



Extended Parallel Processing Model (EPPM) in Understanding the Effectiveness of Public Health Communication During COVID-19 Epidemic in Nigeria: A Thematic Review

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Abstract

Context: The Coronavirus Disease 2019 (COVID-19) pandemic brought significant health and economic challenges to Nigeria. It revealed weaknesses in healthcare systems, governance, and public trust. Effective health communication played a key role in shaping public responses. However, misinformation, cultural beliefs, and limited resources undermined compliance with preventive measures and vaccine acceptance. This review uses the Extended Parallel Processing Model (EPPM) to evaluate health communication's effectiveness during the pandemic in Nigeria.

Materials and Methods: A thematic review of peer-reviewed literature and government reports focusing on how Nigeria perceived and responded to COVID-19 health messages.

Results: The evidence showed that government and media campaigns emphasized the severity and personal danger of COVID-19, leading to an increased perception of threat. However, many communities, particularly those in rural and underserved areas, lacked clear efficacy signals, such as access to preventive resources, trustworthy guidance and confidence in government measures. This imbalance led to different behavioral outcomes. Groups with high threat perception and strong efficacy, like health workers and urban residents with reliable information, took danger-control actions. They practiced consistent mask-wearing, hand hygiene, and vaccine uptake. In contrast, groups that felt a high threat but had low efficacy turned to fear-control actions, including denial, avoidance, or belief in conspiracy theories.

Conclusion: The findings show that effective communication involves more than just increasing fear about disease. Sustainable behavior change relies on combining high threat perception with strong efficacy signals. Recommendations include involving trusted local influencers in campaigns, ensuring access to preventive tools, tailoring communication to fit various cultural and socioeconomic contexts, promoting transparency, and connecting health messaging with socioeconomic support.

By placing Nigeria's COVID-19 response within the EPPM framework, this review emphasizes the need for culturally sensitive, community-focused, and resource-supported communication strategies to improve pandemic preparedness and resilience in low-resource areas.

Keywords: COVID-19, Nigeria, health communication, Extended Parallel Processing Model, fear appeals.

Introduction

The Coronavirus Disease 2019 (COVID-19) pandemic emerged as a global health crisis that put immense pressure on healthcare systems around the world. The World Health Organization (WHO) declared the

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outbreak, first identified in Wuhan, China, on December 8, 2019, as a Public Health Emergency of International Concern (PHEIC) on January 30, 2020¹. By June 7, 2020, global COVID-19 cases had exceeded seven million. The United States reported over two million cases, Brazil had over 700,000, and Russia reported more than 500,000. In Africa, South

Africa and Egypt reported over 54,000 and 38,000 cases, respectively¹.

The pandemic severely disrupted Nigeria's public health infrastructure, economy, and societal systems. By the end of 2022, Nigeria had recorded over 266,000 confirmed cases and more than 3,000 deaths². However, the actual number was likely higher due to limited testing, underreporting, and weak surveillance systems, especially in rural areas³. In addition to these structural challenges, other factors influenced the response, including mistrust in the government, fear of side effects, poor access to services, low awareness of disease risk, and long-standing cultural beliefs, such as denying the existence of COVID-19 or believing it did not affect Africans⁴.

From a sociological perspective, the pandemic disrupted daily life in unexpected ways. Social distancing, lockdowns, and other public health measures changed how people interacted, challenged cultural norms, and limited face-to-face connections that are vital to community life. These changes caused emotional and psychological strain, especially among vulnerable groups. With the closure of schools, places of worship, and markets, economic activity dropped significantly, poverty increased, and fear and uncertainty spread throughout communities. Beyond being a health crisis, COVID-19 became a social shock that tested resilience, revealed inequalities, and transformed how people live, work, and connect with one another. Economically, the crisis was devastating. Nigeria experienced its deepest recession in four decades, with over seven million people pushed into poverty due to massive job losses, disrupted supply chains, and a collapse of the informal sector⁵. Education faced disruptions too, as school closures affected over 36 million students⁶. Fear of infection made it hard to access essential health services³. A national phone survey conducted in April to May 2020 showed that 78% of Nigerian households reported a loss of income in the previous month. Additionally, 85% reported rising food prices, and 46% reported higher prices for farming and business supplies. Debt levels increased, leaving households in a weaker financial position than in previous years⁵.

Importance of Effective Health Communication During Public Health Emergencies

The clear evidence from pandemics, including

COVID-19, shows that global health systems are put under unsustainable pressure. Effective communication is crucial to promote community resilience and readiness. It also addresses the needs and concerns of the population, including misinformation, vaccine hesitancy, side effects, and compliance with public health measures.

Pandemics create not just health crises but also socio-economic shocks. The COVID-19 pandemic had a significant impact on mental health worldwide, leading to higher levels of fear, anxiety, stress, depression, and frustration. The uncertainty surrounding the virus and its long-term consequences caused widespread panic and stigma. In some communities, frontline healthcare workers faced harassment or physical assaults due to fears about virus transmission^{7,8}.

These experiences underscore a serious gap in communication. Inadequate or poorly delivered messages increased public fear and confusion, while timely, culturally sensitive, and empathetic communication built trust, reduced stigma, and encouraged adherence to public health guidelines. Approaches that used local languages and relatable stories were especially effective in reaching vulnerable populations and countering the "infodemic", which WHO defines as an excess of both accurate and misleading information⁹.

Effective communication is more than just sharing facts. It needs clarity, active listening, and consistent engagement with communities. During the pandemic, building trust through clear communication was essential for reducing fear, encouraging vaccination, and supporting mental and social well-being¹⁰.

One notable campaign in Nigeria was the "Follow Who Know Road" initiative. It used storytelling in local languages to tackle vaccine hesitancy and promote routine immunization. By leveraging trusted messengers like religious leaders, television, radio, and social media influencers, the campaign reached millions with life-saving messages while countering misinformation. It also helped develop and share over 50 national guidelines and response plans, improving policy coherence and extending outreach to rural populations through data-driven, community-led strategies¹¹.

Rationale for Using the Extended Parallel Processing Model

The Extended Parallel Processing Model (EPPM) offers a solid framework for studying the effectiveness of health communication during the COVID-19 pandemic in Nigeria. The model combines perceived threat (susceptibility and severity) with perceived efficacy (response efficacy and self-efficacy)¹². It shows how people evaluate and emotionally react to fear-based health messages, ultimately affecting whether they adopt protective behaviors or choose ineffective coping strategies¹³.

Government and media campaigns in Nigeria highlighted the severity of COVID-19 and the widespread risk, especially in urban areas. However, their success varied based on whether these messages included strong efficacy cues. In underserved regions, a lack of actionable guidance, support, and trust in government lowered self-efficacy. Concerns about vaccine effectiveness, fueled by conflicting narratives from officials and social media, diminished response efficacy.

According to EPPM, a high perception of threat paired with low efficacy assessments leads to fear-control responses, such as denial, avoidance, or conspiracy beliefs. This is in contrast to danger-control responses that promote protective actions^{13,14}.

Understanding EPPM helps clarify why awareness did not always lead to action in Nigeria. It emphasizes the need for communication strategies that not only highlight the seriousness of threats but also boost confidence in individuals' and communities' ability to respond effectively.

Theoretical Framework: Extended Parallel Processing Model

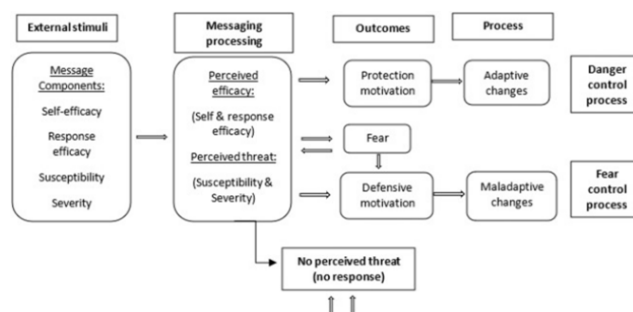
The Extended Parallel Processing Model (EPPM), developed by Witte, explains how people react to health messages that use fear appeals¹². The model suggests that when people face a health threat, they evaluate two important factors:

1. Perceived threat – which includes perceived severity (how serious the consequences are) and perceived susceptibility (the likelihood of being affected).
2. Perceived efficacy – which includes response efficacy (belief that the recommended action works) and self-efficacy (belief in one's ability to perform the action).

EEPM model seeks to set a balance between perceived susceptibility and severity as well as self and response efficacy. Positive behavioral change may be achieved if self efficacy and response efficacy of the individuals are enhanced, while also increasing their perceived susceptibility and severity¹⁴, otherwise, it may result in denial, avoidance and other negative behaviour¹⁵.

When perceived threat is low, people are unlikely to take action since they do not see the health issue as relevant. However, when the threat is high, the response depends on the level of perceived efficacy. High efficacy leads to danger-control responses, where individuals take preventive actions like wearing masks, practicing hand hygiene, or getting vaccinated. Low efficacy results in fear-control responses, such as denial, avoidance, or believing in conspiracy theories¹⁴.

In Nigeria, COVID-19 health communication campaigns often highlighted severity and susceptibility but were less effective in providing strong efficacy cues. This imbalance may explain why many acknowledged the seriousness of COVID-19 but did not consistently follow preventive measures^{14,16}.



Source¹⁴:

Methodology

This review used the Extended Parallel Processing Model as a framework to examine the effectiveness of COVID-19 health communication in Nigeria. Relevant literature was identified through searches in databases like PubMed, Scopus, and Google Scholar, along with grey literature such as government reports and campaign documents. Search terms included “COVID-19 Nigeria,” “health communication,” “vaccine hesitancy,” “fear appeal,” and “Extended Parallel Processing Model.”

Studies were included if they focused on Nigeria,

examined public response to COVID-19 communication, or provided insights into how perceived threat and efficacy shaped behavior. Both peer-reviewed articles and grey literature (such as WHO reports and government guidelines) were included to capture a full picture of Nigeria's communication landscape during the pandemic.

The evidence was analyzed thematically, guided by the four concepts of EPPM: perceived susceptibility, perceived severity, self-efficacy, and response efficacy. This approach allowed for identifying patterns in how Nigerians understood health messages and how these perceptions affected their behavior.

Findings and Discussion

Using the Extended Parallel Processing Model (EPPM) sheds light on how Nigerians perceived and responded to COVID-19 health communication.

Perceived Threat: Severity and Susceptibility

Government and media campaigns consistently stressed COVID-19's severity, portraying it as life-threatening and highlighting its spread worldwide^{1,2}. Messages highlighted the vulnerability of Nigerians, mentioning rapid transmission, lack of early treatments, and the risk of high mortality^{3,17}. These appeals increased perceived threat among populations, although the degree of perceived susceptibility varied. Urban residents and health workers often reported a stronger awareness of personal risk due to credible information sources¹⁸. In contrast, rural and underserved communities frequently underestimated their susceptibility, partly due to cultural beliefs, limited access to information, and less visibility of confirmed cases^{4,19}.

Perceived Efficacy: Response Efficacy and Self-Efficacy

While messages effectively raised awareness of the threat, they often did not provide enough efficacy cues. Many campaigns included instructions like "wear a mask" or "wash your hands" without offering practical advice for resource-limited households²⁰. In areas where face masks or hand sanitizers were hard to find or expensive, the public saw low response efficacy and doubted their ability to follow guidelines. Also, mistrust in government messaging and inconsistent enforcement of

preventive policies weakened self-efficacy, leaving many feeling unable to effectively protect themselves²¹.

Behavioral Outcomes

The gap between high threat and low efficacy influenced behavioral outcomes. Among urban residents, health professionals, and those with better access to information, a combination of high threat and high efficacy led to danger-control responses, such as regular mask usage, adherence to hand hygiene, and eventual acceptance of vaccination¹³. In contrast, rural populations and marginalized groups, where assessments of efficacy were weak, were more likely to engage in fear-control responses, including denying COVID-19, avoiding testing, relying on spiritual explanations, or believing in conspiracy theories¹⁹.

Cultural and Socioeconomic Influences

Cultural norms and socioeconomic conditions heavily impacted how messages were understood. In some communities, traditional beliefs framed COVID-19 as a "foreign disease" or divine punishment, which reduced the motivation to adopt preventive measures¹⁹. Economic factors made these challenges worse. Lockdowns disrupted livelihoods, and without proper social support, many Nigerians prioritized daily survival over following public health guidelines²². For low-income households, prevention strategies like physical distancing or regular handwashing were not always possible²³.

Implications for Public Health Communication

The findings show that effective communication requires more than just boosting fear of disease. According to the EPPM, sustainable behavior change happens when high threat perception aligns with strong efficacy cues. In Nigeria, the absence of actionable guidance, lack of protective resources, and limited trust in government created gaps that weakened public response. This points to the need for culturally sensitive, community-based communication strategies to improve adherence in future health emergencies.

Conclusion and Recommendations

The COVID-19 pandemic was one of the biggest public health and socio-economic challenges in Nigeria's history. While government and media

campaigns effectively communicated the disease's severity and susceptibility, they often did not provide strong efficacy cues. This imbalance meant that while many recognized COVID-19 as a serious threat, they lacked the knowledge, resources, and confidence necessary for taking effective preventive action. The Extended Parallel Processing Model (EPPM) illustrates how this mismatch led to different behavioral responses: adaptive danger-control actions among populations with high threat and high efficacy, and maladaptive fear-control actions where efficacy was low.

The Nigerian experience highlights the importance of context-sensitive communication. Cultural beliefs, economic pressures, and distrust in governmental institutions shaped public responses to health messages. Communication strategies that ignored these factors struggled to gain compliance, especially in rural and marginalized communities. For future pandemics or similar health emergencies, building trust, ensuring fair resource distribution, and including local voices in campaign development are crucial for success.

Based on these findings, several recommendations arise:

1. Strengthen efficacy cues in messaging: Campaigns should do more than just highlight the dangers of disease. Messages must clearly explain preventive measures and demonstrate their effectiveness while addressing practical barriers to adoption.
2. Ensure accessibility of resources: Public health communication must be backed by the availability of affordable preventive tools like masks, sanitizers, vaccines, and testing services, especially in underserved areas.
3. Engage trusted local influencers: Religious leaders, traditional rulers, and community organizations should be involved in campaigns to boost credibility and cultural relevance.
4. Promote transparency and trust in governance: Governments should communicate openly, avoid conflicting statements, and provide regular updates to counter misinformation and rebuild public trust.
5. Tailor communication to diverse populations: Rural and urban communities need different approaches. Campaigns should consider literacy levels, language differences, and cultural

practices to ensure messages are understood and accepted.

6. Integrate socioeconomic support with health messaging: Compliance with preventive measures is more likely when communities receive aid with food, cash transfers, or protection of livelihoods during crises.

By framing Nigeria's COVID-19 response using the EPPM, this review emphasizes the link between fear appeals, efficacy perceptions, and behavioral outcomes. It shows that effective communication cannot depend on fear alone but must empower people with the confidence and resources to act. For low-resource settings, where health systems are fragile and inequalities are significant, such insights are critical for designing communication strategies that protect both lives and livelihoods in times of crisis.

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