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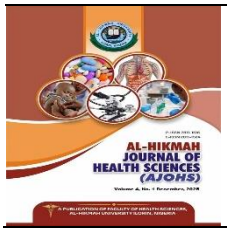

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Perceived Roles of Routine Immunization in Reducing Morbidity and Mortality Among Under-Five Children in Ilorin South LGA, Kwara State

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ABSTRACT

Background: Immunization is a cost-effective and widely recognized public health intervention, capable of preventing vaccine-preventable diseases (VPDs) and potentially reducing morbidity and mortality in children. Parents' perceptions of immunization can influence its uptake and effectiveness.

Objectives: This study examined the perceived role of routine immunization in reducing morbidity and mortality among under-five children in Ilorin South LGA, Kwara State.

Methodology: A descriptive survey research design was adopted. The population comprised parents of under-five children residing in Ilorin South LGA. A total of 413 respondents were sampled using a structured questionnaire, validated by three experts and tested for reliability (r = 0.88). Data were collected by the researcher and analyzed using percentage analysis and Chi-square tests at a 0.05 level of significance.

Results: Findings indicate that the majority of parents perceive routine immunization positively, acknowledging its importance in preventing illnesses and promoting child health. Routine immunization coverage was reported to be fairly high within the study area.

Conclusion: The study concludes that parental perception plays a key role in sustaining immunization coverage. Health personnel should continue to strengthen community sensitization and awareness programs to maintain and improve uptake of routine immunization services in Ilorin South LGA.

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Introduction

Immunization is one of the cost-effective and highly successful public health interventions capable of reducing morbidity and mortality due to vaccine-preventable diseases (VPDs). Before the advent of the global immunization programs, of the estimated 125 million children born every year worldwide, approximately 12 million, or nearly 10%, die before reaching their first birthday with the majority occurring in developing countries (Obanewa & Newell, 2020).

Recent data from the World Health Organization (WHO) and UNICEF emphasize that routine immunization remains one of the most cost-effective public health interventions, preventing millions of deaths and protecting children from vaccine-preventable diseases. Global estimates show high levels of routine vaccination coverage, with about 89 % of infants receiving at least one dose and 85 %

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completing the recommended three doses of diphtheria-tetanus-pertussis (DTP) vaccine in 2024, yet millions of children still miss essential vaccines, especially in low-resource settings, highlighting persistent challenges in reaching all children with lifesaving immunization services. These routine immunization efforts are critical to reducing the burden of infectious disease among vulnerable under-five populations worldwide (WHO, 2025). Immunization involves administering live, attenuated, or inactivated microorganisms to stimulate immune responses and prevent diseases (Pollard & Bijker, 2020). The World Health Organization (WHO) prioritizes vaccination as a cost-effective intervention for protecting vulnerable populations from life-threatening infectious diseases (Gilmour et al., 2021).

Statement of the Problem

Vaccine-preventable diseases such as Tetanus, Tuberculosis, Poliomyelitis, Pertussis, Diphtheria, Yellow fever, Hepatitis B, and Measles have continuously increased morbidity and mortality among children less than five years (Durowade *et al.,* 2021). Nigeria continues to face a significant burden of child mortality, with 132 deaths per 1000 live births, resulting in more than one in eight children dying before the age of five (National Population Commission and ICF, 2019). Ilorin South, Kwara State, just like many Nigeria cities have the world's highest number of unimmunized children, estimated at 4.3 million in 2018 (Ateudjieu *et al*., 2020).

Objectives of the Study

The objective of this study assessed the role of routine immunization in reducing morbidity and mortality among under-five children in Ilorin South LGA, Kwara State.

To assess the perceptions and attitudes of parents toward routine immunization for under-five children in Ilorin South LGA.

To determine the reported coverage of routine immunization among under-five children, as perceived by parents in Ilorin South LGA.

To identify challenges or barriers that parents encounter in accessing routine immunization services in Ilorin South LGA.

To examine the relationship between parental perceptions and reported uptake of routine immunization, including adherence to immunization schedules.

To explore the association between parental perceptions and the reported occurrence of vaccine-preventable diseases (VPDs) among under-five children in Ilorin South LGA.

Research Hypotheses

The research hypotheses are

H01: There is no significant association between parental perceptions of routine immunization and the reported coverage of under-five children in Ilorin South LGA.

H02: There is no significant association between parental perceptions of routine immunization and the reported occurrence of vaccine-preventable diseases (VPDs) among under-five children in Ilorin South LGA.

H03: Socio-demographic factors (such as parents' age, education, and occupation) have no significant influence on parental perceptions and attitudes toward routine immunization in Ilorin South LGA.

Significance of the Study

Nigeria has one the highest under-five mortality rates globally, often due to vaccine-preventable diseases. In Ilorin South LGA, disparities in immunization coverage among children persist due to factors like caregiver awareness, access to healthcare, and vaccine availability.

For nursing mothers and guardians, the study findings would reinforce the critical importance of ensuring timely and complete immunization for their children. The study would encourage continued commitment and highlight the need for improved outreach, follow-up, and record-keeping to ensure full immunization coverage, especially in hard-to-reach areas.

Scope of the Study

This study focused on the evaluation of the role of routine immunization in reducing morbidity and mortality among under-five children in Ilorin South LGA, Kwara State. The population for this study consisted of all parents of under-five children in Ilorin South LGA, Kwara State. The population cut across all eleven wards in Ilorin South Local Government Areas. Multistage sampling procedure was used to select sample size. A descriptive research of survey method was employed in this study. For the study, a descriptive statistic of frequency and percentage was used to analyze the demographic data and answer all the research questions while inferential statistic of Chi-square was used to test the null hypotheses at 0.05 alpha levels.

Methodology

Research Design

This study adopted a descriptive survey research design. The design was considered appropriate because the study aimed to collect information from parents of under-five children to describe their perceptions, attitudes, and reported practices regarding

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routine immunization in detail (Jessica, 2021). The survey method allowed the researcher to reach a wide sample efficiently and examine associations between socio-demographic characteristics and parental perceptions.

Population of the Study

The population of the study comprised all parents or primary caregivers of under-five children residing in Ilorin South Local Government Area (LGA), Kwara State. The target population covered all eleven wards within Ilorin South LGA. According to the Kwara State Bureau of Statistics (2024), the estimated population of parents of under-five children in Ilorin South LGA is 431,922.

Sample Size and Sampling Techniques

A multi-stage sampling technique was employed to select respondents:

Stage One, a simple random sampling method was used to select 5 wards out of the 11 wards in Ilorin South LGA. This was done using the fishbowl method, where the names of all wards were written on individual papers, and five were randomly drawn. The wards selected were Akanbi 1, Akanbi 5, Okaka 1, Balogun Fulani 1, and Balogun Fulani 2. Stage Two, within the selected wards, a proportionate sampling technique was used to select 0.2% of the total population of parents of under-five children, as estimated by the Kwara State Bureau of Statistics (2024). This yielded a total sample of 413 respondents. This sampling procedure ensured that the sample was representative of the selected wards and reflected the diversity of the population.

Research Instrument

Data were collected using a structured questionnaire, divided into two sections: Section A: Elicited demographic information of respondents (age, sex, education, occupation, number of children, etc.). Section B: Focused on the perceptions, attitudes, and reported practices regarding routine immunization. The questionnaire employed a four-point Likert scale: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), allowing respondents to express the intensity of their agreement with statements.

Validity and Reliability of the Instrument

The instrument was validated by three experts in public health and child health to ensure face and content validity. To test reliability, a pilot study was conducted with 30 respondents from Balogun Fulani 3 ward, which was outside the selected wards. The split-half method was used, where the questionnaire was divided into two halves of 15 items each, and the scores were compared using Pearson Product Moment Correlation (PPMC). The analysis yielded a correlation coefficient of 0.88, indicating that the instrument was highly reliable.

Procedure for Data Collection

The questionnaires were personally administered by the researcher, assisted by two trained research assistants. Before administration, consent was obtained from each respondent, respondents were assured of confidentiality and the anonymity of their responses and research assistants were trained on how to interpret and administer the questionnaire consistently.

Completed questionnaires were collected immediately to ensure data completeness and accuracy.

Ethical Consideration

Ethical approval was obtained from the Kwara State Ministry of Health Ethics Review Board (Approval Number: ERC/MOH/2025/09/513). Written informed consent was obtained from all participants. Confidentiality and anonymity were maintained throughout the study. Participation was voluntary, and respondents were free to withdraw at any stage without penalty.

Method of Data Analysis

Data collected were sorted, coded, and analyzed using SPSS, Descriptive statistics (frequencies and percentages) were used to summarize respondents' demographics and perceptions of routine immunization. Inferential statistics: Chi-square tests were employed to determine associations between parental perceptions and reported coverage or reported occurrence of vaccine-preventable diseases among under-five children. Hypotheses were tested at 0.05 level of significance, providing a criterion for either accepting or rejecting the null hypotheses.

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Results

Table 1: Demographic Characteristics of Respondents

S/N	CHARACTERISTICS	FREQUENCY	PERCENTAGE (%)
1.	Age Range		
	15-25years old	72	17.4
	26-35years old	188	45.5
	36-45years old	113	27.4
	46-49years old	40	9.7
	Total	413	100.0
2.	Religion		
	Islam	254	61.5
	Christianity	135	32.7
	Traditional	18	4.4
	None	6	1.4
	Total	413	100.0
3.	Level of Education		
	No formal education	80	19.3
	Primary education	95	23.0
	Secondary education	106	25.7
	Tertiary education	132	32.0
	Total	413	100.0
4.	Number of Under-five Children		
	One		
	Two	168	40.7
	Three	141	34.2
	Four or more	72	17.4
	Total	32	7.7
		413	100.0

Table 1 presents the demographic characteristics of the respondents who participated in the study. The majority of respondents, 188 (45.5%), were aged between 26–35 years, followed by 113 (27.4%) in the 36–45 years' category. Parents aged 15–25 years accounted for 72 (17.4%), while the least represented were those aged 46–49 years, with 40 (9.7%). In terms of religion, most respondents were Muslims, 254 (61.5%), followed by Christians, 135 (32.7%). Parents practicing traditional religion made up 18 (4.4%), while a very small proportion, 6 (1.4%), reported no religious affiliation.

Table 2: Mean Scores Showing the Coverage Rate of Routine Immunization among Under-Five Children

S/N	ITEMS	SA	A	D	SD	Mean	Stand. Dev.
5	My child has received all the required routine immunizations for he/she age.	180 (43.6%)	130 (31.5%)	65 (15.7%)	38 (9.2%)	3.09	0.94
6	Routine immunization is widely accepted and practiced in my community.	170 (41.2%)	135 (32.7%)	70 (16.9%)	38 (9.2%)	3.06	0.95
7	Most children under five in my area receive immunization on schedule.	160 (38.7%)	125 (30.3%)	80 (19.4%)	48 (11.6%)	2.96	1.01
8	I have easy access to immunization services at nearby health facilities.	190 (46.0%)	120 (29.1%)	60 (14.5%)	43 (10.4%)	3.11	0.98
9	Health workers regularly follow up to ensure children receive their vaccines.	150 (36.3%)	120 (29.1%)	90 (21.8%)	53 (12.8%)	2.89	1.03
	Grand Mean ($\bar{X}$)					3.02	

Decision Value: Negative= 0.00-2.44, Positive Value= 2.45-4.00

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Table 2 shows the responses to research question one regarding the coverage rate of routine immunization among parents of under-five children in Ilorin South LGA. The results reveal a grand mean of 3.02, which indicates a positive perception of immunization coverage in the area. Overall, the findings revealed that routine immunization coverage in Ilorin South LGA is fairly high and positively viewed among parents of under-five children in Ilorin South LGA.

Table 3: Mean Scores Showing the Relationship between Routine Immunization Uptake and Disease Prevalence

S/N	ITEMS	SA	A	D	SD	Mean	Stand. Dev.
10	Routine immunization has reduced the occurrence of diseases like measles and polio in my area.	200 (48.4%)	125 (30.3%)	55 (13.3%)	33 (8.0%)	3.19	0.93
11	I believe vaccinated children are less likely to fall sick than unvaccinated children.	190 (46.0%)	130 (31.5%)	60 (14.5%)	33 (8.0%)	3.15	0.94
12	There are fewer outbreaks of vaccine-preventable diseases in communities with high immunization coverage.	175 (42.4%)	140 (33.9%)	65 (15.7%)	33 (8.0%)	3.11	0.95
13	Lack of immunization increases the risk of preventable diseases among children.	185 (44.8%)	135 (32.7%)	60 (14.5%)	33 (8.0%)	3.14	0.94
14	I have noticed a decrease in childhood illness since routine immunization became more accessible.	180 (43.6%)	125 (30.3%)	70 (16.9%)	38 (9.2%)	3.08	0.97
	Grand Mean ($\bar{X}$)					3.13	

Decision Value: Negative= 0.00-2.44, Positive Value= 2.45-4.00

Table 3 addresses the second research question on the relationship between routine immunization uptake and the prevalence of vaccine-preventable diseases among under-five children in Ilorin South LGA. The results reveal a grand mean of 3.13, indicating a positive perception that immunization is effectively reducing childhood diseases in the area. Overall, the findings revealed a strong relationship between immunization uptake and the reduction of vaccine-preventable diseases as perceived by parents of under-five children in Ilorin South LGA.

Test of Hypotheses

$H0_1$: There is no significant relationship between routine immunization uptake and the prevalence of vaccine-preventable diseases among under-five children in Ilorin South LGA.

Table 4: Chi-Square Analysis of Relationship between Routine Immunization Uptake and Disease Prevalence

Variable	N	Df	Cal. χ^2 value	Crit. χ^2 value	P value	Remark
Relationship between Routine Immunization Uptake and Disease Prevalence Among Under-five Children in Ilorin South LGA	413	12	379.91	21.026	0.000	$H0_1$ Rejected

Table 4 shows the calculated chi-square value of 379.91 which is greater than the critical chi-square value of 21.026 (Cal. χ^2 val. > Crit. χ^2 val.) with a degree of freedom of 12 at 0.05 alpha level. Since the calculated χ^2 value is greater than the critical value, the null hypothesis which stated that there is no significant relationship between routine immunization uptake and the prevalence of vaccine-preventable diseases among under-five children in Ilorin South LGA was rejected. This implies that there is significant relationship between routine immunization uptake and the prevalence of vaccine-preventable diseases among under-five children in Ilorin South LGA.

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Discussion of Findings

Research Question One showed a grand mean of 3.02, which indicates a positive perception of immunization coverage in the Ilorin South LGA. Overall, the findings revealed that routine immunization coverage in Ilorin South LGA is fairly high and positively viewed among parents of under-five children in Ilorin South LGA. This finding align with the finding of Tagbo et al. (2024) who founds that the BCG coverage shows over 35% increase from the 40.50% coverage recorded in 2016 against the 76.41% coverage for 2020 and over 53% from the 23% coverage in 2003 (NPC & ICF, 2019; WHO, 2022). The highest BCG coverage was reported in Enugu State and Kwara State with 99.55%, 84.51% respectfully, while the lowest was reported in Kano State with 35.23% (UNICEF & NBS, 2018). This finding indicates that, immunization coverage has increased in Kwara State, including Ilorin South, though, there is still room for improvement.

Research Question Two showed a grand mean of 3.13, indicating a positive perception that immunization is effectively reducing childhood diseases in the area. Overall, the findings revealed a strong relationship between immunization uptake and the reduction of vaccine-preventable diseases as perceived by parents of under-five children in Ilorin South LGA. This finding is in line with the findings of Zhou et al. (2024) who found that among diseases targeted by vaccines recommended before 1980, polio, measles, and rubella have achieved elimination status.

Hypotheses Findings showed the calculated chi-square value of 379.91 which is greater than the critical chi-square value of 21.026 (Cal. χ^2 val. > Crit. χ^2 val.) with a degree of freedom of 12 at 0.05 alpha level. Since the calculated χ^2 value is greater than the critical value, the null hypothesis which stated that there is no significant relationship between routine immunization uptake and the prevalence of vaccine-preventable diseases among under-five children in Ilorin South LGA was rejected. This implies that there is significant relationship between routine immunization uptake and the prevalence of vaccine-preventable diseases among under-five children in Ilorin South LGA. This finding is in corroboration with the findings of Liu et al. (2016) who analyze global child mortality trends from 2020 to 2015, his finding revealed that the expansion of immunization programs contributed to the significant reduction in deaths from measles, pertussis, and other vaccine-preventable diseases.

The findings from Research Question One revealed a grand mean of 3.02, indicating that parents in Ilorin South LGA generally perceive routine immunization coverage as high. This positive perception suggests that immunization services are relatively accessible and acceptable within the study area. The observed alignment with previous national and subnational reports showing improved BCG coverage in Kwara State underscores the effectiveness of ongoing immunization strategies and investments. However, despite these gains, the findings also indicate that there remains room for improvement, particularly in ensuring equitable and sustained coverage across all wards within the LGA.

From a programmatic perspective, the positive perception of immunization coverage has important implications for routine immunization delivery. First, it suggests that existing delivery mechanisms such as fixed health facility immunization services, outreach programs, and community mobilization efforts are yielding measurable results. This provides evidence to support the continuation and strengthening of these strategies. Health authorities can leverage this positive perception to reinforce demand creation activities, including health education and community engagement, to sustain immunization uptake and reduce dropout rates.

Second, the findings highlight the importance of parental trust in the immunization system. Positive perceptions of coverage and effectiveness imply that parents view routine immunization as beneficial and reliable. Immunization programs can build on this trust by improving service quality, ensuring consistent vaccine availability, reducing waiting times, and maintaining respectful provider–client interactions. Strengthening these programmatic elements can further enhance uptake and compliance with immunization schedules.

Furthermore, the perceived link between immunization uptake and the reduction of vaccine-preventable diseases (grand mean = 3.13) reinforces the role of routine immunization as a core child survival strategy. Program managers can use these findings to advocate for sustained funding, improved cold-chain maintenance, and continuous training of frontline health workers to ensure the long-term effectiveness of immunization services.

At the micro-planning level, the findings provide valuable insights for Ilorin South LGA health authorities. The reliance on parental perceptions highlights the need for localized planning that is responsive to community experiences and beliefs. LGA-level planners can use this information to identify wards or communities where perceptions of coverage or effectiveness may be lower and prioritize them for targeted interventions, such as intensified outreach or community dialogue sessions.

Additionally, the findings suggest that parental perceptions can serve as an early indicator of program performance at the grassroots level. Incorporating

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community feedback into LGA immunization micro-plans can help identify service delivery gaps that may not be evident from administrative data alone. For example, parents' perceptions could guide decisions on optimal immunization session timing, location of outreach posts, and communication strategies tailored to specific communities.

The evidence of a perceived reduction in vaccine-preventable diseases also supports the integration of routine immunization planning with other child health programs at the LGA level. Micro-level planning can align immunization activities with maternal and child health services, such as antenatal care, postnatal care, and nutrition programs, to maximize reach and efficiency.

The findings provide actionable evidence for strengthening routine immunization delivery and micro-level planning in Ilorin South LGA. By leveraging positive parental perceptions and addressing identified gaps, local health authorities can enhance immunization coverage, sustain disease reduction gains, and contribute to improved child health outcomes.

Limitation of the findings

However, a major limitation of this study is that the results are based on self-reported perceptions of parents rather than objective immunization records or confirmed clinical data on disease prevalence. As such, the findings reflect perceived rather than medically verified outcomes. This reliance on perception may introduce recall bias or social desirability bias, which could influence respondents' answers. Despite this limitation, parental perceptions remain valuable, as they strongly influence immunization decisions and health-seeking behavior for under-five children.

Conclusions

Based on the findings of the study, the following conclusions were drawn:

Routine immunization coverage in Ilorin South LGA is fairly high and positively viewed among parents of under-five children.

There is strong relationship between immunization uptake and the reduction of vaccine-preventable diseases as perceived by parents of under-five children.

Recommendations

Based on the findings of this study, the following recommendations are made:

Health personnel and local health authorities should strengthen community sensitization and awareness programs to sustain and further improve routine immunization coverage in Ilorin South LGA, with particular emphasis on reinforcing parents' positive perceptions and addressing misconceptions that may influence immunization decisions.

Public health stakeholders should enhance advocacy and health education efforts that emphasize parents' perceived benefits of routine immunization in protecting children against vaccine-preventable diseases, rather than making definitive claims about measured reductions in morbidity and mortality.

Immunization communication strategies should incorporate parental experiences and perceptions, using locally appropriate messages to improve confidence in routine immunization services and encourage consistent utilization across all wards in Ilorin South LGA.

LGA health planners should integrate community perception data into routine immunization micro-plans, using feedback from parents to guide service delivery improvements and strengthen trust in immunization programs.

Public Health Impact

This study highlights how routine immunization helps to reduce preventable diseases, lowering child morbidity and mortality

This study guide local and states health authorities in strengthening immunization programs and addressing coverage gaps in Ilorin South LGA.

Conflict of interest

The authors declared that there is no conflict of interest and open to defending any contrary claims.

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