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Perception of Mothers towards Childhood Immunization of Children under Five in Ajeromi-Ifelodun L.G.A Lagos State

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ABSTRACT

A cross-sectional survey of mothers of children under five towards childhood immunisation in Ajeromi-Ifelodun L.G.A., Lagos State was conducted. The aim was to assess the factors associated with childhood immunisation uptake by mothers of children under five in Ajeromi-Ifelodun Local Government Area, Lagos State. Fisher's formula sampling technique was used to determine the sample size of 801 respondents. The instrument for data collection was a self-structured questionnaire. The questionnaire was administered to respondents, who filled it out, returned it, and analysed it, using the Statistical Package for Social Sciences (SPSS) version 25. Data analysis was presented in tables, percentages, and charts. Childhood immunisation is considered one of the most effective interventions in reducing under-five mortality. Despite efforts to improve childhood immunisation coverage in Nigeria, it has remained below the acceptable level. The attention of stakeholders in the health sector should focus on policies to improve the acceptance and uptake of childhood immunisation.

Keywords: *Childhood immunization, mothers, children under five and vaccine*

INTRODUCTION

The National Immunisation Schedule in Nigeria requires parents and caregivers to protect their children; all routine immunisations before the age of one. Vaccines are free, safe, and save lives. The vaccines given according to the immunisation schedule in Nigeria are BCG, Oral Polio Vaccine (OPV), Pentavalent, Hepatitis B, Measles, Yellow Fever, Vitamin A, Inactivated Polio Vaccine (IPV), Pneumococcal Conjugate Vaccine (PCV), and Rota Vaccine (National Primary Health Care Development Agency (NPHCDA, 2019). The aforementioned vaccines are to prevent different types of diseases. BCG is to prevent Tuberculosis, Pentavalent prevents against Diphtheria, Tetanus, Pertussis, Hepatitis B and

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Haemophilus influenzae type B, Hepatitis B prevents Hepatitis. The Measles Vaccine prevents measles, the Yellow Fever vaccine prevents Yellow Fever, Vitamin A is for the improvement of sight, and the inactivated Polio Vaccine (IPV) prevents Poliomyelitis. Pneumococcal Conjugate Vaccine (PCV) prevents pneumonia, and the Rotavirus Vaccine prevents diarrhoea (Gbemisola, 2021).

Globally, immunisation prevents an estimated 2-3 million deaths among children under five. Yet in Nigeria, only 25% of children aged 12-23 months are fully immunised. There are also marked disparities in the uptake of immunisations, largely attributable to the context within which families live and seek health care. Findings indicate low immunisation coverage rates overall. The following barriers were negatively associated: needing to obtain permission, a poor financing situation, and a far distance to the clinic. These findings called for intervention to address inequitable access to routine immunisation in Nigeria (Olorunsaiye & Degge, 2016).

There are other programs introduced to reduce morbidity and mortality among children under five, such as the national program on immunisation for vaccine-preventable diseases, which accounts for 20% of morbidity and mortality in children. Lagos State Ministry of Health has adopted strategies including the development and dissemination of Information, Education and Communication (IEC) materials, provision of cold chain equipment, procurement of generators, refresher training, and revitalisation of outreaches to strengthen routine immunisation (Cherian & Mantel 2020).

The study aimed to assess the factors associated with childhood immunisation uptake by mothers of children under five in Ajeromi-Ifelodun Local Government Area, Lagos State. The major effective public health intervention currently available for reducing the mortality and morbidity from infectious diseases is Childhood immunisation (Bangura, 2020).

One major way to reduce morbidity and mortality from common vaccine-preventable diseases is immunisation. A child who does not receive complete immunisation will be susceptible to various vaccine-preventable diseases such as Hepatitis, Tuberculosis, Whooping Cough, and Diphtheria. When a child has measles, complications, such as diarrhoea, pneumonia, blindness, and malnutrition, are common. The responsible parents or caregivers of a child should know why to complete all vaccines on time and the potential risks of not completing vaccines on time.

The children will be more likely to get serious illnesses, and other family members are also more likely to get seriously ill. One may contribute to a disease outbreak in the community and bear the cost of treatment for the disease and its complications. There will be a decrease in the quality of life, a likelihood of reducing life expectancy, travel restrictions, and an effect on school enrollment (Amin & Sartini Saman, 2021). Global coverage dropped from 86% in 2019 to 83% in 2021. An estimated 25 million children under the age of one year did not receive basic vaccines. The number of completely unvaccinated children increased by 5 million since 2019 (WHO, 2022).

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Objectives of the Study

1. To assess the perception of mothers towards childhood immunisation of children under five in Ajeromi-Ifelodun L.G.A., Lagos State
2. To determine the factors associated with the completion of childhood immunisation by mothers of children under five in Ajeromi-Ifelodun L.G.A., Lagos State

Research Questions

1. What is the perception of mothers towards childhood immunisation of children under five in Ajeromi-Ifelodun L.G.A?
2. What are the predictors of completion of childhood immunisation by mothers of children under five in Ajeromi-Ifelodun L.G.A?

Literature Review

The last 20 years have seen an explosion in the number of new vaccines. The GAVI Alliance (Global Alliance for Vaccines and Immunisation), together with other multilateral organisations and national governments, has been instrumental in funding these new vaccines in the poorest countries. Vaccines against Hepatitis B and Haemophilus influenzae type b (Hib) have been widely introduced. An increasing number of countries are now offering pneumococcal conjugate vaccine (PCV) and rotavirus vaccine (RV) in their immunisation programs, thus offering protection for some of the leading causes of child death, pneumonia and diarrhoea. Poliomyelitis is at the verge of eradication, while measles-associated deaths have been reduced by 74% between 2000 and 2010, and maternal and neonatal tetanus has almost been eliminated as a public health problem (World Health Organisation, 2021).

In 1979, the Nigerian government introduced the Expanded Programme on Immunisation (EPI), intending to improve children's health by eradicating six killer diseases: polio, whooping cough, measles, diphtheria, tuberculosis, and yellow fever (Centres for Disease Control and Prevention). There was an initial success with an ideal immunisation coverage level of 81.5% in the 1990s, but that success petered out to an abysmal 12.9% in 2016. The latest data from the United Nations International Children's Emergency Fund (UNICEF) and the WHO estimates the immunisation coverage in Nigeria at 57%. As a rule, National Primary Health Care Development Agency (NPHCDA) recommends 10 vaccinations for infants by 12 months of age; 1 dose of Bacillus Chalmette Guerin (BCG) against tuberculosis, 4 doses of Polio, 3 doses of Diphtheria, Pertussis (whooping cough), and Tetanus (DPT), 1 dose of measles, and 1 dose of Yellow Fever (Federal Ministry of Health).

Vaccine-preventable diseases are a major contributor to child morbidity and mortality, especially in sub-Saharan Africa. It accounts for 17% of the global total under-five mortality per year (National Population Commission, 2013). In 2014, an estimated 18.7

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million infants worldwide were not reached with routine immunisation services such as the DTP3 vaccine. More than 60% of these children live in 10 countries: the Democratic Republic of the Congo, Ethiopia, India, Indonesia, Iraq, Nigeria and Pakistan, the Philippines, Uganda and South Africa (World Immunisation Week, 2013).

Immunisation offers a multitude of benefits that extend far beyond individual protection. For children, in particular, the advantages of vaccination are profound, playing a pivotal role in safeguarding their health, preventing diseases, and fostering overall well-being (Rodrigues & Plotkin, 2020). The benefits include Disease Prevention and Control (Laupèze, 2021). Protection Against Serious Health Complications (Rodrigues & Plotkin, 2020). Herd Immunity and Community Protection (Bullen, Heriot, & Jamrozik, 2023). Cost-Effectiveness and Economic Benefits (Rodrigues & Plotkin, 2020). Long-Term Health Benefits and Lifelong Immunity (WHO, 2024). Prevention of Outbreaks and Public Health Emergencies (Rodrigues & Plotkin, 2020). Enhancing Quality of Life and Well-being (WHO, 2024).

Several factors have been identified as barriers to uptake and perceptions of locals towards immunisation. Individual-level factors that influence vaccination in Nigeria are a direct consequence of the parents or the caregivers of the infant. These factors were usually either sociodemographic, socioeconomic, or sociocultural (Cooper et al., 2021).

In terms of barriers to uptake and completion of immunisation, the northern regions of Nigeria have an average literacy rate that is lower than that of the southern regions (Statistica.com 2018; Ophori et al., 2014). They regarded illiteracy as the reason behind the low vaccination uptake rate in the North. There are similarities between the level of education and vaccination uptake in the two cultural regions of the country, the north and the south (Ophori et al, 2014). There is a disparity in the vaccination uptake rates of the six different geopolitical zones. Southern regions have a higher average vaccination uptake rate, three times that of the northern geopolitical zones (Chidiebere, Uchenna, Kenechi, 2014).

The influence of politics on vaccine hesitancy cannot be understated, either due to the influence of political leaders in Nigeria. For example, the Polio vaccination boycott in North-Western Nigeria in 2003 was attributed to a lack of commitment by the government and the highly centralised leadership of the EPI (Ophori et al., 2014). Following public pressure from Islamic and political leaders, the governments of these northern States banned the polio vaccinations that were sponsored by the Nigerian federal government (Kaufmann & Feldbaum, 2009).

Some reasons behind vaccine shortages include inadequate funding, the rising cost of vaccine development, vaccine licensing, and production (Tobin-West & Alex-Hart, 2012). Nigeria, as a developing country, experiences shortages in the supply of necessities for vaccination programs, vaccines, cold chain equipment, and logistics. In 2001, the required funds for vaccine purchases by the National Programme on Immunisation (NPI) were approved, but 61% were released (Ophori et al., 2014). When the funds were eventually released, vaccines had to be purchased at inflated prices on the cash market.

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However, despite the many barriers reported, The Nigerian government has initiated several programmes and campaigns to increase the uptake of routine childhood immunization such as the Nigerian Expanded Programme on Immunisation (EPI), the Universal Child Immunisation (UCI), and Saving One Million Lives, Cerebrospinal Meningitis, Measles, Yellow Fever and Maternal Neonatal Tetanus Elimination (MNTE) initiative, the national routine immunization strategic plan (2013-15), among others (Federal Ministry of Health, 2016).

As a result of these initiatives, there has been some improvement in the percentage of children immunised. For instance, between 2008 and 2018, the percentage of children aged 12-23 months who received all basic vaccinations increased from 23% in 2008 to 31% in 2018, and the percentage who received none of the basic vaccinations declined from 29% to 19%. In August 2020, Nigeria was also certified wild polio-free by the Africa Regional Commission for Certification of Polio Eradication (ARCC). Despite these achievements, universal child immunisation in Nigeria remains a serious public health problem. In 2018, only one-third (31%) of children aged 12-23 months received all basic vaccinations, 28% received the basic vaccinations by the appropriate age of 12 months, and 19% received no vaccinations at all, with 52-58% in some Nigerian States (National Population Commission (NPC), 2018).

Vaccine hesitancy/refusal of mothers to submit to, or take up, vaccines does not have a single cause; rather, it results from a combination of social, psychological, and structural factors. These causes can be broadly categorised into misinformation and disinformation, religious and cultural beliefs, distrust in government and pharmaceutical companies, fear of side effects, complacency, and access barriers (Sinuraya, 2024)

Theoretically, the Health Belief Model (HBM) is a psychological framework that explains health behaviours based on individual perceptions of disease risk and the benefits of preventive actions. It consists of six key components: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Alyafei & Easton-Carr, 2024). In the context of childhood immunisation uptake among mothers of under-five children in Ajeromi-Ifelodun Local Government Area, Lagos State, each component of the model plays a role in influencing maternal decisions regarding vaccination (Adeyanju & Betsch, 2024). The model talks about cue to action, which is based on human perceptions. And perceptions can be influenced by many factors. For example, as stated by the theory, perceived susceptibility refers to a mother's belief about the likelihood of her child contracting vaccine-preventable diseases.

Some mothers may recognise that their children are at high risk of infections such as measles, polio, and tuberculosis, making them more likely to seek immunisation services (Alyafei & Easton-Carr, 2024). Perceived severity relates to how serious a mother believes the consequences of vaccine-preventable diseases could be for her child. If a mother understands that diseases like diphtheria, tetanus, and pertussis can result in severe

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complications, disability, or death, she is more likely to ensure her child receives vaccinations (Alyafei & Easton-Carr, 2024).

Perceived benefits refer to a mother's belief in the effectiveness of vaccines in protecting her child from diseases. Mothers who understand that immunisation reduces the risk of infections and long-term health complications are more likely to follow vaccination schedules. Perceived barriers are the challenges that may discourage mothers from taking their children for immunisation. These barriers could include: hysical barriers such as long distances to health facilities and transportation costs, Institutional barriers such as long waiting times and unavailability of vaccines at health centers, Psychological barriers such as fear of vaccine side effects or distrust in healthcare providers and Social barriers such as negative influence from family members, cultural beliefs, or misinformation spread through social media.

Cues to action are external or internal factors that prompt a mother to take her child for immunisation (Alyafei & Easton-Carr, 2024). These may include: Reminders from healthcare workers; Community campaigns and public health announcements; Personal experiences or knowledge of a child who suffered from a vaccine-preventable disease; Encouragement from family members or peers.

Empirically, the prevalence of full immunisation completion among children under five ranged significantly, with some studies reporting rates as low as 30% and others showing coverage of over 80%, depending on geographical location, healthcare access, and socioeconomic factors. The review indicated that while certain countries, such as Ethiopia, recorded higher immunisation completion rates in some regions, Nigeria consistently demonstrated lower rates of completion, attributed to factors such as maternal education, place of residence, and healthcare access (Galadima, 2021). A study in Nigeria reported that only 57% of children received all recommended vaccines by the age of five, highlighting gaps in immunisation coverage. The review further indicated that within some communities, a significant proportion of mothers initiated childhood immunisation but did not complete the schedule (Galadima, 2021). This drop-off was influenced by factors such as vaccine stockouts, long distances to health facilities, and maternal perceptions of vaccine safety.

Many mothers perceive childhood immunisation as essential in preventing diseases such as measles, polio, and tuberculosis. This positive perception significantly influences immunisation uptake, with one study reporting that mothers who had a good perception of immunisation were 2.6 times more likely to complete their child's immunisation schedule (AOR = 2.60; 95% CI: 1.50, 4.51). Additionally, confidence in vaccine safety was found to be a determining factor, as mothers who trusted the safety of vaccines were significantly more likely to have fully vaccinated children. However, vaccine hesitancy remains an issue, with four studies documenting fear of vaccine side effects (AOR = 1.92; 95% CI: 1.01, 3.70), which contributed to incomplete immunisation (Galadima, 2021).

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METHOD

A cross-sectional descriptive survey was used. Fisher's formula sampling technique was used to determine the sample size of 801 respondents. The instrument for data collection was a self-structured questionnaire. The questionnaire was administered to respondents, who filled it out, returned it, and analysed it using the Statistical Package for Social Sciences (SPSS) version 25. Results of the data analysis were presented in frequency count tables, percentages, and charts.

RESULTS AND DISCUSSION

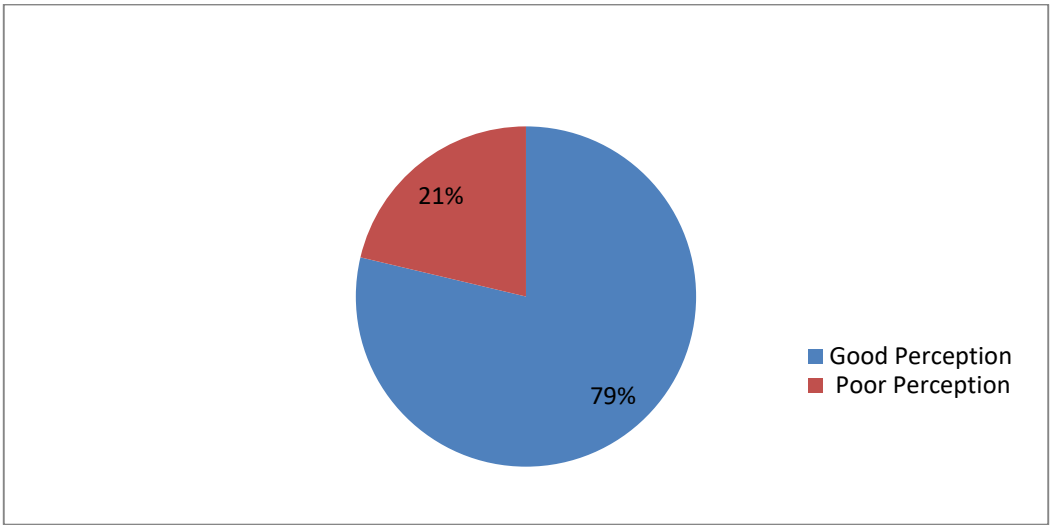

Figure 1: Perception of Mothers/Caregivers of under five children Towards Childhood Immunization in Ajeromi-Ifelodun LGA, June 2024.

The data revealed the socio-demographic characteristics of mothers/caregivers residing in Ajeromi-Ifelodun Local Government Area, June 2024. Among the respondents, those within the 25-29 years were 281 (35.1%), and those younger than 25 years of age were 13 (1.6%). Among the respondents, 688 (86.0%) were married, while 398 (49.7%) were Christians. The data collected from the participants shows that 232 (29.0%) were skilled. The study also revealed that 402 (50.2%) of the respondents were secondary school graduates, 330 (41.2%) were tertiary institution graduates, and only 17 (1.7%) had no formal education. Similarly, as reported, 309 (38.6%) of the respondents earn more than 50,000 monthly. The result further reveals that 461 (57.6%) of the respondents had partners who were graduates of tertiary institutions, while 284 (35.5%) were employed. In all, 413 (51.6%) of the children were within the first six months of birth, and 444 (55.4%) were female. As reported, 255 (31.8%) of the babies were firstborn in the family's birth order.

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Figure 1 presents the perception of mothers/caregivers towards childhood immunisation in Ajeromi-Ifelodun LGA, June 2024. The result reveals 630 (78.7%) of mothers have good perception, while 171 (21.3%) showed poor perception. This supports the finding that children not born in a health facility are likely to be incompletely immunised. Another study reported that children born in health facilities are more likely to receive all vaccines at birth compared to those born elsewhere (Adedire et al., 2021). However, some studies in the Northern part of the country reported low birth antigens immunisation coverage (Omobowale, 2024).

Table 1: Determinants of immunization completion among mothers/caregivers of under-five children in Ajeromi Ifelodun LGA, June 2024

Determinants of immunization completion	OR	95% CI	p-value	AOR	95% CI	p-value
Mothers Age						
<30 years	0.53	0.21-1.34	0.18			
30-39 years	0.56	0.22-1.44	0.23			
40 years and above	1					
Marital status						
Single	2.11	0.63-7.04	0.22			
Married	0.78	0.27-2.26	0.64			
Once married	1					
Religion						
Christianity	1.63	0.98-2.69	0.06			
Others	1					
Place of delivery						
Public hospital	0.47	0.28-0.78	0.004	0.47	0.28-0.81	0.01
Others	1			1		
Partner educational level						
University graduate	1.82	1.06-3.12	0.03	1.66	0.81-3.37	0.17
No university graduate	1			1		

Table 1 shows the factors influencing immunisation completion among mothers in Ajeromi Ifelodun LGA. The results revealed that respondents under 30 years are 43% less likely to complete the immunisation schedule for their children than those aged 40 and above. Similarly, respondents who are university graduates are 2.31 times more likely to complete the immunization schedule of their children than those who are not university graduates at an unadjusted OR (OR = 2.31, 95% CI 1.39-3.84), While mothers who gave birth in public hospitals are 53% less likely to complete the immunization schedules compared to those delivered in other places at both an adjusted OR and an unadjusted OR (AOR = 0.01, 95% CI 0.28-0.81).

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The Perception of Mothers towards Childhood Immunisation

The perception of mothers towards childhood immunisation varies in this study, with most (78.7%) mothers having a good perception towards childhood immunisation. It is consistent with a study in the Atakumosa-West local government area on maternal knowledge, attitude, and perception of routine immunisation programs (Adedire et al., 2021). A small proportion of mothers exhibited a poor perception of childhood immunisation. It is comparable to another study in Osun State, Nigeria, which revealed that 16.3% of the respondents did not perceive it as good. Hence, mothers with negative perceptions were less likely to have their children complete their immunisation schedule (Salako et al, 2024). Thus, there is a dire need for more education and accurate information on childhood immunisation, its significance, vaccine safety, and efficacy. This will help ensure comprehensive knowledge of mothers of routine vaccines and the schedule (Ochei, 2023).

The Perceived Factors associated with the Completion of Childhood Immunisation

There are factors against the completion of childhood immunisation. However, the few considered in this study are very relevant to the subject. Most mothers' lack of awareness was a factor associated with their failure to complete their child's immunisation schedule. This corroborates the findings that poor knowledge of childhood immunisation is strongly associated with incompletion of childhood immunisation (Asnake et al., 2021). Thus, limited knowledge or awareness among mothers about routine immunisation, its significance, and the vaccination schedule has been closely associated with incomplete vaccination and, in some cases, the failure to vaccinate altogether (Mulugeta et al., 2024). It is therefore essential to raise awareness about the routine immunisation of children, educate mothers on its importance, and persuade them to ensure their child's timely completion of the vaccination schedule as recommended.

The absence of health workers was reported as a factor by a large proportion of mothers. This could be due to regular strikes in the health sector to protest for their entitlements or wages that lead to vaccination postponement, a factor in childhood immunisation completion (Asnake et al., 2021). Hence, the government should see that health workers are paid all their dues and on time to prevent strikes, which disrupt the immunisation of the children, thus endangering their health and development.

Childhood immunisation is considered one of the most effective interventions in reducing under-five mortality. Despite efforts to improve childhood immunisation coverage in Nigeria, it has remained below the acceptable level. The attention of stakeholders in the health sector is focused on making policies that will improve the acceptance and uptake of childhood immunisation. This necessitated this study to assess the perception of mothers towards childhood immunisation uptake by mothers of under-five children in the Ajeromi-Ifelodun Local Government Area, Lagos State.

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CONCLUSION AND RECOMMENDATIONS

The findings of this study show overall satisfactory maternal knowledge and positive attitudes and perceptions regarding the childhood RI program. Attendance of antenatal care, health facility delivery of the child, and a higher level of education were positively associated with having good knowledge of the immunisation program and VPDs. Future efforts are needed to improve maternal knowledge and address misconceptions that may limit vaccination coverage rates in Osun State, Nigeria.

Consequently, promotion of female education will reinforce knowledge of health issues critical to implementing child survival interventions. There is a need for health education on routine immunisation among mothers at all health facilities and RI outreach sessions. There is a need to explore the role of potential influencers in the low uptake of routine immunisation in Osun State. Health facilities should encourage and provide reminders to caregivers before the next RI to prompt them about their child's vaccination schedule.

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