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Zero-Dose Children in Kano State: Implications for Social and Behavioral Change Communication -April 2025

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Executive Summary

This qualitative study investigates the extent to which zero-dose children are recognized as a salient and important challenge to be addressed and the drivers for the rising prevalence in Kano State, Nigeria, where over 300,000 children missed routine immunizations in 2023. Despite national and state efforts to reduce zero-dose cases to below 10% by 2024 and substantial state governments' investments, Kano State reports a significant zero-dose prevalence of 30.2%, exceeding the national average. Conducted between July 2024 and April 2025, the research explores local knowledge, attitudes, and drivers of zero-dose persistence through key informant interviews and focus group discussions with caregivers, health workers, community leaders, and other stakeholders across the National Primary Health Care Development Agency (NPHCDA)- identified five high-prevalence Local Government Areas. The findings reveal a complex interplay of economic hardship, vaccine adverse effects (particularly from Penta 1), distrust in free services, and gendered decision-making dynamics, with men and paternal grandmothers significantly influencing vaccination refusals. Misconceptions and misinformation about vaccines causing infertility and traditional beliefs further exacerbate hesitancy. Despite reported high vaccination coverage, a growing minority of vaccine-resistant families contributes to increasing zero-dose cases, amplified by economic crises, migration from border states with insecurity, and reduced community engagement. Respondents' recommendations include engaging religious leaders, enhancing social behavior change communication, sustaining incentive programs, and localizing health worker recruitment to build trust. The study underscores the need for social behaviour change communication and targeted interventions addressing systemic, social, and economic barriers to improve immunization uptake and reduce zero-dose prevalence in Kano State, which persists despite increasing routine immunization investments.

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1.0 Introduction

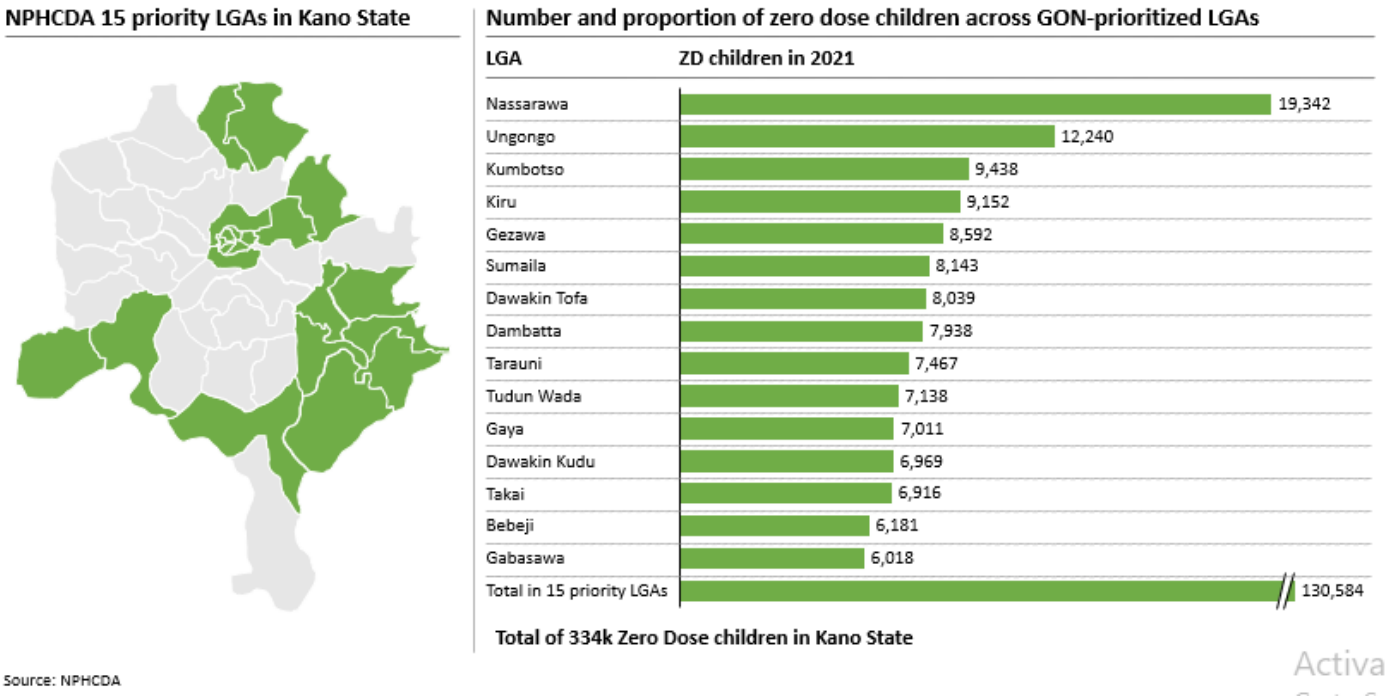
Vaccines are a significant achievement in medical science, preventing millions of deaths annually. The World Health Organization (WHO) estimates that vaccines save 2 to 6 million lives each year, with potential for an additional 1.5 million if coverage increases.[i] Nigeria, in alignment, developed a three-year national strategic plan to reduce zero-dose children to below 10% by 2024, but faces regional disparities. According to 2023 estimates from national reports, UNICEF and WHO, Nigeria has over 2.1 million zero-dose children. [iiiiiiv]The Northwestern region, particularly Kano state, shows high numbers of zero-dose children.

1.1 Contextual Background - The Prevalence of Zero-Dose Children in Kano State

The National Primary Health Care Development Agency (NPHCDA) and the Nigerian Federal Ministry of Health and Social Welfare (FMHSW) define zero-dose children as children who have not received any doses of the pentavalent vaccine (diphtheria, tetanus, pertussis, Hemophilus Influenzae type b, and hepatitis B) or other vaccines in the routine national immunization schedule. Specifically, the NPHCDA emphasizes children who have not received their first pentavalent vaccine (Penta-1) dose, making them highly vulnerable to vaccine-preventable diseases[v]. This definition aligns with global standards, such as those from GAVI and WHO. WHO defines zero-dose children as those without access to or who have never received routine immunization services.[vi] GAVI similarly defines a zero-dose child as one who has not received any dose of the diphtheria, tetanus, and pertussis vaccine (Penta 1).[vii] In contrast, a 'missed dose' refers to a child who hasn't completed the vaccination schedule. At the same time, zero-dose communities are population groups with a high proportion of unvaccinated children that may share the same socio-economic or geographical attributes.

Observing the Kano State immunization coverage rates using time series Nigeria's DHIS2 data from 2018 to 2023, it was evident that the percentage of unimmunized children fell from 31% in 2018 to 28% in 2019 and then plateaued at 28% in 2020. There was a slight decrease to 26% in 2021, followed by a further reduction to 23% in 2022 and a significant increase to 68% in 2023.[viii] According to the Multiple Indicator Cluster Survey (MICS), in 2021, Kano State had a zero-dose child prevalence of 30.2%, ranking fifth in Nigeria, well above the national average of 17.8%. Additionally, only 23% of children were fully immunized by year one, placing Kano 29th among the 36 states, far below the national target of 89.4%. The NPHCDA reported that, as of 2022, Kano had 130,584 zero-dose children, which is 25% of Nigeria's total. Fifteen local government areas (LGAs) contributed to this figure, which included 389 high-risk settlements identified through prioritization strategies.[ix]

Figure 1Kano data on zero-dose children



The 15 LGAs were categorized into three groups based on the prevalence of zero-dose cases: LGAs with high rates of zero-dose cases, LGAs with moderate rates of zero-dose cases, and LGAs with low rates of zero-dose cases.[x]

Table 1 Prevalence of zero-dose children in 15 identified LGAs in Kano state

LGA Category	LGAs with high rates of zero-dose cases			LGAs with moderate rates of zero-dose cases			LGAs with low rates of zero-dose cases
LGA setting	Rural	Urban	Semi-urban	Rural	Urban	Semi-urban	Rural
LGA List	Kiru LGA	Nassarawa LGA Kumbotso LGA. Ungogo LGA	Gezawa LGA	Sumaila LGA Tudun Wada LGA Gaya LGA Danbatta LGA	Tarauni LGA	Dawakin Tofa LGA Dawakin Kudu LGA	Gabasawa LGA Bebeji LGA Takai LGA

In April 2023, UNICEF reported that over 600,000 children in Kano, Katsina, and Jigawa states missed immunizations for childhood diseases, with Kano alone accounting for more than 300,000, or 55% of the total.[xi] The National Demographic Health Survey (NDHS) 2023/24 also ranked Kano state 30th out of the 36 states and the FCT. Although routine immunization effectively prevents diseases, public acceptance is crucial. Vaccine hesitancy arises from various factors, including social, cultural, and political influences and health system experiences. This hesitancy threatens vaccination programs and was recognized as a top ten global health threat by the WHO in 2019.[xii]

Why are the numbers increasing in Kano state? Could the rise in numbers be linked to the extent of investment in routine immunization programs?

1.2 Observing the Kano State Government's Routine Immunization Investment from 2020 to 2024

The federal government is responsible for vaccine sourcing and financing, while subnational governments support immunization programs. Kano State has demonstrated a strong commitment to routine immunization through its health budget over the years. Analyzing the trends from 2020 to 2025 reveals significant state effort. In 2020, the budget allocation for health was approximately N28.34 billion, with routine immunization receiving a modest 1.76% of the total budget. Moving to 2021, while the overall health budget increased to N30.72 billion, the percentage allocated for routine immunization slightly declined to 1.24%. The year 2022 marked a turning point, witnessing a significant increase in the health budget to about N34.00 billion and a rebound in routine immunization allocation to 1.50%. This 34.2% increase reflects a renewed focus on immunization. In 2023, although the health budget rose further to N40.25 billion, the allocation for routine immunization faced a slight dip to 1.24%. This fluctuation represented a decrease of 2.55%. A leap occurred in 2024, with the health budget soaring to N72.00 billion. Despite routine immunization accounting for a lower percentage of the budget at 0.73%, the absolute amount allocated (N524 million) indicated an increase in fiscal commitment. In 2025, a further increase was noted, with the health budget rising to N109 billion, and

the routine immunization budget also increasing to N1.4 billion, which is 1.31% of the health budget, and a 171% increase from the previous year, emphasizing the state's continued investment in health and immunization initiatives.

Table 2 Kano State Routine Immunization Budget Trend from the Kano State Health Budget

KANO FISCAL YEAR	KANO STATE HEALTH BUDGET	KANO STATE ROUTINE IMMUNIZATION FUNDING TREND (2020-2025)	ROUTINE IMMUNIZATION AS A PERCENTAGE OF THE HEALTH BUDGET	% FLUCTUATIONS
2020	N28,337,570,687	N500,000,000	1.76%	*
2021	N30,720,224,964	N380,000,000	1.24%	Decrease of 24%
2022	N33,999,653,517	N510,000,000	1.50%	Increase of 34.2%
2023	N40,252,151,119	N497,295,108	1,24%	Decrease of 2.55%
2024	N72,001,932,297	N528,013,782	0.73%	Increase of 6.2%
2025	N109,263,061,129	N1,434,431,185	1.31%	Increase of 171.66%

Source: Kano State Approved 2020, 2021, 2022, 2023,2024, and 2025 Budget Document.

1.3 Counterpart Funding and Support for Routine Immunization Programming in Kano State: A Decade of Collaboration between National and State Governments and Partners (2014-2024)

Counterpart funding for routine immunization in Kano State, from 2014 to 2024, reflects the collaborative effort among the state government, federal government, and international partners. In response to challenges faced by RI programs in northern Nigeria, the Gates Foundation and Aliko Dangote Foundation (ADF) partnered with six northern states—Bauchi, Borno, Kaduna, Kano, Sokoto, and Yobe—establishing a multi- year Memorandum of Understanding (MoU) to enhance RI systems and sustainably increase immunization coverage.[xiii] The goal was to achieve an 80% vaccination coverage rate, critical for herd immunity against poliovirus. This partnership began in Kano State in 2012 and expanded to other states by 2016. By 2017, at the expiration of the MOU, Kano implemented strategies to maintain RI gains, though the COVID-19 pandemic in 2020 hindered progress. Other partners like USAID, UNICEF, GAVI, and Global Affairs Canada have supported the state through MOUs with over $1 million (BMGF-$650,000, UNICEF-$300,000, ADF-N182 million, etc.) annually, which utilized a basket-funding mechanism to strengthen primary healthcare, including immunization. At the national level, the Nigeria Zero-Dose Immunization Recovery Plan (2023-2028) was developed to strengthen immunization services, targeting Kano as a key area. This plan aligns with the Nigeria Strategy for Immunisation and PHC System Strengthening Version 2.0 (NSIPSS 2.0). To improve performance, the Optimised Integrated Routine Immunization Session (OIRIS) strategy was introduced in 2021, focusing on effective fixed and outreach RI sessions in poorly performing areas.[xiv] In 2023, the Nigeria Health Sector Renewal investment Program under the sector-wide approach was introduced, while Kano State undertook various initiatives in the 15 identified Zero Dose LGAs, including increased logistics funding for cold storage capacity and implementing integrated Primary Healthcare plans. International partners like the WHO and UNICEF supported "Big Catch-up" campaigns, targeting an 80% reduction in zero-dose children by 2028. To reduce zero-dose rates, UNICEF also aimed to reach over 250,000 children in Kano and others in Katsina and Jigawa. In collaboration with GAVI and development partners, the NPHCDA also launched a zero-dose learning hub in 2023, starting in Kano. The Gates Foundation provided technical assistance through indigenous partners, Solina Health, Chigari Foundation, AFENET, Africa Health Budget Network, the development Research and Projects Centre (dRPC)[xv], and others.

1.4 Addressing the Challenge of Zero-Dose Children: Strengthening Routine Immunization in Kano State

After years of RI programming, billions of Naira spent, hundreds of public health workers trained, and hundreds of awareness-creation jingles, we still have increasing cases of zero-dose children in Nigeria. Kano state is at the epicenter of it. Donors, the government at the national and state levels, and traditional leaders are concerned about this new challenge in the routine immunization space in Northern Nigeria and have begun acting.

In 2023, NPHCDA stated it was working closely and effectively with northern traditional leaders under the umbrella of the Northern Traditional Leaders Committee on PHC delivery to strengthen basic healthcare services in the region, including routine immunization.[xvi] The 15th Emir of Kano, HRH Alhaji Aminu Ado Bayero, even spoke in support of vaccination, urging staff to carry out their duties as sacred to God.[xvii] In January 2024, the Gates Foundation awarded research grants to Aminu Kano Teaching Hospital to better understand gender-related issues that affect vaccination uptake and coverage. In April 2024, another research award was given to Bayero University, Kano, to conduct and disseminate research on influence and behavior in Northern Nigeria and promote understanding of such in policy and decision-making, to name a few. After

eight years of the dRPC's PAS project supporting civil society organizations (CSOs) in Kano to work through the PHC system to strengthen government capacity to design and deliver effective routine immunization programs, this new challenge may suggest a gap in the CSO accountability mechanism approach in RI programming in Kano. Kano state is committed to new development partnerships to redress zero-dose cases through social behavioural change communication projects facilitated by eHealth Africa, Chigari Foundation, UNICEF, Breakthrough Action, Save the Children, and GlaxoSmithKline's Boost Project. It is now more urgent for government and CSO networks to pay attention to trends of vaccine hesitancy, rising zero-dose cases, and the gaps in RI programs due to their potential impact on public health. Vaccine hesitancy undermines efforts to achieve herd immunity, leading to increased outbreaks of preventable diseases. The rising zero-dose cases indicate a need to improve access to immunization for vulnerable populations. Furthermore, understanding why this persists in Kano state can help address the failings of RI programs, reduce healthcare costs, and alleviate strain on healthcare systems. But is the emergence of high numbers of zero-dose children evidence of the failure of RI programs? We don't know. However, zero-dose children indicate severe gaps in the immunization program, including access, utilization, awareness creation, and acceptance of vaccination services in the community.

1.5 Understanding Vaccine Hesitancy

The NPHCDA and the FMHSW of Nigeria align their definition of vaccine hesitancy with the WHO's Strategic Advisory Group of Experts on Immunization (SAGE) definition. This definition is referenced in the NPHCDA's NSIPSS (2018, p. 104), which adopts the WHO SAGE framework to address vaccine hesitancy in Nigeria's immunization programs. Vaccine hesitancy, as defined by WHO, is "the reluctance or refusal to vaccinate despite the availability of vaccines." Parents often hesitate due to safety concerns, even with reassurances from health authorities.[xviii] The WHO's SAGE highlights that vaccine hesitancy is complex and varies by context, influenced by factors like complacency, convenience, and confidence.[xix] This issue reflects a broader erosion of trust, exemplified by Kano state's 2003 boycott of the polio vaccine, despite knowing that herd immunity significantly reduces outbreak risks, depending on the infectiousness of the disease.[xx] [xxi]

1.6 The Implications of Vaccine Hesitancy for Kano State: A Cause for Concern

Over the past three decades, low- and middle-income countries like Nigeria faced challenges in vaccine supply, impacting immunization levels. While significant progress has been made in vaccine availability, accessibility remains a barrier due to factors like cost and appointment timing. Recently, a shift towards addressing vaccine demand has emerged, with increased focus on vaccine hesitancy, especially in Kano state, where the number of zero-dose children is rising. There are several reasons why people may not wish or are reluctant to vaccinate their children. As the SAGE points out, vaccine hesitancy "is complex and context-specific, varying across time, place, and vaccines."[xxii] The goal is to foster vaccine confidence, which relies on trust in the effectiveness and safety of vaccines and the institutions involved in their development and administration, as distrust varies widely across different contexts.

1.7 Conceptual Factors Driving Vaccine Hesitancy

Over the last decade, research on vaccine hesitancy has identified various factors influencing individuals' decisions to accept or refuse vaccination. The WHO SAGE developed the 3Cs model—complacency, convenience, and confidence—to analyze these factors. It emphasized that hesitancy isn't applicable when low uptake is due to vaccine unavailability or access issues. In 2016, the 5As framework (access, affordability, awareness, acceptance, and activation) expanded on these determinants, while the 2018 revision of the 3Cs model led to the 5Cs model, which includes constraints, calculation, and collective responsibility. [XVII] The SAGE concept views vaccine hesitancy as a complex issue influenced by community and healthcare factors. In response, WHO and partners created a framework highlighting cognitive, social, motivational, and practical components. Additionally, the Royal Society of Canada Task Force emphasized trust in vaccines and interconnected factors influencing uptake. [XI] This study draws on these conceptual models for its investigation.

1.8 Other Research efforts to understand vaccine hesitancy in Kano and the broader Northwest

Numerous studies have highlighted vaccine hesitancy in Northwest Nigeria, a critical concern marked by the 2003 vaccine boycott in Kano state and Nigeria's position as one of the three remaining polio-endemic countries globally. Despite efforts to interrupt all types of polio, the circulating vaccine-derived poliovirus (cVDPV) continues to pose a threat, primarily viewed through a systems performance lens.[xxiii][xxiv]Owoaje et al. (2020) explored implementation barriers and vaccine hesitancy, emphasizing the connection between conflict and insecurity, competing political

priorities, and social factors like community engagement and mistrust in Kano state. Obi-Jeff et al. (2021) noted that misconceptions exist among community members but highlighted a broader lack of awareness about vaccination's importance as a reason for under-vaccination in northern Nigeria.[xxv] Recent studies have also focused on mapping zero-dose cases to assess vaccination performance. Utazi et al. (2023) used geospatial analysis to identify areas with poor routine immunization systems and ineffective campaigns. They found that districts with the highest prevalence of zero-dose children often corresponded with high population densities.[xxvi] Similarly, Justice-Moses et al. (2023) assessed shifts in zero-dose distributions before and during the COVID-19 pandemic, indicating that maternal education critically affects zero-dose cases and that communication strategies changed during the pandemic.[xxvii] The 2024 research report, "Closing The Immunization Gap," from the zero-dose learning hub, highlighted that persistent zero-dose cases result from facilities relying heavily on volunteer staff and inconsistent cold chain management. While most facilities offer routine vaccinations, some lack essential vaccines like the Hepatitis B birth dose. Furthermore, facilities' strategies to address zero-dose children often lack adequate session frequency and duration.[xxviii] A recent scoping review on risk factors for zero- and missed-dose children in Nigeria categorized these factors into individual, community, and health system elements. Key factors included maternal education, health facility access, socioeconomic status, and community conditions, such as ethnicities and religious affiliations.[xxix] Sato and Takasaki (2021) analyzed vaccine hesitancy in rural northern Nigeria, emphasizing the importance of approaches to measure vaccine beliefs accurately. Their study differentiated between absolute and floating vaccine refusers.[xxx] Later reports from civil society and partner organizations further investigate immunization challenges and interventions in Kano state, including comprehensive analyses by CHAI, the African Health Budget Network, and Save the Children.

Vaccine hesitancy is a complex, evolving process influenced by several factors. Limited research observes this phenomenon in real-time. Our study aims to understand vaccine hesitancy from the local perspective of immunization service providers and caregivers. The existing studies in Kano State highlight systemic challenges like workforce training, cold chain management, and environmental factors such as poverty and transportation costs. However, few address belief systems, social norms, and the role of communication strategies in reducing zero-dose cases.

2.0 Purpose of this research

This research aims to understand why there is an increasing number of zero-dose children in Kano State. It is not an epidemiological study identifying specific areas of concern, acknowledging that other ongoing studies address these dimensions. Instead, it focuses on local knowledge and perspectives about zero-dose children, exploring their awareness, attitudes, and explanations for the persistence of this issue.

2.1 Relevance of the study

The study holds significant programmatic implications for immunization and vaccine hesitancy in Nigeria and Kano state, aligning with the Kano state government, Nigeria, the WHO Immunization Agenda 2030,[xxxi] and the Gavi Strategy 5.0.[xxxii] These initiatives aim to reduce the number of "zero-dose" children, with the WHO targeting a 50% reduction by 2030 and Gavi aiming for a 25% reduction by 2025 through improved vaccination coverage and reaching underserved communities.

2.2 Research Question

1. To what extent is there a recognition of zero-dose cases as a salient and important challenge to be addressed in Kano State?
2. What are the key drivers of zero-dose cases in Kano State, and to what extent are belief systems & social and gender norms, misperceptions, and misinformation key drivers?
3. What are the most critical and achievable recommendations to mitigate barriers to zero-dose cases identified in the research?

3.0 Methodology

3.1 Study setting

The study was carried out in Kano State, Nigeria, which was selected purposively due to the NPHCDA's identification as a state with a high prevalence of zero-dose children.

3.2 Research design

This study utilized a qualitative research design conducted between July 2024 and April 2025. The study population consisted of a heterogeneous group of respondents (all involved in vaccine provision or campaigns), including

volunteer community mobilizers, caregivers, staff of the Local Emergency Routine Immunization Coordination Centre, community health influencers and promoters, ward development committee members, RI Service Providers, village head, and ward head to explore the reasons why zero-dose cases persist in Kano state from a provider perspective.

3.3 Data Collection methods and sampling strategy

Data collection was conducted through key informant interviews and focus group discussions in five Local Governments (Dambatta, Kiru, Kumbotso, Nassarawa, and Ungogo LGAs), selected from the 15 SERICC-identified LGAs with the highest number of zero-dose children through systematic random sampling. This technique allowed us to choose two urban LGAs (Nassarawa and Kumbotso), one semi-urban LGA (Ungogo), and two rural LGAs (Kiru and Danbatta). The study targeted 14 wards and 15 health facilities across the five selected LGAs in Kano state. The table below shows Kano's sampled Local Governments, wards, and health facilities.

Table 3 Sampled Local Governments for Zero Dose in Kano State

Local Government	Wards	Health Facilities	Zone	Number of FGDs	Number of KII
Nasarawa LGA	1. Gawuna 2. Hotoro South 3. Tudun Murtala	1. Gwagwarwa PHC 2. Hotoro South Health Clinic 3. Tadun Murtala Health Clinic	Kano central	8	10
Danbatta LGA	1. Danbatta East 2. Sansan	1. Women Centre 2. Dalal Barde 3. Sansan PHC	Kano south	7	9
Kiru LGA	1. Dangora 2. Badafi 3. Maraku Kiru	1. Dangora BHC 2. Badafi PHC 3. Maraku PHC	Kano south	10	6
Ungogo LGA	1. Tudun Fulani 2. Bachirawa 3. Zango	1. Jajira Health Post 2. Bachirwa PHC 3. Rimin Kebe PHC	Kano Central	11	10
Kumbotso LGA	1. Chalawa 2. Chiranchi 3. Panshekara	4. Chalawa PHC 5. Chiranchi PHC 6. Panshekara PHC	Kano central	8	9
State level officials				0	6
TOTAL				**44**	**50**

A sample of 94 was targeted to achieve saturation. At the health facility, each participant received detailed information regarding the research study, accompanied by written informed consent. Subsequently, they were extended an invitation to partake in the study. The LGA selection covered the three Kano, Kano North, Kano South, and Kano Central senatorial districts to ensure geographical spread, as shown in the table below.

Table 4 Selected Local Government and their Locations

Local Government	Location	Prevalence category
Nasarawa Local Government	Kano central	High
Danbatta Local Government	Kano North	Moderate
Kiru Local Government	Kano south	High
Ungogo Local Government	Kano central	High
Kumbotso Local Government	Kano central	High

The prevalence category was ranked by the Kano State Emergency Routine Immunization Coordination Center (06/2024)

The selected local governments also have the highest population, the largest concentration of newborns, and the most significant cases of zero-dose in Kano.

Research Team

The dRPC Research Team conducted the Kano zero-dose study with support from various partners, including Prof. Yusuf Adamu from the Department of Geography at Bayero University, the Kano State Bureau of Statistics, and the Kano State Primary Health Care Management Board. The dRPC – Kano Technical Team, led by Mallam Umar Ahmed Umar, along with the Partnership for Advocacy in Child and Family Health @ Scale (PAS) CSOs, such as the Medical Women's Association of Nigeria – Kano Chapter, the Women in Media Communication Initiative, the Federation of Muslim Women's Associations of Nigeria, the Accountability Mechanism for MNCH in Kano State, the Concerned Mothers Association of Kano State, and the Community Support and Development Initiative.

The dRPC Data Analysis Team featured Dr. Danjuma Abdullahi from the Department of Local Government and Development Studies at Ahmadu Bello University, Zaria, and Dr. Sa'adatu Baba, a lecturer at the Faculty of Earth Sciences & Sustainability Studies at Kaduna State University, who also coordinates the Department of Development Studies at the National Open University of Nigeria. In addition, data collectors (research assistants) were deployed to gather information across selected LGAs. Orientation for data collectors was conducted on June 7, 2024, to prepare the team for the research. The orientation was attended by 24 participants, including PAS coalition members, dRPC Staff, and government representatives. To ensure government inclusion, the relevant Ministries, Departments, and Agencies, specifically the Kano State Bureau of Statistics, the Kano State Primary Health Care Management Board, and the Program Manager, SERICC, were involved in the design, pre-testing, and execution of the study.

3.4 Ethical considerations

Ethical approval was obtained from the Kano State Bureau of Statistics and the Kano State Primary Health Care Management Board. The detailed account of the process is as follows:

1. **Ethical Approval from Kano State Bureau of Statistics:** On May 20, 2024, a request for approval to research Zero-dose was submitted to the Kano State Bureau of Statistics. The request was approved by the KSBS on May 23, 2024, via a letter with reference number KSBS/MDAs/NGOs/4/BIII/013, and two officials of the Bureau were nominated to participate in the study. Please see a copy of the ethical approval in the appendices.
2. **Approval from Kano State Primary Health Care Management Board:** On May 23, 2024, the Medical Women Association of Nigeria, Kano Chapter, representing the Kano PAFaH@Scale coalition, sent a letter to the Director General of the Kano State Primary Health Care Management Board, informing them about an upcoming research project on zero-dose children. The letter also mentioned the ethical approval obtained for the research and requested the participation of KSPCMB officials in the study. The KSPHCMB approved the research on June 5, 2024.

Data Analysis

This analysis, based on interviews with caregivers, health workers, and community leaders, explores the drivers and solutions for the rising number of zero-dose children in Kano State. Qualitative data were analyzed using NVivo 14, categorizing focus group discussions and interviews into parent and child codes. Key themes included immunization knowledge, myths, reasons for zero-dose, strategies against hesitancy, community factors, and service delivery.

4.0 Results and Analysis

Section I – Recognition of the Salience of Zero-Dose Cases

i. Knowledge and Perceptions of Immunization Coverage

Caregivers demonstrated a strong awareness of vaccination benefits, noting that vaccinated children generally experience milder illnesses. Many reported having all their children fully vaccinated and shared personal anecdotes highlighting healthier outcomes for vaccinated children. Coverage levels are high, with many vaccine provider respondents reporting rates of 70% to 90%, especially where incentives like the N1000 payment and community education programs are in place. Traditional leaders and CSOs noted strong acceptance and participation due to increased awareness and visible benefits of immunization. Routine Immunisation Service Providers also observed positive trends, with some rating coverage at 90%.

ii. Knowledge of Zero Dose Occurrence

Community Leaders: Some traditional leaders acknowledged zero-dose children, but most claimed there were none in their communities or that numbers had significantly decreased. In border communities, leaders mentioned that while immunization rates were high, newly arrived families often contributed to ongoing zero-dose cases.

> ***".....there are rare cases of zero-dose children, the members of the community are immunizing their children, those that are coming in from other places are the ones that have problems, and mostly they are villagers, they have migrated from their places maybe because of certain problems that are worrying them".-***
> *Ward Head*

There appeared to be among community leaders a reluctance to admit to zero-dose children, as shown in the following statements:

> ***"In this community, there are no cases of zero-dose"***
> *Village Head*

> ***"I have never seen or heard about zero-dose children; I know that in this community, anytime immunization providers visit here, then all children are brought out for immunization".***
> *Ward Head*

iii. Health Workers

Routine Immunisation Service Providers (RI SP) and Volunteer Community Mobilizers (VCMs) recognized zero-dose children, but awareness campaigns and outreach programs, though reduced, were helping to address the issue.

"The zero-dose report was correct, but due to the intervention of incentives, the number of zero-dose has gone down".
RI SP Tudun Murtala

"There are husbands that don't like their children to be immunized; they are zero-dose children, and he will even be telling you that this is his own idea and that none of his child has ever been immunized, and he will not accept it, and he will never listen to the ward heads, they are very strict, they never cooperate".
VCM Panshekara

"You can see that this is a register book, which consists of the list of clients that I am counselling, about three hundred and forty of them, but out of them, there are ten cases of zero dose; I have tried as much as I can, but I couldn't make it".
VCM Dantamahe

A contradiction arose among key informants regarding zero-dose children. While some claimed there were no current cases in their areas, they offered detailed insights into factors that contribute to the persistence of zero-dose children in their communities. This discrepancy likely reflects different perspectives: respondents may focus on personal knowledge when discussing current cases but share broader opinions on community attitudes regarding persistence. Notably, key informants generally did not see an increase in zero-dose children; many stated that numbers were declining, especially where incentive programs were in place.

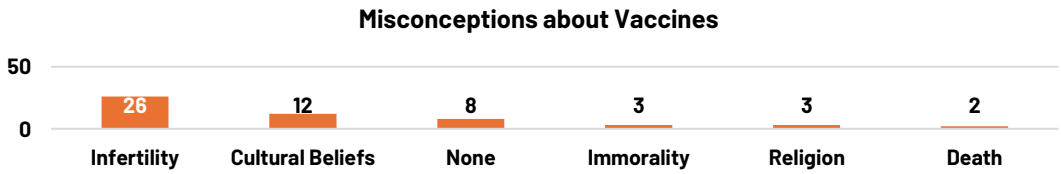
Section II

Beliefs & Misconceptions about Vaccines

The qualitative data reveal the beliefs and misperceptions surrounding immunization. It is important to note that these beliefs are often not personally held by the respondents themselves but are rather described as beliefs held by others in their communities.

The figure below illustrates the distribution of responses along with the corresponding number of mentions.

Figure 2 Vaccine Misconceptions



Key Findings

1. Infertility and Reproductive Concerns

The belief that vaccination causes infertility is a common misconception among various stakeholders. All respondents noted this concern, often attributing it to others in the community. Health workers frequently encounter this belief in their roles. Below are statements from caregivers and key informants on the issue:

"It is not only the rural people, there are people within urban areas that are not supporting immunization, because they are saying that it prevents birth"
Male Caregiver, Panshekara

"Akwai mutanen da sukai imani da cewa allurar riga-kafi zata hana yaran su haihuwa" ("There are some people who have the belief that immunization will prevent their children from giving birth".)
Female Caregiver, Zango Dantamashe

"As I told you, most of the people are saying that, it is a western idea, because they want to damage the reproductive system of our children, they want to prevent our women from giving birth".
CSO, Tauraruwa

"And there are some that are rejecting the immunization because, according to them, it is nothing other than the plan of the Western world, introduced to prevent reproduction. They said that since people did not accept family planning, that is why it has been decided to immunize their children so that if they grow up and get married, they cannot be able to give birth".
RI SP Dangora, Kiru

However, some community leaders report that this perception is gradually changing. Some key informants' remarks:

"There have been some people that were saying that immunization prevents birth, but still they have seen how people are giving birth to twins, triplets, and even more than that".
Mai Unguwar

"And we thank God that those people with such ideas have seen that people are still giving birth despite taking the immunization, so maybe that idea has been wiped away from their minds".
RI SP Dangora, Kiru

2. Traditional Beliefs

Traditional beliefs influence attitudes toward vaccines. Some families prefer traditional medicine over immunizations, believing these methods align better with their culture. Caregivers sometimes link illnesses like polio to spiritual causes and choose traditional remedies instead. Additionally, parents may avoid vaccines based on elders' claims of their childhood experiences when immunizations were not common.

"There are some that have traditional beliefs, they never agree to be immunized, according to them, it is unknown in their tradition."
CSO

"Really there are still traditional beliefs about immunization, some families are not accepting immunization, because according to them, in their tradition did not allow them to be receiving injection, they believe in concoctions."
Male Caregiver, Panshekara

3. Other Beliefs

Several notable beliefs emerged from the analysis. A compelling narrative involved a child's death shortly after immunization, leading their family to stop all vaccinations and sway others in the community. Other misconceptions suggested that vaccines make children "notorious" or immoral, with some believing immunization makes them "tough and naughty." Additionally, objections, particularly among some, frame vaccination as a Western imposition against their faith. These less common beliefs highlight pockets of resistance to immunization within communities.

"Allurar riga-kafi ta nasa yara su zama marasa tarbiyya" ("Immunization brings about immorality, as it makes children become notorious.")
Male Caregiver, Panshekara

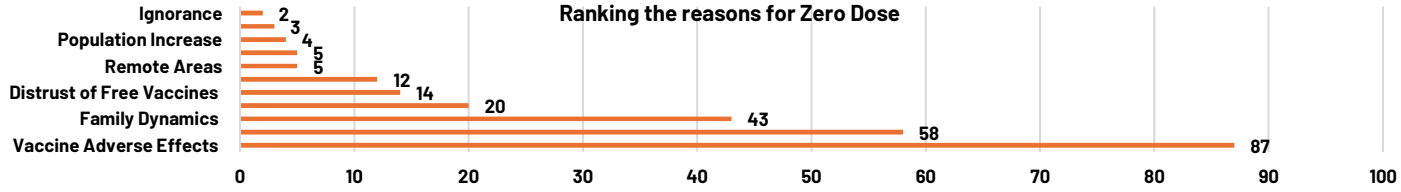
"Some are saying that the immunization is not part of religion, it is just brought to harm people."
VCM, Jajira

Section III – Drivers of Zero-Dose Cases

Possible Drivers for Zero Dose

The analysis identified barriers to immunization as primary and secondary factors. Primary barriers are the most commonly reported obstacles affecting vaccination decisions, while secondary barriers, though significant, are mentioned less frequently.

Figure 3 Primary & Secondary Barriers/Drivers of Zero Dose



Primary Barriers

1. Vaccine Adverse Effects

Many parents express concerns about vaccine adverse effects, including pain, fever, and swelling, which contribute to vaccine hesitancy. Notably, the Penta 1 vaccine often leads to severe reactions like prolonged crying and leg stiffness, discouraging parents from completing vaccination schedules and affecting decisions for future children. A key consequence is that many husbands prohibit further vaccinations after seeing adverse effects. This forces mothers to either forgo immunization or do it secretly, which can lead to domestic conflict.

Health workers acknowledge this as a major barrier.

Wasu iyayen su yanke hukunci cewa ba zasu kara kawo yaransu allura riga-kafi ba saboda bayan da aka yi musu allurar penta 1 tasa yaransu zazzaɓi da ciwon jiki" ("Some parents decide not to bring their children for immunization again after administering the Penta 1 vaccine because it causes fever and pain for the children.")
Female Caregivers Jajira

"Some common reasons include the effects of the Penta vaccine which is painful, because children take a long time, day and night crying, and some parents will be complaining that the child did not allow them to have sound sleep, or they will not take him for the immunisation again. So apart from the Penta 1 vaccine, there are no complaints about the other vaccines."
Female Caregiver Danbatta

"After administering the vaccine, you will see that the child will be crying seriously due to severe fever, or the legs will become stiff, so that is why some husbands will ask their wives never to take their child for immunization again."

"Why don't they like to bring their children for immunization? .... some will say it is due to the effect of the immunization that the children will be crying and preventing them from having a sound sleep. So we use to ask mothers that which one do they prefer, a child to have whooping cough for about 90 days, or just to cry for three days, due to the immunization."
RI SP Kiru

"Anytime I ask them to take their children for immunisation, they will say that they will not do the vaccination, because rashes will appear all over their body, I have tried for several times but they have never attempted to bring their children."
VCM Dantamashe

"There was an incident that happened years ago, whereby due to vaccine reactions some children became physically disabled, and some were even dying, so as a result of this, some parents got scared, and they started rejecting immunization, until when they were enlightened, and afterward they continue accepting it."
Wakilin sarkin Fulani

Some health workers even suggest reducing the strength of certain vaccines, particularly Penta 1, to improve acceptability.

"Another problem is that some of the vaccines are very strong, so it will be better if you will be providing those which are milder... because sometimes after administering the vaccines, adverse effects follow, and that's why some of them never return for the next dose."
RI Service Provider, Kiru

CSOs and traditional leaders seem less engaged with community vaccination concerns, indicating a disconnect in understanding local anxieties about vaccine side effects.

2. Poverty and Competing Priorities

The rise in zero-dose cases is closely linked to the economic struggles faced by communities. Since mid-2023, intensified economic hardships, including soaring inflation and currency depreciation, have pushed vulnerable families deeper into poverty, making basic necessities unaffordable. Caregivers often feel frustrated about prioritizing immunization when their immediate needs aren't met. Health workers and traditional leaders also recognize poverty as a major barrier to vaccination efforts, highlighting the economic frustrations impacting immunization.

"In our areas, still there is no awareness, and also there is poverty, making it difficult to bring the children, because there is no money for transportation, some are busy searching for the means of feeding the family."
Male caregiver

"They will be saying to us that you did not bring food for us, and you are just worrying us with immunization. They will say that we don't need any immunization; we need food."
RI SP Danbatta

"Some of the people are complaining of the current economic situation, they are saying that the cost of living is high and the government never bothers about them. .... that, they should be distributing rice or soap, rather than giving people N1000."
RI SP Hotoro

"People keep on complaining that, they are facing economic problems, and they are not given anything that will alleviate their sufferings, but they are always being worried about immunization, and they are not given free treatment."
VCM, CHIPS, Jajira

"Some of the challenges we experience in taking our children for immunization is that sometimes, it's hard before you get transport, and sometimes we don't have transport money."
Male Caregiver- Panshekara

"During the mosquito net distribution exercise, nobody cares to bring it to them, because they are in remote places, but when it is time for immunisation, we know every nooks and corners that we can find them, so they will not agree."
LERRIC

3. Distrust of Free Services

Some respondents question why vaccination is free while other healthcare services require payment, indicating a distrust of government services. One community member notes that some see free immunization as a hidden agenda.

They believe that there is nothing good about it, that is why they are followed to their houses to get their children immunized because the authorities never approach people with anything that will be useful to people. You have to spend money before getting anything that is good."
Female Caregiver, Dangora

"People are rejecting immunization because they are not given free medical care, according to them anytime they attend the hospital, they must pay for any service rendered to them, so they are asking that ,why is the immunization free of charge and that is why they are not giving their accepting the immunization."
Ward Head

Health workers report struggling to address this paradox. Many ward heads and traditional leaders also highlight this distrust as a significant barrier:

"You know that there is nothing done to them other than bringing immunization for them, and they have been left with hunger and poverty, that's why some of them will tell you that, they never trust the immunization and according to some of them, whenever the government is offering you certain services free of charge, it is done for cheating people."
RI SP Dangora

4. Family Dynamics & Decision Making

a. **Male Spouses**: Gender power dynamics significantly impact vaccination decisions. Caregivers recognize that men often have the final say on child immunization and may prohibit it due to fears of adverse reactions, while some women may continue vaccinations secretly. Ultimately, decision-making power typically rests with men.

"There is problem if the husband doesn't agree with the immunization."
Female Caregiver Panshekara

"Usually, in our communities, there is a father that will agree to allow his child to be immunized especially in the first visit, then if you return and administer Penta 1 immunization, he will tell you that the child will not be immunized again, because due to the pain which the child was experiencing, he disturbs him and prevents him from having sound sleep."
Health worker Dangora

""Whenever government is offering you certain services free of charge, it is done for cheating people."
Male Caregiver, Danbatta

"Some of the challenges include the way in which some male parents are disliking the immunization, making them not to allow their wives to take the children for the vaccination."
Female Caregiver- Bachirawa

"Sometimes mother-in-laws are contributing in making things backward because in some places they are those that never allow children to be immunized because they will be saying that during their time they were not immunized and they remained in a healthy condition."
RI SP Bachirawa

b. **Paternal Grandmothers:** The influence of paternal grandmothers and elderly family members on vaccination decisions is significant, especially mothers-in-law. Healthcare workers often view paternal grandmothers as key barriers to vaccination acceptance.

> ***"In some places, parent in-laws are contributing to the persistence of zero doses because the husband's mother is the one that will say the child will not be immunized, and even if the N1000 is given to them, they will not accept."***
> RI SP Chiranchi

> ***"The reason for the continuance of zero doses in this community is because some people have stuck to their old ideas, ... there was a woman that born her first child; I tried to make her bring the child for immunization, but her husband called his mother through the phone and said to her, have you ever taken me to the hospital, she said no, I have never, then he said, have I ever been immunized, she said never and she said no, don't do it."***
> VCM Bachirawa

> ***"So sometimes if you ask a woman her reason for not bringing her child for immunization, she will tell you that it was the child's grandmother that said the child should be taken to traditional doctors."***
> WDC

Secondary Barriers

The research identified several logistical challenges contributing to zero-dose cases, including poor road access to health facilities, long waiting times at vaccination centers, migration of nomadic populations, and dismissive attitudes from health workers that undermine community trust.

A. Health System Constraints

Most health workers reported no major logistical challenges, although some noted issues like inadequate infrastructure, consumables, staff shortages, and limited outreach. Interestingly, the main complaints about logistics came from CSOs in the field.

> ***"We are lacking working staff in this area. In the twenty years I have been working here, anyone brought here for work never agrees to stay longer; some of them will stay for only two years and seek a transfer and leave."***
> *Health Worker, Badafi*

> ***"The immunization services are poor; there is a lack of required services in some areas where there are no facilities. And sometimes parents come out as early as possible and have to wait for a long time before being immunized, so they get bored and go home."***
> CSO Representative

> ***"Especially in remote areas, particularly Fulani settlements, there are many cases of zero dose because they are migrating from one place to another, so it's hardly that their children get the complete dose."***
> *CSO*

B. Geographic and Population Dynamics

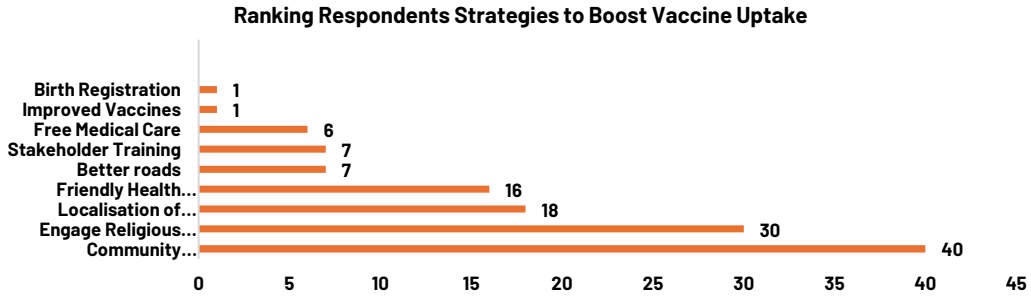
Rapid population growth and urban expansion strain health services, often leaving new settlements without immunization access. Hard-to-reach areas, especially those with nomadic populations like the Fulani, face added challenges.

> ***"Why zero dose in Kano state? Remember that the population is increasing at a high rate, meaning that the population is getting higher and higher. Therefore, there will definitely be a lot of unvaccinated children because new settlements are emerging."***
> CSO

Voices of Respondents: Strategies to Address Zero Dose

Respondents identified several strategies to overcome vaccine hesitancy and strengthen immunization coverage. The following bar chart shows the relative mentions of the strategies.

Figure 6: Strategies to boost vaccine uptake



> ***"I think scholars and imams should be involved in addressing zero dose."***
> Ward Head

Strategies

1. Engage Religious Leaders

Religious leaders are key influencers in addressing vaccine hesitancy, as they shape public opinion in their communities. Trusted and perceived as selfless, Imams particularly affect men's decision-making about vaccination within households. Engaging them is essential for effective outreach.

"Imams of mosques should be enlightening male parents after performing the five daily prayers, and during the Friday sermons."
Female Caregiver Danbatta

"Muslim scholars can reach out to hesitant parents, they can use their Islamiyya schools or preaching grounds, to enlighten such parents about the importance of immunization."
RI SP Zango

"Imams of mosques are the most suitable people that should be involved in

Religious leaders can also dispel misconceptions about vaccines being a "Western ideology," especially when organizations like

"Because when we wear the FOMWAN cap they accept us because it is a religious organization, so they know there is no harm in anything that we brought to them."
CSO

"Like if you have an Islamiyya school for married women, you can be able to preach to them about such kind of matters, and it will be the best platform for extending such messages or information to where it is supposed to reach."
VCM Kumbotso

FOMWAN are involved in advocacy efforts, as illustrated in the following statement:

2. Community Engagement and Mobilization- Particularly by VCMs

The data emphasize the significance of community engagement in tackling vaccine hesitancy. Respondents identified community leaders, such as ward heads and Imams, as crucial for communicating the value of immunization during social and religious events. Village Community Mobilizers (VCMs) were noted as vital links to caregivers through efforts like house-to-house visits, although some communities reported a lack of engagement from them. This highlights the crucial role VCMs play in vaccination initiatives.

"The VCMs are the ones that are really assisting us in this issue,I n the past the thing was going smoothly, but after disengaging the VCMs many problems rose up,...so

"It will be better if VCMs will be engaged again in the duties they use to perform in the past, because they will really help,the WDCs and CHIPS should also improve in their work."
RI SP, Danbatta

"I want to commend the UNICEF for supporting the VCMs, because there are places where the VCMs are not available, so the level of awareness is low, but UNICEF has requested for the names of VCMs that are residing near those places , so hopefully in a short time to come, the issue of zero dose will be wiped away, due to engagement of VCMs."
Ward head

3. Incentives

"Now, our defaulters have reduced just because of the N1000 they are given. There are those who are anxiously waiting for the immunization day just because of that money. Therefore, if they are given some incentives, surely they will accept immunization because we are living in a situation in which people are needy. "
VCM, Kumbotso

The data shows that incentives, like monetary rewards (e.g., N1000 for transportation), effectively address vaccine hesitancy and increase immunization uptake, particularly in economically struggling communities. Tangible rewards can motivate caregivers who prioritize basic needs like food and household expenses. Health workers also support this view, highlighting that addressing financial concerns can enhance vaccination rates.

However, there are questions about their long-term viability. As a CSO representative pointed out,

"If you start giving people money for vaccination, do you think it is an ideal way to solve the problem? How many millions of people will you give that money, and what if you stop?".
CSO

4. Localization and Attitude of Health Workers

The location and attitude of health workers are key in addressing vaccine hesitancy. Recruiting from within communities builds trust, as locals are more likely to cooperate with familiar individuals. One respondent emphasized.

" The reasons for this may come from the people, and it might be due to the way in which the healthcare workers are recruited; it will be better that the service providers work in their native areas because the community members will be familiar with them, so they will not do or bring any harmful thing."
Village Head

"Immunization providers should try to be friendly with the community members whenever immunization services are being carried out, never regard them as inferior, you should be having fun with them, and they will easily accept what you have brought to them."
VCM Danbatta

Health workers' attitudes are crucial in vaccine uptake. Friendly and respectful interactions can boost vaccination rates, while rudeness or perceived superiority may discourage parents from vaccinating their children.

5. Other Strategies

Respondents identified key strategies to improve healthcare access and immunization, highlighting the importance of training health workers to engage caregivers with empathy. Regular training was recommended to help address parental concerns effectively. Improving road infrastructure in remote areas is crucial to facilitate easier access to immunization services. Additionally, providing free medical care, including pain relievers for vaccine side effects, can alleviate parental worries and encourage vaccination completion.

"Sometimes parents-in-law are contributing to making things backward... they will say that during their time they were not immunized and remained in a healthy condition."
(RI SP Bachirawa)

Misinformation and Sources of Information

Misinformation and resistance to vaccine information persist, despite improved awareness. Elders, particularly paternal grandmothers, often hinder immunization by upholding traditional beliefs. Some religious groups view vaccines as a Western imposition, contributing to skepticism. Overall, while recognition of immunization's importance is growing, challenges remain due to misinformation and familial resistance, especially in certain sects.

"Some are saying that immunization is not part of religion; it is just brought to harm people."
VCM Dantamahe

"Some people have stuck to their old ideas... a woman said her husband called his mother, and she told him, 'I have never been immunized... don't do it."
(VCM Bachirawa)

Recommendations From Respondents to Address Misinformation - The Case for Social Behavior Change Communications (SBCC)

1. Imams and traditional leaders are respected, and husbands listen to them. They should be more involved in immunization campaigns, not only during mop-up campaigns but also on a routine basis.
2. Misperception and misconceptions influence decisions about vaccines. People must be educated by those close to them whom they trust.
3. Target husbands and men to raise awareness about the importance of immunization for their children and their families
4. Develop messages in Hausa language to address cultural beliefs and misconceptions that contribute to vaccine hesitancy, ensuring that the information resonates with local values.
5. Engage traditional leaders and influencers, but train them first so that they fully support us, health workers at PHC, and do not make our work more difficult.
6. Do not exclude volunteers, extension health workers, and CHIPs from the RI education program. Talk to them to understand their fears and concerns about RI. Bring them together with communities for training.
7. Grandmothers should be educated, they listen to the radio all the time, they should be educated
8. Some health workers should be specially trained as health communicators and given that as a special job
9. Use various communication channels—media, social media, community gatherings, and health workshops—can effectively reach a broader audience and promote vaccination awareness.
10. Train children in primary schools about health and the importance of immunization so that they can take the message home to their mothers, grandmothers, and even fathers
11. Many things are going on to improve immunization in Kano, and many programs; sometimes, we are not sure what they are trying to do.

Other Notable Key Findings

a. Gender & Immunisation Uptake

There is no gender-based discrimination in immunization uptake across all communities. Caregivers, traditional leaders, health workers, and community representatives agree that male and female children are equally immunized. Only 2 respondents noted more girls were vaccinated, attributing this to a higher population of girls in their community, not discrimination. This is noteworthy in patriarchal communities, where gender biases usually favor males. It challenges traditional norms and shows a commitment to equitable health practices. This finding can serve as a best practice to advocate for gender equality in health and social development.

5

5.0 DISCUSSION

Findings from our analysis indicate that economic, social, and systemic issues contribute to the increasing prevalence of zero-dose children in Kano State. While existing literature has documented individual barriers to vaccination, our research highlights that the rise in zero-dose cases likely stems from a convergence of various factors, particularly misconceptions, migration, and Nigeria's recent economic challenges. A key finding is the contradiction between reported vaccination coverage and the rising number of zero-dose cases. This discrepancy may be attributed to distinct subpopulations within communities - a majority that readily accepts vaccination and a minority that persistently rejects it. The rejecting minority may be growing due to interconnected factors. A significant observation is the impact of vaccine adverse effects, particularly from the Penta 1 vaccine, which seems to trigger a cascade of consequences contributing to zero-dose cases. Severe reactions lead fathers to prohibit further vaccinations for the affected child and future children. This can result in entire families being categorized as zero-dose households. The severity of reactions, inadequate parental preparation, misconceptions, and limited medical support for managing side effects play a crucial role in vaccine hesitancy.

The surge in zero-dose cases coincides with Nigeria's recent economic crises, such as the 2023 fuel subsidy removal. Our analysis shows that economic hardship is both a barrier to accessing vaccination services and a factor that reshapes community perceptions of vaccination. Caregivers frequently question the necessity of immunization amidst financial struggles, indicating that economic conditions have relegated vaccination to a lower priority for many families. The findings also reveal a concerning trend regarding free vaccination services. Distrust in these services, especially in a healthcare context where other services require payment, seems to heighten during economic hardships. This skepticism exacerbates vaccine hesitancy and may lead to an increase in zero-dose cases, creating a paradox where free vaccination raises suspicion instead of appreciation, particularly when basic needs are unmet.

Men and paternal grandmothers significantly influence vaccination decisions, suggesting that current vaccination programs and SBCC, which primarily target mothers, may overlook key decision-makers. The increase in zero-dose cases may reflect a failure of social behaviour change communication to effectively engage these influential family members, especially since men are more likely to restrict vaccination after witnessing adverse reactions. Notably, immunization coverage is equal for boys and girls, indicating no gender discrimination in vaccine access. Traditional beliefs and misconceptions about vaccines have gained renewed traction in the current economic climate. Historic beliefs regarding infertility and Western agendas, compounded by economic grievances, create persuasive narratives during hardships. Economic stress appears to heighten community receptiveness to vaccine-skeptical messages.

Community Mobilizers (VCMs) play a critical role, as their reported disengagement correlates with challenges in reaching and persuading hesitant families. A reduction in community-level engagement may be contributing to the rise in zero-dose cases, especially as economic challenges decrease families' likelihood of seeking vaccination services. These findings illustrate that the increase in zero-dose cases is not solely due to worsening individual factors but reflects multiple simultaneous challenges. Economic hardship amplifies existing barriers and diminishes

community resilience, explaining the prevalence of zero-dose cases even in areas with historically good vaccination coverage.

The analysis also supports the effectiveness of incentive programs in boosting vaccination uptake, with health workers noting significant improvements in attendance and completion rates when monetary incentives are provided. While religious leaders could be pivotal in addressing concerns about adverse effects and economic challenges, their potential remains underutilized.

6.0 Conclusion & Recommendations

The analysis highlights three key areas for immunization programs. It emphasizes the importance of social behaviour change communication in addressing parental concerns about vaccine side effects, as dismissing these can erode trust and increase hesitancy. Caregivers need balanced information on both benefits and potential adverse effects. Systematic documentation of adverse reactions can enhance transparency. Additionally, cash-based incentives may boost vaccination uptake, linking them to social protection programs. Lastly, since men are primary decision-makers and grandmothers influence choices, a targeted campaign engaging respected male community leaders could effectively address vaccine hesitancy. This issue intersects with social protection, and the state's newly passed Social Protection Agency Bill, 2025, can aim to support vulnerable populations. This agency could reduce zero-dose cases by addressing poverty and improving healthcare access.

The following recommendations are proposed.

- Engage Religious Leaders - Religious leaders, especially Imams, play a crucial role in addressing vaccine hesitancy as they influence public opinion in their communities. Engaging them can enhance outreach efforts. Imams can educate parents during prayers and sermons, emphasizing the importance of immunization. "Imams of mosques should enlighten male parents after daily prayers." Community members note that scholars can utilize platforms like Islamiyya schools to reach hesitant parents effectively.
- Social Behaviour Change Communication, Community Engagement and Mobilization - Community leaders, including Imams and Village Community Mobilizers (VCMs), are vital in promoting immunization during social and religious events. VCMs facilitate communication by conducting house-to-house visits, which have proven effective in previous outreach initiatives. "Engaging VCMs again in their past roles is necessary; they have techniques for convincing women."
- Incentives - Providing incentives, such as monetary rewards or essential items, can significantly increase vaccination uptake, especially in economically disadvantaged areas. Health workers have noted that these incentives motivate caregivers who prioritize basic needs. "Some bring their children because of the new incentives program." However, concerns about the sustainability of such incentives persist. "If you start giving money for vaccinations, how long can that continue?"
- Localization and Attitude of Health Workers - Recruiting health workers from local communities fosters trust and encourages cooperation. Familiarity with healthcare providers is essential in addressing vaccine hesitancy effectively. "The way in which healthcare staff engage with the community can impact their receptiveness to vaccination."

Limitations of the Research

The main limitation of the research was the selection of caregiver respondents. Most caregivers were not zero-dose parents themselves, leading to second-hand accounts about the reasons other parents chose not to vaccinate. This absence limited insights into the authentic experiences and decision-making of zero-dose parents. Their direct input would have been valuable for proposing effective strategies to address their specific needs. Additionally, the reliance on community leaders to connect with zero-dose families posed challenges. These leaders may have been hesitant to assist, fearing their communities could be perceived as vaccine-resistant and concerned about external judgment of their leadership regarding public health.

About the dRPC

The development Research and Projects Centre (dRPC) is a mission-driven Nigerian non-profit organisation formed in 1993 by 10 academics and development practitioners from Nigerian Universities. The Centre's mission is to tackle development and humanitarian challenges, as they emerge, by equipping local civil society groups with resources, skills, and competences, enabling them to be pivotal actors in designing and applying high-impact local solutions. Since 1993, the dRPC has remained Nigeria's only local civil society organisation dedicated to mobilising millions of naira and training thousands of local groups to drive local solutions to accelerate sustainable and inclusive change projects that empower women, girls, and all vulnerable groups.

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