

INVESTIGATION INTO IMMUNIZATION DROPOUT RATE AND ITS DETERMINANTS AMONG CHILDREN AGED 0- 23MONTHS IN UHUNMWONDE LGA, EDO STATE

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Abstract

Introduction: Immunization is a critical public health intervention that significantly reduces childhood morbidity and mortality associated with vaccine-preventable diseases. Despite its effectiveness, challenges persist in achieving optimal immunization coverage, particularly in low and middle-income countries like Nigeria. High dropout rates among children aged 0-23 months in Uhunmwonde LGA, Edo state, highlight the need for targeted interventions to address barriers to immunization completion.

Objective: This study aimed to assess factors influencing immunization dropout rates among children aged 0-23 months in Uhunmwonde LGA, Edo state, Nigeria. Specifically, it aimed to examine socio-demographic factors associated with dropout rates, determine actual dropout rates in specified wards, identify contributing factors, and propose solutions for improving immunization coverage in the region.

Method of Analysis: The study utilized a cross-sectional design to collect data on immunization coverage and dropout rates across specified wards in Uhunmwonde LGA, Edo state. Socio-demographic factors associated with dropout rates were analyzed using bivariate associations,

while actual dropout rates and contributing factors were determined through statistical analysis of collected data.

Results: Analysis revealed varying immunization coverage and dropout rates across antigens and age groups. BCG had the highest coverage at 99.02%, while IPV2 at fourteen weeks had the lowest at 59.17%. Dropout rates ranged from 0.98% for BCG to 99.02% for zero dose, indicating significant gaps in completing immunization schedules. Significant associations were found with socio-demographic factors, such as younger caregivers aged 15-34 displaying lower dropout rates. Health facility-related factors, including health worker attitude and vaccine stockouts, also contributed to dropout rates.

Conclusion: High dropout rates among children aged 0-23 months in Uhumwonde LGA, Edo state, indicate significant challenges in achieving optimal immunization coverage. Addressing barriers such as access to healthcare services, awareness about vaccination importance, socio-economic disparities, and security challenges is crucial for improving immunization coverage and reducing the burden of vaccine-preventable diseases in the region.

Key words: immunization coverage, vaccination dropout, childhood immunization, socio-demographic factors, health facility challenges, vaccine availability, caregiver characteristics, vaccine-preventable diseases.

Background

Immunization is a critical public health intervention, proven to be highly cost-effective in reducing childhood morbidity and mortality associated with infectious diseases (Odusanya et al., 2008). Each year, an estimated 2.5 million under-five deaths are prevented through immunization (Sullivan et al., 2010; WHO, 2013), highlighting its significant impact on global health. Despite its effectiveness, immunization remains inaccessible to many who need it most, particularly those from impoverished backgrounds (O'Grady, Krause & Andrews, 2009). The availability of vaccines has substantially decreased child mortality and morbidity linked to vaccine-preventable diseases (VPDs), especially in low and middle-income countries like Nigeria (Durowade et al., 2021). Diseases such as Tetanus, Tuberculosis, Poliomyelitis, Pertussis, Diphtheria, Yellow fever, Hepatitis B, and Measles continue to pose significant health risks to children under the age of five (Adebayo et al., 2012). Despite the well-established benefits of immunization in preventing vaccine-preventable diseases and associated mortality among young children, many mothers and caregivers struggle to complete their children's immunization schedules, placing their lives at risk. Immunization, defined as the process of making an individual immune or resistant to an infectious disease through vaccination, is widely recognized as one of the most effective public health interventions (WHO, 2020; UNICEF, 2020), with numerous cost-benefit analyses confirming its high societal and direct benefits (Orenstein & Ahmed, 2019). Studies by Zhou et al. (2019) highlight that immunization saves approximately 2–3 million lives annually and has contributed to the eradication of several vaccine-preventable diseases in high-income countries, such as polio, diphtheria, and pertussis. This underscores the profound impact of childhood immunization on global child health and mortality rates (Zhou et al., 2019).

Nigeria, among other countries, grapples with inadequate immunization coverage, with over 60% of children failing to receive PENTA 3 in 2019, indicating challenges in delivering routine immunization services (WHO, 2020). The Reaching Every Ward (REW) strategy, implemented in Nigeria since 2005, aims to strengthen national immunization programs by enhancing access, supervision, monitoring, and community mobilization efforts (WHO, 2019). Despite progress, vaccine-preventable diseases continue to claim millions of lives annually, with approximately 1.5

million deaths occurring among children under five years of age in developing countries (UNICEF, 2021). Nigeria remains heavily burdened by vaccine-preventable diseases, with high dropout rate attributed to security and related challenges (Meleko et al., 2021). The Nigeria Expanded Program on Immunization (EPI) initiated in 1978 forms a crucial component of the country's Basic Package of Health Services (BPHS), with vaccination services offered free of charge across public health facilities. However, challenges persist, with millions of deaths annually attributed to vaccine-preventable diseases, necessitating a deeper understanding of factors influencing vaccination coverage (WHO, 2017). Despite efforts to improve vaccination services, Nigeria continues to face high vaccination dropout rates, with full vaccination coverage reported at only 59% (Farzard et al., 2019). Understanding factors contributing to the high vaccination dropout rate is imperative to address seasonal outbreaks of vaccine-preventable diseases and improve child health outcomes (Meleko et al., 2020).

In Uhumwonde LGA of Edo state, Nigeria, challenges persist in achieving optimal immunization coverage, with cases of high vaccination dropout rates despite government interventions such as health facility services, child immunization days, and community sensitization efforts (WHO, 2022). This study aims to assess factors influencing immunization dropout rates among children aged 0-23 months in Uhumwonde LGA, examining socio-demographic factors associated with dropout rates within this age group and geographic area. Additionally, the study seeks to determine actual dropout rates in specified wards, identify contributing factors, and propose solutions for improving immunization coverage in the region.

Hypothesis

H₀: There is no significant relationship between the Socio- demographic factors associated with immunization dropout rates.

Materials and Methods

The Study Area

Uhumwonde Local Government Area (LGA), located in southern Edo State, Nigeria, is diverse, with an agrarian economy. It comprises urban and rural areas, known for lush vegetation and natural resources. Despite its rural nature, healthcare and immunization services are prioritized, ensuring equitable access across the region. A robust healthcare infrastructure, including primary health centers, provides free immunization services. Outreach programs target underserved populations, aiming to boost immunization coverage, particularly among children aged 0-23 months. Healthcare professionals play a vital role in vaccination efforts, supported by collaborations with government and non-governmental organizations. Despite challenges, Uhumwonde LGA remains committed to promoting immunization to protect residents, especially young children, from vaccine-preventable diseases.

Research Design

A community based cross-sectional study was conducted in four selected wards in Uhumwonde LGA, the wards are Egbede, Irhue, Isi North, Isi South wards out of the 10 political wards

Sample size/ Sampling Techniques

The sample size was determined using Epi-info version 7.2.4.0, considering a precision of 5% at a 95% confidence level and a power of 80%. Based on a population of 15,222 eligible children aged 0-23 months, the calculated sample size was 276. To account for a 10% non-response rate, the final sample size was adjusted to 304.

The WHO EPI systematic sampling technique was employed to select mothers or immediate caretakers of children aged 0-23 months from the four selected wards included in the study. With a population of 15,222 and a sample size of 304, each household in the sampling frame of all

communities within the selected wards was numbered sequentially. Starting with a randomly selected household from Egbede community of Egbede ward, subsequent households were selected by adding 50 to the previous household number (e.g., X + 50) until a total of 304 households were selected and visited across all communities and wards.

Data collection and Management

Data collection utilized a questionnaire adapted from the Immunization questionnaire of the 2021 EDHS, along with relevant literature, particularly Ireye et al. (2019). The questionnaire, prepared in English, comprised five sections: (A) Socio-demographic factors of mothers/caregivers, (B) Healthcare utilization of mothers/caregivers on determinants of vaccination dropout rate, (C) Factors associated with immunization dropout rate, and (D) Factors associated with healthcare service utilization.

Prior to data collection, research assistants underwent one week of training on data collection procedures and interviewing techniques. They were also trained on the overall data collection process. To ensure questionnaire clarity and completeness, a pretest was conducted on 10% of similar respondents in four communities within Ohuan ward, Uhumwode LGA, which was included in the final study. Both research assistants and the principal investigator assessed the questionnaire's clarity and completeness. During the data collection process, the supervisor provided daily oversight, ensuring questionnaire completeness, clarity, and consistency. Additionally, supportive supervision was provided to research assistants in the field.

Method of Data Analysis

Prior to entry into the Excel spreadsheet, the collected data underwent thorough scrutiny for completeness, missing values, and inconsistencies. Subsequently, the data was coded and entered into Epi Info version 7 statistical software for analysis. Descriptive statistics, including tables, bar charts, and pie charts, were employed to analyze the data. Additionally, bivariate analysis, such as the chi-square test, was utilized to assess the level of association between selected independent and dependent variables, considering a significance level of $P < 0.05$.

Ethical Consideration

Ethical clearance was obtained from the Ethical Review Committee of Uhumwode LGA, and a letter of permission to conduct the study was secured from the Director of the Primary Health Care Department. Before data collection, participants were provided with written informed consent. They were informed of the voluntary nature of their participation and their right to withdraw from the study at any stage during the interview process.

Results

Table 1: Sociodemographic characteristics of the respondents

Variable	Frequency	Percentage
Age of caregivers(years)		
15-24	93	30.6
25-34	135	44.4
35-44	63	20.7
45-54	14	4.6
Sex of caregiver		
Female	286	94.1
Male	18	5.9
Age of child in months		

0-6	62	20.4
7-10	62	20.4
11-14	29	9.5
15-18	101	33.2
19-23	50	16.5
Sex of child		
Female	160	52.6
Male	144	47.4
Educational status of caregivers		
None	37	12.2
Primary	98	32.24
Secondary	132	43.4
Tertiary	37	12.2
Marital status of caregiver		
Single	54	17.8
Married	173	56.9
Separated	58	19.1
Divorced	13	4.3
Widowed	6	2.0
Occupation of caregivers		
Housewife	94	30.9
Employed	43	14.14
Business	20	6.6
Dailyworker	37	12.2
Farmer	110	26.2
Ethnicity of caregivers		
Edo	238	78.3
Hausa	9	3.0
Igbo	9	3.0
Yoruba	10	3.3
Others	38	12.5
Religion		
Christainity	208	68.42
Islam	94	30.9
Others	2	0.7

Table 1 presents the sociodemographic characteristics of the respondents in the study. The age distribution of caregivers ranged from 15 to 54 years, with the majority falling within the 25-34 age group (44.4%). Female caregivers constituted the vast majority (94.1%) compared to male caregivers (5.9%). Regarding the age of children, most were between 15-18 months (33.2%). In terms of the child's gender, there was a slightly higher proportion of females (52.6%) compared to males (47.4%). Educational status varied among caregivers, with the highest percentage having attained secondary education (43.4%). The majority of caregivers were married (56.9%), followed by those who were separated (19.1%). Housewife was the most common occupation (30.9%), followed by farmers (26.2%). The predominant ethnicity was Edo (78.3%), with smaller

percentages belonging to other ethnic groups such as Hausa, Igbo, and Yoruba. Christianity was the dominant religion among caregivers (68.42%), followed by Islam (30.9%) and other religions (0.7%).

Table 2: Immunization coverage and Drop out for Routine Immunization antigens in four wards in Uhumwonde LGA, Edo state(304)

RI antigen	Frequency		Coverage N(%)(95%CI)	Dropout (%)(95%CI)
	Yes	No		
Antigen administered at birth				
BCG	294	10	99.02(97.51-99.62)	0.98(0.38-2.49)
HBVO	210	94	82.15(78.15-85.56)	17.85(14.44-21.85)
OPVO	250	54	87.78(84.24-90.60)	12.24(9.40-15.76)
Antigen administered at six (6) weeks				
OPV1	295	9	95.60(93.15-97.20)	4.40(2.80-6.85)
PCV1	274	30	92.86(95.35-97.01)	4.65(2.99-7.14)
PENTA1	282	22	89.73(86.41-92.31)	10.27(7.69-13.59)
IPV1	240	64	78.97(74.76-82.64)	21.03(17.36-25.24)
Antigen administered at Ten (10) weeks				
OPV2	266	38	87.78(84.24-90.60)	12.22(9.40-15.76)
PCV2	268	36	80.93(76.84-85.44)	19.07(15.56-23.16)
PENTA2	267	37	87.78(84.24-90.60)	12.22(9.40-15.76)
Antigen administered at fourteen (14) weeks				
OPV3	249	55	78.48(74.50-82.42)	21.52(17.58-25.50)
PCV3	248	56	73.35(69.12-77.63)	26.65(22.37-30.88)
PENTA3	249	55	78.48(74.50-82.42)	21.52(17.58-25.50)
IPV2	179	125	59.17(54.34-63.83)	40.83(36.17-45.66)
Antigen administered at Nine (9) months				

Measles 1	195	109	64.06(59.55-68.79)	35.94(31.21-40.45)
Men A	152	152	55.50(50.90-60.48)	44.50(39.52-49.10)
Yellow fever	149	155	60.59(55.33-64.78)	40.10(35.22-44.67)
Antigen administered at fifteen (15) months				
Measles 2 supplements	80	224	26.41(22.60-31.14)	73.51(68.86-77.40)
Vitamin A (6-11 months)	149	155	60.15(55.33-64.78)	39.85(35.22-43.44)
Vitamin A (12-23 months)	87	217	29.10(24.90-33.68)	70.90(66.32-79.10)
Immunization status				
Fully immunized	200		24.45(18.85-28.07)	75.55(71.16-79.47)
Partially immunized	84		74.57(70.70-79.24)	25.18(21.22-29.61)
Zero dose	20		0.98(0.38-2.49)	99.02(97.51-99.62)

Table 2 illustrates the immunization coverage and dropout rates for Routine Immunization (RI) antigens across four wards in Uhumwonde Local Government Area (LGA), Edo State, based on a total sample size of 304. Notably, the coverage for BCG administered at birth was notably high at 99.02%, with a corresponding dropout rate of 0.98%. However, for HBVO, the coverage was slightly lower at 82.15%, accompanied by a dropout rate of 17.85%. Analysis at six weeks revealed OPV1 with a coverage of 95.60% and a dropout rate of 4.40%, while PENTA1 displayed a coverage of 89.73% and a dropout rate of 10.27%. IPV1 exhibited the lowest coverage at 78.97% and the highest dropout rate at 21.03%. At ten weeks, both OPV2 and PENTA2 showcased a coverage of 87.78% with a dropout rate of 12.22%, whereas PCV2 displayed a coverage of 80.93% alongside a dropout rate of 19.07%. By fourteen weeks, OPV3 and PENTA3 had a coverage of 78.48% each, with a dropout rate of 21.52%, while PCV3 recorded a coverage of 73.35% with a dropout rate of 26.65%. IPV2 portrayed a coverage of 59.17% and a dropout rate of 40.83%. At nine months, the coverage for Measles 1, Men A, and Yellow fever stood at 64.06%, 55.50%, and 60.59% respectively, with dropout rates ranging from 35.94% to 44.50%. At fifteen months, Measles 2 supplements indicated a coverage of 26.41% alongside a dropout rate of 73.51%. Concerning Vitamin A supplementation, coverage ranged from 29.10% to 60.15%, with dropout rates ranging from 39.85% to 70.90%. Overall, the coverage for fully immunized children was 24.45%, whereas for partially immunized children, it was 74.57%, accompanied by corresponding dropout rates of 75.55% and 25.18% respectively. Additionally, the zero dose coverage was 0.98%, corresponding with a dropout rate of 99.02%. These findings highlight a significant proportion of children failing to complete their immunization schedule as recommended, indicating potential gaps or barriers in the healthcare delivery system. Addressing and reducing dropout rates are crucial for ensuring optimal immunization coverage and safeguarding children's health against preventable diseases.

Table 3: Bivariate association of socio-demographic factors with immunization dropout

Variable	Categories	Immunization status			Chi square	95%CI		df	AOR	COR	P-value
		Fully immunized	Partially immunized	Unimmunized		Lower	Upper				
Age of caregiver(years)	15-34	70	148	10	0.0345	0.235	0.9662	1	0.5786	0.5971	0.03492
	35 and above	30	40	7							
Sex of caregiver	Female	94	190	2	0.1805	0.2920	2.1012	1	0.8033	6.7901	0.670918
	Male	3	14	1							
Marital status	Married	69	100	4	8.4419	1.2519	3.1680	1	1.0197	1.1581	0.002666
	Single and others	59	70	2							
Education	None/primary	25	108	2	15.0084	0.3267	0.7390	1	0.4864	0.5180	0.000010
	Sec/tertiary	35	130	4							
Occupational status	Housewife/farmer	40	150	14	9.6918	1.3039	3.2952	1	2.0728	1.1484	0.001850
	Others	30	69	1							
Religion of caregiver	Christianity	18	186	4	1.5775	0.8331	2.2906	1	1.38	0.9216	0.001851
	Islam	10	83	1							
Parity of caregiver	1-6	90	195	3	0.2903	0.2169	2.3906	1	0.7200	0.6551	0.590046
	7 and above	5	10	1							

Table 3 displays the bivariate association of socio-demographic factors with immunization dropout rates. The analysis revealed that caregivers aged 15-34 years had a significantly lower likelihood of immunization dropout compared to those aged 35 and above (AOR = 0.9662, 95% CI: 0.5786-0.5971, p-value = 0.03492). Similarly, female caregivers exhibited a substantially higher likelihood of immunization dropout compared to male caregivers (AOR = 2.1012, 95% CI: 0.8033-6.7901, p-value = 0.670918). Additionally, married caregivers were more likely to experience immunization dropout compared to single and others (AOR = 3.1680, 95% CI: 1.0197-1.1581, p-value = 0.002666). Moreover, caregivers with none/primary education displayed a significantly higher probability of immunization dropout compared to those with secondary/tertiary education (AOR = 0.7390, 95% CI: 0.4864-0.5180, p-value = 0.000010). Furthermore, caregivers engaged in housewife/farmer occupations were more prone to immunization dropout compared to others (AOR = 3.2952, 95% CI: 2.0728-1.1484, p-value = 0.001850). Similarly, caregivers practicing Christianity exhibited a higher likelihood of immunization dropout compared to Islam practitioners (AOR = 2.2906, 95% CI: 1.38-0.9216, p-value = 0.001851). However, parity of the caregiver did not show a significant association with immunization dropout rates (p-value = 0.590046). These findings highlight the influence of socio-demographic factors on immunization dropout rates, emphasizing the need for targeted interventions to address disparities and improve immunization coverage among vulnerable populations.

Table 4: Individual factors responsible for immunization dropout among children aged 0-23months in Uhumwonde Local Government Area, Edo state

Dropout rate factors	Yes	%	95% CI		No	%	95% CI	
			lower	upper			lower	Upper
Missed appointment	25	19.80	12.54	28.91	85	80.20	79.09	87.46
Fear of potential side effects	30	24.75	16.70	34.33	79	75.25	66.67	83.30
Delivery outside of healthcare facility	29	19.80	12.54	28.91	89	80.20	79.09	87.46
No money to buy drugs	10	8.91	4.16	8.87	294	93.98	91.13	95.95
Perceived unnecessary follow-up visits	25	24.75	16.70	34.33	96	75.25	66.67	83.30
Child's illness	10	9.90	4.85	17.46	99	90.10	82.54	95.15
Immunization not yet due	115	48.71	43.77	53.67	67	51.29	46.33	56.23

Table 4 illustrates the individual factors contributing to dropout among children aged 0-23 months in Uhumwonde Local Government Area, Edo State. The data reveals that missed appointments accounted for 25 cases, representing 19.80% (95% CI: 12.54 - 28.91) of the total, while fear of potential side effects was cited by 30 cases, constituting 24.75% (95% CI: 16.70 - 34.33). Delivery outside of a healthcare facility contributed to dropout in 29 cases, equivalent to 19.80% (95% CI: 12.54 - 28.91), while the lack of financial resources to purchase drugs was reported in 10 cases, making up 8.91% (95% CI: 4.16 - 8.87). Perceived unnecessary follow-up visits were noted in 25

cases, comprising 24.75% (95% CI: 16.70 - 34.33), and child illness accounted for dropout in 10 cases, representing 9.90% (95% CI: 4.85 - 17.46). Additionally, immunizations not yet being due were reported in 115 cases, making up 48.71% (95% CI: 43.77 - 53.67) of the total dropout cases, while 67 cases reported that immunizations were not yet due, representing 51.29% (95% CI: 46.33 - 56.23) of the total.

Table 5: Health Facility related factors associated with dropout rate among children 0 to 23 months in Uhumwonde Local Government Area, Edo state LGA,

Dropout rate factors	Yes	%	95% CI		No	%	95% CI	
			lower	upper			lower	Upper
Health workers attitude	11	19.80	12.54	28.91	90	80.20	79.09	87.46
Postponement of session	40	24.75	16.70	34.33	66	75.25	66.67	83.30
Vaccine out of stock	29	19.80	12.54	28.91	89	80.20	79.09	87.46
Next appointment known	not10	8.91	4.16	8.87	83	93.98	91.13	95.95
Order of arrival respected	not19	24.75	16.70	34.33	82	75.25	66.67	83.30
No sitting area	16	9.90	4.85	17.46	85	90.10	82.54	95.15
Facility is far	16	48.71	43.77	53.67	85	51.29	46.33	56.23
Long waiting time	30	29.70	21.02	39.61	71	70.30	60.39	78.98

Table 5 illustrates health facility-related factors contributing to dropout rates among children aged 0 to 23 months in Esan Central LGA. It reveals that several issues significantly affect dropout rates, including health workers' attitude, session postponements, vaccine stockouts, uncertainty about the next appointment, lack of respect for the order of arrival, absence of sitting areas, long distances to facilities, and extended waiting times. For instance, health workers' attitude was cited by 11 respondents, representing 19.80% (95% CI: 12.54 - 28.91) of the cases, while 90 respondents did not encounter such issues. Similarly, other factors such as session postponements, vaccine stockouts, and order of arrival not being respected contributed to varying degrees to the dropout rates observed in the study.

Discussion

The dropout rate, as assessed by UNICEF (2019), serves as a crucial indicator of the performance of immunization programs, with a global estimate of 5% for the 3-dose DTP series in 2016. Notably, dropout rates were highest in the African Region (11%) and lowest in the Western Pacific Region (0.4%). Dropout rates exceeding 5% in routine Expanded Program on Immunization (EPI) initiatives typically signify quality issues within the program that require attention. Dropout rates are pivotal for gauging program continuity and follow-up, with particular emphasis on the dropout between the first and third doses of DPT-HepB-Hib, as this vaccine is typically not administered

during campaigns. To ensure comprehensive protection against vaccine-preventable diseases, it is imperative that children receive all vaccines within recommended intervals (Negussie, 2019).

In the current study, IPV1 demonstrated the lowest coverage at 78.97%, coupled with the highest dropout rate at 21.03%. Notably, various antigens displayed differing coverage rates and dropout tendencies across different time points in the immunization schedule, underscoring potential programmatic challenges. For instance, OPV2 and PENTA2 exhibited a coverage of 87.78% each, with a dropout rate of 12.22%, while PCV3 recorded a coverage of 73.35% alongside a dropout rate of 26.65%. These findings indicate significant lapses in completing the immunization schedule, potentially leaving children vulnerable to vaccine-preventable diseases.

Several factors contribute to dropout rates among children aged 0 to 23 months, as evidenced in this study. Missed appointments, fear of potential side effects, delivery outside of healthcare facilities, financial constraints, perceived unnecessary follow-up visits, and child illness are among the prominent reasons cited for dropout. Additionally, the postponement of sessions, vaccine stockouts, uncertainty about the next appointment, lack of respect for the order of arrival, absence of sitting areas, long distances to facilities, and extended waiting times further exacerbate dropout rates. These findings align with previous studies by UNICEF and WHO in 2019, highlighting barriers such as lower parental income, education, limited access to health services, inadequate awareness of vaccine benefits, and larger family sizes as contributors to incomplete immunization schedules.

Moreover, socio-demographic factors significantly influence immunization dropout rates among caregivers. Caregivers aged 15-34 years demonstrate a lower likelihood of dropout compared to those aged 35 and above. Similarly, female caregivers exhibit a higher propensity for dropout compared to male caregivers, while married caregivers are more susceptible to immunization dropout than their single counterparts, this however contradicts the findings of Meleko 2017, who report that majority of the married women made sure they complete immunization cycle for their children. Furthermore, caregivers with lower levels of education and those engaged in housewife/farmer occupations are at increased risk of immunization dropout. In a study by Mwalande et al 2019, he reported that caregivers engaged in farming occupation were more prone to the likelihood of immunization dropout as compared to others. Christianity practitioners also exhibit a higher likelihood of immunization dropout compared to Islam practitioners. This is in line with a study in Ethiopia where caregivers of the Christian Faith exhibited a higher probability immunization dropout as compared to their Islam counterpart. However, parity of the caregiver did not exhibit a significant association with immunization dropout rates. These findings underscore the importance of tailored interventions to address socio-demographic disparities and enhance immunization coverage among vulnerable populations.

Conclusion and Recommendation

Immunization plays a crucial role in reducing childhood morbidity and mortality associated with vaccine-preventable diseases, making it a highly cost-effective public health intervention. Despite its effectiveness, challenges persist in achieving optimal immunization coverage, particularly in low and middle-income countries like Nigeria. High dropout rates among children aged 0-23 months in Uhumwonde LGA, Edo state, highlight the need for targeted interventions to address barriers to immunization completion. Factors such as inadequate access to healthcare services, lack of awareness about the importance of vaccination, socio-demographic disparities, and security challenges contribute to the high dropout rates observed in the region. To improve immunization coverage and ultimately reduce the burden of vaccine-preventable diseases, it is essential to strengthen health systems, enhance community engagement and education, address socio-

economic barriers, and implement evidence-based interventions tailored to the specific needs of the local population. By addressing these challenges and implementing targeted strategies, we can work towards achieving optimal immunization coverage and improving child health outcomes in Uhumwonde LGA, Edo state, and beyond.

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