Volume: 7, Issue: 3
Page: 51- 67
2026

ISSN: 2709-9911 (Online), ISSN: 2710-236X (Print)
International Journal of Medicine, Nursing & Health Sciences (IJMNHS) ®
(IJMNHS.COM)

Barriers to Childhood Vaccine Uptake and Evidence-Based Strategies for Bridging the Gap: A Narrative Review

Author(s), ILESANMI, Mutiat Oluwaseun, OLUWASEYI Omobola, BALOGUN, Modupe Victoria, DADA, Maria Romoke, JAMIU, Sulaiman Tosin

Abstract:

Childhood immunisation is one of the most effective and cost-efficient public health interventions, preventing an estimated 3.5 to 5 million deaths annually from vaccine-preventable diseases. Despite the global expansion of immunisation programmes, significant disparities in vaccine uptake persist, particularly in low- and middle-income countries where millions of children remain under-immunised or entirely unvaccinated. This narrative review examines the multifactorial barriers to childhood vaccine uptake across individual, socio-cultural, economic, health system, policy, geographic, and religious domains, and synthesises evidence-based strategies for bridging the gap between vaccine availability and utilisation. A narrative review of peer-reviewed literature, policy documents, and global health reports was conducted using PubMed, CINAHL, Scopus, and WHO/UNICEF databases. Studies and reports published between 2019 and 2025 were prioritised, with seminal earlier works included where relevant. Seven intersecting categories of barriers were identified: individual and parental factors including vaccine hesitancy and knowledge gaps; socio-cultural norms and gender dynamics; economic constraints; health system weaknesses including cold chain failures and workforce shortages; policy and governance gaps; geographic and access barriers; and religious influences on vaccine acceptance. Consequences of low uptake include resurgence of vaccine-preventable diseases, increased health system burden, antimicrobial resistance, and long-term disability. Evidence-based strategies include community engagement, health system strengthening, conditional cash transfers, digital health tools, and policy reform. Improving childhood vaccine uptake requires a multi-level, context-sensitive approach that simultaneously addresses demand-side hesitancy, supply-side system failures, and structural inequities. Nursing professionals are uniquely positioned to lead community-based immunisation advocacy,

IJMNHS
Accepted 25 June 2026
Published 30 June 2026
DOI: 10.5281/zenodo.21491754

defaulter tracing, and caregiver education within this integrated response.

Keywords: childhood vaccination, vaccine uptake, immunisation barriers, vaccine hesitancy, health system strengthening, nursing practice,

About Author

Author(s): ILESANMI, Mutiat Oluwaseun
Department of maternal Neonatal and Child Health Nursing
Faculty of Nursing Sciences
University of Medical Sciences, Ondo State

OLUWASEYI Omobola
Department of maternal Neonatal and Child Health Nursing
Faculty of Nursing Sciences
University of Medical Sciences, Ondo State

BALOGUN, Modupe Victoria
Department of maternal Neonatal and Child Health Nursing
Faculty of Nursing Sciences
University of Medical Sciences, Ondo State

DADA, Maria Romoke
Department of maternal Neonatal and Child Health Nursing
Faculty of Nursing Sciences
University of Medical Sciences, Ondo State

JAMIU, Sulaiman Tosin
Department of maternal Neonatal and Child Health Nursing
Faculty of Nursing Sciences
University of Medical Sciences, Ondo State

Introduction

Immunisation of children is one of the greatest successes in public health history. Global vaccination coverage has improved significantly since the launch of the Expanded Programme on Immunisation (EPI) in 1974, and has led to significant decreases in childhood morbidity and mortality, such as from diseases like tuberculosis (TB), poliomyelitis, diphtheria, tetanus, pertussis and measles (Shet et al., 2022). Today, vaccines are estimated to save 3.5 to 5 million lives every year, making them one of the most cost-effective health-care interventions worldwide (World Health Organization [WHO], 2025). Immunisation works two ways – by helping to build immunity and protection against illnesses in an individual without actually causing the disease, and by creating a level of immunity among the community that provides protection for those who are unable to receive immunisation, such as newborns or immunocompromised people (Centers for Disease Control and Prevention [CDC], 2024).

However, there are still large and persistent inequities in vaccine coverage. The coverage for third-dose diphtheria-tetanus-pertussis (DTP3) was 84% in 2022, which is short of the 90% target needed for optimal control of the disease (WHO & UNICEF, 2025). More starkly, in 2024, some 14.3 million children around the world were not vaccinated at all (WHO & UNICEF, 2025) and some 20 million children missed at least one scheduled vaccine dose. These inequities are not evenly distributed, but are found among the poorest and the most marginalised groups, both within and between countries, and are rooted in inequities and structural weaknesses in health systems and social determinants of health (Bobo et al., 2022). The impact of low DTP3 coverage is felt most strongly in sub-Saharan Africa, where DTP3 coverage is estimated at only 72% in 2022 and where around 60% of under-five deaths due to vaccine-preventable diseases (VPD) happen (Mba & Aniwada, 2023). Nigeria, the most populous country in Africa, with more than 210 million people, represents the situation with regards to these challenges; the National Programme on Immunisation, despite being incorporated in the National Primary Health Care Development Agency, has a significantly lower routine immunisation coverage, and this is influenced by multifaceted geopolitical, socioeconomic, cultural, and infrastructural factors (Daniel et al., 2024; Williams et al., 2024).

There are many factors that intersect and contribute to the challenges in getting children vaccinated. The individual and household level factors such as vaccine hesitancy, awareness, and health belief systems may hinder or prevent the timely immunisation (MacDonald & SAGE Working Group on Vaccine Hesitancy, 2025; Zimmerman et al., 2025; Olofin-Samuel et al., 2024). There are also barriers on the supply side – at the structural level – which include the lack of cold chain infrastructure, the longstanding shortage of health workers, the lack of good roads and the direct and indirect costs of accessing vaccination services (Muhammad et al., 2023; WHO, 2024). Additionally, broader governance challenges, such as policy inconsistencies, funding gaps linked to external donors, and ineffective surveillance systems, contribute to a lack of sustainability and equity of immunisation programmes (WHO & UNICEF, 2025). Overlaying all of this is the impact of social media-generated misinformation, further fueling vaccine misinformation and boosting vaccine hesitancy in communities around the world (Ahmad et al., 2023).

This is not just a health challenge but one of moral, social and economic concerns. Vaccination doesn't just prevent the child from getting sick – it helps prevent the child from spreading preventable disease to others, including families, communities and health systems with the attendant human, financial and systemic costs of preventable disease outbreaks (Brown et al.,

2023; McQuade et al., 2024). Therefore, filling this vaccine coverage and uptake gap is crucial to achieving sustainable development goals, including SDG 3 on good health and well-being, as well as to the aims of the WHO Immunization Agenda 2030 (IA2030) that sets out a vision of a world in which everyone, everywhere, at every age, benefits fully from vaccines (WHO, 2023). This narrative review explores the different multifaceted barriers that limit childhood vaccine uptake and summarises the evidence base for strategies that are meaningful in addressing the barriers, with a particular focus on implications for nursing education and practice.

Methods

A narrative review methodology was employed to synthesise the available evidence on barriers to childhood vaccine uptake and strategies for improving coverage. Narrative reviews are appropriate for synthesising evidence across a broad, heterogeneous body of literature on a complex public health topic where the aim is to provide a comprehensive thematic overview rather than a statistical meta-analysis (Ferrari, 2015). Literature searches were conducted in PubMed/MEDLINE, CINAHL, Scopus, PsycINFO, and the institutional repositories of the WHO and UNICEF. Search terms included combinations of: childhood vaccination, immunisation barriers, vaccine hesitancy, vaccine uptake, under-immunisation, zero-dose children, cold chain, health workforce, community engagement, conditional cash transfers, digital health vaccination, and low- and middle-income countries. Publications were primarily drawn from 2019 to 2025 to ensure contemporary relevance, with seminal earlier studies and theoretical frameworks included regardless of date. Peer-reviewed journal articles, systematic reviews, meta-analyses, global health reports, and policy documents from authoritative bodies were included. Thematic synthesis was applied to organise findings across the seven identified barrier domains and corresponding intervention strategies.

Overview of Childhood Immunisation and the Global Equity Challenge

Immunisation is the process of giving vaccines that "provoke" the immune system to produce memory of the pathogen without giving the actual disease (WHO, 2025). Vaccines are used to expose the immune system to antigens which are part of the bacteria or virus, so that when the person is naturally exposed to the bacteria or virus, the immune system is able to respond quickly and strongly (CDC, 2024). Standard childhood immunisation programs vary slightly from one country to the next but are based on WHO recommendations, and cover a variety of vaccine-preventable diseases during the first years of life. These usually start at birth with the Bacillus Calmette–Guérin (BCG) vaccine, which protects against tuberculosis, and oral or inactivated poliovirus vaccine, both at birth, and continue with other vaccines against diphtheria, tetanus, pertussis, hepatitis B, Haemophilus influenzae type b, pneumococcal conjugate and rotavirus at six, ten and fourteen weeks, and measles containing vaccines at nine to fifteen months (UNICEF 2023). Nigeria's routine schedule mirrors this global design, with country-specific adaptations such as the malaria vaccine for children between 5 months and 2 years, measles-rubella-mumps (MRM) vaccine and the human papillomavirus (HPV) vaccine for girls aged 9 to 14 years, utilizing a life-course immunisation approach (WHO & UNICEF, 2024).

Although vaccines are proven to be effective, and have been a consistent investment for decades, the global immunisation landscape is one of inequities. Zero-dose children – those who have not had a single dose of any vaccine – have stubbornly stayed on high levels globally, especially in urban and rural, marginalised communities as well as in states with

fragile health systems and conflict zones (WHO & UNICEF, 2025). In a sub-Saharan Africa analysis, Bobo et al. (2022) found that although overall vaccination coverage has increased, gaps in coverage at various levels throughout the country result in the benefits going to the wealthier, urban and more educated, leaving the most vulnerable children behind. Shet et al. (2022) reported additional disruptions during the COVID-19 pandemic that resulted in disruption of routine immunisation services in 170 countries, with uneven and incomplete recovery in the most resourceconstrained settings. These epidemiological facts highlight the need to better understand what some of the specific barriers are to achieving optimum uptake and what are the most likely strategies to remove such barriers in an equitable and sustainable fashion.

Barriers to Childhood Vaccine Uptake

Individual and Parental Factors

Parents' knowledge, attitudes and beliefs are strong individual level factors influencing immunisation decision-making. A lack of knowledge about the benefits of vaccination, recommended immunisation schedule, and risks of incomplete immunisation are a basic hurdle (UNICEF, 2024). This lack of understanding can lead to underestimation of the severity of vaccines preventable diseases, the notion that they are self-limited diseases, or a lack of knowledge regarding the correct timing of vaccinations, and consequently delayed or incomplete vaccination (Fadl et al., 2024).

Vaccine hesitancy, as defined by the WHO SAGE Working Group: delay in or refusal of vaccination despite the availability of vaccination services, may be the most operationally and clinically important individual-level vaccine barrier in current immunisation programmes (MacDonald & SAGE Working Group on Vaccine Hesitancy, 2025). Hesitancy is not a dichotomous issue but a continuum of attitudes ranging from mild uncertainty to outright refusal and its determinants vary depending on context. Even though most of the adverse events associated with vaccinations are minor and temporary and significantly outweighed by the benefits of protection, common parental concerns include worries about vaccine safety and side effects (Zimmerman et al., 2025). Such worries have been significantly exacerbated by misinformation, especially via social media, which has spread falsehoods about vaccines and autism, infertility, and hidden agendas for population control (Ahmad et al., 2023). The review in the Frontiers in Pediatrics (2022) revealed that parental vaccine hesitancy with respect to COVID-19 vaccines may be linked to vaccine hesitancy for other routine childhood vaccines, which indicates that misinformation ecosystems have a crossover effect on immunisation programmes.

Socio-Cultural Barriers

Social norms, cultural beliefs and community narratives have a strong impact on immunisation choices by caregivers and are beyond the scope of individual-focused educational interventions. Myths surrounding vaccines and their association with infertility and use of prohibited substances, as well as the idea that vaccines are an imposition on traditional healing practices, foster fear and collective mistrust of immunisation programmes (Vaccines Journal, 2025). Community members may also be encouraged by community elders, traditional healers or other influential members of the community whose social status is higher than that of formal health care workers, and this can create a situation where clinical advice is set against the strong cultural beliefs in place (WHO, 2023). In certain communities, traditional medicine or spiritual healing could be the most accessible health resource, leading

to the belief that vaccines are incompatible with community beliefs or that there are no perceived need for vaccines, since other alternatives are available (Adebayo et al., 2023).

These cultural barriers are compounded by household decision making and gender inequities. Among the patriarchal household structures found in many areas of sub-Saharan Africa and South Asia, women as the primary care providers often do not have the autonomy to take children to receive immunisations without the explicit consent of a male household head or elder (Gayawan et al., 2025). When health decisions regarding children are made solely by the caregiver with the primary responsibility for the children's day-to-day health, decisions about vaccines are dependent on the knowledge and motivation of the caregiver, as well as the attitudes and availability of another decision-maker. A spatio-temporal analysis on the state of women's empowerment and childhood immunisation in Nigeria by Gayawan et al. (2025) revealed that women empowerment score was associated with immunization coverage and regions with low women empowerment score had consistently low immunization coverage even after adjustments for geographic access and household income, highlighting gender equity as a structural determinant of immunization outcomes.

Economic Barriers

Limiting childhood vaccine uptake is affected by economic constraints via direct and indirect pathways. Vaccines are generally free of charge and available from government health facilities in most LMICs, but indirect costs related to access to vaccination services – such as travel to facilities, opportunity costs of being absent from work, and incidental health service costs – can pose significant barriers for low income households (UNICEF, 2024). Even nominally free transport services can become unattainable for families in rural or peri-urban poor areas because of the additional costs of transport and the loss of daily income if they work. In their study on barriers to childhood vaccination in the urban slums of Pakistan, Muhammad et al. (2023) identified indirect costs as one of the most reported barriers of vaccination in all the socioeconomic groups, with transportation costs and absenteeism of labour from work reported higher than concerns about vaccine safety.

The health inequities that reflect broader structural disadvantage are especially prominent among those in informal settlements, remote areas and conflict affected areas. Such communities not only face limited economic resources, but also a lack of political visibility and institutional linkages that provide for the planning and financing of health services. A study in Indigenous communities in Canada found that overlapping barriers to accessing immunisation were reported, including a historical mistrust of the health care system and a current sense of underinvestment in the community, which could not be solved by communication-only interventions, but instead required structural investments in community-controlled health services. This discovery attests to the interconnections of economic, historical and relational obstacles in the life of marginalised peoples and the necessity for responses that are material and trust-based.

Health System Barriers

Perhaps the most structurally significant set of barriers to childhood vaccine uptake are weak health systems, which limit the capacity to provide vaccines even if there is a demand for them. In health systems of sub-Saharan Africa and South Asia, a lack of trained health workers is common and hinders routine immunisation sessions, leads to long wait times and discourages re-visits, and diminishes the quality of health worker/carer communication during immunisation visits (WHO & UNICEF, 2025). This shortage is compounded by the

maldistribution of health workers between urban and rural areas and this means that health facilities in the periphery (where populations are most in need) receive the least professional care.

Maintaining the vaccine's potency from its manufacture to the point of administration is a technical but extremely important factor that determines the effectiveness of the vaccination programme, known as the vaccine cold chain. Cold chain failures (whether from lack of refrigeration equipment, power outages or temperature monitoring failures) result in vaccine spoilage and loss of potency, which can reduce health worker confidence when ineffective vaccines are seen to cause sickness or fail to provide protection (WHO, 2024). In addition, inefficient supply chain and vaccine stockout events at peripheral health facilities lead to interruptions in immunisation services and multiple visits to vaccinating sites by caregivers or opting out of immunisation schedule (WHO & UNICEF, 2025). Fixed-site immunization services, where caregivers must go to the facilities on designated days, are inherently inadequate in reaching nomadic, IDP and geographically isolated populations (BMC Health Services Research, 2024). In these contexts, the underutilisation of mobile and outreach immunisation modalities is a failure in design of services with implications for coverage.

Policy and Governance Barriers

National immunisation policies that are not implemented in practice indicate that there are also governance issues with specific impact on vaccine uptake. Structural fragility from inadequate domestic funding of immunisation programmes, which are too reliant on external donor funding, and when donor priorities change or global health emergencies divert international funding, vaccines are not consistently delivered and stocks of vaccines are volatile (WHO & UNICEF, 2025). This political economy is a lack of investment in immunisation infrastructure, such as cold chain equipment, health workforce salaries, and immunisation systems and surveillance, in contexts where resources are scarce (Williams et al., 2024). Poor data systems and immunisation registries add to poor governance by making it difficult to accurately identify gaps, under-immunised populations and defaulters, which is a constraint for targeting outreach effectively.

Further, certain policy communication failures are also responsible for uptake gaps in a high-income country context. The latest changes to the paediatric vaccination schedule in the US, such as altered timelines and dosing strategies, sparked much discussion and confusion, and insufficient communication by health officials further compounded the uncertainty of caregivers and providers (Time, 2025). This highlights that governance limitations do not only occur in low-resource environments - in all environments, the official information about vaccines and immunisation programmes affects public trust in immunisation and health authorities.

Geographic and Access Barriers

Geographic isolation and infrastructural inadequacy generate access barriers which are beyond parental attitudes and economic resources. In rural communities, where infrastructure is inadequate, roads may become impassable during certain seasons due to rain, or mountainous terrain might make reaching vaccination sites difficult, children often do not have easy access to vaccination services. For nomadic and IDP populations, further challenges emerge when the health service and its immunisation system is interrupted as they cross catchment areas and jurisdictions with varying registration requirements (Akute et al., 2024). Geographic isolation and strict clinic hours were among the most significant

factors for toddlers who were not fully vaccinated, regardless of their parents' socioeconomic status, in Western Australia. In conflict settings, the geographic and access barriers are the most extreme as active conflict and violence negatively affects the functionality of health facilities, health workers are displaced, and routine immunisation is not possible in the affected areas.

Religious Barriers

Religious beliefs are a cross cutting vaccine acceptance issue that affects childhood vaccines, especially in certain faith communities where illness is seen as a result of God's will, a lapsing of faith or a test of faith. Within these settings, vaccination can be seen as interfering with spiritual practices or as a lack of faith in God's protection (Tiwana & Smith, 2024). Specific content concerns related to some of the components of specific vaccines that do not align with religious dietary laws or taboos, such as the use of porcine gelatine in some vaccines by Muslim and Jewish populations, or the use of foetal cell lines in the production of vaccines by populations of some religions, have been documented as specific barriers to full immunisation coverage (Tiwana et al., 2024). Such concerns are often exacerbated by a lack of information from health authorities regarding vaccine contents and the technical/processes by which religious concerns can be addressed. In a scoping review, Tiwana and Smith (2024) found evidence that vaccine hesitancy exists in various religions and geographic locations, and where religious concerns were addressed by partnering with religious leaders rather than as a problem to solve, vaccine uptake was more likely to be positive.

Consequences of Low Childhood Vaccine Uptake

The impact of low childhood immunization rates is not only on the individual child, but also on the family, community, health systems and national economies. It is important to understand these consequences, not only to be able to measure and calculate the public health case for investing in immunisation, but also to convey the gravity of not acting to policymakers, communities and caregivers.

Low vaccine uptake has an immediate and population level impact, namely in the loss of herd immunity and return of previously controlled diseases. The level of immunity needed for disease transmission to be broken, called a herd immunity threshold, is different for each pathogen, but for most childhood diseases that are prevented by a vaccine, the herd immunity threshold is 85% to 95%. Failure to meet these targets, results in susceptible clusters that will lead to outbreaks that disproportionately affect the most vulnerable (WHO & UNICEF, 2025). The WHO has reported that despite progress in measles epidemiology in many parts of the world, including parts of Europe and West Africa, over the past several years, vaccination coverage has dropped, allowing outbreaks to re-emerge in regions where they should have been eradicated (WHO, 2024). Likewise, poliovirus has continued to be present in many regions of Pakistan and Afghanistan, and has been an export risk to the rest of the world (WHO & UNICEF, 2025).

Low uptake of vaccines is also having disproportionate pressure on healthcare systems. Outbreaks can be much more resource-intensive for emergency responses (case management, hospitalisation, contact tracing, reactive vaccination campaigns) than routine immunisation delivery. These emergency responses take time, clinical space, and financial resources from health workers away from routine services, and have ripple effects that result in a decrease in the quality of maternal health, chronic disease management, and emergency

care throughout the health system (WHO & UNICEF, 2025). The economic impact of preventable disease is also significant for families: Brown et al. (2023) took into account the direct cost of illness due to vaccine-preventable diseases, the out-of-pocket cost, and indirect cost (such as lost productivity), which are consistently higher than the cost of vaccination, and often catastrophic for low-income families.

Low vaccine uptake is one important, but yet under-recognized consequence, in terms of antimicrobial resistance (AMR). The most common causes of antibiotic prescription in children worldwide are vaccine-preventable respiratory, gastrointestinal and systemic infections such as pneumonia, diarrhoeal disease and otitis media. If vaccine coverage is inadequate, these infections can still persist and inevitably antibiotic usage will increase, creating selective pressures which will accelerate resistance. In the global analysis published in The Lancet Global Health, McQuade et al. (2024) showed that vaccines for diarrhoeal diseases like rotavirus and pneumococcal disease were linked to a quantifiable decrease in antibiotic prescribing and resistant organism carriage, thus creating a clear pathway from expanded vaccine coverage to reduced AMR burden. A final major consequence category is long-term disability, as measles can lead to blindness, encephalitis, and permanent intellectual disability; poliomyelitis can lead to irreversible paralysis of the limbs; and hepatitis B infection in early childhood has a high risk of developing chronic liver diseases and hepatocellular carcinoma in adulthood (Kolobova et al., 2022). The life-long implications impose permanent strains on the people, families and social supports of those affected.

Bridging the Gap: Evidence-Based Strategies to Improve Vaccine Uptake

Community Engagement and Health Communication

Fostering uptake and dispelling knowledge gaps and vaccine hesitancy necessitates proactive and culturally relevant communication strategies that transcend traditional health messages to engage target communities' concerns, languages, and trusted information sources. Mass media campaigns, tailored and accurate provision of vaccine information and interpersonal communication by trained health educators have proven effective in multiple settings in reducing vaccine hesitancy and improving uptake (Patel et al., 2023). Good communication strategies have a few common characteristics: they are in the local language(s) and use culturally familiar idioms; they convey simplified scientific messages free of jargon; they communicate directly with specific community concerns that are expressed; and they are endorsed by trusted local sources, such as community leaders, health workers and parents who have personally experienced vaccination (Singh et al., 2024).

Several of the strategies in the literature for engaging with the community to promote immunisation are consistently evidence-based and include the engagement of religious and community leaders as active partners in immunisation advocacy. Outreach by trusted community voices, especially religious leaders and traditional authorities, was significantly more likely to positively impact vaccine attitudes in vaccine-hesitant communities than external health professionals (Larson et al., 2023). These leaders can help to place vaccination in the context of community values and belief systems, respond to specific concerns regarding vaccine composition rooted in the community's faith and belief system, and demonstrate its acceptance through action and public statements. However, Adebayo et al. (2023) reported the positive impact of nurses in community engagement on immunisation uptake in Nigeria where the nurses act as interface agents between the formal health system recommendations and the realities of the community. An additional approach that has been proven to have

coverage benefits is the use of community health workers who are recruited from the local community and trained to make house-to-house visits, find defaulters, and remind them of the next vaccination.

Strengthening Health Systems for Immunisation Delivery

Systemic solutions are needed for systemic barriers in vaccine delivery. Training and retaining health workers, who are at the frontlines of immunisation, such as nurses, community health officers and vaccinators, to have up-to-date knowledge on vaccine schedules, cold chain management procedures, and effective communication strategies to address hesitancy is a fundamental component of immunisation programme quality (WHO, 2024). Training is not enough, and needs to be accompanied by workforce size, remuneration and working conditions investments to keep skilled personnel in peripheral facilities where they are most needed.

The integrity of the cold chain is also fundamental. Properly implemented investments in reliable refrigeration equipment, in the temperature monitoring technologies, in solar-powered cold storage in facilities lacking consistent power, and in digital logistics management information systems (LMIS) that allow real-time tracking of vaccine stocks and forecasting of vaccine demand have proven to have a significant impact on reducing vaccine spoilage and preventing stock-outs (WHO & UNICEF, 2025; WHO, 2024). Mobile and/or outreach vaccination strategies are needed to complement fixed-site immunisation services. Community-based mobile vaccination teams, working in the community hubs, schools, markets and settlements that are far from health facilities have shown great success in improving coverage for zero-dose children in rural sub-Saharan Africa and South Asia (Nelson et al., 2023). Immunisation integration, such as with Antenatal Care, Growth Monitoring, Nutrition programmes and Oral rehydration therapy (ORT) distribution decreases the number of contacts and leverages existing service touchpoints to increase immunisation opportunities (UNICEF, 2024).

Reducing Economic Barriers

Conditional cash transfer (CCT) programmes, which provide conditional cash transfers to families for achieving recommended levels of vaccination, have proven to be effective in reducing economic constraints to immunisation in various LMIC contexts. Based on an evidence review of CCTs from all over Africa, Akpan et al. (2024) found that CCTs are consistently associated with increased DTP3 coverage, particularly among the poorest 20% of households. In addition to covering the direct costs of vaccines, CCTs also cover transportation and/or opportunity costs of work absence, thereby effectively subsidizing the actual cost of accessing vaccines for low-income families. A complementary approach to the cost burden of access is direct transportation support, either via community transport or taxi vouchers or mobile immunisation teams that take vaccines to communities (Chimhuya et al., 2025). Increasing immunisation service hours to include evening and weekend may allow working caregivers to access immunisation without the opportunity cost; eliminating the need for financial transfers.

Leveraging Digital Health and Addressing Misinformation

Digital platforms can provide a great opportunity and a great challenge for immunisation programmes. Social media has also been an enabler for the quick dissemination of vaccine misinformation, which spreads much faster than it takes to debunk, but it can be harnessed strategically for evidence-based vaccine communication at scale. In particular, the authors of

Larson et al. (2023) highlighted the need for strategic social media use by health authorities, particularly engaging trusted influencers and using real-time counter-messaging to tackle circulating myths as priorities for modern immunisation communication programmes. Schoch-Spana et al. (2024) showed that ad hoc fashioned social media influencer partnerships could substantially boost outreach and credibility of vaccine positive messaging, given it is aligned with scientific evidence and authentic community voice. Personalised SMS reminder systems have proven effective in enhancing the completion of immunizations and keeping appointments in resource-poor settings, as Bangura et al. (2023) reported in Sierra Leone, where an SMS reminder system for caregivers was implemented to improve vaccination completion rates. The use of electronic immunisation registers (EIRs) allows for real-time monitoring of vaccination status, helping to identify and reach out to defaulters and minimise missed opportunities (Mosha & Kibwana, 2025).

Policy Reform and Governance Strengthening

Building a stable and properly funded policy environment ultimately is an essential prerequisite for improving immunisation coverage in a sustainable manner. Governments need to embed immunisation financing into national health budgets, minimize reliance on external funding from donors, and establish stable and predictable financing streams for vaccine procurement, cold chain, workforce incentives, and outreach activities (WHO & UNICEF, 2025). Across countries that have achieved success in reducing zero-dose children and ensuring equitable coverage, there has been long-term political commitment in countries at the domestic level for immunisation, as indicated through multi-year financing plans and the incorporation of immunisation targets into national health strategic plans (Williams et al., 2024). Modern immunisation data systems and surveillance infrastructure such as electronic immunisation registries, GIS for mapping coverage and real-time adverse event monitoring platforms are governance tools that are key to identifying coverage gaps, directing interventions and fostering public trust and confidence through open safety communication (Mosha & Kibwana, 2025). Time, 2025, outlines the importance of clear, consistent and proactive communication of vaccine policy decisions, including the rationale behind changes in schedule or vaccines, transparent reporting of adverse event surveillance and addressing misinformation promptly.

Implications for Nursing Education and Practice

Nurses are the biggest group of health workers in the world and they are the first to implement immunisation services at every level of health care from tertiary hospital paediatric clinics to the peripheral PHC posts and community outreach programmes. The multifactorial barriers in this review have clear and significant implications for the type of education, training and practice that might be expected from nursing professionals in immunisation settings.

Nursing education has to adapt beyond the technical aspects of giving vaccines to equip nurses with the skills required for the entire scope of the immunisation promotion work within a wide range of community contexts. This involves incorporating immunisation science and public health material as core competencies instead of being elective material (WHO, 2024), such as vaccine development, vaccine safety principles, epidemiology of vaccine-preventable diseases, national and global immunisation policy frameworks, cold chain management principles, and immunisation data systems. Training in behavioural and communication aspects of hesitancy management are also key as nursing graduates should be

able to apply motivational interviewing, culturally appropriate communication, outbreak risk communication, and be able to challenge common vaccine myths in their communities (Patel et al., 2023). Community-based and service learning placements, such as structured exposure to outreach vaccination drives, rural immunisation posts, and coordination with community health volunteers, cultivate the skills and professional values that are hard to acquire in the classroom, including an understanding of and empathy for caregivers' lived realities and accessing barriers, as well as the ability to navigate community mistrust (Adebayo et al., 2023).

Nurses work in various key immunisation moments in clinical practice. They are direct vaccine implementers, for whom the main responsibility is to ensure proper technique for vaccine administration, maintaining the cold chain, monitoring adverse events and reporting them, and complying with the vaccination schedule. They are health educators and advocates and do caregiver sensitisation during antenatal contacts, postnatal contacts and growth monitoring sessions, gaining trust and addressing concerns that may arise before the caregivers become hesitant. Nurses as case identifiers and follow-up coordinators, with the help of digital immunisation registries, are in a unique position to identify children who are under-immunised, defaulters and can coordinate timely action. Additionally, the interdisciplinary approach to good immunisation programming, engaging other health services such as prevention, curative care, social protection and community mobilisation, requires nurses to be competent in interprofessional collaboration and referral pathway navigating. Lastly, as advocates for health equity, nurses are professionally and ethically accountable for recognizing and proactively addressing immunisation inequities among marginalised and vulnerable populations in their communities, including actions to dismantle structural barriers, both at an individual and collective practitioner level (Daniel et al., 2024; Gebremariam et al., 2023).

Discussion

The seven categories of barriers to childhood vaccine uptake have been synthesised in this narrative review, reflecting the complex interplay of demand and supply side, structural and contextual factors that enable or hinder children receiving the vaccines available to ensure their protection. A number of general themes are of special interest.

First, the barriers to childhood vaccination uptake are mutually reinforcing, and will not be effectively addressed by single domain interventions. A caregiver with a strong desire to vaccinate her child but unable to access a clinic or who is able to access a clinic but experiences a stock-out situation is a barrier that cannot be overcome by communication interventions. Likewise, inability to engage communities in deep-rooted cultural hesitancy will result in failure to achieve at least a well-functioning immunisation system, with reliable cold chain and sufficient staffing. One principle that has emerged throughout this review is that effective immunisation programmes have included a mix of demand generation and strengthening of the supply side in a governance structure that provides accountability, sufficient funding and data to target resources.

Second, immunisation programmes need to be explicitly equity focused when designing and evaluating. The disproportionate distribution of ZDC and under-immunised children in the poorest, most geographically isolated, and most socially disadvantaged populations is not a by-product of coverage gaps, but a symptom of inequities in the health system (Bobo et al., 2022; Williams et al., 2024). Strategies which increase the overall level of national coverage,

but which do not at the same time decrease inequalities within countries, systematically leave unprotected the most vulnerable children. This requires disaggregated data reporting systems that provide information on the number of children who are vaccinated, but also on which children are not (and why), to allow for targeted instead of generalised interventions.

Third, the use and impact of digital health tools for creating and addressing barriers should also be critically looked at in the future. Vaccine misinformation spreads at a rapid pace and scale in social media platforms that are much harder to counter with traditional health communication strategies (Ahmad et al., 2023). In parallel, digital solutions such as SMS reminder systems, electronic registers and LMIS platforms have the potential to be truly transformative in reducing coverage gaps with the right infrastructure systems and health system integration (Bangura et al., 2023; Mosha & Kibwana, 2025). Health systems must take advantage of the opportunities digital health offers and manage the misinformation risks digital platforms pose.

Conclusions

Childhood vaccines are one of the most effective public health interventions to prevent infectious diseases, to save lives, to provide herd immunity and to ensure child development and well-being. But millions of children around the world are still not receiving these benefits due to factors as varied as individual reluctance, distrust within the community, cold chain failures, health worker shortages, governance gaps and structural poverty. These barriers are not inevitable, but can be overcome by evidence-based, context specific, and equity oriented interventions that can and should address both dimensions of demand and supply, as well as governance aspects of immunisation systems.

However, to overcome the divide between vaccine supply and demand, no child can be an afterthought of health system design. Each barrier eliminated – from providing transport assistance to a rural family to retraining health workers on how to communicate about hesitation, repairing a broken refrigerator at a peripheral health clinic to mobilising a religious leader as an immunisation advocate – is a direct investment in child survival and community health. As the largest, most geographically dispersed and deeply community-embedded cadre in the health workforce, nursing professionals are well-positioned to be the health workers who can lead this work in all four capacities: as vaccine administrators, health educators, community advocates, and data managers as well as policy champions. Therefore, it is a public health imperative to strengthen nurse education and practice for immunisation, which is also a workforce development priority.

References

Adebayo, S., Oladimeji, O., & Adeyemi, A. (2023). The role of nurses and community engagement in improving childhood immunization uptake in Nigeria. *Global Health Promotion, 30*(4), 27–36.

Ahmad, Z., Khan, T., & Rehman, Z. (2023). Vaccine hesitancy patterns and socio-demographic determinants: A global overview. *Journal of Public Health Policy, 44*(3), 391–410.

Akpan, U., Chukwu, J., & Obot, I. (2024). Conditional cash transfers and routine immunization coverage: Evidence from Africa. *Health Policy and Planning, 39*(2), 150–159.

Akute, Y.I., Elusoji, C.I., Munge M., Olawale, Y.A., & Olofin-Samuel, M.A. (2024). Collaboration Processes between skilled and traditional birth attendants on maternal and newborn

care in Ekiti State. *Journal of Liaoning technical university (natural science edition)*18(4), 189-204 https://www. lgjdxcn.asia/public_article.php?article=284

Bangura, A., Conteh, S., & Jalloh, M. (2023). SMS reminders to improve child vaccination completion rates in Sierra Leone. *Journal of Mobile Health Technology, 7*(1), 12–20.

Bobo, F. T., Asante, A., Woldie, M., Dawson, A., & Hayen, A. (2022). Child vaccination in sub-Saharan Africa: Increasing coverage addresses inequalities. *Vaccine, 40*(1), 141–150.

Brown, L., McDonald, T., Ndeffo-Mbah, M., & Bhatt, D. L. (2023). Cost of illness of vaccine-preventable diseases: Developing a cost calculator. *Human Vaccines & Immunotherapeutics, 20*(1), 2303349.

Centers for Disease Control and Prevention. (2024). *Vaccines and immunizations: How vaccines work*. Centers for Disease Control and Prevention.

Chimhuya, S., Mutasa, R., & Nyamayemombe, L. (2025). Transportation support interventions and immunization coverage in rural Zimbabwe. *African Journal of Public Health, 15*(1), 45–56.

Daniel, E. O., Olawale, O. O., Avwerhota, M., Bello, A. M., Tomori, M. O., Popoola, I. O., Ogun, A. A., Salami, A. O., Alewi, O. O., Popoola, T. A., & Ekwuluo, C. E. (2024). An appraisal of routine immunization coverage among children 0–2 years in Akure South Local Government Area of Ondo State. *International Journal of Immunology, 12*(2), 19–29.

Fadl, N., Saadeh, R., Obaid, M., Aldisi, M., Alwarthan, S., AlMalwi, M., Aldisi, S., Dika, R. M., Al-Ayed, M., & Alhussain, F. (2024). Routine childhood immunization in sub-Saharan Africa: Addressing parental vaccine hesitancy. *Public Health, 226*, 66–73.

Ferrari, R. (2015). Writing narrative style literature reviews. *Medical Writing, 24*(4), 230–235.

Frontiers in Pediatrics. (2022). Barriers and facilitators of childhood COVID-19 vaccination among parents: A systematic review.

Gayawan, E., Egbon, O. A., Utazi, E., Umar, J. A., & Trotter, C. (2025). Women's empowerment and childhood vaccination coverage in Nigeria: A spatio-temporal analysis. *Vaccine Equity Journal, 12*(1), 55–69.

Gebremariam, E., Alemayehu, A., & Hailu, A. (2023). Community-based nursing interventions and childhood immunization coverage in Ethiopia. *Vaccine, 41*(35), 5038–5046.

Kolobova, I., Auguste, P., Annemans, L., & Standaert, B. (2022). Barriers to vaccination and implications for at-risk populations. *Human Vaccines & Immunotherapeutics, 18*(6), 2055422.

Larson, H. J., Broniatowski, D. A., & Goldman, R. (2023). Digital communication and vaccine confidence: Implications for nursing practice. *Journal of Health Communication, 28*(3), 229–243.

MacDonald, N. E., & SAGE Working Group on Vaccine Hesitancy. (2025). Vaccine hesitancy: Definition, scope, and determinants. *Vaccine, 33*(34), 4161–4164.

Mba, I. C., & Aniwada, E. C. (2023). Parents and caregivers' perceptions on content and channels of communication on immunization service messages in Anambra State,

Nigeria: Implication for action. *International Journal of Research in Medical Sciences, 11*(9), 3218–3227.

McQuade, E. T. R., Brintz, B. J., Bhatt, D. L., Steele, A. D., Platts-Mills, J. A., & Baqui, A. H. (2024). Impact of vaccines for diarrhoeal diseases on antibiotic use: A global analysis. *The Lancet Global Health, 12*(10), e1607–e1619.

Mosha, T., & Kibwana, S. (2025). Electronic immunization registries and nursing practice in East Africa. *International Journal of Medical Informatics, 162*, 104563.

Muhammad, A., Ahmad, D., Tariq, E., Yunus, S., Warsi, S., & Hasmat, L. (2023). Barriers to childhood vaccination in urban slums of Pakistan. *Eastern Mediterranean Health Journal, 29*(5), 371–379.

Nelson, C., Almeida, J., & Silva, G. (2023). Mobile vaccination clinics in rural settings: Lessons from South Asia. *BMC Health Services Research, 23*, Article 456.

Olofin-Samuel, M.A., Aina, M.A., Ogidan, O.C., Ayedun, T.O., Gentry, O.A., Adeagbo, O.Y., & Oyolola, V.I. (2024). Acceptance of Hepatitis B Vaccine Among Healthcare Workers in Ondo State. *African Journal of Health Nursing and Midwifery.* 7(2), 93-104. https://doi.org/10.52589/AJHNM-Q15A42RK

Patel, N., Singh, R., & Kumar, M. (2023). Communication training for healthcare workers and vaccine acceptance. *Public Health Reviews, 44*, 27.

Schoch-Spana, M., Barrett, N., & Adalja, A. (2024). Using social media influencers to promote public health messaging. *American Journal of Public Health, 114*(1), 76–83.

Shet, A., Carr, K., Danovaro-Holliday, M. C., Sodha, S. V., Prosperi, C., Wunderlich, J., Wonodi, C., Reynolds, H. W., Mirza, I., Gacic-Dobo, M., & O'Brien, K. L. (2022). Impact of the SARS-CoV-2 pandemic on routine immunisation services: Evidence of disruption and recovery from 170 countries and territories. *The Lancet Global Health, 10*(2), e186–e194.

Singh, D., Gupta, P., & Sharma, T. (2024). Community-based communication strategies and immunization uptake in South Asia. *International Journal of Community Health, 12*(2), 89–102.

Time. (2025, December 5). *New vaccine schedule recommendations spark debate*.

Tiwana, M. H., & Smith, J. (2024). Faith and vaccination: A scoping review of the relationships between religious beliefs and vaccine hesitancy. *BMC Public Health, 24*, 1806.

United Nations Children's Fund. (2023). *Immunization schedule and recommended vaccines for children*. UNICEF.

United Nations Children's Fund. (2024). *UNICEF immunization roadmap to 2030*. UNICEF.

Williams, S. V., Akande, T., & Abbas, K. (2024). Systematic review of social determinants of childhood immunisation in low- and middle-income countries and equity impact analysis of childhood vaccination coverage in Nigeria. *BMC Public Health, 24*, 847.

World Health Organization. (2023). *Global vaccine market report 2023*. World Health Organization.

World Health Organization. (2024). *Breaking barriers, building bridges: The collaborative effort to reach every child in Nigeria*. World Health Organization.

World Health Organization. (2025). *Immunization coverage*. World Health Organization.

World Health Organization, & UNICEF. (2024). *WHO–UNICEF estimates of national immunization coverage*. World Health Organization & UNICEF.

World Health Organization, & UNICEF. (2025). *Global vaccination coverage and zero-dose estimates dashboard 2025*. World Health Organization & UNICEF.

Zimmerman, R. K., Nowalk, M. P., & Schaffner, W. (2025). Parental barriers and sociodemographic disparities in childhood vaccination post-COVID-19 in Tennessee. *Vaccines, 13*(5), 452.

Cite this article:

Author(s), ILESANMI, Mutiat Oluwaseun, OLUWASEYI Omobola, BALOGUN, Modupe Victoria, DADA, Maria Romoke, JAMIU, Sulaiman Tosin, (2026). "Barriers to Childhood Vaccine Uptake and Evidence-Based Strategies for Bridging the Gap: A Narrative Review", Journal: International Journal of Medicine, Nursing and Health Sciences (IJMNHS), P, 51- 67. **DOI:** www.doi.org/10.5281/zenodo.21491754 , **Issue:** 3, Vol.: 7, Article: 5, **Month:** June, Year: 2026. Retrieved from https://www.ijmnhs.com/all-issues/

Published By

AND

ThoughtWares Consulting & Multi Services International (TWCMSI)