

Tailored Interventions and their Effectiveness in Promoting Childhood Vaccine Acceptance among Young Mothers in Selected Local Communities in Niger State

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ABSTRACT

Childhood vaccination remains one of the most effective public health strategies for preventing infectious diseases and reducing childhood mortality. However, vaccine hesitancy among young mothers continues to affect immunization coverage in many rural and semi-urban communities in Nigeria, particularly in Niger State. This study examined tailored interventions and determined their effectiveness in promoting childhood vaccine acceptance among young mothers in selected local communities in Niger State. The study specifically identified factors influencing vaccine hesitancy, assessed tailored intervention strategies, and evaluated their impact on vaccine acceptance. A descriptive cross-sectional survey research design was adopted for the study. The target population comprised young mothers of children aged 0–5 years residing in selected local communities in Niger State. A sample size of 250 respondents was selected using multistage and simple random sampling techniques. Data were collected using structured questionnaires and analyzed using descriptive statistics such as frequency counts, percentages, mean scores, and tables. Findings revealed that misinformation, fear of vaccine side effects, religious beliefs, low educational level, and poor access to healthcare services were major factors contributing to vaccine hesitancy among young mothers. The study further showed that community health education, involvement of religious and traditional leaders, mobile vaccination outreach, peer support groups, and SMS reminder systems significantly improved vaccine acceptance. Results indicated that tailored interventions increased awareness, reduced misinformation, improved clinic attendance, and enhanced trust in healthcare providers. The study concluded that culturally sensitive and community-specific interventions are effective in promoting childhood vaccine acceptance among young mothers in Niger State. The study recommended increased government support for community-based immunization campaigns, improved healthcare accessibility, and continuous public enlightenment programmes to sustain positive vaccination behaviours.

Keywords: Childhood vaccination, vaccine acceptance, tailored interventions, young mothers, immunization, Niger State, vaccine hesitancy.

BACKGROUND OF THE STUDY

Childhood immunization remains one of the most effective, affordable, and sustainable public health interventions for preventing infectious diseases and reducing childhood morbidity and mortality globally. Vaccination has contributed immensely to the control and elimination of many deadly childhood diseases such as poliomyelitis, measles, diphtheria, tetanus, pertussis, hepatitis B, tuberculosis, and yellow fever. According to the World Health Organization, immunization currently saves between four and five million lives annually across the world and plays a critical role in strengthening child survival and improving overall public health outcomes. In recent years, global health organizations have intensified efforts toward achieving universal immunization coverage through programmes such as the Immunization Agenda 2030, which emphasizes equitable access to vaccines for all children regardless of geographical location or socioeconomic status.

Despite the significant progress achieved in global immunization programmes, vaccine-preventable diseases continue to pose serious public health challenges, especially in developing countries such as Nigeria. Nigeria remains among countries with high numbers of under-immunized and zero-dose

children, particularly in rural and underserved communities. Although vaccines are provided free of charge through the National Programme on Immunization and supported by international agencies such as UNICEF and Gavi, many children still fail to receive complete vaccination doses required for adequate protection against infectious diseases (UNICEF, 2021). Incomplete vaccination schedules increase the risk of disease outbreaks, childhood disability, and mortality among vulnerable populations.

One of the major barriers affecting immunization uptake globally and in Nigeria is vaccine hesitancy. Vaccine hesitancy refers to the delay in acceptance or refusal of vaccines despite the availability of vaccination services. According to recent public health studies, vaccine hesitancy has become a growing concern due to widespread misinformation, distrust in healthcare systems, fear of side effects, and socio-cultural misconceptions surrounding vaccines (Larson et al., 2021). The problem became more pronounced following the COVID-19 pandemic, during which misinformation and conspiracy theories concerning vaccines spread rapidly through digital and social media platforms. These developments significantly influenced public attitudes toward immunization programmes, including childhood vaccines.

In Nigeria, vaccine hesitancy is influenced by several interconnected factors, including religious beliefs, cultural traditions, educational status, poverty, fear of adverse reactions, inadequate healthcare access, and poor communication between healthcare workers and community members. Studies conducted in Northern Nigeria have shown that misconceptions regarding vaccine safety, fertility concerns, and distrust of government-sponsored health interventions contribute significantly to low vaccine acceptance among parents and caregivers (Afolabi et al., 2021). In some communities, rumours suggesting that vaccines contain harmful substances or are designed to reduce fertility continue to discourage mothers from presenting their children for immunization.

Niger State, located in North-Central Nigeria, is one of the largest states in the country by landmass and comprises several rural and semi-urban communities with varying healthcare challenges. Many local communities in the state experience poor road networks, inadequate healthcare facilities, shortage of trained healthcare personnel, poverty, low literacy levels, and limited access to accurate health information. These infrastructural and socioeconomic challenges negatively affect healthcare utilization, including childhood immunization services. In remote communities, mothers often travel long distances to access vaccination centres, while some health facilities experience irregular vaccine supply and insufficient staffing. Such conditions contribute to missed vaccination appointments and incomplete immunization schedules among children.

Additionally, the healthcare system in many rural communities of Niger State faces operational challenges such as inadequate funding, weak health education structures, and insufficient community mobilization activities. According to the Nigeria Demographic and Health Survey (NDHS, 2023), immunization coverage remains uneven across different regions of Nigeria, with rural communities generally recording lower vaccination rates compared to urban areas. This disparity exposes many children in rural communities to preventable infectious diseases and increases the burden on public health systems.

Young mothers constitute a particularly important group in childhood immunization programmes because they serve as primary caregivers and major decision-makers concerning the health and wellbeing of their children. Their beliefs, attitudes, knowledge, and perceptions significantly influence whether children receive recommended vaccines at the appropriate time. However, many young mothers in Niger State face multiple challenges that affect their vaccine-related decisions. Some lack adequate knowledge regarding vaccine schedules, benefits, and side effects, while others rely on information obtained from family members, peers, traditional birth attendants, religious groups, and social media platforms.

The rapid expansion of social media and digital communication platforms has further complicated vaccine acceptance behaviours among young mothers. Platforms such as WhatsApp, Facebook, TikTok, and Instagram have become major channels through which health information is shared. Unfortunately, these platforms also facilitate the rapid spread of misinformation, rumours, and conspiracy theories regarding vaccines. False claims linking vaccines to infertility, autism, severe illness, or hidden political agendas continue to circulate widely in some Nigerian communities. Young mothers who lack adequate health literacy may become

confused or fearful after exposure to such misinformation, thereby developing negative attitudes toward childhood vaccination (Wilson & Wiysonge, 2020).

Furthermore, cultural and religious beliefs continue to influence immunization behaviours in many communities. In some areas, traditional beliefs may discourage mothers from visiting healthcare facilities, while certain religious teachings may create suspicion toward modern medical interventions. Family influence also plays a major role, particularly in patriarchal communities where husbands, elders, or religious leaders participate actively in healthcare decision-making. Consequently, some young mothers maybe willing to vaccinate their children but are prevented from doing so by social or family pressures.

In response to increasing vaccine hesitancy, public health experts and healthcare organizations have emphasized the need for tailored interventions aimed at addressing the unique needs and concerns of specific populations. Tailored interventions refer to targeted and community-specific strategies developed based on the social, cultural, educational, and behavioural characteristics of a particular group. Unlike generalized public health campaigns, tailored interventions recognize that communities differ in beliefs, communication preferences, language, literacy levels, and healthcare experiences. Therefore, interventions designed to reflect local realities are more likely to achieve positive behavioural outcomes.

Tailored interventions for promoting childhood vaccine acceptance may include community-based health education programmes, involvement of religious and traditional leaders, peer support groups, mobile vaccination outreach services, home visitation by community health workers, and digital awareness campaigns targeted at young mothers. Community health education programmes conducted in local languages can improve understanding of vaccine benefits and address fears concerning vaccine safety. Similarly, the involvement of respected traditional and religious leaders can increase trust and acceptance of immunization programmes within communities.

Mobile vaccination outreach programmes have also proven effective in reaching underserved and hard-to-reach communities where healthcare facilities are limited. These outreach services reduce

transportation barriers and increase convenience for mothers with limited mobility or financial resources. Home visits by community health workers allow for direct interaction with families and provide opportunities for personalized counselling and follow-up on missed immunization appointments. Additionally, digital interventions such as SMS reminders, radio jingles, and social media awareness campaigns can reinforce positive health messages and improve adherence to vaccination schedules among young mothers.

Studies conducted in several low- and middle-income countries have demonstrated that tailored interventions are generally more effective than generalized approaches in improving vaccine uptake and reducing vaccine hesitancy (Dubé et al., 2021). Tailored interventions improve trust in healthcare systems, promote community participation, enhance understanding of immunization benefits, and address misinformation directly within the cultural context of affected communities. They also encourage active involvement of community stakeholders in promoting positive health behaviours.

Despite ongoing efforts by government agencies, healthcare institutions, and international organizations to improve childhood immunization coverage in Nigeria, vaccine hesitancy remains a significant public health concern in many communities within Niger State. Existing generalized immunization campaigns may not adequately address the specific cultural, educational, religious, and communication needs of young mothers in different communities. Consequently, there is an urgent need to identify context-specific and culturally appropriate interventions capable of improving vaccine acceptance among young mothers in selected local communities in Niger State.

This study therefore seeks to identify tailored interventions and determine their effectiveness in promoting childhood vaccine acceptance among young mothers in selected local communities in Niger State. The study is important because it will provide evidence-based recommendations for policymakers, healthcare providers, public health practitioners, and development partners on strategies for improving immunization uptake and reducing vaccine hesitancy within vulnerable populations.

THEORETICAL REVIEW

Health Belief Theory (Health Belief Model)

This study is anchored on the Health Belief Theory, also known as the Health Belief Model (HBM). The theory was propounded by Godfrey Hochbaum in 1958 and later developed by Irwin Rosenstock, Stephen Kegels, and Howard Leventhal in the 1960s and 1970s. The theory was designed to explain and predict health-related behaviours, especially preventive health actions such as vaccination, disease screening, and health promotion practices.

The Health Belief Model states that individuals are likely to engage in a health behaviour if they believe they are at risk of a disease, understand the seriousness of the disease, believe that the preventive action will be beneficial, and perceive fewer barriers to taking action. The theory is based on six major constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy.

Perceived Susceptibility

This refers to an individual's belief about the likelihood of contracting a disease. In this study, young mothers who believe their children are vulnerable to vaccine-preventable diseases are more likely to accept childhood immunization.

Perceived Severity

This refers to beliefs regarding the seriousness of diseases and their consequences. Mothers who understand the dangers associated with diseases such as measles, poliomyelitis, and tetanus are more likely to vaccinate their children.

Perceived Benefits

This refers to the belief that vaccination can effectively prevent diseases and improve child health outcomes. Mothers who recognize the benefits of vaccines are more likely to comply with immunization schedules.

Perceived Barriers

These are obstacles that discourage individuals from taking health actions. In this study, barriers may include fear of side effects, misinformation, religious beliefs, poor healthcare access, and distrust in healthcare providers.

Cues to Action

These are reminders or motivations that encourage health behaviour. Examples include health education campaigns, SMS reminders, advice from healthcare workers, and community awareness programmes.

Self-Efficacy

This refers to confidence in one's ability to perform a health behaviour successfully. Mothers who feel informed and supported are more likely to complete vaccination schedules for their children.

Application of the Theory to the Study

The Health Belief Theory is relevant to this study because it explains how beliefs, perceptions, and attitudes influence childhood vaccine acceptance among young mothers in selected communities in Niger State. The theory supports the use of tailored interventions such as community health education, involvement of religious leaders, mobile vaccination outreach, peer support groups, and digital awareness campaigns to improve vaccine acceptance.

These interventions help increase awareness of disease risks, emphasize the benefits of vaccination, reduce misconceptions and barriers, and encourage positive health behaviours among

young mothers. The theory therefore provides a suitable framework for understanding how tailored interventions can improve childhood vaccine acceptance in Niger State.

METHODOLOGY

Research Design

The study adopted a descriptive cross-sectional survey design. This design was considered appropriate because it enabled the researcher to collect data from respondents at a particular point in time and assess the effectiveness of tailored interventions in promoting vaccine acceptance.

Area of the Study

The study was conducted in selected local communities in Niger State, Nigeria. Niger State is located in North-Central Nigeria and comprises both urban and rural communities with varying levels of healthcare access and immunization coverage.

Population of the Study

The target population consisted of young mothers with children aged between 0-5 years residing in selected communities in Niger State.

Sample Size and Sampling Technique

A sample size of 250 respondents was selected for the study using multistage sampling procedures. Communities were first selected purposively based on immunization challenges, after which simple random sampling was used to select respondents.

Instrument for Data Collection

Data were collected using a structured questionnaire titled:

“Tailored Interventions and Childhood Vaccine Acceptance Questionnaire (TICVAQ)”

The questionnaire contained sections on:

- Socio-demographic characteristics
- Causes of vaccine hesitancy
- Types of tailored interventions
- Perceived effectiveness of interventions

Validity of the Instrument

The instrument was validated by experts in public health and health education to ensure content validity.

Reliability of the Instrument

A pilot study was conducted, and Cronbach Alpha reliability coefficient of 0.82 was obtained, indicating that the instrument was reliable.

Method of Data Analysis

Data collected were analyzed using descriptive statistics such as frequencies, percentages, mean scores, and tables.

RESULTS

Table 1: Socio-Demographic Characteristics of Respondents

Variable	Frequency (n=250)	Percentage (%)
Age 18-25 years	110	44.0
Age 26-35 years	95	38.0
Age 36-45 years	45	18.0
Married	190	76.0
Single	40	16.0
Widowed/Separated	20	8.0
Primary Education	60	24.0
Secondary Education	115	46.0
Tertiary Education	75	30.0

Field Survey (2026)

The table shows that majority of respondents (44.0%) were between 18-25 years, while 76.0% were married. Most respondents had secondary education (46.0%), indicating moderate literacy levels among participants.

Table 2: Factors Influencing Vaccine Hesitancy

Factors	Agree	Disagree	Percentage Agree (%)
Fear of side effects	210	40	84.0
Religious beliefs	185	65	74.0
Misinformation from social media	225	25	90.0
Poor healthcare access	200	50	80.0
Low trust in healthcare workers	170	80	68.0

Field Survey (2026)

The table indicates that misinformation from social media (90.0%) was the most significant factor influencing vaccine hesitancy, followed by fear of side effects (84.0%) and poor healthcare access (80.0).

Table 3: Tailored Interventions Identified in the Communities

Intervention Strategy	Frequency	Percentage (%)
Community health education	230	92.0
Religious leader involvement	205	82.0
Mobile vaccination outreach	215	86.0
Peer support groups	190	76.0
SMS reminders	180	72.0
Home visits by health workers	220	88.0

Field Survey (2026)

Community health education (92.0%) was the most commonly identified intervention, followed by home visits (88.0%) and mobile vaccination outreach programmes (86.0%).

Table 4: Effectiveness of Tailored Interventions

Outcome Variable	Effective	Not Effective	Percentage Effective (%)
Increased vaccine awareness	235	15	94.0
Reduced misinformation	220	30	88.0
Improved clinic attendance	225	25	90.0
Increased trust in healthcare providers	210	40	84.0
Improved completion of immunization schedules	230	20	92.0

Field Survey (2026)

The results reveal that tailored interventions were highly effective in promoting vaccine acceptance. Increased awareness (94.0%) and improved immunization completion (92.0%) were the highest reported outcomes.

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Conflict of Interest Statement

The authors declare that there are no conflicts of interest regarding the publication of this paper.

Author Contributions

U.N. conceptualized the study, designed the methodology, collected and analyzed the data, and drafted the manuscript. A.I.A. supervised the study, reviewed the methodology, and contributed to manuscript revision. Y.B.N. provided academic guidance, supervised the research process, and critically reviewed the manuscript. A.E.U. contributed to data interpretation, manuscript editing, and final review. All authors read and approved the final version of the manuscript.

CONCLUSION

Childhood vaccine hesitancy remains a significant public health challenge among young mothers in selected communities in Niger State. The study established that factors such as misinformation, fear of side effects, religious misconceptions, low healthcare access, and distrust in healthcare providers negatively influence vaccine acceptance. However, the findings demonstrated that tailored Interventions designed to reflect community realities and communication preferences are highly effective in improving vaccine uptake.

Interventions such as community health education, engagement of religious leaders, home visits by healthcare workers, peer support programmes, mobile vaccination outreach, and SMS reminders significantly increased awareness and acceptance of childhood vaccines among young mothers. Tailored approaches proved more successful because they addressed specific cultural beliefs, fears, and barriers affecting vaccination behaviours.

The study therefore concludes that sustainable and culturally sensitive interventions are essential for improving childhood immunization coverage in Niger State. Government agencies, healthcare providers, community leaders, and development partners should collaborate to strengthen community-based vaccination programmes and ensure that immunization services are accessible, acceptable, and responsive to local needs.

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