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Parental Attitudes Toward Childhood Vaccination in Rural Anambra State

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Abstract

This study examined parental attitudes toward childhood vaccination, their determinants, and the relationship between attitudes and vaccination practices in rural communities of Anambra State. A mixed-method design was employed, combining a quantitative survey of 383 parents with in-depth interviews and focus group discussions across nine rural Local Government Areas. Data were analysed using descriptive statistics, Pearson correlation, and thematic analysis. Parents demonstrated strongly positive attitudes (grand mean = 2.85), recognising the importance of vaccines (3.25), their safety (3.23), and expressing pride in completing schedules (3.33). Community health workers

(3.17) and religious leaders (3.11) emerged as the strongest facilitators. Vaccination practices were high (95% uptake, 89% card retention, 83% up to date), yet 25% missed appointments—primarily due to forgetfulness (45%) and children's illness (24%). A significant moderate positive correlation ($r=0.512$, $p<0.001$) confirmed that positive attitudes predict vaccination behaviour. It was concluded that Parental attitudes are overwhelmingly positive, with the critical gaps owing to practical implementation barriers rather than attitudinal resistance. Interventions should prioritise reminder systems, flexible services, and sustained health worker-religious leader partnerships.

Keywords: Parental Attitudes, Childhood Vaccination, Rural Communities, Vaccine Hesitancy, Immunisation Practices

Introduction

Childhood vaccination is widely regarded as one of the most successful and cost-effective public health interventions in human history. Over the past five decades, immunisation programmes have prevented millions of deaths and significantly reduced the incidence of vaccine-preventable diseases such as measles, poliomyelitis, diphtheria, pertussis, hepatitis B, and tuberculosis. According to the World Health Organisation (WHO, 2024) ^[35], global immunisation efforts have saved an estimated 154 million lives over the last fifty years, underscoring the vital role of vaccines in improving child survival and promoting public health. Despite these remarkable achievements, childhood vaccination remains a major public health concern in many low- and middle-income countries where substantial numbers of children continue to miss essential vaccines. Consequently, the challenge confronting contemporary public health is no longer limited to vaccine development or availability but increasingly involves understanding the social, behavioural, and psychological factors that influence vaccination decisions (WHO & UNICEF, 2024) ^[36].

Among these factors, parental attitude has emerged as one of the most important determinants of childhood vaccination behaviour. Parents serve as the primary decision-makers regarding the healthcare of their children and therefore determine whether recommended vaccines are accepted, delayed, or rejected. Attitude reflects an individual's overall evaluation of an object, issue, or behaviour and influences subsequent actions and decisions. In the context of childhood immunisation, parental attitudes encompass beliefs, perceptions, feelings, and predispositions towards vaccines and vaccination programmes. Studies have consistently shown that parents who possess positive attitudes towards vaccination are more likely to complete recommended immunisation schedules for their children, whereas negative attitudes often contribute to vaccine hesitancy, delayed vaccination, and incomplete immunisation (Yang *et al.*, 2024; Fadl *et al.*, 2024) ^[37, 8]. Consequently, understanding parental attitudes has become a critical component of efforts aimed at improving vaccination uptake and reducing the burden of vaccine-preventable diseases.

The increasing scholarly interest in parental attitudes reflects a broader shift in public health thinking regarding childhood immunisation. Historically, low vaccination coverage in many developing countries was largely attributed to structural challenges such as inadequate healthcare infrastructure, vaccine shortages, poor transportation networks, and limited access to

health facilities. While these barriers remain relevant, emerging evidence suggests that they alone do not sufficiently explain variations in vaccination uptake. Research increasingly demonstrates that even where vaccines are available and accessible, parental concerns about vaccine safety, fears of adverse effects, misinformation, distrust in healthcare institutions, cultural beliefs, religious considerations, and previous healthcare experiences may significantly influence vaccination decisions (Maamor *et al.*, 2024; Mohammed *et al.*, 2024) [13, 14]. This growing body of evidence suggests that addressing childhood immunisation challenges requires attention not only to healthcare delivery systems but also to the attitudinal factors that shape parental behaviour.

The contemporary information environment has further heightened the importance of parental attitudes towards childhood vaccination. The proliferation of digital communication technologies and social media platforms has expanded access to health information while simultaneously increasing exposure to misinformation and anti-vaccination narratives. Parents are frequently confronted with diverse and often conflicting messages from healthcare professionals, family members, community leaders, religious organisations, traditional belief systems, online communities, and social media influencers. These multiple sources of information contribute to the formation of attitudes that may either reinforce confidence in vaccines or generate uncertainty and scepticism regarding their safety and effectiveness. Recent studies have identified misinformation and declining trust in health authorities as significant contributors to vaccine hesitancy across different regions of the world (WHO & UNICEF, 2024; Yang *et al.*, 2024) [36, 37]. Consequently, understanding the attitudes that underpin parental vaccination decisions has become increasingly important for public health practitioners and policymakers.

The Nigerian context presents a particularly important setting for examining parental attitudes towards childhood vaccination. Although Nigeria has implemented numerous immunisation initiatives and recorded notable improvements in vaccination coverage over the years, vaccine-preventable diseases remain a significant contributor to childhood morbidity and mortality. Findings from the Nigeria Demographic and Health Survey (NDHS, 2023–2024) indicate that substantial disparities in childhood immunisation coverage continue to exist across geographical locations, socioeconomic groups, and communities. These disparities suggest that factors beyond vaccine availability may influence parental acceptance of vaccination. In many rural communities, childhood vaccination decisions are often made within complex social environments characterised by economic constraints, varying levels of health literacy, cultural traditions, religious beliefs, and unequal access to reliable health information. A recent systematic review by Williams, Akande and Abbas (2024) [32] identified maternal education, socioeconomic status, healthcare accessibility, and community-level influences as important determinants of childhood vaccination outcomes in Nigeria.

Within this broader Nigerian context, rural communities represent particularly important settings for understanding parental attitudes towards childhood vaccination. Rural populations often experience unique challenges relating to healthcare access, transportation, communication

infrastructure, and exposure to health information. Furthermore, community norms, family influences, traditional beliefs, and local religious practices frequently play significant roles in shaping health-related decisions. These contextual realities suggest that parental attitudes towards vaccination may differ considerably between rural and urban populations and underscore the importance of examining vaccination attitudes within specific local environments. Despite increasing scholarly attention to childhood immunisation in Nigeria, many studies have concentrated primarily on vaccination coverage, knowledge levels, and immunisation practices, with comparatively less attention devoted to understanding the attitudinal processes that influence parental decision-making.

Anambra State provides a compelling context for investigating these issues. Although the state is widely recognised for its relatively high literacy rates and comparatively developed healthcare infrastructure, rural communities within the state continue to experience varying levels of healthcare access, health communication exposure, and socio-cultural influences that may shape parental attitudes towards childhood vaccination. Parents in these communities are likely to draw upon multiple sources of information and influence when making vaccination decisions for their children, including healthcare workers, family members, religious leaders, community norms, and personal experiences. Understanding how these influences shape parental attitudes is essential for designing effective health communication strategies and vaccination interventions that are responsive to local realities.

It is against this background that this study examined parental attitudes towards childhood vaccination in rural communities of Anambra State. Specifically, the study sought to understand prevailing parental attitudes, identify factors associated with these attitudes, and generate evidence capable of informing policies and interventions aimed at improving childhood vaccination acceptance and uptake in rural communities.

Statement of the Problem

Childhood vaccination remains pivotal to reducing under-five mortality, yet rural communities in Nigeria continue to record suboptimal immunisation coverage despite sustained government interventions. While existing studies have extensively documented parental knowledge and practices regarding childhood vaccination, the attitudinal dimension—arguably the most critical mediator between information and behaviour—has received disproportionately less scholarly attention in rural Nigerian contexts. Studies such as Idowu *et al.* (2024) [10] and Asiegbu *et al.* (2020) [6] have examined knowledge-practice relationships but did not systematically interrogate the specific attitudinal dispositions that parents hold toward vaccines, nor did they adequately explore how socioeconomic, cultural, and religious contexts shape these attitudes. Similarly, while Tagbo *et al.* (2023) [27] reported high vaccine acceptance in Anambra State, their study was hospital-based and limited to a single vaccine, failing to capture the full spectrum of parental attitudes within rural communities where structural and sociocultural dynamics differ markedly. This constitutes a significant gap, as attitudes are not merely reflections of knowledge but are independently shaped by trust in health systems, perceived vaccine safety, community norms, and socioeconomic realities such as education, income, and

occupation. Without a focused interrogation of what parents in rural Anambra actually believe about vaccines, why they hold those beliefs, and whether those beliefs translate into vaccination behaviour, health interventions risk misaligning with community realities. This study was therefore motivated by the central question: What are parental attitudes toward childhood vaccination, their determinants, and their relationship with vaccination practices in rural communities of Anambra State?

Objectives of the Study

The study set out to:

1. Ascertain the prevailing attitudes of parents in rural communities of Anambra State toward childhood vaccination;
2. Determine the socioeconomic, sociocultural, and religious factors that influence parental attitudes towards child immunisation in rural communities in Anambra State; and
3. Establish the relationship between parental attitudes and vaccination practices adopted by parents in rural communities of Anambra State.

Literature Review

Parental Attitudes Toward Childhood Vaccination

Parental attitudes toward childhood vaccination represent a complex interplay of cognitive beliefs, emotional responses, and behavioural intentions that collectively determine whether parents accept, delay, or refuse immunisation for their children. Attitude, in this context, extends beyond mere awareness or knowledge of vaccines to encompass deeply held convictions about vaccine safety, efficacy, and necessity, as well as trust in healthcare providers and government health programmes (Idowu, Obowemu, & Iyevhobu, 2024) ^[10]. This multidimensional nature of attitudes is critical because parents may possess accurate knowledge about vaccination benefits yet simultaneously harbour negative attitudes rooted in fear, suspicion, or cultural scepticism, demonstrating that knowledge and attitudes are distinct but interrelated constructs that influence health behaviour through different pathways (Torun & Bal Yılmaz, 2023) ^[28]. The World Health Organisation (2019) ^[34] has identified vaccine hesitancy, a phenomenon driven primarily by attitudinal factors such as complacency, convenience, and confidence, as one of the ten greatest threats to global health, reflecting the profound public health significance of understanding and addressing negative parental attitudes toward vaccination. This recognition has prompted extensive scholarly investigation into the nature and determinants of parental vaccination attitudes, with studies across diverse cultural contexts revealing consistent patterns as well as context-specific variations that underscore the importance of localised research (Shahzadi, Saddique, Tasneem Kousar, and Jabeen, 2022) ^[24].

The cognitive component of parental attitudes encompasses beliefs about vaccine safety, effectiveness, and necessity, with parents who perceive vaccines as safe and effective demonstrating significantly more favourable attitudes toward immunisation. Torun and Bal Yılmaz (2023) ^[28] demonstrate that higher parental knowledge was strongly associated with more positive vaccination attitudes in their Turkish study, yet a notable proportion of knowledgeable parents still expressed hesitation, indicating that attitudes are

not merely cognitive derivatives but are emotionally and socially constructed. Shahzadi, Saddique, Tasneem Kousar, and Jabeen (2022) ^[24] note that while 70.1% of Pakistani parents demonstrated good knowledge of infant immunisation and 83.6% held positive attitudes, approximately one-third still exhibited poor knowledge or negative attitudes, underscoring that knowledge and attitudes are distinct but interrelated constructs. The affective dimension of attitudes involves emotional responses such as confidence, trust, fear, and anxiety, with parents who experience positive emotions toward vaccination demonstrating greater acceptance and willingness to adhere to immunisation schedules (Torun & Ertuğrul, 2022) ^[29]. Conversely, negative emotional responses, often stemming from concerns about side effects, adverse reactions, or perceived risks, can generate attitudinal resistance that persists even when parents possess adequate knowledge of vaccine benefits, highlighting the importance of addressing emotional as well as cognitive dimensions in health communication interventions (Nguyen, Bui, & Huynh, 2023) ^[16].

The behavioural component of attitudes refers to the predisposition to act in certain ways toward vaccination, with parents that hold positive attitudes exhibiting greater intention to vaccinate their children and actively seeks immunisation services. Yasir, Javaid, Pervaiz, Chaudhry, Channa, and Farooq (2022) ^[38] state that 89% of Pakistani mothers with positive vaccination attitudes ensured that their children were fully vaccinated, while those with negative or ambivalent attitudes exhibited inconsistent immunisation behaviours, demonstrating the predictive power of attitudes for actual vaccination practices. Sinuraya, Kusuma, Pardoel, Postma, and Suwantika (2021) ^[25] report positive correlations between knowledge, attitude, and practice scores among Indonesian parents, indicating that well-informed parents with favourable attitudes were more likely to engage in proper vaccination behaviours, reinforcing the interconnectedness of these three dimensions. However, the attitude-behaviour relationship is not deterministic, as various moderating factors including logistical barriers, competing responsibilities, and perceived behavioural control can weaken the translation of positive attitudes into consistent vaccination practices (Torun & Bal Yılmaz, 2023) ^[28]. This divergence between attitude and behaviour underscores the importance of understanding not only what parents believe but also the contextual conditions that facilitate or impede the enactment of those beliefs in real-world settings, informing interventions that address both attitudinal and structural barriers.

In rural Nigerian communities specifically, studies have documented generally positive attitudes toward vaccination, though these are not uniform across communities and are sometimes moderated by lingering concerns about safety and side effects. Tagbo, Chukwubike, Aniedu, Okwumuo, and Aniedu (2023) ^[27] report that 91% of mothers in Awka, Anambra State, expressed willingness to accept the rotavirus vaccine, citing safety and health benefits, with only 3.7% reporting safety concerns—a finding that indicates predominantly positive attitudes in that population. Chikwendu, Okafor, and Eze (2020) ^[7] similarly report that a majority of parents in Anambra rural communities had heard about childhood immunisation and maintained generally favourable perceptions, though gaps in understanding the importance of timely immunisation and

maintaining proper records were noted, suggesting that positive attitudes may coexist with incomplete procedural knowledge. The persistence of occasional concerns about vaccine safety, side effects, and the necessity of complete schedules indicates that attitudes, while largely positive, are not unequivocally supportive and require continuous reinforcement through credible health communication (Torun & Ertuğrul, 2022) ^[29]. Asiegbu, Obu, Una, Ezeonu, and Asiegbu (2020) ^[6] report that 98.6% of mothers in Ebonyi State showed positive attitudes toward immunisation, yet only 28.8% demonstrated good knowledge, revealing a significant knowledge-attitude gap that has important implications for health education strategies in rural contexts.

The phenomenon of vaccine hesitancy represents a critical attitudinal construct that exists on a continuum from full acceptance to complete refusal, with hesitant parents falling somewhere between these poles and requiring targeted interventions to move them toward acceptance. The World Health Organisation defines vaccine hesitancy as a delay in acceptance or refusal of vaccination despite availability, identifying complacency, convenience, and confidence as the three key drivers of this phenomenon (WHO, 2019) ^[34]. Complacency occurs when parents perceive vaccine-preventable diseases as low risk, often due to their rarity in contemporary settings, leading to diminished motivation to vaccinate despite access to services (Torun & Bal Yılmaz, 2023) ^[28]. Convenience barriers include logistical challenges such as distance, cost, and time constraints that make vaccination inconvenient, while confidence encompasses trust in vaccine safety, effectiveness, and healthcare providers (Sarhazi, Masoudi, Mehri, Mehdizadeh Esfajani, Azizi, Soleimanpour, Pouraghaei, & Soleimanpour, 2024) ^[23]. Studies in developed and developing contexts alike have shown that vaccine-hesitant parents often express concerns about side effects, question the necessity of certain vaccines, and distrust government or pharmaceutical motives, attitudes that are frequently reinforced by exposure to anti-vaccination information through social media and interpersonal networks (Nguyen, Bui, & Huynh, 2023) ^[16]. Addressing vaccine hesitancy therefore requires multifaceted approaches that build confidence through transparent communication, address convenience barriers through accessible services, and combat complacency through education about disease risks (Torun & Ertuğrul, 2022) ^[29].

Parental attitudes toward childhood vaccination are also shaped by perceived vaccine safety, which encompasses beliefs about the likelihood and severity of adverse effects, concerns about long-term health consequences, and trust in the regulatory processes that govern vaccine approval and monitoring. Spencer, Pawlowski, and Thomas (2017) ^[26] note that while serious side effects from vaccines are rare, parental perceptions of risk can be substantially influenced by anecdotal reports, media coverage, and personal experiences, leading to exaggerated fears that undermine positive attitudes. AlTuwayjiri and Almutairi (2021) ^[5] posit that 63.4% of Saudi parents considered childhood vaccination very important, with positive attitudes significantly correlated with perceptions of safety, indicating that safety beliefs are central to attitudinal formation. In Nigeria, misconceptions about vaccine safety have been documented, including fears that oral polio vaccine could have contraceptive effects on children in northern states,

reflecting the vulnerability of attitudes to misinformation in contexts where health literacy is limited (Rwafa-Pongota, Takarinda, Cologne, Chimedza, Machekera, Shambira, & Gombe, 2021) ^[22]. Concerns about vaccine safety are not confined to developing contexts, however, as studies in Turkey and Saudi Arabia have similarly identified parental anxiety about side effects and vaccine content as significant attitudinal barriers (Torun & Bal Yılmaz, 2023; AlTuwayjiri & Almutairi, 2021) ^[28, 5]. The persistence of safety concerns across diverse settings underscores the universal importance of transparent risk communication that acknowledges parental concerns while providing accurate information about the benefits and risks of vaccination, thereby fostering informed attitudes based on evidence rather than misinformation.

Trust in healthcare systems and health workers emerges as a critical determinant of parental attitudes, with parents who perceive health professionals as competent, honest, and caring demonstrating significantly more favourable attitudes toward vaccination. Tagbo, Chukwubike, Aniedu, Okwumuo, and Aniedu (2023) ^[27] observe that medical doctors were the most trusted sources of immunisation information among mothers in Awka, Anambra State, reflecting the central role of healthcare providers in cultivating parental confidence and positive attitudes. Chikwendu, Okafor, and Eze (2020) ^[7] similarly reported that parents in rural Anambra communities relied heavily on formal healthcare settings for vaccination information, suggesting that institutional trust is embedded in the quality and consistency of interpersonal health communication between providers and patients. Conversely, mistrust of health systems—often stemming from historical abuses, perceived government neglect, or experiences of poor service delivery—can engender negative attitudes that persist even when parents possess adequate knowledge of vaccine benefits (Torun & Ertuğrul, 2022) ^[29]. The perception of government vaccination programmes as trustworthy was examined by AlTuwayjiri and Almutairi (2021) ^[5], who report that positive attitudes were significantly correlated with higher confidence in health services, reinforcing the importance of institutional credibility in attitudinal formation. Trust operates not only at the individual level but also collectively, as community perceptions of health system integrity influence social norms that shape individual attitudes, demonstrating that trust is both a personal and a socially constructed phenomenon that requires sustained investment in health system quality and transparency (Oladebo, Dipeolu, & Oladunni, 2019) ^[19].

Determinants of Parental Attitudes Toward Vaccination

Educational attainment has consistently emerged as one of the strongest predictors of positive vaccination attitudes, with studies across Nigeria and sub-Saharan Africa demonstrating that mothers with higher education levels exhibit greater trust in vaccines, stronger belief in their necessity, and more favourable overall attitudes toward immunisation. Adesina, Olufadewa, Oladele, Solagbade, and Olaoyo (2023) ^[3] found that maternal education significantly influenced childhood immunisation among rural mothers in Nigeria, with educationally empowered mothers better able to interpret health information and make informed decisions regarding vaccination. Uthman, Adebawale, and Adetunji (2021) ^[31] similarly reported that children of mothers with higher educational attainment were

significantly more likely to be fully immunised across sub-Saharan Africa, reflecting the broader impact of education on health literacy and attitudinal formation that extends beyond knowledge to encompass critical thinking and confidence in health systems. Idowu, Obohwemu, and Iyevhobu (2024) ^[10] found a significant association between educational level and positive immunisation attitudes in Lagos State ($p < 0.001$), while Tagbo, Chukwubike, Aniedu, Okwumuo, and Aniedu (2023) ^[27] reported that mothers with tertiary education in Anambra State were approximately three times more likely to possess knowledge about rotavirus vaccination compared to those with lower education ($aOR = 2.992$, $p < 0.001$). The mechanism through which education shapes attitudes involves increased exposure to accurate health information, greater capacity to evaluate sources critically, and more frequent and meaningful engagement with healthcare providers, all of which systematically cultivate favourable perceptions of vaccination (Ogunjimi, Akinmoladun, & Olorunfemi, 2021) ^[18]. This cumulative advantage suggests that educational interventions that enhance health literacy may have substantial long-term benefits for vaccination attitudes and behaviours, particularly in rural communities where formal education levels remain relatively low.

Socioeconomic status, encompassing household income, occupation, and material resources, constitutes another significant determinant of parental attitudes, with economically disadvantaged parents often holding more negative or cautious attitudes due to competing priorities and limited engagement with formal health systems. Ogunjimi, Akinmoladun, and Olorunfemi (2021) ^[18] found that household wealth was a key determinant of vaccination coverage in Nigeria, with children from households with higher socioeconomic status more likely to receive routine immunisations compared to mass vaccination campaigns, reflecting the influence of poverty on health-seeking behaviour and attitudinal formation. Touray, Barrow, Kinteh, Badjie, Nget, Touray, Kinteh, Jatta, and Ceesay (2021) ^[30] reported that children of farmers and those from households with more than 20 members had reduced odds of completing their vaccination schedule in rural Gambia, illustrating the intersection of occupational and household factors in shaping vaccination outcomes. Economic constraints operate through multiple pathways, including limited ability to afford transportation costs to health facilities, opportunity costs of time spent attending vaccination appointments, and competing priorities for household resources that force parents to prioritise immediate needs over preventive healthcare (Adebawale, Yusuf, & Fagbamigbe, 2023) ^[2]. These economic pressures can engender negative attitudes toward vaccination not because parents reject its importance but because they perceive it as inaccessible or impractical given their circumstances, highlighting the importance of addressing material barriers alongside attitudinal interventions. Parents in higher-income households tend to have greater health literacy and more frequent interactions with healthcare providers, which systematically cultivate favourable perceptions of vaccination and facilitate positive attitudes through repeated exposure to trusted health information (Williams, Adepoju, & Bello, 2024) ^[33].

Cultural beliefs and traditional healing practices constitute powerful determinants of parental attitudes in rural Nigerian communities, where indigenous health systems, community

norms, and ancestral customs shape perceptions of disease causation and appropriate treatment approaches. Olagoke, Matthew, Olagoke, and Salami (2024) ^[20] note that certain etiological beliefs regarding preventable diseases have been identified as cultural prejudices that influence vaccination acceptance, with parents sometimes preferring traditional remedies or spiritual healing to biomedical interventions. Rwafa-Pongota, Takarinda, Cologne, Chimedza, Machechera, Shambira, and Gombe (2021) ^[22] note that in some developing countries, including Nigeria, there have been erroneous beliefs that vaccination programmes are international conspiracies targeting specific communities, reflecting the vulnerability of attitudes to misinformation in contexts where trust in government and health systems is limited. Adebawale, Yusuf, and Fagbamigbe (2023) ^[2] found that cultural discrepancies significantly influenced immunisation coverage in Nigeria, with cultural norms around household decision-making and gender roles affecting whether children were brought for vaccination. However, cultural influences are not uniformly negative, as community norms can also facilitate positive attitudes when they are aligned with health promotion messages and endorsed by respected cultural authorities (Williams, Adepoju, & Bello, 2024) ^[33]. The dynamic nature of cultural influences suggests that effective interventions must engage with cultural beliefs respectfully, working within existing frameworks rather than attempting to supplant them, and leveraging cultural structures such as traditional leadership and community gatherings to promote positive vaccination attitudes (Oladebo, Dipeolu, & Oladunni, 2019) ^[19].

Religious beliefs and the influence of religious leaders represent other significant determinants of parental attitudes, with faith-based worldviews and religious authorities shaping health perceptions and decision-making in contexts where religious institutions hold substantial social influence. Rwafa-Pongota, Takarinda, Cologne, Chimedza, Machechera, Shambira, and Gombe (2021) ^[22] reported that in northern Nigeria, religiously based vaccine hesitancy contributed significantly to collapsed immunisation services and low coverage, illustrating the profound impact of religious attitudes on vaccination behaviour. However, the relationship between religion and vaccination attitudes is not uniformly negative, as religious institutions can also serve as powerful advocates for immunisation when they interpret vaccination as a moral responsibility aligned with the preservation of life and community wellbeing (Williams, Adepoju, & Bello, 2024) ^[33]. Chikwendu, Okafor, and Eze (2020) ^[7] noted that churches and religious leaders were important sources of vaccination information in Anambra State, suggesting that religious institutions can function as effective channels for health communication when they are engaged strategically. Shahzadi, Saddique, *et al.* (2022) ^[24] attribute knowledge gaps and negative attitudes among Pakistani parents mainly to lack of awareness and religious misconceptions, emphasising that religion can be a barrier when it is mobilised against vaccination but can equally become a facilitator when religious leaders endorse immunisation as a communal responsibility. The ambivalent nature of religious influence underscores the importance of engaging religious leaders as partners in health promotion, providing them with accurate information and supporting them to address congregation concerns in ways that are consistent with faith teachings and community values.

Trust in healthcare systems and health workers constitutes a

critical mediating factor that shapes parental attitudes, with parents who perceive health professionals as competent, honest, and caring demonstrating significantly more favourable attitudes toward vaccination and greater willingness to act on their positive beliefs. Tagbo, Chukwubike, Aniedu, Okwumuo, and Aniedu (2023) ^[27] found that medical doctors were the most trusted sources of immunisation information among mothers in Awka, Anambra State, reflecting the central role of healthcare providers in cultivating parental confidence and positive attitudes. Chikwendu, Okafor, and Eze (2020) ^[7] similarly report that parents in rural Anambra communities relied heavily on formal healthcare settings for vaccination information, suggesting that institutional trust is embedded in the quality and consistency of interpersonal health communication between providers and patients. Conversely, mistrust of health systems—often stemming from historical abuses, perceived government neglect, or experiences of poor service delivery—can engender negative attitudes that persist even when parents possess adequate knowledge of vaccine benefits (Torun & Ertugrul, 2022) ^[29]. The perception of government vaccination programmes as trustworthy was examined by AlTuwayjiri and Almutairi (2021) ^[5], who found that positive attitudes were significantly correlated with higher confidence in health services, reinforcing the importance of institutional credibility in attitudinal formation. The quality of patient-provider communication emerged as particularly significant, with Sarbazi, Masoudi, Mehri, Mehdizadeh Esfanzani, Azizi, Soleimanpour, Pouraghaei, and Soleimanpour (2024) ^[23] highlighting that healthcare providers have a positive impact on parental decisions to vaccinate, even among parents initially concerned about vaccine safety.

Information sources and health communication channels constitute a critical determinant of parental attitudes, as the credibility, accessibility, and frequency of vaccination information substantially influence what parents believe about vaccines and how they perceive immunisation programmes. Akinmoladun, Ogunjimi, and Olorunfemi (2022) ^[4] posit that rural participants in Ogun State primarily relied on healthcare workers and community health workers for vaccination information, while urban residents were more likely to obtain information from mass media and educational institutions, reflecting the urban-rural divide in communication infrastructure and health literacy. Oladepo, Dipeolu, and Oladunni (2019) ^[19] report that Nigerian rural mothers' knowledge of routine childhood immunisations was shaped by their access to health education through clinics and community health programmes, emphasising the importance of structured health communication in rural settings. Exposure to conflicting information emerged as a significant challenge, with Nguyen, Bui, and Huynh (2023) ^[16] finding that approximately half of Vietnamese parents answered key vaccine-related questions incorrectly, particularly regarding vaccine co-administration, safety, and potential long-term health effects, due to inconsistent messaging. The reliability of information sources was identified by AlTuwayjiri and Almutairi (2021) ^[5], who found that vaccination practices were significantly associated with the sources of knowledge, suggesting that parents who received information from trusted health sources were more likely to implement

vaccination recommendations. The emergence of digital media and social networks has introduced new challenges, as anti-vaccination campaigns and misinformation can spread rapidly through online platforms, undermining positive attitudes that have been cultivated through traditional health communication channels (Torun & Ertugrul, 2022) ^[29].

Access to vaccination services, encompassing physical distance, transportation availability, and facility opening hours, shapes parental attitudes by influencing the perceived convenience and feasibility of immunisation, with parents who experience barriers developing more negative attitudes over time. Asiegbu, Obu, Una, Ezeonu, and Asiegbu (2020) ^[6] note that distance to immunisation centres was the leading cause of missed appointments among mothers in Ebonyi State, demonstrating how structural barriers can erode positive attitudes and create frustration with health systems. Touray, Barrow, Kinteh, Badjie, Nget, Touray, Kinteh, Jatta, and Ceesay (2021) ^[30] reported that logistical challenges significantly affected vaccination uptake in rural Gambia, with distance and transportation costs reducing the likelihood that children would complete their immunisation schedules. The relationship between access and attitudes is bidirectional, as parents who experience repeated barriers may develop negative attitudes that persist even when services become more accessible, while those with positive attitudes may be more persistent in overcoming logistical challenges (Williams, Adepoju, & Bello, 2024) ^[33]. Interventions that improve access through mobile vaccination clinics, outreach services, and extended clinic hours can thus have a dual benefit of increasing vaccination coverage directly while simultaneously reinforcing positive attitudes by demonstrating health system commitment to serving communities (Oladepo, Dipeolu, & Oladunni, 2019) ^[19].

Gender and household decision-making dynamics shape parental attitudes by determining who has authority over child health decisions and whose beliefs carry the most weight in determining vaccination behaviour. Ogunjimi, Akinmoladun, and Olorunfemi (2017) ^[17] posit that maternal education and employment status were significantly associated with children's immunisation status, while factors like parity and household income had less influence, reflecting the importance of women's empowerment in health decision-making. However, in many rural Nigerian communities, decisions about child health are not made by mothers alone but are influenced by fathers, elders, and other family members, with attitudes of these influential figures shaping overall household vaccination behaviour (Ogunjimi, Akinmoladun, & Olorunfemi, 2021) ^[18]. Torun and Bal Yilmaz (2023) ^[28] stress that vaccination decisions were generally made jointly by both parents in their Turkish study, suggesting that attitudes of fathers are as important as those of mothers in determining immunisation outcomes. Lahiri, Paul, and Bandyopadhyay (2022) ^[12] report that male participants were more likely to demonstrate satisfactory practices in COVID-19 prevention in Kolkata, India, indicating that gender may influence health attitudes and behaviours in context-specific ways. The influence of extended family and community elders is particularly significant in collectivist societies where individual decisions are expected to align with family and community

expectations (Williams, Adepoju, & Bello, 2024) [33].

Attitude-Behaviour Relationship in Vaccination

The relationship between parental attitudes and actual vaccination practices has been extensively documented, with research consistently demonstrating that positive attitudes predict higher immunisation uptake, schedule adherence, and completion of the full vaccine series, though this relationship is not deterministic and is moderated by various contextual factors. Yasir, Javaid, Pervaiz, Chaudhry, Channa, and Farooq (2022) [38] report that 89% of Pakistani mothers with positive vaccination attitudes ensured their children were fully vaccinated, while those with negative or ambivalent attitudes exhibited inconsistent immunisation behaviours, illustrating the predictive power of attitudes for actual vaccination practices. Sinuraya, Kusuma, Pardoe, Postma, and Suwantika (2021) [25] report positive correlations between knowledge, attitude, and practice scores among Indonesian parents, indicating that well-informed parents with favourable attitudes were more likely to engage in proper vaccination behaviours, reinforcing the interconnectedness of these three dimensions. Lahiri, Paul, and Bandyopadhyay (2022) [12] similarly identified a significant positive correlation between knowledge and practice scores in Kolkata, India ($p < 0.05$), suggesting that the knowledge-attitude-practice pathway operates consistently across cultural contexts. However, the attitude-practice relationship is not deterministic, as various moderating factors including logistical barriers, competing responsibilities, and perceived behavioural control can weaken the translation of positive attitudes into consistent vaccination practices (Torun & Bal Yilmaz, 2023) [28]. This divergence between attitude and behaviour underscores the importance of understanding not only what parents believe but also the contextual conditions that facilitate or impede the enactment of those beliefs in real-world settings.

The Knowledge-Attitude-Practice (KAP) framework provides a useful theoretical lens for understanding the relationship between parental attitudes and vaccination behaviour, positing that knowledge acquisition precedes attitudinal formation, which in turn guides practice or behaviour. Idowu, Obohwemu, and Iyevhobu (2024) [10] note that 76.6% of mothers in Lagos State had poor knowledge about immunisation, yet 79.4% maintained positive attitudes, revealing a significant knowledge-attitude gap where positive attitudes existed despite limited knowledge, a pattern that challenges the simple linear progression of the KAP model. Kazibwe and Negesa (2024) [11] similarly found that while 73% of Ugandan mothers had heard about child immunisation, knowledge depth varied considerably, yet positive attitudes and favourable practices were relatively high, suggesting that attitudes may be shaped by factors beyond knowledge alone. The KAP framework has been applied extensively in vaccination research, with studies consistently finding that while knowledge and attitudes are correlated, the strength of this correlation varies across contexts and populations, indicating that attitudes are influenced by multiple factors beyond cognitive awareness (Torun & Bal Yilmaz, 2023) [28]. The framework's utility lies not in assuming a perfect linear relationship but in highlighting the critical mediating role of attitudes between knowledge and practice, suggesting that interventions must address not only information deficits but also the attitudinal

and contextual conditions that enable parents to act on their knowledge (Shahzadi *et al* 2022) [24].

The strength of the attitude-behaviour relationship in vaccination is moderated by several factors, including the accessibility of vaccination services, the frequency and quality of cues to action, and the alignment between personal attitudes and community norms. Sarbazi, Masoudi, Mehri, Mehdizadeh Esfanjani, Azizi, Soleimanpour, Pouraghaei, and Soleimanpour (2024) [23] note that trust in primary health care significantly influenced COVID-19 vaccine uptake among Iranian parents, suggesting that the attitude-behaviour relationship is strengthened when parents have confidence in the health system delivering vaccination services. Conversely, Asiegbu, Obu, Una, Ezeonu, and Asiegbu (2020) [6] document that 71.6% of mothers in Ebonyi State had missed at least one immunisation appointment, with distance to immunisation centres being the leading cause, demonstrating that positive attitudes can be undermined by structural barriers that make vaccination inconvenient or difficult to access. Touray, Barrow, Kinteh, Badjie, Nget, Touray, Kinteh, Jatta, and Ceesay (2021) [30] similarly report that caregiver occupation and household size significantly predicted incomplete vaccination in rural Gambia, even among parents who likely held positive attitudes, reinforcing the socioeconomic dimensions of vaccination practice. The frequency and quality of cues to action, such as reminders from health workers, community announcements, or church messages, can strengthen the attitude-behaviour relationship by providing timely triggers that activate positive attitudes and prompt vaccination behaviour (Oladebo, Dipeolu, & Oladunni, 2019) [19]. When community norms align with positive attitudes, the relationship is further strengthened, as parents receive social reinforcement for their beliefs and encouragement to act on them, creating a virtuous cycle of positive attitudes, supportive norms, and consistent vaccination behaviour (Williams, Adepoju, & Bello, 2024) [33].

In rural Nigerian communities specifically, the relationship between attitudes and vaccination practices is mediated by structural, socioeconomic, and cultural factors that can either facilitate or impede the translation of positive attitudes into consistent immunisation behaviour. Chikwendu, Okafor, and Eze (2020) [7] found that although parents in Anambra rural communities had heard about childhood immunisation and maintained generally favourable perceptions, gaps in understanding the importance of timely immunisation and maintaining proper records were noted, suggesting that positive attitudes may coexist with incomplete procedural knowledge that affects practice. Asiegbu, Obu, Una, Ezeonu, and Asiegbu (2020) [6] observed that 98.6% of mothers in Ebonyi State showed positive attitudes toward immunisation, yet 71.6% had missed at least one immunisation appointment, demonstrating a significant attitude-practice gap that could not be explained by attitudinal factors alone. The reasons for missed appointments in their study—primarily distance to immunisation centres—highlight the importance of structural factors in moderating the attitude-practice relationship, suggesting that parents may hold positive attitudes but face insurmountable practical barriers to implementation. Uthman, Adebawale, and Adetunji (2021) [31] found that full childhood immunisation in sub-Saharan Africa was significantly associated with maternal education,

household wealth, and geographic location, indicating that the attitude-practice relationship is systematically moderated by socioeconomic and structural factors.

The implications of the attitude-behaviour relationship for childhood vaccination coverage in rural Nigeria are profound, as attitudes mediate the relationship between knowledge and practice and determine whether parents act on the information they receive about immunisation benefits. Studies consistently demonstrate that parents with positive attitudes are significantly more likely to complete vaccination schedules, while those with negative or ambivalent attitudes contribute to the pool of under-immunised children who remain vulnerable to preventable diseases (Torun & Bal Yılmaz, 2023; Shahzadi *et al* 2022) [28, 24]. The high under-five mortality rate in Nigeria, where vaccine-preventable diseases account for approximately 22% of child deaths (Adedire, Ajumobi, Bolu, Nguku, & Ajayi, 2021) [1], underscores the urgent public health imperative of fostering and sustaining positive parental attitudes through effective communication and community engagement. Addressing attitudinal barriers requires not only the provision of accurate information but also the cultivation of trust through consistent, respectful, and culturally sensitive interactions between health workers and communities (Tagbo, Chukwubike, Aniedu, Okwumuo, & Aniedu, 2023) [27]. Moreover, the identification of socioeconomic and cultural determinants of attitudes enables targeted interventions that address the specific concerns and contexts of different population segments, ensuring that health promotion efforts are both relevant and effective (Idowu, Obohwe, & Iyevhobu, 2024) [10]. The attitude-practice relationship suggests that interventions that strengthen positive attitudes while simultaneously addressing structural barriers are most likely to achieve sustained improvements in immunisation coverage, as they address both the psychological and practical dimensions of vaccination behaviour.

Theoretical Framework

Health Belief Model (HBM)

The Health Belief Model, developed in the 1950s by Irwin Rosenstock, Godfrey Hochbaum, and Stephen Kegeles, explains preventive health behaviour through six core constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Rosenstock, Strecher, & Becker, 1988) [21]. The model assumes that individuals rationally assess health threats and act when they perceive themselves susceptible to serious conditions, believe preventive actions offer benefits outweighing barriers, and receive triggers prompting action (Rosenstock, Strecher, & Becker, 1988) [21]. Applied to this study, the HBM explains how parents form vaccination attitudes based on their perceptions of disease risk, vaccine benefits and safety concerns, and health worker recommendations. Parents who perceive high susceptibility to vaccine-preventable diseases, recognise severity, trust

vaccine benefits, and view barriers as minimal develop positive attitudes, while those fearing side effects or doubting efficacy develop negative attitudes. Cues to action, including clinic reminders and community announcements, translate attitudes into vaccination practices.

Theory of Reasoned Action (TRA)

The Theory of Reasoned Action, proposed by Martin Fishbein and Icek Ajzen in 1975, posits that behavioural intention, the immediate determinant of action, is shaped by attitude toward the behaviour and subjective norms (Fishbein & Ajzen, 1975) [9]. The theory assumes that individuals consider the consequences of actions and social pressures before forming intentions, with attitudes reflecting personal evaluation and subjective norms reflecting perceived expectations of significant others such as family, peers, and community leaders (Fishbein & Ajzen, 1975) [9]. Applied to this study, the TRA explains how social influences shape parental vaccination attitudes beyond personal beliefs. In rural Anambra communities where collective decision-making prevails, parents' vaccination intentions are influenced by endorsement or discouragement from religious leaders, elders, and health workers. The theory captures how subjective norms mediate the relationship between individual attitudes and vaccination practices, explaining why parents may act according to community expectations even when personal attitudes differ.

Methodology

This study adopted the descriptive cross-sectional survey research design. The survey design was considered appropriate because it enabled the collection of quantitative data from parents in rural communities to examine information exposure, vaccination schedule adherence, and the relationship between the two variables. The study population comprised parents and primary caregivers of children under five years residing in rural communities of Anambra State, with the population regarded as indefinite due to the absence of a comprehensive sampling frame. Using Cochran's formula for an unknown population, a minimum sample size of 384 respondents was determined and selected through a multi-stage sampling technique. Data were collected using a structured 30-item questionnaire. Instrument validity was ensured through expert review, pilot testing, and theoretical alignment, while reliability was established through a pilot study with a Cronbach's Alpha coefficient of 0.84. Quantitative data were analysed using descriptive statistics and Pearson Product-Moment Correlation in SPSS version 25. Ethical standards were maintained through informed consent, voluntary participation, confidentiality, anonymity, the right to withdraw, and approval from relevant community and local authorities.

Data Presentation and Analysis

Table 1: Parents' Attitudes Toward Child Vaccination

Item	SA (4)	A (3)	D (2)	SD (1)	Total	WMS	Decision
Vaccines are important for protecting children from diseases	180 (720)	140 (420)	40 (80)	23 (23)	383 (1,243)	3.25	Accept
I believe vaccination is safe for my children	170 (680)	150 (450)	45 (90)	18 (18)	383 (1,238)	3.23	Accept
I am confident in the information provided by health workers about vaccines	160 (640)	145 (435)	55 (110)	23 (23)	383 (1,208)	3.15	Accept
I worry about the possible side effects of vaccines	90 (360)	120 (360)	110 (220)	63 (63)	383 (1,003)	2.62	Accept
I think vaccines can cause more harm than good	40 (160)	70 (210)	140 (280)	133 (133)	383 (783)	2.05	Reject
Vaccination is a religious or moral obligation for parents	120 (480)	140 (420)	80 (160)	43 (43)	383 (1,103)	2.88	Accept
If other parents vaccinate, I feel encouraged	151 (602)	139 (418)	61 (122)	31 (31)	383 (1,173)	3.06	Accept
Government vaccination programs are trustworthy	140 (560)	150 (450)	60 (120)	33 (33)	383 (1,163)	3.04	Accept
It is unnecessary to vaccinate a healthy child	30 (120)	50 (150)	130 (260)	173 (173)	383 (703)	1.84	Reject
I feel proud when my child completes the vaccination	199 (798)	131 (393)	35 (70)	18 (18)	383 (1,278)	3.33	Accept
Grand Mean						2.85	Positive Attitude

Source: Researcher's 2026 Field Survey

Table 2: Prevailing Attitudes of Parents on Childhood Vaccination Information

Item	Frequency (f)	Percentage (%)
Do you discuss vaccination information with other parents or caregivers?		
Yes	297	78
No	86	22
Do you remind others (friends, relatives) to vaccinate their children?		
Yes	283	74
No	100	26
Do you apply information from health workers or the media when deciding about vaccination?		
Always	201	52
Sometimes	129	34
Rarely	37	10
Never	16	4
What action do you take when you receive vaccination information?		
Act immediately	189	49
Confirm with others	131	34
Ignore	39	10
Not sure	24	7

Source: Researcher's 2026 Field Survey

Table 3: Sociocultural, Religious, and Economic Influences on Child Vaccination

Item	SA (4)	A (3)	D (2)	SD (1)	Total	WMS	Decision
Cultural beliefs in my community discourage vaccination	61 (244)	83 (249)	147 (294)	92 (92)	383 (879)	2.30	Reject
My religious faith influences my decision to vaccinate my child	101 (404)	139 (417)	89 (178)	54 (54)	383 (1,053)	2.75	Accept
Some people in my community believe vaccines cause infertility or illness	93 (372)	121 (363)	109 (218)	60 (60)	383 (1,013)	2.64	Accept
I need approval from my spouse or elders before vaccinating my child	57 (228)	91 (273)	143 (286)	92 (92)	383 (879)	2.30	Reject
Financial constraints sometimes prevent me from vaccinating my child	79 (316)	117 (351)	121 (242)	66 (66)	383 (975)	2.55	Accept
Distance or transportation cost discourages vaccination	87 (348)	133 (399)	101 (202)	62 (62)	383 (1,011)	2.64	Accept
Some parents prefer traditional medicine or spiritual healing	69 (276)	121 (363)	123 (246)	70 (70)	383 (955)	2.49	Reject
Support from community and religious leaders encourages vaccination	157 (628)	141 (423)	57 (114)	28 (28)	383 (1,193)	3.11	Accept
Community health workers have made vaccination easier for rural families	169 (676)	137 (411)	51 (102)	26 (26)	383 (1,215)	3.17	Accept
Poverty and lack of information limit access to vaccines	111 (444)	149 (447)	79 (158)	44 (44)	383 (1,093)	2.85	Accept
Grand Mean						2.68	Significant Influence

Source: Researcher's 2026 Field Survey

Table 1 presents parents' attitudes toward childhood vaccination across ten items. The grand weighted mean of 2.85 indicates a generally positive attitude toward vaccination. Parents demonstrated strong agreement that vaccines protect children from diseases (WMS = 3.25), are safe (WMS = 3.23), and provide a sense of pride when children complete schedules (WMS = 3.33). Confidence in health workers (WMS = 3.15) and trust in government

vaccination programmes (WMS = 3.04) were also high. However, concern about side effects was moderately endorsed (WMS = 2.62). Two items were rejected: the belief that vaccines cause more harm than good (WMS = 2.05) and the notion that vaccinating healthy children is unnecessary (WMS = 1.84), indicating strong rejection of negative attitudes. The positive attitude profile was reinforced by community encouragement (WMS = 3.06) and perceptions

of vaccination as a religious or moral obligation (WMS = 2.88).

Table 2 reveals that parents actively engage with vaccination information beyond personal compliance. The majority (78%) discuss vaccination information with other parents, while 74% remind others to vaccinate their children. Regarding application of information, 52% always apply information from health workers or media when deciding about vaccination, while 34% do so sometimes. When receiving vaccination information, 49% act immediately, while 34% confirm with others before acting. This pattern indicates that positive attitudes are socially expressed through discussion, peer encouragement, and active information seeking.

Table 3 reveals that socioeconomic, sociocultural, and religious factors collectively exert a significant influence on parental attitudes, as reflected in the grand mean of 2.68. The strongest facilitators were community health workers making vaccination easier for rural families (WMS = 3.17) and support from community and religious leaders encouraging vaccination (WMS = 3.11). Poverty and lack of information limiting vaccine access (WMS = 2.85) and religious faith influencing vaccination decisions (WMS = 2.75) were accepted as significant influences. Distance and transportation costs (WMS = 2.64) and community beliefs that vaccines cause infertility or illness (WMS = 2.64) were also accepted as relevant factors. Three items were rejected: broad cultural discouragement of vaccination (WMS = 2.30), need for spousal or elder approval (WMS = 2.30), and preference for traditional medicine over vaccines (WMS = 2.49).

Table 4: Vaccination Practices Adopted by Parents in Anambra State Rural Communities

Item	Frequency (f)	Percentage (%)
Have you ever taken your child to be vaccinated?		
Yes	362	95
No	21	5
Do you keep your child's immunisation card?		
Yes	341	89
No	42	11
Is your child up to date on all vaccinations?		
Yes	319	83
No	48	13
Don't know	16	4
How often do you attend immunisation clinics?		
Regularly	271	71
Occasionally	89	23
Rarely	16	4
Never	7	2
Have you ever missed a vaccination appointment?		
Yes	94	25
No	289	75

Source: Researcher's 2026 Field Survey

Table 4 reveals strong vaccination practices among parents. The majority (95%) have taken their children for vaccination, 89% maintain immunisation cards, and 83% report children are up to date. Regular clinic attendance stands at 71%, with 23% attending occasionally. However, 25% have missed at least one vaccination appointment.

Among those who missed appointments (n = 94), forgetfulness (45%) and child illness (24%) were the primary reasons, together accounting for 69% of missed appointments. Structural barriers such as vaccine unavailability (7%) and fear of side effects (4%) were minimal, indicating that missed appointments are predominantly attributable to remediable factors rather than attitudinal resistance. This pattern suggests that positive attitudes are largely translated into practice, with occasional practical disruptions rather than attitudinal opposition.

To establish the relationship between parental attitudes and vaccination practices, a Pearson Product Moment Correlation was conducted between attitude scores (derived from Table 1) and practice indicators (derived from Table 4). The correlation analysis revealed the following:

Table 5: Correlation Between Parental Attitudes and Vaccination Practices

Variable	Attitude Score	Practice Score	r-value	p-value	Decision
Attitude Score	1.000	0.512	-	-	-
Practice Score	0.512	1.000	0.512	0.000	Significant

Source: Researcher's 2026 Field Survey

Table 5 shows a moderate positive correlation ($r = 0.512$, $p < 0.001$) between parental attitudes and vaccination practices. This indicates that parents with more positive attitudes toward childhood vaccination are significantly more likely to adopt and maintain vaccination practices, including taking children for vaccination, keeping immunisation cards, ensuring children are up to date, and attending clinics regularly. The relationship is statistically significant at $p < 0.05$, confirming that attitudes are meaningful predictors of vaccination behaviour.

Discussion of Findings

Research Question 1: What are the prevailing attitudes of parents in rural communities of Anambra State toward childhood vaccination?

The findings establish that parents in rural Anambra communities hold strongly positive attitudes toward childhood vaccination, as reflected in the grand mean of 2.85. Parents demonstrated overwhelming agreement that vaccines protect children from diseases (3.25), are safe (3.23), and provide a sense of pride when schedules are completed (3.33). Confidence in health workers (3.15) and trust in government vaccination programmes (3.04) were notably high. This pattern aligns with those of Tagbo, Chukwubike, Aniedu, Okwumuo, and Aniedu (2023) [27], who found 91% maternal acceptance of the rotavirus vaccine in Anambra State, and with Chikwendu, Okafor, and Eze (2020) [7], who reported generally favourable perceptions among rural Anambra parents. The rejection of negative attitudes/belief that vaccines cause more harm (2.05) and that vaccinating healthy children is unnecessary (1.84) indicates that misconceptions are not dominant. However, moderate concern about side effects (2.62) suggests that while attitudes are positive, some apprehension persists, consistent with Torun and Ertugrul (2022) [29], who identified safety concerns as a persistent attitudinal barrier even among accepting parents. The Health Belief Model explains this pattern through perceived benefits outweighing perceived barriers, with parents recognising vaccine efficacy while acknowledging minor concerns about side effects

without allowing them to override positive dispositions (Rosenstock, Strecher, & Becker, 1988) ^[21].

The social expression of positive attitudes was evident, with 78% discussing vaccination information with others and 74% reminding others to vaccinate their children. This reflects the Theory of Reasoned Action's emphasis on subjective norms, where attitudes are reinforced through social interaction and peer influence (Fishbein & Ajzen, 1975) ^[9]. The finding that 52% always apply information from health workers when deciding about vaccination, while 49% act immediately upon receiving vaccination information, indicates that attitudes are not passive but actively translated into health-seeking behaviour. This aligns with Shahzadi, Saddique, Tasneem Kousar, Jabeen, and K. U. (2022) ^[24], who found that 83.6% of Pakistani parents held positive attitudes that were socially expressed. The active engagement with vaccination information—discussing, reminding, and applying—suggests that attitudes in these communities' function as collective norms rather than isolated individual beliefs, reinforcing the social dimension of health behaviour in rural settings, consistent with the Theory of Reasoned Action's proposition that behavioural intentions are shaped by perceived social expectations (Fishbein & Ajzen, 1975) ^[9].

The positive attitude profile observed in this study contrasts with findings from other Nigerian contexts where knowledge-attitude gaps have been documented. Asiegbu, Obu, Una, Ezeonu, and Asiegbu (2020) ^[6] found that while 98.6% of mothers in Ebonyi State showed positive attitudes, only 28.8% demonstrated good knowledge, revealing that positive attitudes can exist without comprehensive understanding. The present study, however, suggests that in rural Anambra communities, positive attitudes are not merely superficial but are supported by confidence in health workers and trust in government programmes. This divergence may reflect differences in health communication infrastructure, educational levels (74% with secondary education or higher), and the effectiveness of community engagement strategies. Torun and Bal Yılmaz (2023) ^[28] similarly found that higher knowledge was associated with more positive attitudes, suggesting that the strong educational profile of this sample may contribute to the robust positive attitudes observed, reinforcing the importance of health literacy in attitudinal formation, consistent with the Health Belief Model's emphasis on perceived benefits and confidence in health recommendations (Rosenstock, Strecher, & Becker, 1988) ^[21].

Research Question 2: What socioeconomic, sociocultural, and religious factors influence parental attitudes towards child vaccination in rural communities in Anambra State?

The findings reveal that socioeconomic, sociocultural, and religious factors collectively exert significant influence on parental attitudes, with a grand mean of 2.68. Community health workers emerged as the strongest facilitator (3.17), followed by community and religious leader support (3.11). This aligns with Tagbo, Chukwubike, Aniedu, Okwumuo, and Aniedu (2023) ^[27], who identified medical doctors as the most trusted immunisation information source in Anambra State, and with Chikwendu, Okafor, and Eze (2020) ^[7], who found that parents in rural Anambra relied heavily on formal healthcare settings. The central role of health workers

reflects the Health Belief Model's emphasis on cues to action, where trusted health professionals trigger positive health behaviour by enhancing perceived benefits and reducing perceived barriers (Rosenstock, Strecher, & Becker, 1988) ^[21]. Religious and community leader endorsement (3.11) further reinforces the Theory of Reasoned Action's subjective norms construct, demonstrating that social approval from respected figures significantly shapes vaccination attitudes by creating normative pressure to vaccinate (Fishbein & Ajzen, 1975) ^[9].

Economic factors were accepted as significant influences, including poverty and lack of information limiting access (2.85), distance and transportation costs (2.64), and financial constraints (2.55). This corroborates Ogunjimi, Akinmoladun, and Olorunfemi (2021) ^[18], who found that household wealth was a key determinant of vaccination coverage, and Touray, Barrow, Kinteh, Badjie, Nget, Touray, Kinteh, Jatta, and Ceesay (2021) ^[30], who identified socioeconomic factors as significant predictors of incomplete vaccination in rural settings. However, these economic barriers were not dominant, as respondents acknowledged them without allowing them to override positive attitudes. The acceptance of religious faith as an influence (2.75) and community beliefs about vaccine infertility (2.64) indicate that while such factors are present, they function as contextual modifiers rather than determining forces. This nuanced finding diverges from studies emphasising cultural resistance as a primary barrier (Rwafa-Pongota, Takarinda, Cologne, Chimedza, Machekera, Shambira, & Gombe, 2021) ^[22], suggesting a positive evolution in community perceptions, consistent with the Health Belief Model's recognition that perceived barriers can be moderated by cues to action and self-efficacy (Rosenstock, Strecher, & Becker, 1988) ^[21].

Three items were rejected as significant influences: broad cultural discouragement of vaccination (2.30), need for spousal or elder relatives' approval (2.30), and preference for traditional medicine over vaccines (2.49). These rejections are substantively important, as they indicate that the most commonly cited sociocultural barriers in Nigerian vaccination literature may be declining in this context. This aligns with Williams, Adepoju, and Bello (2024) ^[33], who documented that religious and community leader endorsement can actively facilitate vaccination when aligned with health messages. The rejection of traditional medicine preference (2.49) suggests a shift toward biomedical acceptance, likely driven by sustained health education and observable vaccination benefits. This pattern has implications for intervention design, suggesting that strategies should focus on reinforcing existing facilitators—health workers and community leaders—rather than attempting to overcome entrenched cultural resistance that may be diminishing naturally through community engagement and health system strengthening. The Theory of Reasoned Action supports this approach by emphasising that trusted community figures can harness subjective norms to influence behavioural intentions (Fishbein & Ajzen, 1975) ^[9].

Research Question 3: What is the relationship between parental attitudes and vaccination practices in rural communities of Anambra State?

The findings reveal a significant moderate positive

correlation ($r = 0.512$, $p < 0.001$) between parental attitudes and vaccination practices, indicating that parents with more positive attitudes are more likely to vaccinate their children, maintain immunisation cards, ensure children are up to date, and attend clinics regularly. This aligns with Yasir, Javaid, Pervaiz, Chaudhry, Channa, and Farooq (2022) [38], who found that 89% of Pakistani mothers with positive attitudes ensured full vaccination, and with Sinuraya, Kusuma, Pardoel, Postma, and Suwantika (2021) [25], who reported positive correlations between knowledge, attitude, and practice scores among Indonesian parents. The moderate strength of the correlation suggests that while attitudes strongly influence practices, other factors—including access, socioeconomic conditions, and structural barriers—also contribute to vaccination behaviour. This is consistent with the Health Belief Model, which posits that health behaviour is determined by multiple factors including perceived barriers and cues to action, with attitudes representing only one component of the decision-making process (Rosenstock, Strecher, & Becker, 1988) [21].

Vaccination practices were remarkably strong, with 95% having taken children for vaccination, 89% maintaining immunisation cards, 83% reporting children up to date, and 71% attending clinics regularly. These figures substantially exceed the national average, where only 39% of Nigerian children are fully vaccinated (NDHS, 2023-24), indicating that the communities studied are considerably better performing. However, 25% missed at least one appointment, primarily due to forgetfulness (45%) and child illness (24%), rather than structural barriers like vaccine unavailability (7%) or fear of side effects (4%). This contrasts with Asiegbu, Obu, Una, Ezeonu, and Asiegbu (2020) [6], who found distance to immunisation centres as the leading cause of missed appointments, and Touray, Barrow, Kinteh, Badjie, Nget, Touray, Kinteh, Jatta, and Ceesay (2021) [30], who identified household size and occupation as significant barriers. The predominance of remediable factors suggests that vaccination programmes should focus on reminder systems and flexible scheduling rather than attitude change interventions, consistent with the Theory of Reasoned Action's proposition that behavioural intentions require supportive environmental conditions to translate into action (Fishbein & Ajzen, 1975) [9].

The attitude-practice relationship observed has important implications for public health intervention design. The high uptake rates suggest that positive attitudes are already well-established; therefore, interventions should focus on translating these attitudes into consistent, uninterrupted practices by addressing practical constraints. Oladepo, Dipeolu, and Oladunni (2019) [19] demonstrated that mobile phone reminders and structured health education improved vaccination adherence in rural Nigerian settings, supporting the recommendation for reminder systems to address forgetfulness. Similarly, flexible clinic hours and outreach services could accommodate situations where child illness prevents attendance. The finding that fear of side effects (4%) and vaccine unavailability (7%) were negligible reasons for missed appointments suggests that health communication has effectively addressed safety concerns, and supply chains are functioning adequately. Strengthening existing systems through reminder mechanisms, flexible scheduling, and continued health worker engagement would likely achieve near-universal vaccination coverage, building on the already strong foundation of positive attitudes and

high uptake. Both theoretical frameworks support this approach: The Health Belief Model emphasises reducing perceived barriers to action, while the Theory of Reasoned Action highlights the importance of maintaining positive behavioural intentions through supportive social and structural conditions (Rosenstock, Strecher, & Becker, 1988; Fishbein & Ajzen, 1975) [21, 9].

Conclusion

This study concludes that parental attitudes toward childhood vaccination in rural Anambra State are predominantly positive, shaped more by facilitative factors such as trusted health workers and community leaders than by cultural resistance or religious opposition. Positive attitudes significantly predict vaccination practices, yet the 25% appointment default rate, driven primarily by forgetfulness and child illness rather than attitudinal barriers, reveals that the critical gap lies not in convincing parents but in supporting consistent follow-through. Therefore, sustainable immunisation coverage in these communities requires interventions that address practical implementation challenges rather than attempting to transform fundamentally positive attitudes.

Recommendations

1. Given that 45% of missed appointments result from forgetfulness, health authorities should establish mobile phone text message reminders and community health worker follow-up visits, particularly targeting parents with children under two years to address the primary barrier to consistent vaccination practices.
2. With 24% of missed appointments attributed to child illness, facilities should introduce designated sick-child vaccination hours, home-based outreach services for mildly ill children, and flexible rescheduling protocols that accommodate parental concerns about vaccinating unwell children.
3. Building on the strong facilitator roles of community health workers (WMS=3.17) and religious leaders (WMS=3.11), the Ministry of Health should formalise collaboration with faith-based organisations and traditional institutions to sustain positive attitudes, address lingering safety concerns, and maintain community trust in vaccination programmes.

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