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DETERMINANTS OF THE IMPLEMENTATION OF CHILDHOOD IMMUNIZATION AMONG NURSING MOTHERS IN KATSINA-ALA LOCAL GOVERNMENT AREA OF BENUE STATE

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ABSTRACT

This study investigated the determinants of the implementation of childhood immunization among nursing mothers in Katsina-Ala Local Government Area of Benue State. Two research questions were raised for the study and two hypotheses formulated for the study. Literature was reviewed covering the main variables of the study. The study adopted descriptive survey research design. The population of the study comprised all nursing mothers attending primary healthcare centres in Katsina-Ala Local Government Area of Benue State. A sample of 315 respondents was drawn through multistage sampling procedure. An instrument titled 'Child Immunization among Nursing Mothers Questionnaire, CINM-Q' was used for data collection. Descriptive statistics of percentages was used to analyze the demographic characteristics of the respondents; mean score was used to answer the research questions while Chi square was used to test the hypothesis. The study found out that attitudes and knowledge had significant influence on the implementation of immunization programme among nursing mothers in Katsina-Ala Local Government Area of Benue State. The researchers recommended that there should be immunization campaigns mounted in the entire local government area and that there should be good communication skills of healthcare workers in the area of study.

Keywords: determinants, implementation, childhood immunization, primary healthcare, nursing mothers.

Background of the Study

One of the best interventions in preventing infectious diseases is immunization. Immunization (vaccination) involves creating immunity by using small quantities of weakened or killed microorganisms that causes a given condition (Selvaraj, Sarkar & Daya, 2014). Childhood immunization has the most massive impact among public health

interventions, reducing mortality in children at a low cost. While this is a recommendable practice as a critical strategy towards realizing United Nations' Sustainable Development Goals (goal number 3, namely reducing mortality among under-five children to less than 25/1000 live births), research indicates that the majority of children from developing and underdeveloped countries go unvaccinated or under-vaccinated. Africa is leading globally with the highest under-five mortality rates, accounting for 40% of the total deaths. Like many countries in Africa, the situation in Nigeria is not different. In 2023, WHO/UNICEF revealed that Nigeria was among the ten countries in the world where 70% of their children did not receive the diphtheria-tetanus-pertussis (DTP3) vaccine (Janeway, Paul, Mark & Mark, 2023). According to Heininger (2021), children are considered fully vaccinated if, during the first year of life, they have received three or more doses of the polio vaccine, a DPT vaccine, and one dose of measles vaccine. Jegede and Owumi, (2023) observe that in Nigeria, more than 1 million children out of 6 million born every year do not get fully vaccinated during their first year despite the national government developing Expanded Program of Immunization (EPI) aimed at achieving the MDG target of reducing the under-five infant mortality. The vaccination coverage varies by zone, residence, and socioeconomic status, with rural areas being adversely affected. This has been partly attributed to the negative attitudes towards children immunization.

According to the Goldberg (2020), a child is fully immunized when they have received three doses of DPT against diphtheria, pertussis, and tetanus, a dose of BCG against tuberculosis, a dose of measles vaccine, and three doses of polio vaccine. Friedrickson, Davis, Arnold, Kennen, Humisston, Cross and Bocchini (2023) observe that, although vaccination coverage increased from 13% to 25% between 2021 to 2014 the trend in immunization rate or coverage is still considered to be low. In Nigeria, one study showed that most mothers (88.9%) were willing and intended to take their children for immunization while 91% of them could recommend vaccination to others (Evans, 2023). However, despite a positive attitude towards vaccination for children, low knowledge about different vaccines and their importance was associated with significantly low coverage amongst most Nigerian mothers (Bonnie & Mary, 2021). Babalola (2021) found that the attitudes of Nigerian caregivers to take their children for immunization were influenced by health facilities (education sessions, time is taken, clinical environment, etc.), announcements (in churches, markets, communities), and media outlets (sensitization messages).

Polio vaccine is administered by mouth at birth, at six weeks, 10 weeks and 14 weeks. DPT vaccine is given by injection on the left upper thigh at 6 weeks, 10 weeks and 14 weeks. Measles vaccine is also given by injection on the left upper arm but at 9 months. Atkinson, Hamborsky, McIntyre and Wolfe (2021) opine that various approaches have been applied to understand immunization coverage problems. However, there are acknowledged deficiencies in these approaches. This is clearly demonstrated in Uganda, where despite many immunization campaigns through media, health visits and improved health services management, the coverage rate is still less than 60% (Antai, 2022). "Fully immunized" is the term used to describe a child less than 12 months old who received one dose of BCG, one dose of Measles, and three doses of DPT/OPV before his/her first birthday (Cohen, 2023). The report also states that most children (84%) received one dose of immunization and only 37% received all the five doses. The report further indicates that as many as 63% of mothers are not aware

when their children need their next immunization doses in order to complete the immunization schedule.

Globally, in 2022, about 20.5 million children were either unvaccinated or under-vaccinated, with about 14.3 million children having not received any vaccination. Immunization has prevented an estimated 4.4 million deaths annually (Folliden, 2023). About 6.2 million children in Nigeria have never received vaccination in the past five years (Kimmel, Madlon-Kay, Burns & Admire, 2020). To reduce infectious and vaccine-preventable diseases (VPDs) among children, the World Health Organization (WHO) and the government have developed an Expanded Program on Immunization (Babatsikou, Vorou, Vardaki, Galani, Ktenas & Koutis, 2021) to improve and strengthen regular immunization coverage across member nations. Immunization is the process of improving the first line of defence against vaccine preventable infections, as well as one of the most effective health benefits for lowering mortality rates of children. Immunization against polio, as well as rubella, meningitis, measles, diarrhea, and pneumonia, has considerably reduced the occurrence of disabilities such as mental retardation, hearing loss or deafness, meningitis, intellectual disability, and mobility impairment. However, there has been low uptake of immunization in Nigeria especially in rural areas.

A study by Atkinson, Hamborsky, McIntyre and Wolfe (2021) found that poor knowledge and negative attitude amongst mothers on routine immunization was the major impediment to the completion of childhood immunization in Nigeria which has led to high dead rate of children. Additionally , the success of children immunization depended on the prevailing attitudes and strategies to overcome persistent barriers. However, despite these studies revealing positive developments in terms of attitudes on immunization, it is not known why vaccination coverage continues to be far from expectations. As a doctor from Nigeria I have seen firsthand how poor immunization coverage by the government has affected the life of some many children, the lack of basic knowledge about immunization and illiteracy are some underlying factors which has to be looked into for the improvement and betterment of the life of every Nigeria child, the conduction of this research will show us the major determining the implementation of childhood immunization programmes among nursing mothers.

Statement of the Problem

Immunization has been shown to be one of the most cost-effective public health interventions to reduce morbidity and mortality associated with vaccine preventable diseases. The Expanded Programme on Immunization (EPI) was launch by the World Health Organization (WHO) in 1974 with the mandate of reaching 90% national vaccination coverage and at least 80% vaccination coverage in every district. However, many developing countries still not achieved the goal. Despite decades of remarkable progress in immunization services in Africa, large number of children remains unvaccinated. The performance of routine immunization in African region has stalled during the last decades for majority of vaccine delivered- antigens. In 2017, the global DPT3 coverage remains at 85% approximately (1 16.2 million) children with no significant changes during the past few years.

Previous studies have shown that uptake of immunization services depends not only on provision of these services but other factors related to maternal knowledge, geographical accessibility and many other socio-demographic characteristics. Rural communities represent

highly marginalized areas especially access to health care interventions including immunization services. This underscores the need to assess immunization coverage rates and identify factors influence uptake of routine immunization services in these marginalized areas. There is dearth of research focusing on the rural area of the country; understanding the determinants influencing childhood immunization among rural mothers is critical for developing targeted interventions to improve vaccine coverage and ultimately protect the health and wellbeing of children in these vulnerable communities. There is limited literature on the social factors that influence mothers living in the rural areas of Nigeria for the uptake of immunization of their children aged <5 years. Therefore, this study aims to investigate the factors that can influence the uptake of childhood immunization among mothers in Katsina-Ala Local Government Area of Benue State.

Objectives of the Study

The main objective of this study was to investigate the determinants of the implementation of childhood immunization among nursing mothers in Katsina-Ala Local Government Area of Benue State. Specifically, the research seeks to

i. Examine ways that attitudes among factors affecting the implementation of Immunization programmes in Katsina-Ala Local Government Area of Benue State.
ii. Assess the ways in which knowledge is a factor affecting the implementation of Immunization programmes in Katsina-Ala Local Government Area of Benue State.

Research questions

The following research questions were raised to guide the study.

1. In what ways are attitudes among determinants of the implementation of immunization programmes among nursing mothers in Katsina-Ala Local Government Area of Benue State?
2. In what ways is knowledge among determinants of the implementation of immunization programmes among nursing mothers in Katsina-Ala Local Government Area of Benue State?

Hypotheses

The following hypotheses were formulated for the study.

i. Attitudes are not a significant determinant of the implementation of immunization programmes among nursing mothers in Katsina-Ala Local Government Area of Benue State.
ii. Knowledge is not a significant determinant of the implementation of immunization programmes among nursing mothers in Katsina-Ala Local Government Area of Benue State.

Research Design

Descriptive survey design was adopted for this study. A descriptive survey research design deals with data collection from a large population by drawing a representative sample of such population for the purpose of describing, interpreting, evaluating and analyzing the existing perceptions, conditions or variables and prevailing situations through the formulation and testing of relevant hypotheses for drawing inferences.

Population of the Study

The population of the study is made up of all the women with children in Katsina-Ala Local Government Area of Benue State. The population of the respondents consists of 1, 495 in the area of study based on the 2006 National Population Census.

Sample and Sampling Techniques

The sample for this study comprised 315 nursing mothers attending healthcare facilities in the area of study. Accidental sampling techniques were employed in drawing the sampling. The researcher first and foremost sampled all the settlements in the area. After that, the researcher visited the sampled settlements and administered the instrument on whoever was attending the healthcare facility at the time of the study. Instrumentation: One instrument was used for data collection. It was a structured questionnaire titled "Child Immunization among Nursing Mothers Questionnaire, (CINMQ). The questionnaire consisted of Parts 'I' and 'II'. Part 'I' contained demographic characteristics of the respondents. Part 'II' of the questionnaire consisted of three (3) clusters named Section A and B. The response format was Strongly Agree, Agree, Disagree and Strongly Disagree. Section A contained items are concerned with the attitudes of nursing mothers towards child immunization in Katsina-Ala Local Government Area of Benue State. Section B elicited information on the knowledge of nursing mothers about child immunization in the area of study.

Method of Data Collection

The instruments were administered on the respondents by the researchers A total number of 315 copies of the questionnaire were taken to the field and administered to the respondents and copies were returned. The researchers collected the questionnaire from the respondents on the same day.

Method of Data Analysis

Descriptive statistics of percentages, bar charts and pie charts were used to present demographic characteristics of the respondents while the descriptive statistics of Mean Score (x) and was used to answer the two (2) research questions. The mean score of 2.50 and above was not rejected as having the desired influence while a mean score of less than 2.50 was rejected as having an influence. The Chi-Square test statistics was used to test the hypotheses at 0.05 level of significance.

Data presentation

Analysis of research questions

Research question 1. In what ways are attitudes among determinants of the implementation of immunization programmes among nursing mothers in Katsina-Ala Local Government Area of Benue State?

TABLE1: Respondents' attitudes towards child immunization.

S/N	ITEMS	SA	A	D	SD	Mean	Remarks
1	There is PHC center in the Community	75	25	55	145	2.83	Accepted
2	You take your last child for DPT Immunization	22	30	101	202	1.64	Rejected
3	Your last child completed DPT Immunization Schedule?	5	15	210	125	1.72	Rejected
4	You take your last child for Measles Immunization	25	55	75	200	1.73	Rejected
5	Your last child complete the Measles immunization schedule	47	45	50	213	1.79	Rejected

Source: Researchers' Field Work (2025).

The result presented in Table 1 above indicates that item 1 has a mean score of 2.13 indicating that respondents disagreed to the presence of a PHC in their community. The rest of the items also have a mean score below 2.5. This shows that nursing mothers have the wrong attitudes towards immunization process in Katsina-Ala Local Government Area of Benue State.

Hypothesis 1: Attitudes are not a significant determinant of the implementation of immunization programmes among nursing mothers in Katsina-Ala Local Government Area of Benue State.

Analysis of data relating to the above hypothesis is presented on table 2.

Table 2: Chi-Square Analysis on the Influence of Attitudes on Immunization in Katsina-Ala Local Government Area of Benue State.

Opinions	**Observed N**	**Expected N**	**Level of Sig.**	**df**	**χ^2-cal**	**P-value**	**Decision**	**Nature of Influence**
SD	33	78.75	.05	3	533.62	.00	Significant	Positive
D	18	78.75					Ho rejected	
A	92	78.75						
SA	152	78.75						

(P-value=0.00; P=0.00<0.05; Ho rejected; Positive Influence).

Table 2 shows Chi-square (χ^2) value of (3df) = 533.62, P<0.05 and Ho rejected. This indicates that the null hypothesis which states that attitudes are not a significant determinant of the implementation of immunization programmes among nursing mothers in Katsina-Ala Local Government Area of Benue State is rejected. This implies that attitudes significantly influence the implementation of immunization programmes among nursing mothers in Katsina-Ala Local Government Area of Benue State.

Research Question Two: In what ways is knowledge among determinants of the implementation of immunization programmes among nursing mothers in Katsina-Ala Local Government Area of Benue State?

Analysis of data relating to the above research question is presented on table 3.

TABLE 3: Respondents' Knowledge of Immunization.

S/N	ITEMS	SA	A	D	SD	Mean	Remarks
1	I know the vaccine preventable diseases	2	2	201	95	1.88	Rejected
2	I know the number of times a child should be taken to a health facility to complete his/her routine immunization	5	20	134	156	1.66	Rejected
3	I know the age (or at what time) a child should receive his/her routine immunization	26	14	75	200	1.73	Rejected
4	Immunization prevents all childhood diseases	7	15	80	213	1.79	Rejected
5	Childhood vaccines are safe for children	15	20	218	62	2.08	Rejected

Source: Researcher s' Field Work (2025).

Analysis of data as presented in table 3 above shows that the respondents rejected all items indicating that they had low knowledge of immunization in the study area.

Test of Hypotheses

The following hypotheses were formulated and tested for the study.

Hypothesis 2: Knowledge is not a significant determinant of the implementation of immunization programmes among nursing mothers in Katsina-Ala Local Government Area of Benue State.

Analysis of data relating to the above hypothesis is presented on table 4.

Table 4: Chi-Square Analysis on the influence of knowledge on immunization among nursing mothers in Katsina-Ala Local Government Area of Benue State.

Opinions	**Observed N**	**Expected N**	**Residual**	**Level of Sig.**	**df**	**χ^2-cal**	**P-value**	**Decision**	**Nature of Influence**
SD	12	78.75	-42	.05	3	57	.00	Significant	Negative
D	9	78.75	-57					Ho rejected	
A	137	78.75	17						
SA	157	78.75	82						

(P-value=0.00; P=0.00<0.05; Ho rejected; Negative Influence).

Table 4 shows Chi-square (χ^2) value of (3df) = 57, P<0.05 and Ho rejected. This indicates that the null hypothesis which states that knowledge is not a significant factor affecting the implementation of immunization programmes nursing mothers in Katsina-Ala Local Government Area of Benue State is rejected. This implies that knowledge significantly influence the implementation of immunization programmes among nursing mothers in Katsina-Ala Local Government Area of Benue State.

Discussion of Findings

The first finding of the study reveals that attitudes of nursing mothers significantly affected the implementation of immunization programmes in Katsina-Ala Local Government Area of Benue State. This corroborates the finds Babatsikou, Vorou, Vardaki, Galani, Ktenas and Koutis (2021) that 2 million child deaths were not prevented through vaccination because of the wrong the attitudes of nursing mothers towards implantation of the immunization programmes.

From Research Question Two, the study further revealed that the level of knowledge of nursing mothers influence the implementation of immunization programmes in the area of study. This is in agreement with Atkinson, Hamborsky, McIntyre and Wolfe (2021) who found out that despite the global advances in universal immunization and oral rehydration therapy for diarrheal disease, and the endowment of Nigeria with human and natural resources, childhood mortality is still extremely high.

Conclusion

The research found out that the implementation of immunization programmes in Katsina-Ala Local Government Area of Benue State is influenced by attitudes and knowledge of the nursing mothers about immunization programmes in the area of study. The implication therefore is that efforts must be put in place in order to increase the efficacy of the implementation of immunization programmes among nursing mothers in the area of study.

Recommendations

Based on the findings of the research, the following recommendations are hereby made:

1. Immunization campaign—Social mobilization should embark on creating immunization campaigns to inform and educate mothers about immunization will go a long way to help mothers gain more understanding about the need for complete vaccination.
2. Good communication skills of healthcare workers: Low knowledge of immunization among nursing mothers can be improved by effective communication which will lead to low vaccine hesitancy.

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