engagement also corroborate previous studies that emphasise the importance and inevitability of stakeholder engagement. For instance, Burroughs and Carter (2012) maintain that stakeholder engagement is essential in improving communication, obtaining wider support, gathering valuable data and ideas, enhancing agency reputation, and facilitating more sustainable decision-making.

Similarly, a study by Oku et al. (2017) that sought to identify factors affecting the implementation of childhood vaccination communication strategies in Nigeria found that the involvement of stakeholders (traditional and religious institutions) facilitated the delivery of communication regarding childhood vaccination. Respondents felt that such engagement significantly boosted the immunisation program, given the trust and respect the people had for those organisations. However, some aspects of the study's findings suggest that the involvement of stakeholders, i.e., trusted members of the communities, did not solely affect the believability and conviction of the Covid-19 campaign message. There were doubts among the villagers about the existence of the pandemic, as well as misconceptions about the Covid-19 vaccine, which led to non-adherence by some villagers, as revealed by some GB participants.

Meiring et al. (2019) in their study also revealed the importance of stakeholder engagement, maintaining that engagement activities proved effective in raising trial awareness and mobilising community participation. Anoko et al. (2019) further added that a one-size-fits-all approach to community engagement is likely to fail if engagement is not contextualised for affected communities due to the uniqueness of each community.

Additionally, it can be stated that the local government engaged community organisations and individuals deemed credible by the villagers to enhance the acceptance and credibility of the Covid-19 message. Beyond improving message acceptance and credibility, the partnership also helped the local government reach a wider audience and access more channels for disseminating the Covid-19 message, which can be regarded as a positive step by the local government in overcoming the challenge of insufficient human and material resources identified as an implementation obstacle in the study.

To support the argument, the study found that engaging stakeholders was highlighted as a best practice by the local government. This approach ensured that Covid-19 communication

by the local government was perceived as useful and relevant by villagers. It provided evidence of how stakeholder engagement within a public health communication campaign could enhance public health professionals' understanding of their target audiences, needs, and concerns, enabling them to create and implement public health campaigns deemed relevant by those audiences. Furthermore, this underscores "relevance" as a crucial attribute of a public health communication campaign, as incorporated in the IFEPHC.

Additionally, the importance of 'relevance' in any public health campaign, as the study found in the steps taken by the local government to engage stakeholders, is supported by Chatman's (1996) theory of information poverty, where she discusses situational relevance. According to Chatman (1996) that which will be of interest is what is useful in response to the concerns or problems of an individual. This was also supported by Wilson's (1996) information behaviour model, which addressed the context of need, referring to the situation in which information is needed.

Furthermore, the engagement of multiple stakeholders, as identified by participants in the study, was one of the major reasons for the perceived effectiveness of the Covid-19 campaign. This finding aligns with previous studies that emphasised the need for increased collaboration between relevant agencies and stakeholders in public health promotion campaigns. For instance, Oladeinde et al. (2015) recommended increasing intervention efforts by relevant agencies to educate rural dwellers on the causes, modes of transmission, and prevention of Lassa fever in Nigeria, emphasising the use of local dialects to facilitate understanding. The study by Gregson et al. (2013), which investigated grassroots community organisations' contributions to scaling up HIV testing and counseling services in Zimbabwe, recommended partnerships as a way to harness community support for the increased HIV testing needed in Sub-Saharan Africa.

- *Solution to language Barrier as a reason for the engagement of multiple influential members of the community*

Participants further discussed the solution to the language barrier as another reason for engaging influential community members (e.g., village heads, traditional rulers, religious leaders, market leaders) because these individuals were conversant with the various languages spoken in these communities. As revealed in the study, engaging local stakeholders who understood the different languages spoken in the local government helped simplify the messages and disseminate the Covid-19 information in familiar languages that people could understand.

Evidence of engaging influential and community-based trusted members of the community familiar with the people and spoken languages in the Covid-19 public health campaigns,

supports message simplification and successful dissemination in familiar languages to enhance the understandability of health messages. This aligns with the 'understandable' attribute of IFEPHC.

Moreover, the finding is consistent with the recommendations made by Eze (2016), which suggest the use of multi-dimensional communication strategies that include enlisting influential individuals to combat sociocultural challenges, thereby maximising the success of health campaigns in Nigeria.

This step could be one of the reasons for the perceived effectiveness of the Covid-19 pandemic and identified indicators for effectiveness (villagers understanding of the Covid-19 messages) by the participants because it enabled message relatability and understandability by the target audiences. Moreover, the study found that the LG initially envisaged a language barrier as a potential implementation challenge, hence the use of influential members of the community.

The effectiveness of this identified step by the local government health communicators emphasises the importance of adaptability, which in the context of the present study involves audience definition and tailoring communication strategies to meet the needs and peculiarities of a specific target population. This underscores the indispensability of "audience centered" and "understandability" in public health communication as outlined in the IFEPHC (see Figure 1).

Although findings from the study indicate that despite the government's effort, some villagers still found the public health messages complex and could not comprehend them.

Again, suggesting that the local government's step towards tackling the challenge of language barrier may not have been solely effective.

(4) Repetition Strategy

Repetition strategy was used by GB participants because they believed it would help convince the villagers about the reality of the Covid-19 pandemic, persuade the audiences, and bring about behaviour change. It would also aid them in understanding the messages, retaining health information, and reaching wider audiences. This finding aligns with the repetition attribute of effective public health communication in the IFEPHC, which emphasises the importance of repeating public health messages over time to help audiences internalise the messages and act accordingly.

This finding aligns with previous studies (Jang & Park 2018; Morgan & Cappella 2023) that analysed the effects of repetitive messaging. Jang and Park (2018) for example, investigated how repetitive communication through various channels affects prevention behaviour during

health crises. Their findings underscored that repetitive messaging boosts individuals' perception of a crisis's severity and their awareness of its potential impact. In the context of the current study, this indicates that the local government intentionally employed repetition to enhance the target audience's understanding of the Covid-19 pandemic and its seriousness. The rationale for this strategy is that the more frequently individuals are exposed to information about the dangers of the virus and the consequences of non-compliance, the more likely they are to perceive it as a serious threat and adopt safety measures.

Morgan and Cappella's (2023) research adds another layer to this understanding, revealing that individuals are more likely to perceive information as truthful upon repeated exposure. This mechanism may explain the villagers' comprehension of the messages, their adherence to Covid-19 safety protocols, and their willingness to get vaccinated, as discussed earlier. By repeating Covid-19 messages, the information was reinforced for those already familiar with it, while also reaching individuals who had not previously encountered the message. Subsequent repetitions ensured that no one in the community was left uninformed. However, Mukenge (2021) warns in his study on the use of repetition in HIV awareness posters against excessive repetition, which can lead to redundancy and audience disengagement. In oral communication, this translates to avoiding overloading or annoying the audience with unnecessary repetition. Therefore, while repetition is essential for effective public health messaging, it must be used judiciously to maintain its effectiveness without overwhelming the audience.

Although public health communication in rural, developing countries has been a focus of research, a notable gap remains in studies specifically addressing the effectiveness of repetition as a communication strategy. Furthermore, the limited literature cited above was not conducted within African contexts. This study, therefore, not only underscores the critical role of repetition in effective public health communication in rural, developing settings but also fills a significant gap in the existing literature.

(5) Monitoring and Evaluation

The use of M&E as one of the strategies in the delivery of the Covid-19 awareness campaign was one of the findings from group A. This was to ascertain whether the plans and strategies were implemented as expected and whether the campaign achieved the desired impact. This was discussed in section 4.2.2(c). This appears to be both process and outcome evaluation. This finding is consistent with the Malikhao (2020) classification of monitoring and evaluation as one of the strategies of health communication. The LG's use of the strategy was in line with the NCDC's (n.d) stipulations in RCCE in which monitoring and evaluation were important components. This finding equally conforms to one of the criteria for effective public health communication in the IFEPHC, which is 'M&E'.

M&E are expected to commence once the campaign begins (U.S. DHHS, 2004) and will cover both the process of implementation and the outcome, including the impact of the campaign's implementation.

The study also found that M&E, as expressed by GA participants, were conducted for specific reasons, namely to ascertain the campaign's effectiveness and to identify areas for improvement. However, there was a noticeable lack of discussion among the participants regarding the specific aspects of the campaign strategies that were evaluated and monitored. This limited discussion about the specific aspects of the campaign including the stage at which the LG commenced M&E of the campaign, and the lack of detailed M&E activities show a gap in policy level professionals' M&E practices and suggest that policy level professionals in the LG might not fully understand the breadth of the monitoring activities that were conducted, given that M&E is recommended as important steps after the commencement of any public health campaign; and public health communication professionals are expected to assess specific aspects of the campaign to help them in identifying how well a campaign is currently performing (WHO 2017). The identified gap in the M&E findings of the study is consistent with Kioko (2017) who posited that in Sub-Saharan Africa, substantial M&E achievements are rare. It is also consistent with the findings of previous studies, which attribute the challenges of poor health data production in low- and middle-income countries to weak M&E systems and data generation (Chaulagai et al. 2005; Kimaro et al. 2005; Thiam et al. 2013). What this means, to the study finding, is that limited discussion on the M&E activities by the LG suggests a possible lack of adequate M&E systems, which could be due to the lack of resource constraints discussed in the study. This lacuna could have affected their evaluation of the believed indicators for the campaign's effectiveness. Addressing this gap is necessary to ensure a robust M&E process that not only seeks to ascertain areas of improvement and campaign effectiveness as the study also revealed.

5.3 Overview of Findings/ Key Contributions and Chapter Summary

This thesis examined public health communication strategies in a rural developing economy, focusing on Covid-19 communication in rural Nigeria. It evaluated the strategies employed by the Local Government in Delta State to manage the pandemic in rural areas, aiming to understand the effectiveness and challenges of these campaigns as well as future public health lessons.

The findings provided valuable insights into the study's objectives and contributed to the field of health communication. They enhanced the understanding of factors essential for effective public health communication, validating and strengthening the IFEPHC framework developed in this study.

The study found that most participants believed the Covid-19 public health campaign was effective, attributing their perception to three key indicators (*see section 5.2.2*). The perceived effectiveness resulted from various public health communication strategies discussed as employed by the local government for managing the pandemic (*see section 5.2.3*).

These strategies were adopted to serve different purposes, geared toward achieving the local government's set goals and objectives during the pandemic (*see section 5.2.1*). This included a public awareness campaign and timely sensitisation about the Covid-19 pandemic, highlighting the importance of timely information, especially when target audiences are receptive, and validating its inclusion in the IFEPHC-developed framework. Additionally, the provision of understandable Covid-19 messages aimed to ensure the safety of the rural populace from the pandemic.

Audience definition and tailoring strategy revealed the importance of audience centred in any public health campaign as it allows for the understanding of the target audiences and adaptability of messages, languages, and practices to suit intended audiences. This was also identified in the study as a step taken towards ensuring that the target audiences consider the public health messages relevant and actionable.

As a result, the study emphasised the importance for public health communication professionals to define and consider their audiences in practice. The identified tailoring and audience definition steps by the participants using a variety of communication platforms, prove the inevitability and value of audience-centred attribute, as such authenticates the foundational attribute of my developed IFEPHC framework that highlights the importance of audience analysis and segmentation as the first crucial step in designing and developing public health communication strategies.

This further validates the relevance and actionable criteria incorporated in the IFEPHC framework, as the above step was discussed in the study as geared towards ensuring that the target audiences consider the public health messages as relatable and relevant to them, thereby motivating them to take action.

The study also found that due to the definition of the audience, the government adopted multiple channels of communication and engaged various stakeholders as public health communication strategies. These measures aimed to provide Covid-19 messages through preferred, affordable, and easily accessible communication channels for target audiences, while also fostering trust and credibility to enhance understanding, acceptance, and believability of public health messages. This approach sought to reach broader audiences and improve the effectiveness of interpersonal channels used in past public health campaigns. Consequently, tackling the anticipated challenges of language barriers, low literacy, cultural beliefs, psychological dispositions (such as mistrust in government and misconceptions), the

lack of human and material resources, and disbelief in Covid-19, which could hinder the effectiveness of public health campaigns in the communities.

These steps taken by the local government, along with the identified reasons for their adoption, highlight the importance of trust and credibility in public health communication sources, the accessibility of communication channels, and partnerships for effective public health communication. This validates the criteria (trust and credibility; accessibility; understandability; partnership) included in the IFEPHC framework as essential elements for public health communication. Furthermore, it underscores the need for public health professionals in rural developing economies to incorporate these elements in every public health campaign endeavour.

The study also found that the repetition strategy facilitated easy retention and understanding, encouraging target audiences to change their behaviour to address the challenge of disbelief in the existence of the Covid-19 pandemic, as well as to reach new audiences. This validates its inclusion in the IFEPHC framework, making it an indispensable attribute of effective public health communication given its crucial role.

Monitoring and evaluation were also identified in the present study as key public health communication strategies employed by local governments to ascertain areas for improvement and assess campaign effectiveness. Through ongoing evaluation of message efficacy and strategic modifications, public health communication professionals can ensure that their communication remains relevant and impactful. The adoption of the monitoring and evaluation strategy (M&E) demonstrates its value and emphasises the importance of incorporating it into public health communication strategies in rural developing economies. This validates its inclusion in my developed framework for effective public health communication.

Furthermore, the implementation challenges and difficulties experienced by villagers in seeking Covid-19 health information, as the study found, show that public health communication in rural developing economies is not without notable and addressable challenges. The careful application of these identified criteria embedded in the IFEPHC framework by public health communication professionals in rural developing economies would help address and overcome some of these challenges, thereby enhancing more effective public health communication in rural developing economies, such as Nigeria, and achieving positive health outcomes.

In conclusion, these contributions not only validate the core attributes outlined in my developed framework (IFEPHC) but also offer valuable practical insights into its application in real-world public health communication within rural or underserved settings. This demonstrates the suitability of the IFEPHC as a guiding tool for achieving effective public health communication when implemented.

CHAPTER SIX

Conclusions and recommendations

6.0 Introduction

This study concluded with an overview of its findings and contributions. First, a summary of the key findings was presented, followed by the key contributions of the research. The third section addressed the study's limitations, while the fourth discussed its implications. The fifth section offered recommendations, and the final section served as the study's conclusion.

6.1 Summary of Research findings

The overall aims of the study were: to investigate what constitutes effective public health communication; to explore effective public health communication strategies in rural regions of developing economies from the perspectives of professionals, using Covid-19 health communication in rural Nigeria as a case study; and to develop a framework for effective health communication in a rural setting of a developing nation like Nigeria. These questions guided the study (*See Section 1.6 Research Questions*).

This section provides a succinct summary of the study's findings in relation to the research questions posed. The primary findings are as follows:

6.1.1 Understanding effective public health communication and influencing factors

The study found that the public health communication strategies employed by the local government to manage the Covid-19 pandemic were deemed effective by the majority of GA and GB participants. Additionally, the goals (*see section 5.2.1*) of the LGA were satisfactorily achieved. This belief among the GA and B participants stemmed from noticeable outcomes, including villagers' understanding of the Covid-19 message, high levels of adherence to and compliance with the Covid-19 prevention messages, and a perceived reduction in infection and mortality rates. These improvements were attributed to the public health communication strategies employed by the local government (*see section 5.2.3*). Furthermore, the study found that various public health communication strategies were adopted to serve different purposes, all aimed at achieving the local government's goals and objectives during the pandemic.

The definition and tailoring strategy by the local government, evident in the study, and consistent with Rice and Atkin (2012) who maintain that audience definition improves message efficiency and effectiveness, especially if message content, style, form, and channels are tailored to the attributes of subgroups, was for easy messages understanding of the target audiences (the villagers), so they can understand the messages, consider them relevant and act on them. This supports the audience-centred, understandable, actionable, and relevant criteria of IFEPHC (see: *Figure 1*).

Additionally, this strategy allowed both groups of participants to address potential challenges that could hinder the campaign's success (see *sections 4.2.4 & 4.3.5*).

This situation necessitated the use of interpreters to alleviate language barriers and the involvement of various influential stakeholders (partnerships, another criterion of IFEPHC) within the community to enhance trust and credibility, ensuring the messages were believable and acceptable. Furthermore, this approach aimed to expand the reach to wider audiences, extending beyond just the local government's audiences to include their partner audiences.

Furthermore, to ensure accessibility of the Covid-19 health messages by the target audiences, and to ensure source credibility, participants reported that the local government adopted multiple communication channels such as interpersonal communication, revealed by Egenti et al. (2022) as the most potent sources of health information, as the study found, mass media supported by Oladeinde et al. (2015); Ojeka-John et al. (2023) who found radio as the mostly preferred sources of health information by rural target audiences; and Nwangwu and Ajama 2011; Nyiam and Ngwu 2020; Sokey and Adisah-Attah 2017; Nelson et al. 2014; Nelson and Salawu 2016) studies that reported that mass media were sources of public health sensitisation and information and recommended its use for improving public health awareness, and native indigenous methods which is also consistent with Abaneme et al. 2021; Odigbo et al. 2013; Edet et al. 2015; Nkanunye & Obiechina, 2017 studies that highlighted the importance of indigenous and/or traditional media in health communication.

The study also found that the repetition strategy facilitated easy retention and understandability, convincing target audiences to change their behaviour to address the challenge of disbelief in the existence of the Covid-19 pandemic, and to reach new audiences. This finding aligned with the repetition criterion for effective public health communication in the IFEPHC. It also aligns with Jang and Park's (2018) study, which found that repetitive communication about a health crisis heightens individuals' perception of the crisis's severity and the possible ways they may be affected.

Finally, participants indicated that they engaged in monitoring and evaluation. This finding aligns with the Malikhao (2020) classification of monitoring and evaluation as a strategy in health communication. The local government's implementation of this strategy was consistent

with the NCDC's (n.d) guidelines in RCCE, where M&E was a crucial component. It also aligns with the M&E criterion outlined in the developed IFEPHC (see: *Figure 1*).

The findings from the study corroborate existing empirical literature and demonstrate that public health communicators in LG used several strategies that align with the IFEPHC attributes of effective public health communication (see: *Figure 1*). The reported public health strategies by the local government (see section 5.2.3) align with the IFEPHC framework. The integration of these attributes into the Covid-19 communication campaign suggests a strong understanding of the IFEPHC among policy-level professionals and community-level actors, thereby addressing RQ1 of this study.

However, while these reported observations from the study are significant, it is important to note that the participants' evaluation of the campaign's effectiveness indicators was largely based on anecdotal evidence (personal accounts from the study participants) rather than comprehensive data from the target audience (the villagers). This group was excluded from the study. This lack of a thorough evaluation limits the validity of the study participants' opinions.

Additionally, the study found discrepancies between the perceived indicators of campaign effectiveness, as believed and reported by participants, and specific health data patterns in the selected LG, such as high mortality and infection rates. These inconsistencies suggest that the perceived effectiveness of the campaign may not be as successful as participants initially assumed, particularly regarding its ability to reach and positively influence every community member, especially given the lack of detailed discussion on the monitoring and evaluation (M&E) activities. This highlights potential issues with incomplete monitoring and evaluation (M&E) activities, as well as challenges related to inadequate civil registration and vital statistics, alongside a lack of death certification (Nwakassi et al. 2022). Nevertheless, there may be beneficial outcomes from the public health communication activities conducted by the local government. This underscores the need for further research to evaluate the target audience's (villagers') perceptions of the public health campaign and strategy effectiveness. Other implementation challenges (see section 4.2.4 & 4.3.5) were evident. Inadequacy of resources was consistent with previous studies that identified human and material resources as a health system barrier (Oku et al. 2017; Ogunkola et al. 2020; Oleribe & Mamon 2019; Anugom 2020; Azevedo 2017; and Omaka-Amari et al. 2020). Additionally, it was a challenge in using health information (Sokey et al. 2018), acted as a factor preventing the use of health facilities (Nwangwu & Ajama 2011), and posed a significant challenge in health information-seeking behaviours in rural parts of Nigeria (Adejumo et al. 2020). The paucity of Covid-19 information, evident in the study, indicated that Covid-19 information was not well circulated within the villages. This finding aligns with Efe (2020)'s study, which notes the non-availability

of needed Covid-19 information as a challenge for the use and access of Covid-19 information by rural dwellers in Nigeria. Unsteady electricity was another difficulty for villagers attempting to access public health information, consistent with Wogu et al. (2019). Their study found media campaigns against female genital mutilation in rural Nigeria ineffective due to poor network reception and erratic power supply. Misconceptions and disbelief regarding the existence of the Covid-19 pandemic echo findings from previous studies (Illoanusi et al. 2021; Omaka-Amari et al. 2020; Renne 2014; Sarki and Roni 2019; Osugbande & Siyanbade 2011). Moreover, fear and avoidance of Covid-19 messages align with the study conducted by Amari et al. 2020. Hostility, vaccine hesitance, and resistance to change, stemming from a lack of trust in the government, have been documented in earlier studies by Omaka-Amari et al. 2020 and Eze 2018. Lastly, the finding regarding language barriers is in line with previous research by Sokey and Adisah Attah 2017; Momodu 2002; Alali & Jinadu 2002; Haile et al. 2004; Segalowitz & Kahayia 2011; and Taye et al. 2023.

These challenges, despite the proactive steps by the local government, impact the overall effectiveness of the public health communication strategies by the local government. The study highlighted issues such as hostility, non-adherence, complexity of Covid-19 messages, vaccine hesitancy, mistrust in government, and a lack of Covid-19 messaging. These findings indicate that the local government's measures may have been effective in certain areas while remaining ineffective in others.

Furthermore, these challenges, while important to note, do not undermine the application of the recommended IFEPHC by public health communicators for effective public health communication. Instead, they underscore the complex nature of public health communication in rural developing economies, such as Nigeria, and the necessity for these challenges to be addressed by public health communicators to achieve effective public health communication. Overall, the application of the IFEPHC framework to the findings of the current study, it is apparent that while the public health communication strategies and campaigns were believed to be effective and satisfactory, according to the policy level professionals and community level actors, they could be further enhanced, especially in rural developing economies. This will be achieved by adopting the IFEPHC framework as a guide for future public health campaign activities, especially in the rural context, through careful review and integration of relevant elements and attributes of effective public health communication by authors and organisations (WHO 2017; ECDC n.d; U.S. DHSS 2004; Suggs et al. 2015; Schiavo 2013; Andrews et al. 2020; Tulane University School of Tropical Medicine 2021).

This combination of the study findings and the IFEPHC not only validates the significance and necessity of the developed framework for effective public health communication but also provides strategies for enhancing public health communication in rural developing economies.

6.2 Key contributions

This study contributes to knowledge in a number of ways:

- i. This study contributes to the literature on effective public health communication during health pandemics in rural developing economies. To the best of the researcher's knowledge, it is the first empirical study of public health communication strategies that explored public health communicators' understanding of health communication effectiveness in disadvantaged populations in Nigeria from a health communication and human information behaviour perspective.
- ii. This study provided greater insight into the applicability of human information behaviour concepts (as advanced by Wilson (1996) and information poverty theory by Chatman (1996) to understanding effective health communication. For example, the study facilitated a deeper understanding and appreciation of the role of trust and credibility in public health information acceptance and avoidance. Additionally, it fostered a clearer understanding and appreciation of the significance of intervening variables and concepts (demographic, economic status, role-related source characteristics) in effective public health communication.
- iii. It has equally contributed to the theory of public health communication by expanding, developing, and introducing a novel integrative framework for effective health communication, IFEPHC, through careful integration of concepts from theories, organisations, and scholars, which will be applied in rural and disadvantaged settings. This was achieved by demonstrating how Chatman's theory aligns with health communication in these settings and the IFEPHC. The IFEPHC that emerged from this study contributes to health communication research by providing researchers who seek comprehensive measures for assessing the effectiveness of health communication with a guide for developing instruments for quantitative as well as mixed-method assessments.
- iv. The study has advanced understanding of what constitutes effective public health communication in rural developing economies.
- v. The study provides new empirical insights and an understanding of how health communication is approached in developing economies by policy level professionals and community level actors.
- vi. The study also contributes to the health communication literature by providing further evidence of the importance of using multiple communication methods. For example, it

enhances understanding of the rationale for adopting various methods for effective health communication in rural or disadvantaged areas.

- vii. Finally, study also contributes to health communication literature by providing evidence of the indispensability of health literacy consideration for the effectiveness of public health communication, by enabling a better understanding of policy level professionals' knowledge of health literacy in rural/disadvantaged areas, as well as providing insights into areas for improvement (i.e. enhancing health communicators' understanding and skills in health literacy through health literacy training and education).

6.3 Limitations of research and suggestions for future research

The following were the limitations identified in the study:

- i. One major limitation of the study was the researcher's inability to explore the effectiveness of health communication strategies holistically from three perspectives: local government professionals at the policy level, community-level actors, and the villagers in the community (the target audiences). From the beginning, the researcher had planned to adopt an embedded mixed-method approach that integrates quantitative and qualitative research methods. This approach would enable the researcher to go beyond simply obtaining quantitative data and gather detailed qualitative information about the study phenomena. To achieve this, the researcher initially hoped to travel to Nigeria for fieldwork and engage 48 respondents: Group A (12 local government professionals at the management level involved in the development and management of public health campaigns) through one-on-one interviews; Group B (12 community-level actors involved in the implementation and dissemination of public health campaigns) through individual interviews; and Group C (24 villagers from the community) through both one-on-one and group interviews. The researcher also planned to collect demographic information from Groups A and B using quantitative methods, as well as gather information on media usage, frequencies of media use, and routine demographic information of the villagers quantitatively. However, due to security risks and challenges in Nigeria at the time of the proposed fieldwork (November 2022), the researcher couldn't travel to Nigeria for fieldwork after discussions with the PhD supervisory team. This situation limited the exploration of villagers' awareness of the Covid-19 pandemic, their recognition of specific campaigns (where applicable) adopted by the government, their health information needs, information sources, and information-seeking behaviour. To mitigate the impact of the absence of villagers (Group C) in the sample, the researcher

increased the number of Group B participants (community level actors) from twelve (12) to twenty-nine (29). This adjustment partially compensated for the inevitable absence of Group C and provided a deeper understanding of the challenges and experiences of those tasked with implementing public health campaigns, which the researcher could not have attained through Group A.

Research is an ongoing process. Future studies should strive to explore this area using a mixed-methods approach, particularly the quantitative research method.

- ii. The study explored the perspectives of policy-level professionals and community-level actors in one geo-political zone (South-South) out of the six geo-political zones in Nigeria. The findings of the study cannot be regarded as representative of health communication professionals' perspectives in Nigeria or other developing nations due to cultural diversity, geopolitical differences, multi-religious beliefs, and socioeconomic disparities—essentially reflecting the non-homogeneity of Nigeria and other developing economies. Future research on health communication in rural Nigeria should aim to broaden the research scope by examining policy level professionals and community level actors' perspectives on pandemics and effective communication in the remaining five geopolitical zones of Nigeria .
- iii. Another limitation was the researcher's inability to collect sample communication materials from local government policy level professionals to support their responses. The participants who promised to send these campaign materials via email after the interviews failed to fulfill their commitments. The researcher relied on information shared during the telephone interviews and information obtained online through extensive research to inform the analysis. For instance, the Risk Communication and Community Engagement (RCCE) document outlining all the strategies recommended for use in Nigeria during public health emergencies and the Covid-19 status update document from the Delta State, Nigeria website (<https://www.deltastate.gov.ng/covid-19-delta-state>; https://covid19.ncdc.gov.ng/media/files/UPDATED_RCCE_Strategy_web_version.pdf update/) were used for further discussions.

6.4 Implications of the study

The implications of this study were two, namely, implications for practice and policy, discussed in turn.

6.4.1 Implications for Practice

The study offered valuable insights into how policy level professionals and community level actors handle public health communication in rural developing economies like Nigeria. It examined the public health communication strategies adopted, the factors considered essential for campaign's effectiveness, and the challenges of implementation and information-seeking. While participants reported that the public health campaigns were effective—evidenced by a notable increase in adherence levels, a decrease in infection and mortality rates, and perceived understanding of the messages by the villagers—several challenges persisted (see sections 4.2.4 & 4.3.5).

These challenges have implications for practice and how future public health communication can be improved and made effective.

For instance, the identified challenge of mistrust in government as evident in the study, despite the reported steps taken by the government to ensure the employment of credible and trusted sources of Covid-19 messages, can undermine the effectiveness of any public health communication effort.

Complexity presents a challenge in the current study, despite the reported efforts of public health communicators to ensure that these messages are tailored, simplified, and presented in forms and styles that are easily understood by the target audiences. This can influence the effectiveness of any public health campaign. Therefore, public health communicators must continuously ensure they tailor appropriate public health messages and languages, crafting them in simple, clear, and concise ways that are easily comprehensible.

The monitoring and evaluation practices in health communication may be influenced by findings from this study. The Monitoring and Evaluation Officers and health communicators could enhance their practice by utilising the IFEPHC as a guideline to direct their monitoring and evaluation activities.

Health practitioners and public health communicators can apply IFEPHC within healthcare systems in disadvantaged rural environments. By integrating these attributes into their health communication strategies, rural residents will experience enhanced health literacy and feel more motivated to engage with the healthcare system and utilise available services and facilities. Consequently, key barriers to universal health coverage, such as poor enrollment in

health insurance schemes, inadequate understanding of healthcare benefits, and mistrust in healthcare systems, will be significantly reduced, leading to improved health outcomes and equity in rural communities.

6.4.2 Implications for Policy

The adoption of the ten attributes of IFEPHC into health communication strategies by the policy level professionals and community level actors as evidenced in the study suggests good knowledge of them. This shows their importance in every public health communication. Consequently, governments at the three levels (federal, state, and local) should establish these attributes (see *Figure 1*) to inform everyday health communication practices and procedures. .

The preference and perceived effectiveness of indigenous/native communication channels and methods imply that there is a need for policy and plans at the local and state levels on how these channels could be included in conventional campaign planning.

Perceived mistrust in the government was identified as a challenge in implementing Covid-19 health communication. This has implications for developing and integrating transparency policies regarding the provision of relevant data to the public and the distribution of health relief and resources, especially during health emergencies.

6.5 Recommendation for effective public health communication in rural/disadvantaged areas

This section presented a series of recommendations.

Recommendation 1: The IFEPHC (See *Figure 1*) is recommended as a framework for guiding effective public health communication in rural and disadvantaged areas during emergencies. A unified 11-point framework for public health communication, developed from the views of public health communication scholars and health organisations/institutions, helped in understanding the effectiveness of public health communication, making a substantial contribution to the public health communication theoretical environment.

It is evident that the IFEPHC 11-point framework is significant. The fact that public health communicators at LGA policy level and community level actors demonstrated the application of ten out of the eleven IFEPHC framework which are audience centred, timely, understandable, relevance, actionable, accessibility, repetition, partnership, credibility and trust, and M&E, is a testimony of the framework's validation. It might be that those at the policy level might have adopted pre-testing and revision but did not discuss it. Nevertheless, the absence of "pre-testing and revision" in the context of this study does not suggest that it is an irrelevant element but rather a call for its integration into the designing and implementation of

public health communication in rural contexts even during health emergencies. The lack of emphasis on or disregard for pre-testing and revision during emergencies, as observed by John Hopkins University (2020) due to time constraint or lack of resources should be changed, as it remains an important element in effective health communication.

Recommendation 2: Mistrust in the government was identified as one of the key implementation challenges in the study. It was therefore recommended that to improve trust, believability, and acceptance of public health campaign messages, and for public health communication strategies to be more effective, public health communicators should be transparent and honest in their relationship with the villagers and include in their communication methods evidence of victims and/or survivors of pandemics (either through interpersonal communication; mass media- television; billboards; flyers, including indigenous native communication methods).

Recommendation 3: The findings, as revealed by some participants showed that the indigenous native communication method proved valuable and effective in disseminating Covid-19 messages to specific audiences in rural/disadvantaged hinterlands (the remote areas of the local government from the urban areas). Therefore, the study recommends that public health communicators should pay much attention to indigenous native communication methods and make it one of the inevitable communication channels and as a public health communication strategy for public health campaigns in rural/disadvantaged areas, because of the role it plays in African/traditional settings, and because villagers are familiar with them and accept them.

Recommendation 4: This study suggests the promising potential of mobile phones in disseminating health information within rural communities. Based on these findings, it is recommended that government and non-governmental health interventions prioritise the following measures: providing free android mobile phones, installing solar energy systems to improve electricity supply, and enhancing internet bandwidth for reliable access at both primary healthcare centers and village units. The distribution of free phones could be implemented in phases. The initial phase could focus on clan, unit, or village leaders, as well as heads of units at healthcare centers, while the subsequent phase could target family heads.

Recommendation 5: Findings revealed that public health communicators at the local government policy level agreed that health literacy was an important factor for consideration in public health campaigns, but they demonstrated limited understanding of health literacy, thus, the present study suggested and recommended the need for better improvement of

public health communicators in rural/disadvantaged areas through continuous training and education. This would aid them in reducing public health information complexity, which was evident in the study as one of the difficulties some of the villagers experienced while seeking Covid-19 information. It will also aid them in learning the recommended health literacy techniques such as teach-back (where public health professionals ask target audiences to relay back what they have heard to check comprehension and understandability), chunk and check (entails breaking down information into smaller pieces and check for understanding), use of simple languages, use of pictures, and routinely offering help with paperwork techniques (The health literacy place n.d), and applying them in future public health campaigns to boost target audiences' health literacy towards effective public health campaigns.

Recommendation 6: The study found that public health communicators demonstrated good awareness of several attributes of effective health communication incorporated in the IFEPHC. The study, therefore, recommends that for public health communication to be effective in rural/disadvantaged areas of Nigeria, public health communicators, including partner agencies -Non-governmental organisations (NGOs), Community-based organisations (CBOs), Nigerian Centre for Disease Control (NCDC), ministry of health, ministry of education, and ministry of information both at the local, state, and federal levels should ensure that these principles are reinforced from the inception of any public health campaign to its conclusion. That is, the government should integrate the IFEPHC criteria into training and skill building, by developing, and organising public health communication workshops where the usefulness and indispensability of these criteria in public health communication would be highlighted.

Recommendation 7: Given the identified implementation challenge of language barrier in the study, there is a need for public health communication to be developed in multiple languages to address the problem of language barriers. Through careful formative research and audience definition, public health communicators can learn about their target audiences, enabling them to tailor messages and language that suit their audiences. This also includes translating health messages into all identified languages spoken by their target audiences to aid in the understanding of messages and improve compliance.

6.6 Final Conclusion

This study aimed to understand effective public health communication and investigate it in rural areas of developing economies from the perspective of policy level professionals and community level actors, using the Covid-19 pandemic as a case study. It highlights the importance of the eleven attributes of effective health communication identified in the IFEPHC

framework (see *Figure1*). This framework reveals what constitutes effective health communication in rural and marginalized contexts. Additionally, it outlines the public health communication campaigns and strategies employed during a public health crisis, the perceived influencing factors, indicators for the perceived effectiveness of these communication strategies, and potential challenges that affect the effectiveness of public health communication in rural developing economies like Nigeria. In doing so, it addresses the research questions posed in the study and achieves the set objectives through:

- Understanding the attributes of effective public health communication.
- Understanding the goals and priorities of the local government in the wake of the Covid-19 pandemic including the public health communication strategies and steps employed by the local government in managing the pandemic.
- Understanding how the strategies were implemented in the rural areas and possible implementation challenges.
- Identifying the influencing factors for the effectiveness of the communication strategies by the local government.
- Offering recommendations for effective public health communication in rural developing economies.

Conclusively, from lessons learned, better effective public health communication in rural/disadvantaged areas of developing economies can be achieved through careful engagement of trusted insiders within the target population as they are perceived to make significant contributions to the trustworthiness and effectiveness of health communication; collaboration and teamwork; through promoting transparency and trust by ensuring honesty and consistency of messages. Also, by careful consideration of the challenges raised in the study including addressing them through careful application of the various attributes of effective public health communication as incorporated in the IFEPHC that guided this study, as these attributes have been shown in the study as beneficial to affect public health communication, especially in rural/disadvantaged areas of developing economies like Nigeria

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Appendices

Appendix A: Ethics Approval Form

University of Stirling
Cottrell 3B1
Stirling FK9 4LA

02/09/2022

Dear Onyinye

Ethics Application Form : Covid-19 Pandemic: In-depth Evaluation of the Public Health Communication Strategies in Rural Nigeria 7550

Thank you for your submission of the above ethics application.

The ethical approaches of this project have been approved and you can now proceed with your project.

Please note that should any of your proposal change, a further amendment submission will be necessary.

If you have any further queries, please do not hesitate to contact the Panel by email to ethics@stir.ac.uk

Yours sincerely,
General University Ethics Panel

Appendix B: Survey Demographic Information for Group A (Policy Level Actors at the Local Government)

1. What age group do you belong to? 35– 39, 40– 44, 45– 49, 50 or above
 2. What is your native language?

Igbo	()
Hausa	()
Yoruba	()

 Others (please specify)
 3. What is your highest level of education?

High School	()
College	()
University	()
Masters	()
PhD	()

 Others (Please Specify)
 4. Do you possess any academic or professional qualifications in health communication or related fields of communication (e.g. PR, strategic communication)? Yes/No
 If yes, please specify:
 5. What is your professional position?

Director Primary Health Care (DPHC)	()
Health Promotion officers	()
National Orientation Agency Community mobilization officers	()
Monitoring and Evaluation Officers	()

 Other (Please Specify):
 6. What is/was your role in the management of the covid-19 pandemic in the Local Government?
 1. Survey (ascertaining what the people in the community know about covid-19 and how they feel about the risk) ()
 2. Health information/Covid-19 communication campaign formulation ()
 3. Sensitization (engaging the community influencers, trusted voices to disseminate covid-19 information) ()
 4. Dialogue (finding out from the community their concerns on the desired behaviour and agree on a way forward) ()
 5. Monitoring and evaluation of health campaigns ()
 6. Other (Please Specify):
- “Approximately how many years experience do you possess for the above or similar roles: ()”

Appendix C: Interview Guide for Group A (Policy Level Professionals at the Local Government Level)

1. What were the Local Government's public health communication goals and priorities during the Covid-19 pandemic (probe: what did you hope to achieve during Covid-19)?
2. Tell me about the key risk communication and community engagement campaigns and strategies adopted and/or designed in your local government area in the management and control of the Covid-19 pandemic in the Local Government (probes: why the choice of strategies)?
3. When developing and delivering public health communication campaign messages, is audience health literacy a factor to consider? (Probes: If yes, why do you consider this as a factor)?
4. How were these key campaigns and strategies implemented in the rural areas (probes: who were the persons involved in the implementation and why)?
5. Were these key campaigns and strategies monitored and evaluated (probe: why did you engage in monitoring and evaluation; if yes, in what way and to what effect; if no, why not)?
6. What were the key indicators for the effectiveness of the key campaigns and strategies? How well do you think you achieved them (Probe: how well do you think that key strategies/campaigns helped in achieving the local government's Covid-19 pandemic health communication goals and objectives)?
7. What do you think were the key challenges experienced in these Covid-19 campaigns?
8. With the benefit of hindsight, is there anything that could have been done differently/more effectively regarding public health communication during the Covid-19 pandemic?

Appendix D: Survey Demographic Information for Group B (Community Level Actors at the Local Government)

1. What age group do you belong to? 35– 39, 40– 44, 45– 49, 50 or above

2. What is your native language?

Igbo ()

Hausa ()

Yoruba ()

Others (please specify):

3. What is your highest level of education?

High School ()

College ()

University ()

Masters ()

PhD ()

Other (Please Specify):

4. Do you possess any academic or professional qualifications in health communication or related fields of communication (e.g. PR, strategic communication)? Yes/No

If yes, (please specify):

5. What is your position?

Traditional Rulers ()

Religious Leaders (FBOs) ()

Chairman (CBOs) ()

Community influencers/leaders ()

Village Development Committees ()

Nurses at the primary health centers ()

Community Health Experts ()

NGO Fieldworkers ()

Town criers ()

Traditional healers ()

Community orientation officers ()

Others (Please Specify):

6. What is/was your health communication role in the management of the covid-19 pandemic in the community of Delta State Nigeria?

Dissemination of covid-19 health Information and options needed to make decisions and take actions through:

Interpersonal communication -house to house visits, group discussions, one on one while maintaining or practicing preventive measures ()

Street to street campaigns using megaphones ()

Distribution of print materials such as flyers, leaflets, and brochures ()

Motorised campaigns ()

Fixed loudspeaker at places of worship/markets ()

Others (Please Specify):

Approximately how many years of experience do you possess for the above or similar roles: ()

Appendix E: Interview Guide for Group B (Community Level Actors at the Local Government)

1. For Covid-19, what do you think were the key local government public health communication campaigns and strategies? Were you involved in any way (official or other) in their implementation and dissemination?
2. What was the key most regular Covid-19 information that you communicated to the villagers, and why?
3. How did you reach/communicate with the villagers (probe: what communication channels and sources of information were used, and why)?
- 3a. What was the most effective medium of communication and why?
4. In your opinion, when villagers sought information on Covid, where did they obtain this from? (Probe: why). What difficulties did they experience, and why?
5. In your opinion, would you say that the local government Covid-19 public health communication campaigns and strategies were effective and/or ineffective? (Probe: why the former or the latter)?
- 5a. What specific public health communication campaigns and strategies do you think were effective and why do you think they were effective?
- 5b. What were the key challenges you experienced during the implementation of these public health communication campaigns and strategies?
6. With the benefit of hindsight, is there anything that could have been done differently/more effectively regarding public health communication during the Covid-19 pandemic?

Appendix F: Participant Information Sheet for interviews with Policy Level professionals managing Covid at the LGA and the Community Level Actors.

Version A2: 25 August 2022

1. Research Project Title: Understanding effective public health communication strategies in a rural region of a developing economy: A case study of Covid-19 communication in rural Nigeria.

2. Purpose: This research is conducted as part of the primary research for a Doctoral Degree.

3. Background, aims of the project

My name is Onyinye Chiweta-Oduah, a PhD researcher at the University of Stirling, Scotland, United Kingdom.

The research investigates public health communication strategies in a rural developing economy, using Covid-19 health communication in rural Nigeria as a case study. I would like to invite you to take part in this research as your contribution would go a long way in realising this project's aims.

4. Why have I been invited to take part?

You have been invited to participate in this research because you have been identified as a key professional involved in Covid-19 public health communication.

5. Do I have to take part?

No, you do not have to take part because it is completely voluntary. If you decide to participate, you can withdraw at any time without explanation or penalty by advising the researcher of this decision. If you withdraw, we will not collect any more data from you but the researcher will still use the data already collected to the point of your withdrawal for academic purposes unless a request to withdraw already-provided data is made absolute (within 4 weeks from the date data were provided); this is because the information provided will have been included in analysis.

To withdraw your data, email opc1@stir.ac.uk (which is the email address of the researcher) quoting the unique reference codes (e.g., Eco 1, Eco 2, or Eco A, B, and C) that would be assigned to you during the interview for easy identification of your data.

You will be given a copy of this information sheet to keep and be asked to complete the consent form which would be sent to you electronically via email or given to you before the interview proper.

6. What will happen if I take part?

You will be initially asked to complete a short demographic questionnaire in person before the interview, or it will be sent to you electronically via email and should take no longer than 5-10 minutes to complete and return within one week (via return email).

You will be interviewed orally by the researcher and the interview should take no longer than 40 minutes and will be conducted via telephone. The interview will be recorded, and you will be asked to provide consent before it commences.

You have every right not to answer all the questions.

7. Are there any potential risks in taking part?

There are no risks associated with this research subject.

8. Are there any benefits in taking part?

There will be no payment for taking part in this project.

What happens to the data I provide?

The research data (interview recordings and transcripts) will be kept anonymous using unique reference codes, meaning that your name will not appear in the data.

The interview questions will not ask you to provide any personal information, and if this information is provided by accident, the researcher will remove it.

Only the researcher and her supervisor (if applicable) will be privy to the notes, recordings, and documents (but will have signed a confidentiality agreement).

Once the audio recordings are transcribed and checked, audio files will be deleted.

Data will be kept for a minimum of 10 years on OneDrive and on the online digital repository (DataSTORRE) a secure data centre of the University of Stirling and then will be securely destroyed in accordance with the University's policies.

We will ask all participants for their permission to use direct quotes, still maintaining confidentiality by using the assigned unique reference codes.

9. Will the research be published?

The research may be published in an academic journal. You will not be identifiable in any report/publication.

The University of Stirling is committed to making the outputs of research publicly accessible and supports this commitment through our online open access repository STORRE. As such, this research will be publicly disseminated through our open access repository.

10. Who has reviewed this research project?

The ethical approaches of this project have been approved by The University of Stirling General University Ethics Panel.

11. Who do I contact if I have concerns about this study or I wish to complain?

If you would like to discuss the research with someone or wish to seek additional information concerning the research, please contact the researcher via her email address (opc1@stir.ac.uk) or her supervisor (s.j.buchanan@stir.ac.uk).

The University's Data Protection Officer is Joanna Morrow, Deputy Secretary. If you have any questions or complaints relating to data protection these can be addressed to data.protection@stir.ac.uk in the first instance.

You will also be given a copy of this information sheet to keep.

Thank you for your participation!

Appendix G: Consent form for interviews with Policy Level professionals and Community Level Actors at the LGA

Version A4: 25 August 2022

Name of Department: Communications, Media and Culture

Research Project Title: Understanding effective public health communication strategies in a rural region of a developing economy: A case study of Covid-19 communication in rural Nigeria.

Please carefully read the information below before you sign the form to take part in the study.

Aim of the study:

The research investigates public health communication strategies in a rural developing economy, using Covid-19 health communication in rural Nigeria as a case study. I would like to invite you to take part in this research as your contribution would go a long way in realising this project's aims.

Please initial box	
I confirm that I have read and understood the information sheet for this study explaining the above research project and I have had the opportunity to ask questions about the project	
I understand that this study is part of the PhD degree at the University of Stirling in the United Kingdom	
I understand that my participation is voluntary and that I am free to withdraw at any time during the study and withdraw my data up until 4 weeks after the interview takes place without giving a reason and without any penalty. I understand that after 4 weeks from the date of this interview, when data analysis has started/results are published it may not be possible to remove my data from the study.	
I understand that my responses will be kept anonymous and give permission for members of the research team (i.e. the research supervisor) to have access to my anonymised responses.	
I understand that I do not have to answer all questions if I would prefer not to.	
I consent to being audio recorded	
I understand that there will be no payment for taking part in this project.	
I understand that I can contact the researcher via email (opc1@stir.ac.uk) or her supervisor by email (s.j.buchanan@stir.ac.uk) if I need clarifications regarding this project.	
I give permission to be anonymously quoted in research publications	
I agree to take part in this study	

Name of Participant:

Signature:

Date:

Name of Researcher: ONYINYE CHIWETA-ODUAH

Signature:

Date: 1-07-2022

Appendix H: Topic Coding

Participants' Background Information

Name	Files	References
GRA ECO 1		2

Attribute	Value
Age Range	35-39 years
Educational Level	MA
Language	Igbo
Academic Qualification in Health Communication	Yes/PR
Role in Covid-19 Management	Sensitisation
Years of experience	7
Job Title in Organization	[Redacted]
gender of Interviewee	Female
Organization	[Redacted]

Appendix I: Topic Coding

The screenshot shows the NVivo software interface. The ribbon at the top includes tabs for File, Home, Import, Create, Explore, and Share. The left sidebar contains a tree view with the following categories and sub-items:

- Quick Access**
 - Files
 - Memos
 - Nodes
- Data**
 - Files
 - File Classifications
 - Background Informa
 - Group A
 - Group B
 - Externals
- Codes**
 - Nodes
 - Sentiment
 - Relationships
 - Relationship Types
- Cases**
- Notes**
- Search**
- Maps**

The main pane displays the 'Nodes' list, which is a table with the following data:

Name	Files	References
Health communication goals and priorities during covid-19	12	12
Public Health Communication strategies employed	12	23
Reasons for choice of strategy	9	11
Effectiveness of strategies employed	12	23
Implementation challenges	12	12
Suggestions for the future	12	12

Appendix J: 1st Inductive phase: Open Coding

File Home Import Create Explore Share

Clipboard Paste Cut Copy Merge Properties Open Memo Link Item Add To Set Create As Code Create As Cases Query Visualize Code Auto Code Range Code Uncode Case Classification

Quick Access

- Files
- Memos
- Nodes

Data

- Files
- File Classification
- Externals

Codes

- Nodes
- Sentiment
- Relationships
- Relationship

Cases

Notes

- Memos
- Framework
- Annotations
- See Also Link

Search

Maps

Nodes

Name	Files	References
Health communication goals and priorities during covid-19	12	12
Provide information on covid	1	1
Stop the spread of covid	1	1
Manage those infected	2	2
educate the people	1	1
contain spread of covid	1	1
provide understandable message	1	1
provide accurate information	1	1
ensure public awareness	1	1
sensitize the people	2	3
make sure people are safe	3	4
Make people understand the dangers of covid	2	2
send understandable message to the public	1	1
Public Health Communication strategies employed	12	26
involvement of state & NGOs	1	1
Provide materials - face masks, sanitizers	1	1
Health literacy - poverty	1	1
health literacy - illiteracy	1	1
redesigned posters to suit local community	1	1
Meeting the villagers directly	2	3
Reviewing activities	1	2

Appendix K: Sorting Codes & Identifying Themes

File Home Import Create Explore Share

Paste Cut Copy Merge Clipboard

Properties Open Memo Link Create As Code Create As Cases

Query Visualize Explore

Code Auto Code Range Code Uncode Coding

Case Classificat

Quick Access

- Files
- Memos
- Nodes

Data

- Files
- File Classifica
- Externals

Codes

- Nodes
- Sentiment
- Relationships
- Relationship

Cases

Notes

Search

Nodes

Name	Files	References	C
Health communication goals and priorities during covid-19		12	12 2
Public Sensitization and Awareness Creation		0	0 2
Provision of Understandable message		0	0 2
Safety of the public		0	0 2
Public Health Communication strategies employed		12	26 2
Provision of palliatives and preventive devices		0	0 2
Use of simple language for understanding		0	0 2
Use of Jingles and pre-recorded messages in multiple language		0	0 2
Translation and use of interpreters		0	0 2
Monitoring and Evaluation of campaign		0	0 2
Audience Identification and tailoring of message		0	0 2
Involvement and Engagement with stakeholders		0	0 2
Use of multiple channels of communication		0	0 2
teamwork and Collaboration		2	2 2
Peer group strategy		1	1 2

Appendix L: Refined Themes

File Home Import Create Explore Share

Paste Cut Copy Merge Clipboard Properties Open Memo Link Create As Code Create As Cases Query Visualize Code Auto Code Range Code Uncode Clas

Nodes

Quick Access

- Files
- Memos
- Nodes
- Sentiment
- Relationships
- Relationship

Cases

Notes

Search

- Queries
- Query Result
- Node Matrix
- Sets
- Search Folde

Maps

- Maps

Output

- Reports
- Extracts

Name	Files	References
Public Sensitization and Awareness Creation		6
Provision of Understandable message		4
Safety of the public		6
Public Health Communication strategies employed		12
Monitoring and Evaluation of campaign		8
M&E to identify areas of improvement		5
M&E to check effectiveness		2
Audience Identification and tailoring of message		7
Translation and use of interpreters		5
Use of Jingles and pre-recorded messages in multiple language		5
Use of simple language for understanding		3
Engagement and involvement of stakeholders		2
Influential and trusted voices in the community		11
Health professionals & Workers from health centres		4
Involvement of NPOs & NGOs		1
Use of multiple channels of communication		0
Indigenous and native methods		7
Interpersonal channels		9
Mass media		8