

Mothers' Knowledge and Perception about Vaccines: A Study of Immunization Decision-Making amongst Mothers in the Ukpenu Community, Edo State

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Abstract

Background: Maternal knowledge and attitudes toward immunization are key factors influencing vaccine uptake and child health outcomes. Understanding these factors is essential to improving immunization coverage in local communities.

Objective: To assess the knowledge and perception of mothers with children under five years of age toward routine childhood immunization in the Ukpenu community, Esan West Local Government Area, Edo State, Nigeria.

Methods: A descriptive, cross-sectional study design was adopted using a non-experimental approach. A total of 275 mothers were selected through a convenience sampling technique. Data were collected using a structured questionnaire consisting of 21 close-ended questions, divided into three sections. Descriptive statistics, including frequency tables and percentages, were used for data analysis.

Results: Out of the 275 participants, 95.6% reported having heard of immunization, while 4.4% had not. In terms of attitude, 92.6% demonstrated a positive attitude toward immunization, whereas 7.4% showed a negative attitude. The findings indicate that the majority of mothers had good knowledge and a favorable attitude regarding childhood immunization.

Conclusion: Most mothers in the Ukpenu community possess adequate knowledge and positive attitudes toward immunization. To further improve immunization uptake, the study recommends that the Edo State Ministry of Health enhance health education campaigns targeting mothers. These should include vaccination booklets detailing immunization benefits, schedules, card importance, and management of common side effects. Routine education on immunization should also be integrated into antenatal and postnatal care services.

Keywords: Immunization; Knowledge; Attitude; Ukpenu Community

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Introduction

Immunization has greatly reduced the burden of infectious diseases [1]. Immunization prevents illness, disabilities, and death from vaccine-preventable diseases (VPDs), which includes diphtheria, measles, yellow fever, meningitis, pertussis, pneumonia, polio, tuberculosis, Rota-virus, diarrhea, rubella, and tetanus. Immunization is one of the cost effective public health interventions and largely responsible for reduction of under-five years morbidity and mortality rate [1]. Improving immunization coverage and timelines is a key health policy objective in many developing countries. Parent's knowledge and their attitude towards immunization are likely to influence uptake [2].

Immunization, also called vaccination is the process by which an individual's immune system becomes fortified against an agent called immunogen. When human system is exposed to molecules that are foreign to the body, it will orchestrate an immune response, and it will also respond to a subsequent encounter because of immunological memory, which is a function of the adaptive immunity of the immune system that are improved by immunization are the T cells, B cells and the antibodies B cell produce. The element T cell and B cell are responsible for the swift response to a second encounter with a foreign molecule [3].

Immunization can be active or passive. Active immunization occurs when the body produces antibodies against an immunogen after the first exposure to that immunogen. Passive immunization is the introduction of antibodies into the body by way of vaccination to protect the body against vaccine-preventable diseases [4].

Increasing immunization coverage to above 80%, cuts the chain of disease transmission and provides the herd immunity in that area. To achieve this goal, a full course of potent vaccine should be given at the right time [5].

Acceptance of any vaccination program is largely dependent on knowledge and attitude of the mothers, provision of the services, density of health workers and the opportunity cost incurred by parents. Sociocultural attitudes of the community are important for success of any program [6].

A community based cross sectional study was conducted on parents attending immunization clinic of Pulianthope urban health center between October and December 2017 a total number of 150 mothers were included in this study. 90% of parents have the positive attitude towards childhood immunization; like childhood immunization is important and safe, the most of the mothers around 92% have agreed and 34.7% not sure compliance to immunization schedule is important (90% parents have agreed and 6.7% not sure). After immunization with vaccine, the children may get the same disease (46.75 agreed and 34.7% not sure). 73% of mothers have good knowledge about immunization, like routine vaccination prevent children from some infectious disease and its complication (90% agreed and 8% don't know), and first dose of vaccination given at birth (84% agreed and 9.3% don't know). The parents have the misconception that the common cold, ear infection, and diarrhea are contraindicated for immunization of their children [7].

Generally the administration of vaccines may be associated with Common local reactions like pain, swelling and redness at the Injection site, Systems Reactions Including Fever, Irritability, Drowsiness and rash may occur. More than 50% of the recruited Parents strongly agreed or agreed that that immunization is associated with side effects. In another survey nearly 20% of the interviewed mothers considered administration of vaccines are associated with undesirable effect like allergies and asthma. Parents should be educated about these side effects[8]. Educational, socio-economic and cultural backgrounds differs from region to another, research findings from one population cannot be generalized. Thus it is necessary to do research into knowledge and attitude of general population to improve services and to keep up the ongoing services. Hence, it is needed to undertake this current study to gain good understanding of the knowledge and attitude about childhood immunization in Ukpenu community in Esan West Local Government Area of Edo State, Nigeria.

Conceptual review

Immunization refers to the process of making an individual immune or resistant to an infectious disease, usually through the administration of a vaccine. Vaccines work by stimulating the body's immune system to recognize and combat pathogens, thereby preventing future infections. Immunization is a critical public health tool proven to control and even eliminate life-threatening diseases. According to the World Health Organization, immunization prevents an estimated 2 to 3 million deaths annually and is considered one of the most cost-effective health interventions available. Its well-defined strategies and target groups ensure that even vulnerable and hard-to-reach populations can benefit through outreach programs [9].

Immunization is commonly carried out by administering vaccines-substances designed to train the immune system to recognize and fight disease-causing microorganisms. Vaccines prepare the body to defend itself against infections, offering a safer alternative to contracting and recovering from the disease itself [10].

Both children and adults benefit from immunization. For children, it not only provides protection from deadly diseases but also helps in strengthening and developing their immune systems [11].

Types of immunization

Immunization can be categorized into two forms: active and passive.

- **Active immunization:** Also known as active immunity, this form develops when an individual's immune system is exposed to a pathogen-either naturally through infection or artificially via vaccination. The body responds by producing antibodies and memory cells, which provide long-lasting protection in case of future exposure [12].
- **Passive immunization:** This involves the direct transfer of ready-made antibodies into a person's system, offering immediate but short-term protection. It occurs naturally when antibodies are passed from mother to fetus during pregnancy. Artificially, it can be provided through antibody-containing injections (CDC, 2016). Unlike active immunity, passive immunity acts quickly but does not last as long [13].

Vaccines

Vaccines are biological preparations made from weakened, inactivated, or killed forms of microbes, their toxins, or surface proteins. These preparations train the immune system to respond quickly and effectively to real infections, thereby preventing illness (Health and Human Services (HHS) [14].

Types of vaccines

There are four main types of vaccines, each designed to trigger an immune response in different ways:

1. **Live-attenuated vaccines:** These vaccines contain a weakened (attenuated) form of the pathogen that causes a disease. They closely mimic a natural infection, resulting in a strong and long-lasting immune response. Examples include vaccines for measles, mumps, rubella, yellow fever, smallpox, and rotavirus [15].
2. **Inactivated vaccines:** These vaccines are made from pathogens that have been killed. While they are safer than live vaccines, they usually provide weaker immunity and may require multiple doses. Examples include polio, rabies, hepatitis A, and influenza vaccines [16].

3. **Toxoid vaccines:** Instead of targeting the whole pathogen, these vaccines use a modified toxin produced by the pathogen to trigger an immune response. They are effective against diseases caused by bacterial toxins. Booster doses are often needed. Examples include the diphtheria and tetanus vaccines [17].
4. **Subunit, recombinant, polysaccharide, and conjugate vaccines:** These vaccines use specific pieces of the pathogen-such as proteins or sugars-to trigger an immune response. Because they only use essential components of the pathogen, the risk of side effects is lower [18].

Subunit, recombinant, polysaccharide, and conjugate vaccines

These types of vaccines are made using specific components of a germ-such as its protein, sugar, or outer shell (capsid). By targeting only essential parts of the microorganism, they produce a strong and focused immune response. Since they don't contain the entire germ, they are considered very safe. Common examples include vaccines for whooping cough, hepatitis B, and HPV [18].

Importance of vaccination

Vaccination offers numerous health, social, and economic benefits:

1. **Saves lives:** Modern vaccines have significantly reduced or eliminated diseases that once caused widespread illness and death in children. For instance, polio has been nearly eradicated thanks to immunization [19].
2. **Safe and effective:** Vaccines undergo rigorous testing by scientists and healthcare experts before being approved. While minor side effects like redness or pain at the injection site may occur, these are minimal compared to the severity of the diseases they prevent [19].
3. **Protects others in the community:** Immunization not only protects the vaccinated child but also helps safeguard those who cannot be vaccinated-such as infants or people with weakened immune systems (e.g. cancer patients). For example, measles and whooping cough have resurged in recent years, with thousands of cases and several infant deaths in the U.S. alone [20].
4. **Prevents spread of disease:** When most people are vaccinated, it creates "herd immunity," which reduces the spread of contagious diseases and protects vulnerable populations [20].
5. **Saves time and money:** Preventing illness through vaccination avoids costly medical treatments, long-term disability, lost work time, and school absences. In contrast, vaccine programs are affordable and often funded by the government and NGOs [21].
6. **Protects future generations:** Vaccines have eliminated deadly diseases like smallpox, and continued vaccination efforts could lead to the eradication of other conditions such as rubella, helping protect future children from these threats [21].

Consequences of not immunizing a child

Failing to vaccinate can lead to serious individual and societal consequences:

1. **Increased risk of illness and death:** Children who are not vaccinated are at higher risk of contracting and dying from preventable diseases.
2. **Disabilities:** Diseases like polio can lead to permanent conditions such as limb paralysis.
3. **Public health threat:** Unvaccinated children can transmit diseases to others during outbreaks, endangering those around them.
4. **Social and educational impact:** During outbreaks, unvaccinated children may be barred from schools or childcare facilities, causing disruption for both the child and their family.

5. Financial burden: Treating vaccine-preventable diseases can lead to high medical costs, missed work, and long-term care needs, affecting not just the child but also their family and the wider community [22].

Theoretical review: Knowledge-attitude-practice (KAP) model

This study utilizes the Knowledge-Attitude-Practice (KAP) model, a widely recognized framework in health education developed by Western scholars in the 1960s. According to the World Health Organization, the model operates on the principle that increasing an individual's knowledge can lead to a shift in attitudes, which ultimately influences behavior [23]. The model outlines a three-step process:

1. Knowledge acquisition
2. Attitude formation
3. Behavioral change.

When individuals gain information about a particular health issue, their attitude whether positive or negative tends to shift accordingly. This attitude then shapes their behavior toward others and health-related actions. The KAP model helps identify misconceptions or knowledge gaps that may hinder behavior change or prevent the implementation of health interventions. Knowledge can be acquired from sources such as mass media, healthcare workers, or health campaigns, which in turn can reshape perceptions about health and illness [23].

Application to the research study

In the context of this study, the KAP model explains how knowledge influences mothers' attitudes and behaviors toward child immunization. For example, a mother who is well-informed about the benefits of immunization is more likely to have a positive attitude and complete her child's vaccination schedule. On the other hand, limited knowledge may foster negative attitudes such as fear of side effects which can result in delayed or incomplete immunization. Therefore, improving knowledge is key to promoting positive health practices [24].

Empirical studies on immunization knowledge, attitude, and practice

Multiple studies across different countries have explored parental knowledge, attitudes, and practices toward childhood immunization. A study in Malaysia found that mothers with up-to-date immunized children had significantly higher knowledge scores, indicating a strong link between knowledge and practice [25]. Similarly, a Saudi Arabian study showed high awareness of vaccination's preventive role, but gaps remained in understanding the importance of multiple doses and vaccine safety [26].

In Nigeria, Beckie., *et al.* (2012) reported that while 82% of mothers recognized immunization's role in disease prevention, education level significantly influenced immunization acceptance [27]. Rita., *et al.* (2015) in India found that 70% of mothers had inadequate knowledge about immunization schedules. However, in Lagos, 72% had good knowledge and 86.4% fully immunized their children [28].

Attitude-wise, studies showed that although many mothers had positive views on immunization, lack of information and fear of side effects hindered full compliance. Incentives like gift items improved participation. Overall, education, occupation, and awareness significantly influence immunization behavior, highlighting the need for targeted health education to improve knowledge and overcome barriers [29].

The Universal Healthcare Program (UHCP) has been implemented in Georgia since 2013. Its primary objectives include enhancing healthcare services and strengthening the National Immunization Program. However, vaccination coverage remains low, and measles has not yet been eradicated-continuing to be a leading cause of early childhood deaths. In 2017, Georgia recorded 94 measles cases; 13%

involved children under one year old, while 33% affected individuals over 14 years of age. Adequate knowledge, positive attitudes, and proper perceptions toward vaccination are fundamental strategies for controlling infectious diseases. Research has shown that maternal education and immunization practices positively influence a child's vaccination status [30].

Negative maternal attitudes-such as fear of vaccines, concerns about side effects, and avoiding vaccination due to minor illnesses-act as significant barriers to childhood immunization. Mothers with unfavorable views toward vaccines often do not immunize their children and rarely seek additional information from healthcare professionals or credible sources. Additionally, some medical practitioners who are not directly involved in vaccination efforts may contribute to the spread of misinformation by expressing anti-vaccination opinions. Based on these findings, it is evident that inadequate knowledge and negative maternal attitudes toward immunization represent challenges that must be urgently addressed [31].

Research questions

What is the level of knowledge of immunization amongst Mothers in Ukpenu Community?

Scope of the study

The study is delimited to mother with children in Ukpenu Community of Esan West Local Government Area of Edo State.

Methodology

This chapter outlines the methods used to investigate mothers' knowledge and attitudes toward childhood immunization in the Ukpenu community, Esan West Local Government Area, Edo State. The methodology covers the research design, setting, target population, sample size determination, sampling technique, data collection instrument, validation and reliability of the instrument, methods of data collection and analysis, as well as ethical considerations.

Research design

The study employed a descriptive, non-experimental research design, suitable for examining current events and existing conditions without manipulating variables.

Research setting

The research was conducted in Ukpenu community, located in Ekpoma, the administrative center of Esan West LGA, Edo State. Ekpoma, with a population of approximately 190,000, includes over 60,000 adult males and more than 50,000 adult females. The area covers 502 km² and is subdivided into ten political wards and twenty villages. It has various healthcare facilities-government and private-including a general hospital, health centers, university clinic, and maternity homes. Educationally, it hosts 48 primary schools, 12 secondary schools, and one tertiary institution-Ambrose Alli University.

Target population

The target population consisted of 875 mothers with at least one child residing in the Ukpenu community, based on data from the Immunization Department of Esan West LGA (2015).

Sample size determination

The Slovin's formula was used to calculate the sample size:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = Number of sample size

N = Total population

e = Error margin

To get error margin e, the confident level need to be attained and the confident level for this study is 95% which will make error margin as 0.05.

Therefore, if e = (0.05)

n =?

N = 875 mothers

Then $n = \frac{N}{1 + N(e)^2}$

$n = \frac{875}{1 + 875 (0.05)^2}$

$n = \frac{875}{1 + 875 \times 0.0025}$

$n = \frac{875}{1 + 2.1875}$

$n = \frac{875}{3.1875}$

n = 278.5098

n = 275 mothers

Thus, the sample size was 275 mothers.

Sampling technique

The study used a convenience sampling technique, a non-probability method where participants are selected based on ease of access and availability [32].

Instrument for data collection

Data were collected using a structured questionnaire comprising 21 close-ended questions divided into three sections:

- **Section A:** 5 questions on respondents' socio-demographic details
- **Section B:** 8 questions assessing knowledge about immunization
- **Section C:** 8 questions evaluating attitudes toward childhood immunization.

Responses were rated using a 4-point Likert scale.

Validity of the instrument

To ensure face and content validity, the questionnaire was reviewed by the researcher’s supervisor. Necessary corrections were made before final approval and administration.

Reliability of the instrument

The study adopted a test-retest method to assess reliability. The same questionnaire was administered twice to a group of mothers in Ujoelen with a two-week interval. Responses were analyzed using the Pearson Product Moment Correlation Coefficient (PPMCC), resulting in a reliability coefficient of $r = 0.805$, indicating a high level of consistency.

Method of data collection

The researcher, with the assistance of four trained field workers, conducted house-to-house visits to administer the questionnaire. The entire data collection process lasted approximately two weeks, with the researcher overseeing supervision and quality control.

Method of data analysis

Collected data were analyzed using descriptive statistics, which summarize data using frequencies, percentages, and tables to present the findings clearly and concisely.

Ethical considerations

Ethical approval was obtained from the Research and Ethics Committee of Ambrose Alli University and Esan West Local Government Council. Participants were informed about the study’s purpose and gave both verbal and written consent. All data collected were treated with strict confidentiality.

Results

In this section, the data generated from the study are presented using tables with frequencies and percentage distribution. Out of the 275 copies of questionnaire distributed same were properly filled and valid for data analysis, giving a return rate of 100%.

Variables	Frequencies	Percentage	Mean
Age (years)			
16-20	15	6%	
21-25	28	10.2%	
26-30	78	28.4%	
31-35	67	24.4%	
36-40	56	20%	
41-45	25	9%	
46 and above	6	2%	
Total	275	100%	39.3
Level of education			
Primary	34	12%	
Secondary	158	57%	
Tertiary	65	24%	

None	18	7%	
Total	275	100%	68.8
Occupation			
Housewife	21	7.6%	
Farmer	18	6.6%	
Business	162	58.9%	
Civil servant	46	16.7%	
Others	28	10.2%	
Total	275	100%	55
Marital status			
Married	184	66.9%	
Single	37	13.5%	
Widowed	27	9.8%	
Divorced	13	4.7%	
Separated	14	5.1%	
Total	275	100%	55
Religion			
Christianity	241	87.6%	
Muslim	26	9.5%	
Traditional	8	2.9%	
Total	275	100%	91.7

Table 1: Socio-demographic characteristics of respondents.

Table 1 reveals that most of the participants 78 mothers (28.4%) were within the ages of 26 to 30 years, followed by 67 mothers (24.4%) ages, 31-35 years, 36-40 years accounted for 56 mothers (20%) with the minority been ages of 46 and above (2%).

The educational levels of participants revealed that 158 (57%) had secondary education, 65 mothers (24%) had tertiary education, 34 (12%) had primary education and 18 mothers were not educated (7%).

The occupation status revealed that 162 mothers (58.9%) were (7%) business women, 46 mothers (16.7%) were civil servants, 21 mothers (7.6%) were housewife, 18 mothers (6.6%) were farmers and 28 mothers (10.2%) were engaged with other occupation like hair stylist etc.

Marital status of the participants revealed that 184 mother (66.9%) are married, 37 mothers (13.5%) are single mothers, 27 mothers (9.8%) are widow, 13 mothers (4.7%) are divorced and 14 mothers (5.1%) are separated from their husbands.

Religion status revealed that majority 241 mothers (87.6%) are Christian, 26 mothers (9.5%) are Muslim and 8 mothers (2.9%) are traditional worshippers.

Variables	Frequency	Percentage
Have you heard of immunization?		
Yes	263	95%
No	12	4.4%
Total	275	100%
If your answer to question six is yes, when did you hear of immunization?		
Before delivery	163	59.3%
After delivery	64	23.3%
During immunization program	28	10.1%
Other sources	20	7.3%
Total	275	100%
Where did you learn about immunization?		
Nurses	168	61.1%
Doctors	59	21.5%
Mass media / internet	16	5.8%
Friends	18	6.5%
Others	14	5.1%
Total	275	100%
Do you think immunized children are healthier than unimmunized children?		
Yes	217	78.9%
No	58	21.1%
Total	275	100%
Do you think immunization provide protection to your children against deadly childhood diseases?		
Yes	243	88.4%
No	32	11.6%
Total	275	100%
Should school immunization of children be encouraged?		
Yes	223	81.1%
No	52	18.9%
Total	275	100%
Do you think immunized children still suffer from any of the childhood deadly diseases?		
Yes	42	15.3%
No	233	84.7%

Total	275	100%
Has immunization helped to reduce incidence of childhood deadly diseases?		
Yes	239	86.9%
No	36	13.1%
Total	275	100%

Table 2: Knowledge of mothers towards childhood immunization.

Table 2 revealed that 263 mothers (95.6%) have had of and 12 mothers (4.4%) have not heard of immunization. 163 mothers (59.3%) had about it before delivery, 64 mothers (23.3%) had about it after delivery, 28 mothers (10.1%) had about it during immunization programs while 20 mothers (7.3%) heard about it from other source. 168 mothers (61.1%) learnt about immunization from nurses, 59 mothers (21.5%) learnt about it from doctors, 16 mothers (5.8%) from mass media, 18 mothers (6.5%) from friends and 14 mothers (5.1%) from other source. 217 mothers (78.9%) think immunized children are healthier than unimmunized children but 58 mothers (21.1%) disagreed. 243 mothers (88.4%) knows immunization provide protection to children against deadly diseases while 32 mothers (11.6%) don't know about the protection immunization provides. 223 mothers (81.1%) are of the opinion that school immunization should be encouraged but 52 mothers (18.9%) disagreed. 42 mothers (15.3%) think immunized children still suffer from vaccine preventable diseases, while 233 mothers (84.7%) think immunized children do not suffer from childhood deadly diseases. 239 mothers (86.9%) is of the opinion that immunization helps to reduce incidence of childhood deadly diseases, while 36 mothers (13.1%) disagree.

Answering research question

Question 1: What is the level of knowledge of immunization amongst mothers in Ukpenu community?

Answer: The findings of the study revealed that 95.6% (263) mothers have heard about immunization at difference places and from health personnel, friends and mass media, while 4.4% (12) mothers have not heard about immunization's protection to their children against deadly childhood diseases, while 32 mothers (11.6%) does not know the importance of immunization. Also, 233 mothers (84.7%) know immunized children does not suffer from any of the vaccine preventable diseases, but 42 mothers think immunized children still suffer from vaccine preventable disease. 239 mothers (86.9%) knows immunization has helped to reduce incidence of childhood deadly diseases but 36 mothers (13.1%) does not know. With these findings, it is said that the level of knowledge of immunization amongst mothers in Ukpenu is high.

Discussion

The study was carried out to examine the knowledge of mothers towards childhood immunization in Ukpenu community of Esan West Local Government Area of Edo State. The findings showed that the average age of participants was 31 years and all the participants are mothers. Majority 158 (57%) of the participants had their secondary school educator, minority, 18 mothers (7%) did not have any formal education. Majority of the mother 58.9% (162 mothers) are into business and minority, 21 mothers (7.6%) are housewives. Majority of the mothers 184 (66.9%) are married, and minority 13 mothers (4.7%) are divorced. Majority of the mothers 241 (87.6%) are Christian, while minority of mothers (2.9%) are traditional worshippers.

The findings showed that majority of the mothers 263 (95.6%) have heard about immunization while 12 mothers (4.4%) have not heard about immunization 243 mothers (88.4%) knows it is importance to children but 32 mothers do not know the importance of immunization. 223 mothers (81.1%) knows the protection that immunization provides and encourages school immunization of children

while 52 mothers (18.9%) do not know the protection immunization provides and do not encourage school immunization. These findings correlate with knowledge, attitude and practice model by WHO (2021), which is based on the notion that increasing knowledge about a topic/situation will influence one's behaviour to change. Also, according to Ammar, Siti, Omer (2014), parents' with up-to-date immunized children have significantly better knowledge towards immunization than parents who do not.

Significance of the Study

1. This study will help healthcare professionals raise community awareness about the importance of immunization, enabling mothers to better understand why vaccinating their children is essential.
2. It will also support healthcare providers in enhancing their knowledge of immunization, encouraging continuous learning through workshops, seminars, programs, and research, so they can identify areas needing improvement.
3. Furthermore, the study will contribute to a deeper understanding among mothers and the broader community about the benefits of vaccinating their children. As mothers develop a more positive attitude toward immunization, their children will be better protected against vaccine-preventable diseases, promoting healthier growth and development.
4. Lastly, the findings can guide government efforts to create and implement programs that educate mothers on the value of immunization, ultimately helping to reduce childhood illness and death caused by preventable diseases.

Limitations of the Study

The limitations of the study are those mothers who have not heard about immunization; 12 mothers (4.4%). These mothers do not know the importance of immunization and cannot say if immunized children are healthier than unimmunized children. Also, with their lack of knowledge concerning immunization, their attitude towards childhood immunization cannot be ascertained.

Conclusion

The findings from this study revealed that the knowledge of mothers towards childhood immunization in Ukpenu community is high with majority of the mothers having good knowledge about immunization from different sources. Majority of the mother knows the importance of immunization, they know the protection immunization provides to their children and encourages school immunization of children. Also, majority of the mothers knows that immunization has helped to reduce incidence of childhood immunization. Majority of the mothers are satisfied with their encounter with vaccinators and will go for their return visit. However, few mothers have not heard about immunization, they do not also know that immunization is mandatory for their children. They do not know about the protection immunization provides, they do not know the importance of immunization and some out of the minority are not satisfied with their encounter with vaccinators and so, they do not revisit for their next immunization appointment and some of the mothers do not know the importance of immunization. There is need for more sensitization of mothers on the importance of immunization through organization of routine house to house immunization of children.

Recommendations

Based on the findings the following recommendations were made:

1. Mothers should be educated on the importance of immunization and taking their children to clinic for routine immunization to complete their children's vaccination.
2. Vaccinators should be properly educated on how to behave in the field during National Immunization Day (NID) so as to encourage parents to bring their children for immunization.
3. Religion/cultural leaders should assist in combating the scourge of infectious diseases through campaign on immunization among their people.

4. Government should release funds to train vaccinators through seminars and workshop and give support to any immunization program so as to ensure its success.
5. There should be proper surveillance and regular quarantine to overcome the spread of disease outbreaks.

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Competing Interests

The authors declare that they do not have any conflicts of interest.

Ethics Approval and Consent to Participate

Ethical consideration was obtained from research and ethics committee of Ambrose Alli University and from Esan West Local Government Council. Before the researcher administered the questionnaire to the participants, a verbal and written consent was obtained from the participants. All information obtained was treated as confidential.

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