Assessment of Health Communication Strategies Adopted by the Ministry of Health in Child Immunisation Campaigns in Select States of North Central Nigeria

Ageshen Gloria Mark;[↓]
Mohammad S. Rabiu[↔]
&
Tsegyu Santas[↑]

Abstract
Effective and strategic communication has continued to play a key role in both routine and planned campaigns against child-killer diseases globally. This is because people need to understand all the issues surrounding vaccines and their safety and benefits for children. To this end, the focus of this research was to evaluate the health communication strategies of the Ministry of Health in the following select states in the North-Central: Benue, Nasarawa, and Plateau. The study used three key research designs: survey, Focus Group Discussion (FGD), and in-depth interview. A survey was used for those parents who have had experience with child immunisation before; FGD was used for nursing mothers; and caregivers; while in-depth interview was used for those health who have been on the immunisation beat. Key findings of the research from the survey were that the extent of awareness of the child immunisation campaign was due to the role played by influential religious/traditional leaders; and that ignorance and illiteracy were major challenges of the child immunisation campaign. Concerning the hypothesis, the study revealed that there was no significant difference in the health communication strategies adopted by the Ministry of Health in the child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau ($X^2_{cal}=6.372 \leq X^2_{tab}=9.488$). For the FGD, findings showed that the major source of information on child immunisation by the nursing mothers were the respective clinics where they gave birth. Concerning the findings from the in-depth interview, the respondents (health workers) noted that their key communication strategies included community stakeholders, such as religious/traditional leaders, and complementing that with the mass media; they also revealed that poor funding from the respective state governments, which relied heavily on international donors was a major of the campaign. It was therefore recommended,

[↓] Ageshen Gloria Mark, Department of Mass Communication Faculty of Communication and Media Studies Nasarawa, State University, Keffi, Nigeria

[↔] Mohammad S. Rabiu, Department of Mass Communication Faculty of Communication and Media Studies Nasarawa, State University, Keffi, Nigeria

[↑] Tsegyu Santas, Department of Mass Communication Faculty of Communication and Media Studies Nasarawa, State University, Keffi, Nigeria. *tsegyu@nsuk.edu.ng (Corresponding author)*

among others, that there should be comprehensive planning and coordination of the health communication interventions; and that there should be adequate funding of the health communication interventions by the respective state governments.
Keywords: Health Communication Strategies, Ministry of Health, Child Immunisation, North-Central, Nigeria

Introduction

Child immunisation, unarguably remains one of the most cost-effective and significant public health intervention initiatives aimed at reducing drastically child morbidity or mortality globally. The global immunisation of children against the six deadly but Vaccine-Preventable Diseases (VPDs) - Diphtheria, Measles, Pertussis, Poliomyelitis, Tetanus, and Tuberculosis, is quite tangential to the aims and aspirations of the United Nations Children Emergency Fund (UNICEF) and the World Health Organisation (WHO), as well as international donor agencies and the various governments in the world. However, apart from these well-known six child-killer diseases, Hepatitis B and Yellow Fever, are also life-threatening to children (Adisa, Akinleye, Obafisile, and Oke, 2022). One of the ways of reducing these VPDs is to ensure access and the use of routine immunisation strategies which should be embraced by not only nursing mothers and their spouses, but also by opinion leaders (traditional, political, and religious) in Nigeria, especially in the North.

Furthermore, the potential of immunisation in preventing dangerous child diseases and disability is unparalleled worldwide. This is because it helps to prevent well over three million deaths of children across age-groups (Meleko, Geremev, and Birhanu 2019). As a demonstration of the importance attached to immunisation, WHO launched the Expanded Programme on Immunisation in 1974 to showcase its global efforts at ensuring life-saving vaccines for children, irrespective of their socio-economic status or geographical location. Despite some challenges, in well over 50 years now, the EPI has gained some dynamism and also recorded landmark achievements that have redefined and reshaped the discourse and landscape of global health. Initially, the EPI's target was on preventing the six child-killer diseases; but today, the programme has grown to include 13 recommended vaccines in the lifespan of humans, and also an additional 17 vaccines depending on the circumstances surrounding their recommendations (Temitayo-Oboh, Adegbola, Dedeke, Adeniyi, Soyannwo, Ajewole, and Sanni, 2023).

In Nigeria, the EPI was introduced in 1978 to provide routine immunisation to children less than two years. The objectives of the EPI were to achieve 90% national immunisation coverage and at least 80% at district levels, eradicate Poliomyelitis, eliminate neonatal tetanus, and reduce drastically incidence of measles. In a bid to enhance the effectiveness of the EPI, and meet the national challenges of immunisation, the EPI was restructured and renamed The National Programme on Immunisation in 1997. Consequent upon the Federal Government Health Sector Reform in 2007, the NPI was merged with the National Primary Health Care Development Agency (NPHCDA). The mandate of the NPHCDA, among others, was to protect children from vaccine-preventable diseases through the provision of vaccines, devices, and technical support to the state, local governments, and communities in the countries (NPHCDA, 2024). Although this programme recorded some modicum of success at the initial stage, which saw the reduction of child morbidity, there were still some challenges due to ignorance as well as socio-cultural and religious sentiments (UNICEF, 2017).

According to USAID (2017), children that are exempted from routine immunisation are more likely to suffer from Measles 22 times, and Pertussis, six times, when compared with children that are vaccinated. The international donor agency (USAID) also noted that Nigeria in particular has a relatively poor coverage in terms of national routine immunisation, which is still less than 50 percent. UNICEF (2017), underscores the position of USAID by stating that Nigeria tops the table of unvaccinated or incompletely vaccinated children in the world with a figure of 3, 980, 310. According to Tagbo, Eke, Omotowo, Onwuasigwe, and Onyeka (2019), one of the reasons which could be adduced for this level of vaccine hesitancy or immunisation lethargy is the attitude of post-natal women who have developed a lukewarm attitude towards immunisation for their children. They argue further that in spite of the fact that vaccines are free for children between the ages of 0-5 years, global and national policy on immunisation, as well as the success of the EPI, some of the VPDs still remain prevalent in the country. This is why it is imperative for post-natal mothers and their spouses to understand the importance of child immunisation. In a similar vein, the immunisation picture in Nigeria also reflects that of sub-Saharan Africa. Although child mortality due to vaccine hesitancy has fallen in most low-income countries of the Global South, the situation in sub-Saharan Africa remains of concern.

It is in the light of the above that strategic health communication has become imperative to the campaign on child immunisation in Nigeria, especially in the North. According to Thompson, Parrott, and Nussbaum (2021), health communication in general and in child immunisation in particular, tends to make the target audience, that is, the nursing mothers/care givers to demonstrate healthy behavioural practices; influence attitudes and behaviours towards adoption; increase the awareness and knowledge level of the target audience on good health practices, such as the rejection of vaccine hesitancy; advocates a positive position on health policy or issues; educate and enlighten the target audience against misconception about child immunisation, arising from ignorance, and also enhances the effectiveness and efficiency in healthcare delivery. So the focus of this research is to assess the health communication strategies adopted by the Ministry of Health in child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau.

Statement of the Problem

Child immunisation aims to avert the deaths of more than 1.2 million children annually, and it is strategic to the attainment of goal number 3 of the Sustainable Development Goals (SDGs), which is aimed at the "reduction of under-five mortality to less than 25/1000 live births" (Bangura, Xiao, Qiu, and Chen, 2020:2). However, despite the laudable gains which have been made in preventing Vaccine-Preventable Deaths, especially in the low-income countries, like the drastic reduction of Poliomyelitis, there are some teething challenges which has resulted in vaccine hesitancy in Nigeria, particularly in the North (Oku, 2019). For instance, strategic health communication interventions have been made in Nigeria to reduce child mortality from the VPDs. This is quite evident in the communication interventions on the eradication of Poliomyelitis. However, according to Oku, Oyo-Ita, Glenton, Frethelm, Eteng, Ames, Muloliwa, Kaufman, Hill, Cliff, Cartier, Bosh-Capblanch, Rada, and Lewin (2017), several health communication interventions have been carried out, especially in the states with a high risk, to increase acceptance of routine immunisation and adopt positive behaviour

towards child immunisation; but implementing these strategic health communication programmes has been challenging. Arising from the foregoing, what have been the health communication intervention initiatives on the six child killer diseases in the select states of Benue, Nasarawa, and Plateau States of North-Central, Nigeria; and how effective have these communication interventions been? These posers constitute the problem of this research.

Objectives of the Study

The major objective of this research is to assess the health communication strategies adopted by the Ministry of Health in the child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau, but specifically, it is to:

1. Find out the extent of awareness of the various health communication strategies adopted by the Ministry of Health in child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau by the respondents.
2. Determine the extent of effectiveness of the health communication strategies adopted by the Ministry of Health in child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau.
3. Examine the challenges of the health communication strategies adopted by the Ministry of Health in child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau.

Research Questions

The following research questions guided the study:

1. What is the extent of awareness of the various health communication strategies adopted by the Ministry of Health in child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau by the respondents?
2. What is the extent of effectiveness of the health communication strategies adopted by the Ministry of Health in child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau on the respondents?
3. What are the challenges of the health communication strategies adopted by the Ministry of Health in child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau?

Hypothesis

Ho: There is no significant difference in the health communication strategies adopted by the Ministry of Health in the child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau.

H_1: There is significant difference in the health communication strategies adopted by the Ministry of Health in child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau.

Literature Review

Conceptual Clarifications: The following concepts are clarified in this research: Health Communication, Immunisation, and Communication Strategies.

Health Communication

Health communication is the art and science of communicating information related to health, especially in public health campaigns and in health education either a medical and the patient, or between health professionals and the target public (Rutten, Blake, and Greenberg-Worisek, 2019). In a comprehensive conceptualisation of the term "health communication", Schiavo (2013), cited in Goldstein, MacDonald, and Guirguis (2015, p.288), states that it is:

> A multifaceted and multidisciplinary field of research, theory, and practice concerned with reaching different populations and groups to exchange health-related information, ideas, and methods in order to influence, engage, empower, and support individuals, communities, health-care professionals, patients, policymakers, organizations, special groups, and the public so that they will champion, introduce, adopt, or sustain a health or social behaviour, practice, or policy that will ultimately improve individual, community, and public health outcomes.

The major aim of health communication is to use communication strategies not only to inform and influence health-related decisions but also to induce behaviour change where necessary. It is important to stress that since health communication is directed at a particular target audience, its process must be research-driven, and evidence-based (www.ruralhealthinfo.org). In specific terms, health communication, the objectives of health communication are to: increase the awareness and knowledge of the public on health issues; influence the attitudes and behaviours of the public positively towards health issues; ensure that members of the public adopt healthy practices; drive the advocacy of policies on health issues; make strong arguments against misconceptions and misperceptions on health issues; improve health worker-patient relationship; and also enhance the effectiveness of healthcare delivery (Maibach, 2018).

Immunisation

Immunisation is the cornerstone of public health. It is a way to protect people from infectious diseases. Immunisation programmes are considered one of the most important public health achievements in the world. Together with clean water and improved access to health care, immunizations have contributed in a definitive and relevant way to the increase in life expectancy in most countries, also resulting in reductions in the dramatic infant mortality rates recorded in the not-distant past. According to data from the World Health Organization, vaccination campaigns prevent 4 to 5 million deaths annually worldwide (Safadi, 2022)

Bjork and Morelli (2021), dilating upon the immunisation strategies for healthcare practices and providers, note that in order to increase immunisation coverage, health workers should create or support effective interventions such as patient reminder and recall systems, by providing assessment and feedback, as well as reminders; generate, evaluate, and monitor the responses of the public to the outbreaks of Vaccine-Preventable Diseases; facilitate inventory management and accountability; determine patient immunisation status that will inform decisions made by care-providers, and clinics, and help in the surveillance of vaccine coverage, missed vaccination opportunities, and invalid dose administration. Expatiating further, Bjork and Morelli (2021), used the acronym "SHARE" to explain how health workers can pass important

information to help patients make informed decisions about immunisation. According to the authors, the acronym "SHARE" stands for Share, Highlight, Address, Recall, and Recall. It follows therefore that health workers should **share** why the recommended vaccine is right for the patient, based on his/her age, health status, lifestyles, occupation, or risk factors; **highlight** positive experiences with vaccines as appropriate, in order to reinforce the benefits and strengthen confidence in vaccination; **address** patients' questions and concern about the vaccine, including side effects, safety, and vaccine efficacy in an understandable manner; **remind** patients that vaccines protect them and their loved ones from many common and serious diseases; and **explain** the potential costs of getting the disease, including serious health effects, time lost, and also financial costs.

Communication Strategies

Goldstein, MacDonald, and Guirguis (2015), argue that communication strategies are important; and that communication strategies should be incorporated into the planning of any immunisation programme right from its inception because last-minute communication planning compromises the quality of the communication, the immunisation intervention, and the effects. They argue further that lack of communication at the beginning of the campaign can lead to serious problems with the implementation of the programme; and that there is a need for a methodical, and proactive communication strategy to respond to misinformation and anti-sentiments. They continue by saying that since communication is a two-way process, understanding the perspective of the people for whom immunisation services are intended, and their engagement with the issue, is as important as the information that the experts give.

Also, the Pan-American Health Organisation (2023), states that a communication strategy for immunisation, should be based on the RCCE model. This stands for Risk Communication and Community Engagement. So according to the body, the immunisation managers should build trust as an institution continuously; have a crisis communication plan ready; define communication objectives clearly and tangibly; identify the data and information already available and what may be need still; develop a policy for dealing with trolls; choose trustworthy relatable, and empathic spokespersons; train technical staff from health workers to non-communication professionals who will serve as spokespersons; use variety of platforms and trusted messengers to communicate about the benefits and risks of vaccination; engage continuously with stakeholders; engage continuously in audience/social listening and adapt the messages, platforms and spokespersons accordingly; invest in capacity-building for social listening; evaluate the political, social, economic, and cultural contexts in which messages are shared; monitor and address potential concerns of specific groups who may perceive vaccine-related risks to be higher; communicate about vaccine safety early in campaigns and continually; be transparent; acknowledge and address people's concerns about vaccination risks with empathy and compassion; and evaluate your communication efforts.

Review of Empirical Studies

Nwankwo and Osakwe (2020), studied the cultural impediments to health communication on radio, by focusing on the immunisation campaigns in the South-East geopolitical zone of Nigeria. Using survey research design, they discovered that such

cultural variables as traditional beliefs, language barriers, cultural affinities, and belief systems were perceived by the residents of the South-East as barriers to health communication on radio. In a study by Ames, Njang, Glenton, Fretheim, Kaufman, Hill, Oku, Cliff, Cartier, Bosch-Capblanch, Rada, Muloliwa, Oyo-Ita, Kum, and Lewin (2017), on stakeholder perception of communication about vaccination in two regions in Cameroon, the authors discovered that while parents felt vaccinating their children was important, and the information provided by the health workers was trust-worthy, parents felt that they did not have an adequate chance of asking questions; the respondents equally noted that social mobilisation activities such as outreach/door-to-door campaigns as well as announcements during religious services were important channels of vaccine communication. The study also found that the respondents believed that these aforementioned channels should be complemented by mass media campaigns as well as text messages. The researchers concluded that parents regard information about childhood vaccination as important. They recommended that health services needed to be organised in ways that prioritise and facilitate communication, particularly about routine vaccination

Bbaale (2023), studied the factors influencing childhood immunisation in Uganda. Using a nationally-representative data from the Uganda Demographic and Health Survey (UDSH); he discovered certain factors which had association with childhood immunisation as follows: maternal education, especially at tertiary institution level; exposure to the mass media, maternal healthcare utilisation, maternal age, occupation, immunisation plan, as well as regional and local peculiarities. He underscored the fact that children whose mothers who had post-secondary education were twice more likely to be fully-immunised when compared with mothers with only primary education. He concluded that unravelling the factors influencing childhood immunisation in Uganda would lead policy-makers to take decisive actions in the country. He equally recommended that it was imperative to increase media penetration, maternal healthcare utilisation, and to ensure parity across localities and regions in the country. Dempster (2020), studied evidence-based communication strategies for promoting vaccination and addressing vaccine hesitancy; he discovered that 50% of the parents in America were hesitant about vaccination, while their decisions about vaccination were usually based on emotion, not logic, reasoning, or facts.

Meleko, Geremew, and Birhanu (2017), assessed child immunisation coverage and the associated factors with full vaccination among children age 12-23 months in Ethiopia. They discovered based on the vaccination cards of the children that 27 (8.4%) of them were not immunised at all; 159 (49.4%) were partially-immunised; and 136 (42.2%) were fully immunised. The authors noted that the educational background of the parents of the children, place of delivery, maternal healthcare utilisation, and mother/caregiver's knowledge of vaccines and VPDs showed a significant relationship with the full vaccination of the child. They concluded that child immunisation in the study area was low. Kaufman, Ryan, and Hill (2018), on the identification of potential outcomes related to vaccination communication in Melbourne, Australia, discovered that there was anxiety among parents about vaccination; deciding for parents on whether to vaccinate their children or not was a hard choice; and that there also some challenges with the mode or pattern of communication. Andrade, Lorenzini, and Silva (2023), studied mothers' knowledge regarding the vaccination programme and the factors that lead to vaccine hesitancy in South Brazil. Two themes emerged out of their discoveries: (1)

mothers' knowledge about vaccination, and (2) factors behind vaccine hesitancy among mothers. They concluded that clear and concise communication between health workers and mothers was tangential for the promotion of compliance with the child immunisation programme. From the empirical reviews, some of them used either Focus Group Discussion (FGD), or in-depth to gather their data; while a few used both research designs. But this research is the only one that used three research designs: survey, FGD, and in-depth interviews to gather data from all the relevant stakeholders in the child immunisation campaign.

Theoretical Framework

This research is anchored on the Health Belief Model and the Theory of Planned Behaviour.

Health Belief Model

This is a behaviour change model rooted in social psychology, developed and enunciated to explain and predict behaviours related to health, especially in relation to the uptake of health services or health communication campaigns. This model also explains patterns of individual beliefs about the prevention of diseases, maintenance of good health, and achieving total well-being (Siddiqui, Ghazal, Saima, Ahmed, and Saijad, 2016). The HBM was developed in the 1950s by Irwin M. Rosenstock, Godfrey M. Hochbaum, Stephen S. Kegeles, and Howard Leventhal, all Social Psychologists at the Public Health Service of the United States of America (Janz and . Becker, 1984). To date, this model remains one of the most widely used in health behaviour research. The HBM explains how people's beliefs about health problems, perceived benefits of actions, and barriers to action, as well as self-efficacy can determine engagement or lack of engagement in the promotion of good health behaviour (Carpenter, 2010). It follows therefore that the behaviour of nursing mothers/caregivers will depend on their belief in the efficacy of vaccines as well as the perceived benefits which they hope to derive. In other words, if the nursing mothers believe that vaccines will save their children from VPDs, then they will embrace immunisation.

Theory of Planned Behaviour

The theory of Planned Behaviour explains how to understand and predict human behaviour. This psychological theory draws a relationship between individual beliefs and behaviour. This theory argues that human behaviours are determined by intentions, and certain circumstances, as well as perceived behavioural control; and that behavioural intentions are determined by a combination three factors: attitude towards the behaviour, subjective norms, and perceived behavioural control. The theory which is an extension of the Theory of Reasoned Action (TRA) developed by Icek Ajzen in 1985, was initially proposed by Martin Fishbein and Icek Ajzen in 1980, as a general model to predict and explain behaviour across a wide range of different types of behaviours. Pourmand, Doshmangir, Ahmadi, Noori, Rezaeifar, Mashhadi, Aziminia, Pourmand, and Gordeev (2020), in their study on the application of the theory of planned behaviour to self-care in patients with hypertension, noted that theory has been used in public health issues even more than the HBM; and that the theory is more applicable when the probability of success and actual control over the performance of a behaviour is suboptimal.. The relevance of this theory to this research is that most nursing mothers,

their spouses, opinion leaders (religious and traditional), as well as the community will embrace child immunisation based on their positive attitude towards it; and that their beliefs (religious or otherwise), may determine their positive attitude towards immunisation or vaccine hesitancy.

Methodology

The research designs used for the study were survey, Focus Group Discussion (FGD), and in-depth interview. Survey, is a kind of research design used to collect information from a sample of a population that is too large. According to Babbie (2020), the sample of this population must be representative enough to be generalisable. Focus Group Discussion is a kind of qualitative research technique and data collection method whereby a predetermined and selected group of people discuss an issue or topic in-depth. This group of people usually have the same characteristics; and the discussion is usually facilitated by a professional or expert in that field. The number could be from 6-20 (Nyumba, Wilson, Derrick, and Muckherjee, 2018). FGD was deemed quite appropriate because of similar experiences of nursing mothers concerning immunisation, especially if the health communication strategies of the Ministry of Health of the respective states were on target. An in-depth interview, on the other hand, is a kind of qualitative research design used for the collection of detailed information from an individual about his/her thoughts, beliefs, or perceptions about an issue (Boyce and Neale, 2022). It follows therefore that the researcher used a survey for mothers and fathers who have had experiences with immunisation before; Focus Group Discussion was used specifically for nursing mothers; while the in-depth interview was used for those health workers who have been in charge of the immunisation campaign in their respective states.

The population of this study consisted of all the indigenes and residents of Makurdi, the capital of Benue State; Keffi, a major and densely-populated town in Nasarawa State; and Jos, the capital of Plateau State. The 2024 estimated population of Makurdi capital city is 471,754; that of Keffi is 142,900; while that of Jos capital city is 1,001000 (www.worldpopulationreview.com; and www.population.de). This brings the total population to 1,615,654. The sample size for this research was 384. This was based on Krejcie and Morgan (1970) Sample Size Determination Table, which states that when the population of a study is more than 1,000,000, then the sample should be 384. The most important consideration in selecting a sample size is that it should be representative enough

Employing proportional distribution of questionnaire, which is usually based on the logic of the larger the population, the larger the sample size, Bourley's proportional allocation formula was used. According to Bourley's formula, as cited in Achonu, Okoro and Ozomadu (2019), the formula goes thus:

$$n_b = \frac{n(n)}{N}$$

Where: n_b = Bourley Proportional Allocation Formula
n = population allocated to respondent groups
n = total sample size
N = population of the study
So following the above, the calculation for the proportional distribution of questionnaire for Makurdi is as follows:

$$\frac{384\ (471{,}754)}{1{,}615{,}654}$$

$$= \frac{384 \times 471{,}754}{1{,}615{,}654}$$

$$= \frac{181153536}{1{,}615{,}654}$$

= 112.123967137

= 112

Also, the calculation for the proportional distribution of the questionnaire for Keffi is as follows:

$$\frac{384\ (142{,}900)}{1{,}615{,}654}$$

$$= \frac{384 \times 142{,}900}{1{,}615{,}654}$$

$$= \frac{54{,}873{,}600}{1{,}615{,}654}$$

= 33.963707576

= 34

The calculation for the proportional distribution of questionnaire for Jos is as follows:

$$\frac{384\ (1,\ 001000)}{1{,}615{,}654}$$

$$= \frac{384 \times 1{,}001000}{1{,}615{,}654}$$

$$= \frac{384384000}{1{,}615{,}654}$$

= 237.912325287

= 238

The above is represented in the table below thus:

Table 1: Proportional Distribution of Questionnaire Using Bourley's Formula

S/N	State	Study Area	Population	Frequency/Percentage of Questionnaire Distributed
1	Benue	Makurdi	471,754	112 (29.2%)
2	Nasarawa	Keffi	142,900	34 (8.9%)
3	Plateau	Jos	1,00100	238 (61.9%)
Total			**1,615,654**	**384 (100%)**

The sampling techniques used were cluster sampling and simple random sampling techniques for mothers and fathers who were the respondents for the questionnaire. The essence of incorporating mothers and fathers is that mothers who are not necessarily nursing babies have had experiences in immunisation before and can make contributions; while for the fathers, it demonstrates the fact that immunisation should

not be left in the hands of mothers alone. For the nursing mothers and health workers, convenience sampling was used. This is usually based on the availability of the respondents. Following this, Makurdi, the capital of Benue State was selected as the study area because of the presence of Benue State University Teaching Hospital; Jos, the capital of Plateau State was selected because of the presence of the University of Jos Teaching Hospital (JUTH); while Keffi was selected as the study area for Nasarawa State because of the presence of Federal Medical Centre (FMC), Keffi.

The research instruments used for the study were the questionnaire and in-depth interview. The questionnaire was used for mothers and fathers, while in-depth interview was used for nursing mothers through the Focus Group Discussion; and the health workers. The researcher collected data through self-administration of questionnaires as well as conducting in-depth interviews with the help of two research assistants. Apart from this, secondary sources of data were also used. These included books, reports, journals, and online resources. The study used simple percentages, frequency tables, charts, and Likert Scale for the research questions, while Chi-Square was used to test the hypothesis.

Data Presentation and Analysis

Out of the 384 copies of questionnaire distributed in the study areas of the select states in North-Central, 376 copies representing 97.9% were returned; while 368, representing 97.9% were found useful for the analysis of the data. Below is the presentation of the demographic data of the respondents:

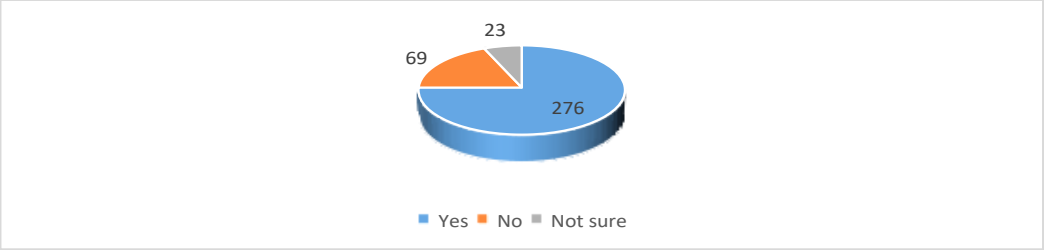
Table 1: Demographic Data of the Respondents

Variables	Frequency	Percentage
Sex		
Male	158	42.9%
Female	210	57.1%
Total	**368**	**100%**
Age-range		
18-22	74	20.1%
23-27	98	26.6%
28-32	131	35.6
33 & above	65	17.7%
Total	**368**	**100%**
Education		
WAEC/NECO	22	5.9%
NCE/ND	63	17.1%
HND	76	20.7%
Undergraduate	82	22.3%
BA/B.Ed/B.Sc	89	24.2%
MA/M.Ed/M.Sc	30	8.2%
PhD	6	1.6%
Total	**368**	**100%**
Religion		
Christianity	215	58.4%
Islam	134	36.4%

Others	19	5.2%
Total	**368**	**100%**
Occupation		
Public Servant	168	45.7%
Private Sector Worker		
Business	98	26.6%
Others		
	57	15.5%
Total	45	12.2%
	368	**100%**

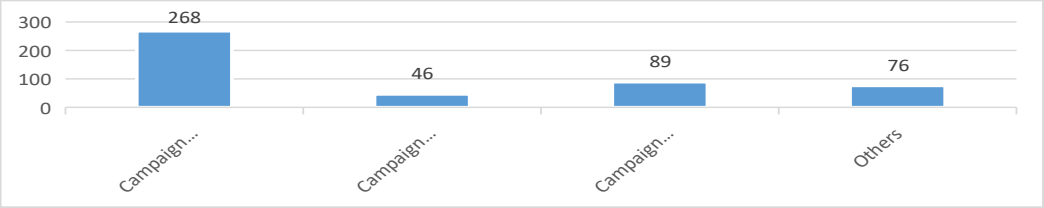
From Table 1 above, a majority of the respondents were female. This could be attributed to the fact that the primary target population for the child immunisation campaign is usually women, while men constitute a part of the secondary target population. For the age range of the respondents, a majority of the respondents are between 28-32 years of age. One obvious fact is that most of those within this age-range have more than two children and have had experience in child immunisation. For their level of education, this was more of a reflection of the fact that the study areas have been exposed to tertiary education for decades. For their religious inclination, this shows that the respondents were adherents of the two major religions in Nigeria (Christianity and Islam), while the respondents being mainly civil servants reflects the civil service structure of the three selected states.

Chart 1: Respondents' Awareness of Child Immunisation Campaigns



From Chart 1 above, an absolute majority of the respondents being aware of the child immunisation campaign could be attributed to routine immunisation campaigns through the clinics and even the tertiary health institutions in the study areas.

Chart 2: Respondents' Awareness of Specific Child Immunisation Campaigns



From Chart 2 above, the campaign on the eradication of Poliomyelitis championed mainly by the Bill and Melinda Gates Foundation gained widespread attention not only in Nigeria, but also in almost all the low-income countries. In spite of the conspiracy theories and fears about the Polio vaccine, especially in the North, the campaign was well-coordinated in terms of its frequency and reach; and that is why it tops the list of the most popular campaign by the respondents (Oku, 2019).

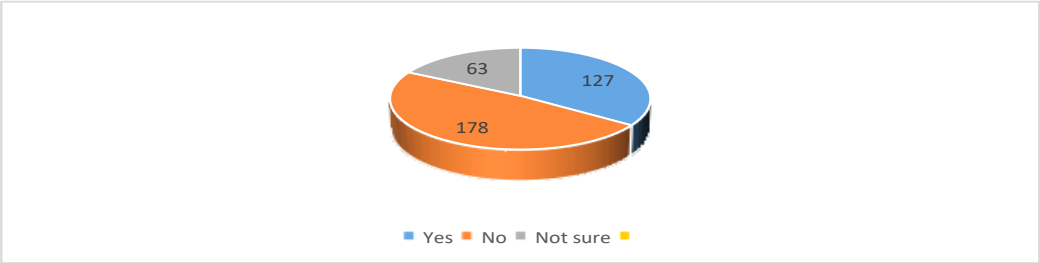
Table 2: Extent of Awareness of Health Communication Strategies on Child Immunisation
KEY: Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Not Sure (NS)

S/N	Child Immunisation Campaign Strategies	VHE	HE	LE	NS	Total	Mean
i	The use of traditional rulers/institutions	136	109	94	29	368	3.21
ii	The use of religious leaders	157	95	89	27	368	3.66
iii	The use of the political elite	35	44	143	146	368	1.91
iv	The use of television	66	82	128	92	368	1.79
v	The use of radio	265	103	0	0	368	3.72
vi	The use of community mobilisers	67	76	133	92	368	2.32
vii	The use of indigenous media	72	83	122	91	368	2.37
viii	The use text messages	145	115	60	48	368	2.97
ix	The use of immunisation officers	222	104	42	0	368	3.38

Key: if mean ≤ 1.5-2.49= Not Sure: 2.5-3.49=Less Extent: 3.5-4.49= High-Extent; while 4.5-5=.Very High Extent

Table 2 above used grade points to arrive at the mean. It follows that Very High Extent (VHE) had a grade point of 4; High Extent (HE) had a grade point of 3; Less Extent (LE) had a grade point of 2; while Not Sure (NS) had a grade point of 1. So the use of traditional leaders/institutions, religious leaders, and radio were seen as key channels/media in carrying out health communication campaigns/interventions in child immunisation in the study areas.

Chart 3: Respondents'' Views on the Effectiveness of the Health Communication Strategies Adopted by the States' Ministry of Health



In Chart 3 above, a majority of the respondents stated that the health communication strategies adopted by the Ministry of Health in the respective states were not effective. This could be attributed to poor coordination of the campaign and/or lack of funding for

the campaign, as both the state and federal government rely too much on international donors/partners.

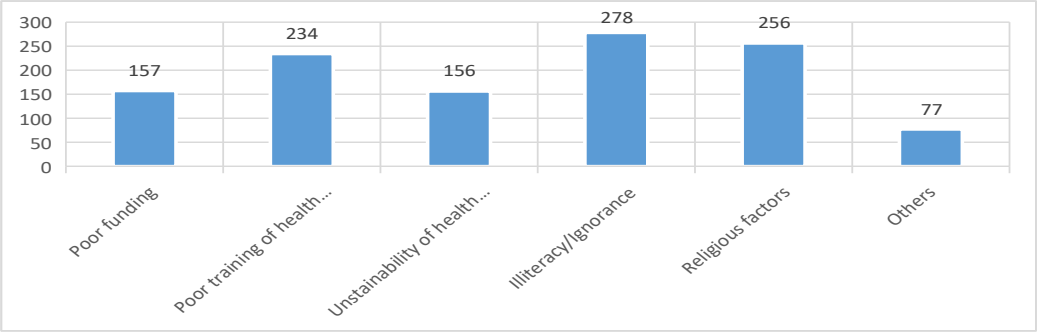
Table 3: Extent of Effectiveness of the Focus/Content of Health Communication Strategies on Child Immunisation
KEY: Very Effective (VE), Effective (E), Less Effective (LE) and Not Sure (NS)

S/N	Focus of Health Communication Strategies	VE	E	LE	NS	Total	Mean
i	Information	98	29	0	0	127	3.77
ii	Education	104	23	0	0	127	3.82
iii	Mobilisation	87	40	0	0	127	3.69
iv	Fear appeal	92	35	0	0	127	3.72

Key: if mean ≤ 1.5-2.49= Not Sure: 2.5-3.49=Less Effective: 3.5-4.49= Effective; while 4.5-5=.Very Effective

Just as Table 2, Table 3 above also used grade points to arrive at the mean. It follows that Very High Extent (VHE) had a grade point of 4; High Extent (HE) had a grade point of 3; Less Extent (LE) had a grade point of 2; while Not Sure (NS) had a grade point of 1. The aggregate of the views of the 127 respondents who said "Yes" was that the foci of the health communication strategies adopted by the Ministry of Health in the respective states were effective.

Chart 6: Challenges of Health Communication Strategies Adopted by the State Ministry of Health



In Chart 6 above, illiteracy/ignorance was identified by the respondents as a major challenge confronting the health communication strategies adopted by the state ministry of health. This cold be attributed to the fact that a majority of the target population of the immunisation campaign was not educated enough to understand the benefits of child immunisation.

Hypothesis
Ho: There is no significant difference in the health communication strategies adopted by the Ministry of Health in the child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau.
H_1: There is a significant difference in the health communication strategies adopted by the Ministry of Health in the child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau.

Decision Rule: Accept Ho if X^2cal ≤ X2tab (critical value), and reject if otherwise.

Table 4: Chi-Square Tests

	Value	df	Asymp.Sig (2-sided)	Exact Sig. (2-sided	Exact Sig. (1-sided)
Pearson Chi-Square	6.372	4	.000		
Continuity Correction	4.225	4	.000		
Likelihood ratio	9.205	4	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	6.221	4	.000		
N of Valid Cases	100				

Alpha (α= .05)
Degree of Freedom (df=4)

In Table 4 above, since the calculated Chi-Square (X^2_{cal}=6.372) is less than the critical value (X^2_{tab}=9.488), we accept the null hypothesis and reject the alternative and declare that there is no significant difference in the health communication strategies adopted by the Ministry of Health in child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau.

Focus Group Discussions

Six focus group discussions were held altogether in the three selected states. These discussions included 18 selected nursing mothers. Apart from two research assistants, two interpreters were used for the following languages- Tiv and Idoma (Benue State). It is pertinent to note that the data collected in Tiv, and Idoma languages were translated into English. Also, careful observation was done of the communication strategies of the health workers. The table below shows the distribution of the respondents (nursing mothers), based on the states.

Table 5: Distribution of Focus Group Discussions' Respondents Based on the Selected States

S/N	State	Study Area	No. of Respondents
1	Benue	Makurdi	6
2	Nasarawa	Keffi	6
3	Plateau	Jos	6
	Total		**18**

With the help of health workers in the health facilities used, the researcher was able to get the target sample for the Focus Group Discussion. The age-range of the respondents (nursing mothers) was between 20-45 years; for their education, the least had primary school certificate; in terms of occupation, there were predominantly housewives, students, teachers, petty traders, and just a few civil servants. Concerning their religion, they claimed to be either Christians or Moslems. The semi-structured questions of the FGDs centred on the following:

1. The respondents' extent of awareness of child immunisation campaigns.
2. The effectiveness of these campaigns on them.

3. Their sources of getting information on child immunisation

Findings from the FGDs showed that the number of the nursing mothers ranged from 1-7; while those who have been married for more than five years said that they have been aware of the child immunisation campaigns in their respective states for more than five years, while those marriage was less than five years said theirs was less than five years. For the nursing mothers' preferred sources of information. Concerning the effectiveness of child immunisation, all the nursing mothers affirmed that child immunisation was quite effective against the well-known child-killer diseases, and that was why they used to take their children to the clinics for immunisation. One of the nursing mothers however said she was worried about the rumour of how the vaccines could harm the children in the long-run, but was assured that it was not true. On the sources of information on child immunisation, all the nursing mothers said the respective clinics where they gave birth impressed on them to come for immunisation from when the child is 0-23 months. Some of them also said they also got information from radio, health workers on routine immunisation campaigns, and also some traditional and religious leaders.

In-depth Interview

For the in-depth interview, the researcher purposively selected the those health workers who had been involved in the conception, design, and delivery of health communication messages on child immunisation at either the state or local levels of health care delivery or through international partners/donors. Using a semi-structured interview guide, the researcher sought to find out from the health workers, a key segment of the stakeholders in the child immunisation campaign in the country, the kind of vaccine communication strategies used for both routine vaccination and campaigns. The table below shows the distribution of the respondents.

Table 6: Distribution of the Interviewees/Respondents by State and Designation

S/N	State	Study Area	Designation	No. of Respondents
1	Benue	Makurdi	a.Senior Immunisation Officer b.Social Mobilisation Officer (State Health Educator)	1 1
2	Nasarawa	Keffi	a.Senior Immunisation Officer b.Local Social Mobilisation Officer (Local Government Health Educator)	1 1
2	Plateau	Jos	a.Senior Immunisation Officer b.Social Mobilisation Officer (State Health Educator)	1 1
	Total			**6**

The Senior Immunisation Officers (SIOs) noted that their health communication strategies/interventions revolved round educating and sensitising nursing mothers as well as religious and traditional leaders on the imperative of vaccinating their children against the deadly child-killer diseases. They also said that the frequency of the campaigns was not fixed; but that the preferred frequency was through use of routine immunisation. They also noted that their preferred media/channels of delivering the messages on child immunisation was through traditional institutions and religious leaders; while this should be complemented with the media and text messages. For the Social Mobilisation Officers, all of them said their health communication strategies centred on educating and mobilising the people through the immunisation officers at the local level so that nursing mothers and even their spouses can embrace vaccination. They also said there was no fixed time for immunisation campaigns, except the ones scheduled by their partners/donors; and that routine immunisation was still a better strategy. They added that they preferred working with traditional institutions and religious leaders as well as community mobilisers.

On the attitude of community stakeholders, the SIOs said that most of the traditional and religious leaders have been quite receptive to the child immunisation campaign. They attributed the relative success recorded so far to their interventions because of the kind of influence which they wield in their respective communities. On the challenges faced by the health workers in the immunisation campaign, the SIOs listed them to be: poor funding of health communication interventions, inadequate human resources for the immunisation campaigns, insecurity, lack of equipment, especially that of Information, Education, and Communication (IEC) materials, megaphones and vehicles for mobilisation, lack of training as well as monitoring and evaluation; ill-motivated health workers, attitudes of some parents towards vaccination, poor political support and ownership of the immunisation campaign, and lukewarm community reception and participation. On the issue of poor funding especially, an SMO noted thus:

> The budget for health communication campaign on immunisation is usually very small and not enough for us to carry out our duties. Some of the times, we use our own money to fund the campaign because we have the interests of our people at heart. This is apparently why achieving the expected nationwide coverage based on the benchmark of the WHO will be difficult.

Discussion of Findings

The focus of this research was to evaluate the health communication strategies adopted by select states in North-Central, Nigeria in the child immunisation campaign. The states were: Benue, Nasarawa, and Plateau. To discuss the findings critically, and also bringing out the insights and implications, the research questions of the study were used:

Research Question 1: What is the extent of awareness of the various health communication strategies adopted by the Ministry of Health in child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau by the respondents?

The essence of the above research question was to first of all find out from the respondents using the questionnaire, the extent of their awareness of the various health communication strategies/interventions adopted by the Ministry of Health in the select states in North-Central Nigeria in their child immunisation campaigns. A majority of the

respondents stated that they were aware of the child immunisation campaigns; when asked further about the specific health communication campaign they were aware of, the campaign on the eradication of Polio was mentioned as the most popular. This tends to justify the findings of Adisa, Akinleye, Obafisile, and Oke (2022) that the campaign on the eradication of Polio championed by the Bill and Melinda Gates Foundation resonated across the length and breadth of Nigeria, even up to the grassroots.

When the respondents were asked further about the extent of awareness of the health communication strategies used in the child immunisation campaign, a majority of them pointed out that the use religious and traditional leaders/institutions, being opinion leaders, was a key strategy used. This justifies the findings of Oku (2019) who found out that religious and traditional leaders/institutions were quite instrumental to the level of acceptability of child immunisation seen in the North, The sub-text of this assertion cannot be lost on those who know the reverence with which the North hold their traditional and religious leaders. They are seen as influential opinion leaders that even most politicians respect, so health workers have discovered that these opinion leaders can be used in the child immunisation campaign.

Research Question 2: What is the extent of effectiveness of the health communication strategies adopted by the Ministry of Health in child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau on the respondents?

Before going into the key finding that answers the above research question, the respondents were asked if the health communication strategies of the Ministry of Health in the respective states were effective. Although a majority of the respondents gave a negative answer, for the 127 respondents who answered in the affirmative, when asked about the extent of the effectiveness of the focus of the health communication strategies, the aggregate of their views showed that it was effective. This contradicts the findings of Eze (2016), who discovered that the implementation focus/content of the child immunisation campaign in the North, especially Kaduna and Sokoto States, with regards to Polio was low and thereby less effective.

Research Question 3: Examine the challenges of the health communication strategies adopted by the Ministry of Health in child immunisation campaign in the following select states of North-Central: Benue, Nasarawa, and Plateau?

Findings from the above research question showed that illiteracy/ignorance led the pack, followed by religious factors, and then poor training of the health workers. This justifies the findings of Oku, Oyo-Ita, Glenton, Fretheim, Eteng, Ames, Muloliwa, Kaufman, Hill, Cliff, Cartier, Bosch-Capblanch, Rada, and Lewin (2017), who identified these challenges, among others, as the factor militating against the implementation of childhood vaccination communication strategies in the North.

Supporting the above, findings from the Focus Group Discussions with the nursing mothers/care-givers showed that they agreed that child immunisation was effective in the prevention of Vaccine-Preventable Diseases (VPDs) justifying the findings of Temitayo-Oboh, Adegbola, Dedeke, Adeniyi, Soyannwo, Ajewole, and Sanni (2023); they equally gave their views on the preferred sources of information on child immunisation. Also, apart from giving their channels of getting information on child vaccination, the respondents gave their preferred sources of information concerning child immunisation.

For the in-depth interview with the health workers, the respondents noted that their health communication strategies/interventions involved reaching out to the primary target population (nursing mothers), as well as the secondary target population (spouses of nursing mothers, religious and traditional leaders as well as the community. They equally noted that the frequency and reach of the campaign was done more through routine immunisation. They also said that their preferred channels of carrying out immunisation campaign was through religious and traditional leaders/institutions, while also complementing that with the media. On the challenges by them, they mentioned poor funding of health communication interventions, inadequate human resources for the immunisation campaigns, insecurity and lack of equipment, especially that of Information, Education, and Communication (IEC) materials, megaphones and vehicles for mobilisation, lack of training as well as monitoring and evaluation; ill-motivated health workers, attitudes of some parents towards vaccination, poor political support and ownership of the immunisation campaign, and lukewarm community reception and participation. Their views justify the findings of Oku (2019) on the challenges facing the challenges facing childhood vaccination communication in Nigeria, especially the North.

Conclusion and Recommendations

All over the world, especially in the developing countries, child-killer diseases or infant mortality has continued to pose a threat to sustainable human development as well as the achievement of the Sustainable Development Goals (SDGs). However, in the relative success achieved so far in Nigeria in combatting the child-killer diseases, as well as vaccine hesitancy, strategic health communication interventions have played tremendous role. But strategic health communication interventions require careful planning and coordination, evidence-based research and data mining. For a conservative society like the North, the choice of health communication strategies like the use of religious and traditional institutions is very germane to the success of the child immunisation campaign. Complementing the above should be the use of the media, especially radio because it is perhaps the most penetrating and pervasive medium of mass communication in the North.

Further, health communication strategies should go beyond mere routine visits. Outreach to include deliberate campaigns aimed at sensitising not only the nursing mothers but also their spouses, religious/traditional institutions, as well as the community. When the people are adequately sensitised, the resistance to child immunisation will reduce, which will also reduce vaccine-hesitancy. It is imperative to note that the health communication strategies should be holistic and all-embracing, using all the categories of the media: indigenous media, mass media, and the new media (mobile phones), so that the target audience can be reached anywhere and anytime. Arising from the above, the following are the recommendations of the study:

1. There should be comprehensive planning/coordination of health communication strategies/interventions
2. There should be the use of an integrated media/channels approach
3. There should be adequate funding for health communication interventions by the state governments.

References

Achonu, C.V. Okoro, B.C. & Ozomadu, E.A. (2019). Effects of authoritative classroom management style on performance of students in public secondary schools in Imo State. *International Journal of Management and Marketing Systems,* 13(5), 91-116

Adesina, M.A. Olufadewa, I.I. Oladele, R.I. Solagbade, A. & Olaoyo, C. (2023). Determinants of childhood immunization among rural mothers in Nigeria. *Population Medicine*, 5 (22), 1-7.

Ajzen, I. & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood-Cliffs: Prentice-Hall.

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J, Beckman (Eds.), *Action-Control: From Cognition to Behavior*, 11-39, Heidelberg: Springer.

Ames, H. Njang, D.M. Glenton, C. Fretheim, A. Kaufman, J. Hill, S. Oku, A. Cliff, J. Cartier, Y. Bosch-Capblanch, X. Rada, G. Muloliwa, A.M. Oyo-Ita, A. Kum, A.P. & Lewin, S. (2017). Stakeholder perceptions of communication about vaccination in two regions of Cameroon. *PLoS ONE,* 12 (8), 1-23.

Ames, H. Njang, D.M. Glenton, C. Fretheim, A. Kaufman, J. Hill, S. Oku, A. Cliff, J. Cartier, Y. Bosch-Capblanch, X. Rada, G. Muloliwa, A.M. Oyo-Ita, A. Kum, A.P. & Lewin, S. (2017). Stakeholder perceptions of communication about vaccination in two regions of Cameroon. *PLoS ONE,* 12 (8), 1-23.

Andrade, D.R.S. Lorenzini, E.S. & Silva, E.F. (2023). Immunization of children from 0 to 2 years: Knowledge of caregivers and actions of the nurse in family health strategy. *PLoS ONE*, 22 (4), 1-22.

Babbie, E.R. (2020). *The practice of social research (13th ed.)*. New Jersey: CENGAGE

Bangura, J.B. Xiao, S. Qiu, D. Ouyang, F. & Chen, L. (2020). Barriers to childhood immunization in sub-Saharan Africa. *BMC Public Health*, 20 (1108), 1-15.

Bbaale, E. (2023). Factors influencing childhood immunization in Uganda. Journal of Health *Population*, 31 (1), 118-129.

Bjork, A, & Morelli, V. (2021). Immunization strategies for healthcare practices and providers. https://www.cdc.gov. Accessed May 22, 2024.

Boyce, C.B. & Neale, P. (2022). Conducting in-depth interviews: A guide for designing and conduting in-depth interviews for evaluation input. https://www.pathfinderinternational.com. Accessed May 22, 2024.

Carpenter, C.J. (2010). A meta-analysis of the effectiveness of health belief model variables in predicting behavior. *Health Communication*, 25, 661-669.

Dempster, A. (2020). Evidence-based communication strategies for promoting vaccination and addressing vaccine hesitancy. www.healthnet.com. Accessed May 22, 2024.

Goldstein, S. MacDonald, N. & Guirguis, S. (2022). Health communication and vaccine hesitancy. *International Journal of Health Communication*, 17 (4), 288-300.

Janz, N.K. & Becker, M.H. (1984). The health belief model: A decade later. *Health education and behavior*, 11(1), 1-47.

Kaufman, J. Ryan, R. & Hill, S. (2018). Qualitative focus group with stakeholders identify new potential outcomes related to vaccination communication. *PLoS ONE,* 13 (8), 1-18.

Krejie, R.V. & Morgan, D.W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement,* 30(3), 607-610.

Maibach, E.W. (2018). Communication for health. *Annual Review of Public Health*, 25 (2), 439-455.

Meleko, A. Geremew, M. & Birhanu, F. (2017). Assessment of child immunization coverage and associated factors with ful vaccination among children aged 12-23 months at Mizan Aman Town, Maji Zone, Southwest Ethiopia. *International Journal of Pediatrics,* 22 (1), 1-11.

National Primary Health Care Development Agency (2024). *Nigeria national polio eradication emergency plan (NPEP)*. Abuja: NPHCDA

Nwankwo, F.B. & Osakwe, S.O. (2020). Cultural impediments to health communication on radio: A study of polio-immunization campaign in South East Nigeria. *Innovative Journal of Arts and Social Sciences* (IJASS), 01, 27-38.

Nyumba, T.O. Wilson, K. Derrick, C.J. & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods in Ecology and Evolution*, 9(1), 1-13.

Oku, A. (2019). Childhood vaccination communication in Nigeria. A Doctor of Philosophy Thesis Submitted to the Faculty of Medicine, University of Oslo, Norway.

Oku, Oyo-Ita, A. Glenton, C, Fretheim, A. Ames, H. Eteng, G. Muloliwa, A. Kaufman, J. Hill, S. Cliff, J. Cartier, Y. Bosch-Capblanch, X, Rada, G, & Lewin, S. (2017). Factors affecting the implementation of childhood vaccination communication strategies in Nigeria. *BMC Public Health,* 17 (20), 1-12.

Pan American Health Organization (2023). *Communicating about vaccine-related risks*. Washington, D.C: Pan American Health Organization.

Pourmand, A, & Gordev, V. (2020). An application of the theory of planned behavior to self-care in patients with hypertension. *GMC Public Health*, 20(1290), 1-8.

Rutten, L.F.J. Blake, K.D. & Greenberg-Worisek, S.V. (2019). Online health information seeking among US adults: Measuring progress towards a healthy people 2020 objective. *Public Health Reports,* 134 (6), 617-625.

Safadi, M.A. (2022). Evolving meningococcal immunization strategies. Retrieved from https://www.pubmed.ncbi.nlm.nih.gov, on April 18, 2024.

Siddiqui, T.R. Ghazal, S.B. Ahmed, S. & Saijad, W. (2016). Use of health belief model for assessment of public knowledge and household preventive practices in Karachi, Pakistan. *PLOS Neglected Tropical Diseases,* 10(11), 444-457

Tagbo, B.N. Eke, C.B. Omotowo, B.I. Onwuasigwe, C.N & Onyeka, E.B. (2019). Vaccination coverage and its determinants in children aged 11-23 months in an urban district of Nigeria. *World Journal of Vaccines*, 16, 175-183

Temidayo-Oboh, A.O. Adegbola, A.A. Dedeke, I.O.F. Adeniyi, M.A. Soyannwo, T. Ajewole, G.A. & Sanni, S.B (2023). Immunization coverage among children aged 0-23 months at a tertiary hospital, southwestern Nigeria: A retrospective study. *Babcock University Medical Journal,* 6(1), 1-8.

Thompson, T. Parrott, R. & Nussbaum, J. (2021). *The routledge handbook of health communication (2nd. Ed.)*. Oxfordshire: Routledge

UNICEF (2017). UNICEF immunization road map (2018-2013). New York: United Nations Children Fund

USAID (2017*). Behavior change communication strategy: For primary health services*. New York: USAID.