

**FACTORS INFLUENCING UTILISATION OF IMMUNISATION
SERVICES IN AKINYELE LOCAL GOVERNMENT AREA
OYO STATE**

BY

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DEDICATION

This dissertation is dedicated to my dear wife Mrs. Esther Olawumi Adewole for her understanding, prayers and encouragement and to my dear brother Mr. James Akinkunmi Adewole who volunteered himself to be used by God for my Secondary and Bachelor of Pharmacy Education.

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ABSTRACT

Improving coverage of immunisation is a key component of programmes for reducing childhood morbidity and mortality. Despite several resources committed, Akinyele Local Government Area (LGA) had low immunisation coverage of 28% of OPV-3 as at October 2007 when the study was conducted. The factors contributing to these problems were yet to be fully explored. This study was therefore designed to assess the factors influencing utilisation of immunisation services in Akinyele LGA, Oyo State.

This descriptive study involved random sampling of 500 mothers of children under 5 years from Primary Health Care (PHC) facilities in all of the 12 wards of the LGA. Data were collected using validated questionnaire. These services consisted of availability of vaccines, adequate manpower, maintenance of cold-chain, awareness and advocacy among others. Also, six Focus Group Discussions (FGDs) were conducted with the nursing mothers and caregivers. Descriptive statistics, Chi-square test was used to analyse the quantitative data at $p \leq 0.5$ while information obtained through FGDs data were subjected to content analysis.

The respondents' mean age was 29.6 ± 7.6 years. About 43% of the respondents had secondary school education. Majority (95.4%) of the respondents had heard about childhood immunisation. The percentage of respondents whose children had completed their children's immunisation, those that did not complete and those that did not receive immunisation at all were 28.0%, 64.0% and 8.0% respectively. Prominent sources of Vaccine Preventable Diseases (VPDs) immunisation information among those ever used respondents were Primary Health Centres (62.2%), State Hospital (27.4%), Mobile Clinic (24.1%) and tertiary health institutions (5.2%). Utilisation of immunisation services according to the respondents' level of education was non-formal (54.3%), Arabic (60.0%), primary (57.7%), secondary (71.8%) and tertiary education (80.8%). The main sources of information on completion of immunisation schedule were immunisation card (75.5%), information from health workers (56.2%), mass media (29.2%) and neighbours/family members (23.3%). The major reasons adduced by the 64.0% of respondents for non-completion of immunisation schedules were report sickness of the children (45.7%) and forgetfulness of the mothers (26.8%). Fear of side effects and religious beliefs were responsible for non-acceptance of immunisation by the respondents who did not receive immunization at all. The respondents who took part in the FGD said the

major reasons for not receiving full immunisation were fear of side effects, lack of presence of health workers during immunisation.

Despite the high percentage of children that received immunisation services, non-chalant attitude by mothers, fear of side effects, religious beliefs and level of education are the major factors that influenced the utilisation of immunisation services. Health education strategies such as public enlightenment, community mobilization and advocacy may be needed to address the problem.

Keywords: Vaccine preventable diseases, Childhood immunisation, Use of immunisation services

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May God bless you all.

CERTIFICATION

I certify that this work was carried out by Moses Adebowale ADEWOLE, in the Department of Health Promotion and Education, College of Medicine, University of Ibadan, Ibadan-Nigeria.

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ACCRONYMS USED IN THE STUDY

BCG:	Bacillus Calmette-Guerin (for Tuberculosis)
CDC:	Center for Disease Control and prevention
DPT:	Diphtheria Pertussis and Tetanus
EPI:	Expanded Programme on Immunization
FGD:	Focus Group Discussion
GAVI:	Global Alliance for vaccine and immunizations
HBM:	Health Belief Model
HBV:	Hepatitis B Vaccine
LGA:	Local Government Area
MV:	Measles Vaccines
MDG:	Millennium Development Goal
NIDs:	National Immunization Days
NPI:	National Programme on Immunization
OPV:	Oral Polio Vaccine
PEP:	Post Exposure Prophylaxis
PHC:	Primary Health Care
SIAs:	Supplemental Immunization Activities
UCI:	Universal Child Immunization
UNICEF:	United Nations Children Education Fund
USAID:	United States Agency for International Development
VPDs:	Vaccine Preventable Diseases
WHO:	World Health Organization
YF:	Yellow Fever

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Immunization remains one of the most important public health interventions and a cost effective strategy to reduce both the morbidity and mortality associated with infectious diseases. Over two million deaths are delayed through immunization each year worldwide. Despite this, Vaccine Preventable Diseases (VPDs) remain the most common cause of childhood mortality with an estimated three million deaths each year (Atkinson, Hamborsky, McIntyre and Wolfe, 2009). Uptake of vaccination services is dependent not only on provision of these services but also on other factors including knowledge and attitude of mothers (Mastsumura, Nakayama, Okamoto and Ito, 2005) density of workers, accessibility to vaccination posts/clinics and availability of safe needles and syringes.

Research has shown that children who are not immunized on time are likely to be poor, live in rural areas, and be members of racial and ethnic minority groups (Wood and Halfon, 1996). Other identified risk factors associated with immunization rates below National averages includes low parental educational levels, inability to access appropriate transportation, single-parent family, lack of parental care and a late start on the vaccination series (Pruitt, Kline and Kovaz, 1995).

Several reasons are cited in the literature for parental refusal of child vaccinations, including erroneous beliefs about contra-indications, not wanting to expose children to perceived dangers of vaccines, and not wanting to deliberately expose healthy children to diseases (Bedford 2000-cited in Frederickson et al 2004). In addition, studies focusing on vaccine decision making have found that parents may prefer to make errors of omission (bad outcomes due to lack of action) rather than error of commission (bad outcomes due to action) and that they may find it easier to accept “natural” risk rather than “man-made” risks (Meszaros et al., 1996).

Parents cognitive processes, specifically their perceived ability to control their child’s susceptibility to the disease and the outcome of the disease, as well as doubts about the reliability of vaccine information, have also been noted as reason some parents forgo some childhood vaccines (Meszaros et al., 1996). Other studies note some mothers disagreed with

the practices of conventional medicine. Out of this group, some believed in “natural healing” and thought it is better for children to be exposed to the diseases and get over them naturally (Stein and Martin, 2001). Others refused based on religion convictions (Bonnie et al., 2009). Some parents and groups view compulsory vaccination as unnecessary infringements on individual rights (Fredrickson et al. 2004). Providers need to be aware of these concerns and develop strategies to effectively respond to each group of parents.

1.2 Statement of problem

In Nigeria, the National Programme on Immunization (NPI) formerly called the Expanded Programme on Immunization (EPI) was launched in 1979. The Nigerian National Programme on Immunization (NPI) schedules are BCG, OPV0 and HBV1 given at birth (also called first dose); DPT1, OPV1 and HBV2 given at 6 weeks (second dose); DPT2 and OPV2 given at 10 weeks (third dose); DPT3, OPV3 and HBV3 given at 14 weeks (fourth dose) and Measles and Yellow fever at 9 months (Odusanya et al., 2008,). Several resources have been committed to the implementation of the NPI that consist of two strategies namely the Routine Immunization which is the vaccination given at service centers (fixed post) and Supplemental Immunization Activities (SIAs) which are vaccination activities done at mobile / outreaches and house – to – house. These activities are sponsored by both the Nigerian Government and International donor agencies which include World Health Organization (WHO), United Nations Children Education Fund (UNICEF), USAID, and Rotary International just to mention but few.

However, despite these efforts, 4.7 millions Nigerian children still die from Vaccine Preventable Diseases (VPDs) as a result of low immunization coverage (WHO Bulletin 2003). Oyo State, located in the South Western region of the country, has never attained the national average target of 75% in the last three years (Awosika, 2003). In 2007, the State was reported to attain a coverage rate of 32% due to a number of factors including poor outreaches, poor documentations and inadequate sessions to cater for the population of children less than one year of age (WHO Data report 2007, unpublished).

Moreover, resurgences of vaccine preventable diseases in Oyo State was becoming a thing of the past until a case of Wild Polio Virus type 1 was reported in Akinyele Local Government Area of Oyo State in 2007. Despite the concern raised about the challenge, no

study has been conducted to identify factors that may be responsible for not complying with recommended immunization schedules in the affected LGA. Hence, this study was conducted to fill this gap.

However, much data are available on the phenomenon of under utilization of immunization services by children in Nigeria. Many studies have been conducted in different population using various methods to assess immunization levels and to examine barriers to immunizations. These studies were conducted using diverse population ranging from urban to rural. Though these studies were conducted outside Oyo State and focus more on the perspective of the consumers, the providers and program planners in Akinyele Local Government Area of Oyo State.

1.3. Justification of the study

Improving immunization coverage is a key strategy in reducing infant and under-five mortality rates. Therefore, providers and policy-makers need to be aware of factors influencing immunization coverage at the individual and programmatic levels, which this study aims at identifying in Akinyele Local Government, where 6 years ago case of Polio was reported. It is by looking at the programmatic and non-programmatic factors influencing immunization for children that appropriate interventions may be developed to address the problem.

Assessing immunization coverage helps to evaluate progress in achieving program objectives and in improving service delivery (Stock, 1983). In addition, evaluation of immunization coverage provides evidence whether substantial progress towards achieving vaccination targets is being made. Such positive evidence is required as feedback and for continuing support from donor-supported initiatives like the Global Alliance for Vaccine and Immunizations (GAVI).

Moreover, available data from the Federal and State Ministry of Health only give information about coverage without detailed information about factors responsible for the coverage. Thus, it was decided to assess the immunization coverage of children aged 12-23 months in the LGA and to identify the determinants of full immunization status. This is likely to help in identifying maternal characteristics that could be predictive of immunization coverage and lead to improvement in services.

An educational diagnosis of factors influencing immunization for children would help to identify areas that communications messages should address as well as choice evidence-based strategies for improving coverage and appropriate remedial steps for maintaining public confidence in immunization programme.

Thus, this study is significant in that the findings may help to effect necessary changes in order to boost the routine immunization services by nursing mothers. It is also hoped that through this study, growth of health care delivery system at the various LGA Health centers will be achievement of health for all and reduced infant and maternal morbidity and mortality rates. Furthermore, it is hoped that this study will increase the awareness of nursing mothers on utilization and administration of the immunization programme.

1.4 Research questions

This study will provide answers to the following research questions:

1. What knowledge do mothers and caregivers have about childhood immunization services in Akinyele LGA of Oyo State?
2. What is the status of immunization services for children between the ages of 12-23 months within the selected populations?
3. What factors contribute to compliance and non-compliance with recommended immunization schedules for children?
4. How can the coverage of immunization services for children within the LGA be improved?

1.5 Broad objective

The aim of the study is to identify factors contributing to the poor coverage of childhood immunization services in Akinyele Local Government Area of Oyo state.

1.5.1 Specific objectives

The specific objectives of the study are to:

1. Assess mothers' and caregivers' knowledge and perceptions of immunizations and childhood killer diseases in Akinyele LGA of Oyo State.
2. Assess immunization status of children 12-23 months in the selected populations.

3. Identify factors influencing compliance with recommended immunization schedules for children.
4. Make recommendations for improving coverage of immunizations for children based on the findings of the study.

1.6 Research hypotheses

1. There is no significant difference between demographic characteristics of mothers and knowledge about immunization.
2. There is no significant difference between mother's knowledge of immunization and coverage of immunization.
3. There is no significant difference between demographic characteristics of parents and immunization status of children in the study area.

CHAPTER TWO

LITERATURE REVIEW

2.1 History of Immunization

It is believed that some form of inoculation was developed in India or China before the 16th century (Lombard, Pastoret, Moulin, 2007). Scholar Ole Lund comments: "The earliest documented examples of vaccination are from India and China in the 17th century, where vaccination with powdered scabs from people infected with smallpox was used to protect against the disease. Smallpox used to be a common disease throughout the world and 20% to 30% of infected persons died from the disease. Smallpox was responsible for 8% to 20% of all deaths in several European countries in the 18th century. The tradition of inoculation may have originated in India in 1000 BCE." (Lund et al., 2005).

Since then vaccination campaigns have spread throughout the globe, sometimes prescribed by law or regulations. Vaccines are now used against a wide variety of diseases besides smallpox. Louis Pasteur further developed the technique during the 19th century, extending its use to killed agents protecting against anthrax and rabies. The method Pasteur used entailed treating the agents for those diseases so they lost the ability to infect, whereas inoculation was the hopeful selection of a less virulent form of the disease, and Jenner's vaccination entailed the substitution of a different and less dangerous disease for the one protected against. Pasteur adopted the name *vaccine* as a generic term in honor of Jenner's discovery.

Consistency would suggest the activity should have predated Jenner's description of an effective vaccination system, and there is some history relating to opposition to the older and more hazardous procedure of variolation (Wolfe, Robert, Sharp and Lisa, 2002). In modern times, the first vaccine-preventable disease targeted for eradication was smallpox. The World Health Organization (WHO) coordinated the global effort to eradicate this disease. The last naturally occurring case of smallpox occurred in Somalia in 1977.

Maurice Hilleman was the most prolific of inventors of vaccines. He developed successful vaccines for measles, mumps, hepatitis A, hepatitis B, chickenpox, meningitis, pneumonia and *Haemophilus influenzae* bacteria (Offit, 2007).

In 1988, the governing body of WHO targeted polio for eradication by the year 2000. Although the target was missed, eradication is very close. The next eradication target would most likely be measles, which has declined since the introduction of measles vaccination in 1963. In 2000, the Global Alliance for Vaccines and Immunization was established to strengthen routine vaccinations and introduce new and under-used vaccines in countries with a per capita GDP of under US\$1000. GAVI is now entering its second phase of funding, which extends through 2014.

2.1.1 Nature of Immunization and Vaccination

Immunization, also called vaccination or inoculation, is a method of stimulating resistance in the human body to specific diseases using microorganisms—bacteria or viruses—that have been modified or killed. These treated microorganisms do not cause the disease, but rather trigger the body's immune system to build a defense mechanism that continuously guards against the disease. If a person immunized against a particular disease later comes into contact with the disease-causing agent, the immune system is immediately able to respond defensively. (Microsoft Encarta, 2008). In other words, it is the administration of antigenic material (a vaccine) to stimulate the immune system of an individual to develop adaptive immunity to a disease.

In the generic sense, the process of artificial induction of immunity, in an effort to protect against infectious disease, works by 'priming' the immune system with an 'immunogen'. Stimulating immune response, via use of an infectious agent, is known as *immunization*. Vaccinations involve the administration of one or more immunogens, which can be administered in several forms. Some vaccines are administered after the patient already has contracted a disease. The first rabies immunization was given by Louis Pasteur to a child after he was bitten by a rabid dog. Subsequent to this, it was found that proper post-exposure prophylaxis (PEP) of potential rabies cases within 14 days of infection provides complete protection against the disease (Rupprecht et al., 2010).

Immunization has dramatically reduced the incidence of a number of deadly diseases. For example, a number of cases of *Haemophilus influenzae* type b meningitis in the United States have dropped 95 percent among infants and children since 1988, when the vaccine for that disease was first introduced. In the United States, more than 90 percent of children

receive all the recommended vaccinations by their second birthday. About 85 percent of Canadian children are immunized by age two (Microsoft Encarta, 2008).

2.2 Types of immunization

A. Active immunization

Vaccines that provide active immunization are made in a variety of ways, depending on the type of disease and the organism that causes it. The active components of the vaccinations are antigens, substances found in the disease-causing organism that the immune system recognizes as foreign. In response to the antigen, the immune system develops either antibodies or white blood cells called *T lymphocytes*, which are special attacker cells. Immunization mimics real infection but presents little or no risk to the recipient. Some immunizing agents provide complete protection against a disease for life. Other agents provide partial protection, meaning that the immunized person can contract the disease, but in a less severe form. These vaccines are usually considered risky for people who have a damaged immune system, such as those infected with the virus that causes Acquired ImmunoDeficiency Syndrome (AIDS) or those receiving chemotherapy for cancer or organ transplantation. Without a healthy defense system to fight infection, these people may develop the disease that the vaccine is trying to prevent. Some immunizing agents require repeated inoculations-or booster shots-at specific intervals. Tetanus shots, for example, are recommended every ten years throughout life.

In order to make a vaccine that confers active immunization, scientists use an organism or part of one that has been modified so that it has a low risk of causing illness but still triggers the body's immune defenses against disease. One type of vaccine contains live organisms that have been attenuated-that is, their virulence has been weakened. This procedure is used to protect against yellow fever, measles, smallpox, and many other viral diseases. Immunization can also occur when a person receives an injection of killed or inactivated organisms that are relatively harmless but that still contain antigens. This type of vaccination is used to protect against bacterial diseases such as poliomyelitis, typhoid fever, and diphtheria.

Some vaccines use only parts of an infectious organism that contain antigens, such as a protein cell wall or a flagellum. Known as acellular vaccines, they produce the desired

immunity with a lower risk of producing potentially harmful immune reactions that may result from exposure to other parts of the organism. Acellular vaccines include the *Haemophilus influenzae* type B vaccine for meningitis and newer versions of the whooping cough vaccine. Scientists use genetic engineering techniques to refine this approach further by isolating a gene or genes within an infectious organism that code for a particular antigen. The subunit vaccines produced by this method cannot cause disease and are safe to use in people who have an impaired immune system. Subunit vaccines for hepatitis B and pneumococcus infection, which causes pneumonia, became available in the late 1990s.

Active immunization can also be carried out using bacterial toxins that have been treated with chemicals so that they are no longer toxic, even though their antigens remain intact. This procedure uses the toxins produced by genetically engineered bacteria rather than the organism itself and is used in vaccinating against tetanus, botulism, and similar toxic diseases.

B. Passive immunization

Passive immunization is achieved without injecting any antigen. In this method, vaccines containing antibodies are obtained from the blood of an actively immunized human being or animal. The antibodies last for two to three weeks, and during that time the person is protected against the disease. Although short-lived, passive immunization provides immediate protection, unlike active immunization, which can take weeks to develop. Passive immunization is used when there is a high risk of infection and insufficient time for the body to develop its own immune response, or to reduce the symptoms of ongoing or immunosuppressive diseases, (for example, for tetanus). The antibodies can be produced in animals ("serum therapy") although there is a high chance of anaphylactic shock because of immunity against animal serum itself. Thus, humanized antibodies produced *in vitro* by cell culture are used instead if available.

C. Naturally acquired passive immunity

Maternal passive immunity is a type of naturally acquired passive immunity, and refers to antibody-mediated immunity conveyed to a fetus by its mother during pregnancy. Maternal antibodies (MatAb) are passed through the placenta to the fetus by an FcRn receptor on placental cells. This occurs around the third month of gestation. Immunoglobulin G is the only antibody isotype that can pass through the placenta (Coico, Sunshine and Benjamin,

2003). Immunization is often required shortly following birth to prevent diseases such as tuberculosis, hepatitis B, polio, and pertussis. However, maternal antibodies can inhibit the induction of protective vaccine responses throughout the first year of life. This effect is usually overcome by secondary responses to booster immunization (Lambert, Margaret and Claire-Anne, 2005).

Passive immunity is also provided through the transfer of IgA antibodies found in breast milk that are transferred to the gut of the infant, protecting against bacterial infections, until the newborn can synthesize its own antibodies (Paul et al., 2001).

D. Artificially acquired passive immunity

Artificially acquired passive immunity is a short-term immunization achieved by the transfer of antibodies, which can be administered in several forms; as human or animal blood plasma or serum, as pooled human immunoglobulin for intravenous (IVIG) or intramuscular (IG) use, as high-titer human IVIG or IG from immunized or from donors recovering from the disease, and as monoclonal antibodies (MAb). Passive transfer is used prophylactically in the case of immunodeficiency diseases, such as hypogammaglobulinemia (Keller et al., 200). It is also used in the treatment of several types of acute infection, and to treat poisoning. Immunity derived from passive immunization lasts for only a short period of time, and there is also a potential risk for hypersensitivity reactions, and serum sickness, especially from gamma globulin of non-human origin. Passive immunity provides immediate protection, but the body does not develop memory, therefore the patient is at risk of being infected by the same pathogen later (Paul et al., 2001).

Occasionally there are complications associated with passive immunization. Diseases such as botulism and rabies once posed a particular problem. *Immune globulin* (antibody-containing plasma) for these diseases was once derived from the blood serum of horses. Although this animal material was specially treated before administration to humans, serious allergic reactions were common. Today, human-derived immune globulin is more widely available and the risks of side effects are reduced.

2.3 Childhood Immunization Programme

Although immunizations have proved to be one of the most effective public health strategies of this century, recent resurgences of vaccine-preventable diseases have generated

concern in the public, political and medical arenas in recent years (Evers, 2000). In response, numerous strategies have been employed to address the issue of under-immunization of children. For example fifty states and districts of Columbia required completion of a basic series of immunizations in order to enroll a child in school, resulting in immunization rates of almost 98% for school age children. At first glance this statistics was comforting-until it was discovered that, many instances, this was a case of parent playing catch-up to fulfill legal requirements for immunization before children will be permitted to attend school (Schmalz and Larwa, 1997). This practice of waiting to fully immunize a child at school entry does not provide protection against many life-threatening diseases of infancy and early childhood.

Both accurate and inaccurate immunization information are available to parents through variety of sources. For example, Wolfe et al., (2002) reported 22 anti-vaccination Web sites that expressed a range of concerns about vaccine safety and a general distrust of medicine. Family physicians, pediatricians, and nurses need to be more fully prepared to have productive discussions with parents who resist or refused immunizations.

National routine vaccination services remain inadequate. In 2000, an estimated 38% of infants aged<1 year received 3 doses of oral polio vaccine (OPV) (3), and in 2001, an estimated 25% of infants aged<1 year received 3 doses of OPV (Anthony et al., 2003).

2.4 Vaccine Preventable childhood diseases

2.4.1 Poliomyelitis

Poliomyelitis, often called polio or infantile paralysis, is an acute, viral, infectious disease spread from person to person, primarily via the fecal-oral route (Cohen, 2004). The term derives from the Greek *poliós*, meaning "grey", *myelós*, referring to the "spinal cord", and the suffix *-itis*, which denotes inflammation (Chamberlin and Narins, 2005).

Poliomyelitis is caused by infection with a member of the genus *Enterovirus* known as poliovirus (PV). This group of RNA viruses colonize the gastrointestinal tract (Cohen, 2004) specifically the oropharynx and the intestine. The incubation time (to the first signs and symptoms) ranges from three to 35 days, with a more common span of six to 20 days (Atkinson et al., 2009). PV infects and causes disease in humans. Its structure is very simple, composed of a single (+) sense RNA genome enclosed in a protein shell called a capsid. In addition to protecting the virus's genetic material, the capsid proteins enable poliovirus to

infect certain types of cells. Three serotypes of poliovirus have been identified-poliovirus type 1 (PV1), type 2 (PV2), and type 3 (PV3) each with a slightly different capsid protein. All three are extremely virulent and produce the same disease symptoms (Ryan and Ray, 2004). PV1 is the most commonly encountered form, and the one most closely associated with paralysis (Ohri et al., 1999).

Individuals who are exposed to the virus, either through infection or by immunization with polio vaccine, develop immunity. In immune individuals, IgA antibodies against poliovirus are present in the tonsils and gastrointestinal tract, and are able to block virus replication; IgG and IgM antibodies against PV can prevent the spread of the virus to motor neurons of the central nervous system. Infection or vaccination with one serotype of poliovirus does not provide immunity against the other serotypes, and full immunity requires exposure to each serotype (Kew et al., 2005).

2.4.2 Diphtheria

Diphtheria is an upper respiratory tract illness that is caused by *corynebacterium diphtheriae*, a facultative anaerobic Gram positive bacterium. It is characterized by sore throat, low fever, and an adherent membrane (a pseudomembrane) on the tonsils, pharynx, and/or nasal cavity (Ryan and Ray, 2004). A milder form of diphtheria can be restricted to the skin. Less common consequences include myocarditis (about 20% of cases) and peripheral neuropathy (about 10% of cases) (Solders, Nennesmo and Persson, 1989).

Diphtheria is a contagious disease spread by direct physical contact or breathing the aerosolized secretion of infected individuals. Historically quite common, diphtheria has largely been eradicated in industrialized nations through widespread vaccination. In United States, for example, there were 52 reported cases of diphtheria between 1980 and 2000; between 2000 and 2007, there were only three cases (Atkinson et al., 2007) as the diphtheria-Pertussis-tetanus (DPT) vaccine is recommended for all school-aged children.

2.4.3 Measles

Measles is an infection of the respiratory system caused by a virus, specifically a paramyxovirus of the genus *Morbillivirus*. Morbilliviruses, like other paramyxoviruses are enveloped, single-stranded negative-sense RNA viruses. Symptoms include fever, cough, runny nose, red eyes and a generalized maculopapular erythematous rash.

Risk factors for measles virus infection include the following: Children with immunodeficiency due to HIV or AIDS, leukemia, alkylating agents or corticosteroid therapy, regardless of immunization status; travel to areas where measles is endemic or contact with travelers to endemic areas.

Complications of measles (Table) are relatively common being more severe in adults who catch the virus. Between the year 1987 and 2000, the case fatality rate across the United States was three measles-attributed deaths per 1000 cases, or 0.3%. In underdeveloped countries with high rates of malnutrition and poor healthcare, fatality rates have been as high as 28% (Perry, Hasley and Neal, 2004). In immunocompromised patients, the fatality rate is approximately 30% (Sension et al., 1988).

2.4.4 Tetanus

Tetanus is a medical condition characterized by a prolonged contraction of skeletal muscle fibres. The primary symptoms are caused by tetanospasmin, a neurotoxin produced by the Gram-positive, rod-shaped, obligate anaerobic bacterium *Clostridium tetani*. Infection generally occurs through wound contamination (Table) and this involves a cut or deep puncture wound. As the infection progresses, muscle spasms develop in the jaw and elsewhere in the body (Wells and Wilkins, 1996). Infection can be prevented by proper immunization and by post-exposure prophylaxis (Center for Disease Control, 2007).

In recent years, approximately 11% of reported tetanus cases have been fatal. The highest mortality rates are unvaccinated people and people over 60 years of age (Center for Disease Control, 2007).

There are several types of Tetanus infections namely:

- **Generalized tetanus:** The most common type, representing about 80% of cases.
- **Neonatal tetanus:** Is a form of generalized tetanus that occurs in newborn. Infants who have not acquired passive immunity because the mother has never been immunized are at risk.
- **Local tetanus:** Is an uncommon form of the disease, in which patients have persistent contraction of muscles in the same anatomic areas of injury.
- **Cephalic tetanus:** Is a rare form of the disease, occasionally occurring with otitis media (ear infections) in which *C.tetani* is present in the flora of the middle ear, or following injuries to the head (Asgaonkar, Kulkarni, Yadav and Dalvi, 2002).

2.4.5 Tuberculosis

Tuberculosis is a common and in many cases, lethal infectious disease caused by various strains of mycobacteria, usually *Mycobacterium tuberculosis*. Tuberculosis typically attacks the lungs but can also affect other parts of the body (Abbas, Fautso and Mitchell, 2007). Most infections are asymptomatic and latent, but about one in ten latent infections eventually progress to active disease which, if let untreated, kills more than 50% of those so infected.

The classic symptoms of active TB (short for tubercle bacillus) infection are chronic cough with blood-tinged sputum, fever, night sweats, and weight loss. Infection of organs causes a wide range of symptoms.

A number of risk factors make people more susceptible to TB infections. The most important risk factor globally is HIV; 13% of all TB cases are infected by the virus (WHO, 2011). This is a particular problem in sub-saharan Africa, where rates of HIV are high (WHO, 2006). Other risk factors include: malnutrition, cigarette smoking, alcoholism, diabetes melitus, genetic susceptibility, and certain medications such as corticosteroids (Lawn and Zumla, 2011).

Tuberculosis prevention and control efforts primarily rely on the vaccination of infants and the detection and appropriate treatment of active cases. The WHO has achieved some success with improved treatment regimens, and a small decrease in case numbers (Lawn and Zumla, 2011).

2.4.6 Pertussis

Pertussis also known as whooping cough, is a highly contagious bacterial disease caused by *Bordetella Pertussis*. In some countries the disease is called the 100 days cough or cough of 100 days (Carbonetti, 2007).

Symptoms are initially mild, and then develop into severe coughing fits, which produce the namesake high-pitched “whoop” sound in infected babies and children when they inhale air after coughing. Prevention by vaccination is of primary importance because treatment is of little benefit to the person infected. However, antibiotics shorten the duration of infectiousness and are thus recommended (Heininger, 2010). It is estimated that the disease currently affects 48.5 million people yearly, resulting in nearly 295,000 deaths (Bettiol et al., 2012).

The classic signs of Pertussis are a paroxysmal cough, inspiratory whoop and vomiting after coughing. The cough from Pertussis has been documented to cause subconjunctival hemorrhages, rib fractures, urinary incontinence, hernias, post cough fainting, and vertebral artery dissection. If there is vomiting after a coughing spell or an inspiratory whooping sound on coughing, the likelihood that the illness is Pertussis is nearly doubled. On the other hand, the absence of paroxysmal cough or posttussive emesis makes it almost half as likely (Cornia, Hersh, Lipsky, Newman and Gonzales, 2010).

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Table 2.1 Summary of nature of Vaccine Preventable childhood diseases

Disease	Mode of spread	Complication(s)	Treatment
Poliomyelitis	Fecal-oral route. Through intake of contaminated food or water.	Flacid paralysis	No cure. Use of antibiotics (for infection),analgesics (for pain),as well as physical therapy
Diphtheria	Air borne. Through physical contact with infected person	Severe sore throat, fever, obstruction of breathing ,damage to the eye (paralysis), heart and kidney	Diphtheria antitoxin, antibiotics (for infections) such as metronidazole, erythromycin, procaine penicillin
Measles	Air borne. Contact with fluids from an infected person’s nose or mouth either directly or through aerosol transmission	Diarrhea, pneumonia, otitis media, and acute encephalitis	No specific treatment regimen. Use of drugs to take care of the complications
Tetanus	Wound contamination	Painful skeletal muscle spasms in the jaw, back, chest, and abdomen	Tetanus immunoglobulin, metronidazole(for infection), diazepam (as a skeletal muscle relaxant)
Tuberculosis	Air borne	Chronic cough, weight loss, chest pain, fever, blood-stinged sputum.	Use of combination of antibiotics such as isonoazid and rifampicin
Pertussis	Air borne	Pneumonia, earache, encephalopathy, seizures	Erythromycin, trimethoprim-sulphamethoxazole

Source: National Programme on Immunization (NPI), 2011

Table 2.2 Routine Immunization Schedule

Nos	Types of vaccines	Schedules Time
1	BCG/OPV ⁰ /HBV ⁰	At Birth to 2 Weeks
2	DPT ¹ /HBV ¹ /OPV ¹	4 Weeks
3	DPT ² /HBV ² /OPV ²	6 Weeks
4	DPT ³ /HBV ³ /OPV ³	10 Weeks
5	M/V & YF	Months

Source: National Programme on Immunization (NPI), 2011

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2.5 Polio Eradication Campaign

Polio Eradication has been defined in various ways as elimination of the occurrence of a poliomyelitis even in the absence of human intervention (Barrett, 2004). It has also been defined as the extinction of polio virus, such that the infectious agent no longer exist in nature or in the laboratory (Cockburn, 1961); control of an infection to the point at which the transmission of a disease within a specified area (Barrett, 2004), and as reduction of the worldwide incidence of poliomyelitis to zero as a result of deliberate effort, and requiring no further control measures.

The global eradication of poliomyelitis is a public health effort to eliminate all cases of polio infection around the world. The global effort began in 1998 and led by the WHO, UNICEF, and The Rotary Foundation, has reduced the number of annual diagnosed cases from the hundred of thousands to around a thousand. If polio is eradicated, this will represent only the third time this has ever been achieved, after smallpox (WHO, 2006) and rinderpest (BBC News, 2010).

2.5.1 Factors Influencing Eradication

In theory, if the right tools were available, it would be possible to eradicate all infectious diseases which only reside in a human host. In reality there are distinct biological features of the organisms and technical factors of dealing with them that make their potential eradicability more or less likely (CDC, 1999). Three indicators however are considered of primary importance in determining the likelihood of successful eradication: that effective intervention tools are available to interrupt transmission of the agent such as a vaccine; that diagnostic tools, with sufficient sensitivity and specificity, be available to detect infections that can lead to transmission of the disease; and that humans are for the life cycle of the agent which has no other vertebrate reservoir and cannot amplify in the environment.

2.5.2 Strategy

The most important step in eradication of polio is interruption of endemic transmission of poliovirus. Stopping polio transmission has been pursued through a combination of routine immunization, supplementary immunization campaigns and surveillance of possible outbreaks. The four key strategies outlined by the WHO for stopping polio transmission are (WHO, 2008):

1. High infant immunization coverage with four doses of Oral Polio Vaccine (OPV) in the first year of life in developing and endemic countries.
2. Organization of “National immunization days” to provide supplementary doses of OPV to all children less than five years of age.
3. Active surveillance for wild polio virus through reporting and laboratory testing of all cases of acute flaccid paralysis among children less than fifteen years of age.
4. Targeted “mop-up” campaigns once wild polio virus transmission is limited to a specific focal area.

The goal of eradicating polio worldwide has attracted international and media attention, but since 20 progress has been erratic in reducing the number of cases, which has led to getting rid of the last 1% being described as “like trying to squeeze Jell-O to death” (McNeil and Donald, 2011). However, in 2011 incidence rates of the disease were dramatically reduced, and with after a large reduction again in the early months of 2012, hopes for eliminating polio have been rekindled.

2.6 Immunization Activities in Nigeria

The expanded programme on immunization (EPI) was launched in Nigeria in 1979, and attainment of universal child immunization (UCI) target coverage of 80 per cent was reported by 1990. The years after 1990 witnessed major decline in vaccination coverage in Nigeria, due in part to problems of inadequate service delivery, low political will and social support, inadequate service funding, poor community involvement and participation, and ad hoc approach to national and local mobilization efforts. However, polio eradication campaigns through National Immunization Days (NIDs) have brought about positive changes, including increased oral polio vaccine (OPV) coverage nationwide and improvement to cold chain and immunization systems. One component that has contributed to this achievement is the social mobilization and advocacy aspect of the campaign.

In order to provide information for the improvement of information, education and communication (IEC) activities in the African region, an interagency study team comprising the World Health Organization (WHO), USAID/BASICS and JHU/PCS and National Programme on Immunization (NPI) was constituted to study communication and social

mobilization support for polio eradication and routine immunization in Nigeria and lessons learned as part of a five-nation African study.

Nigeria, like many countries in the African region, is making efforts to significantly contribute towards the Millennium Development Goal (MDG) of halving child mortality by 2015. Though very challenging in the current context, these goals have renewed the commitment of the Government to ensure that the set targets are met. One of the identified efforts towards the MDGs is to strengthen Nigeria health system, in general, and routine immunization services, in particular, to reduce disease burden from vaccine preventable diseases (VPDs). This is against a backdrop of poor routine immunization coverage (12.7% National Average), (ICS, 2003).

Health delivery systems in Nigeria are still weak compared to other African countries and even more so to international standards. This could explain, to a large extent, the delay in reaching global or regional set goals like polio eradication, malaria and tuberculosis control and the failure to sustain a strong routine immunization system in the country.

Through participation in the development of the health sector reform programme strategy to revitalize Primary Health Care (PHC), WHO advocated for routine Immunization to be taken as the core component and arrowhead for revitalizing Primary Health Care (PHC) in Nigeria. Since the end of 2003, WHO has invigorated its support for routine immunization, strategically at policy level with FMOH and the National Programme on Immunization (NPI), and operationally at the field level in all States of the Federation and Local Government Areas (LGAs). It is pertinent to mention that all the activities are deployed within the framework of the ICC, where government and partner agencies are represented as an avenue to move the programme forward.

The Expanded Program on Immunization (EPI) resulted from the latest developments in immunization research through which vaccines can be administered simultaneously in a way that would not cause complications in the recipients. All WHO member countries adopted the EPI to strengthen health services. The program is designed to offer protection against 6 common diseases: Tuberculosis, diphtheria, Pertussis, tetanus, poliomyelitis and measles. The target population consists of children aged from birth to 2 years, women in the childbearing age (15-45) and farmers. The pilot projects were carried out in an area of Nigeria with an estimated population of 352,170. A total of 29,532 women were also vaccinated

against tetanus. Following the success of the pilot area in Oyo State, the EPI was adopted nationwide. The objectives were: to reduce significantly the morbidity and mortality caused by the EPI target diseases; to reduce by 80% the morbidity and mortality from measles; to reduce the morbidity of childhood tuberculosis, poliomyelitis and whooping cough by 80%, and mortality; to reduce morbidity from tetanus by 80% and to prevent infant and maternal mortality; and to achieve 80% immunization coverage of the eligible population between 1980 and 1989. Constraining factors which have been identified include poor and erratic supply logistics, poor maintenance of the cold chain and inadequate capabilities for effective program execution. A new revised EPI program seeks to achieve 80% immunization coverage by 1990; to achieve a midterm goal of 60% coverage by 1987; and to reduce by 1990 the incidence of the target diseases throughout the State by at least 50%. With the new emphasis now placed on preventive health services at all levels in the state, and the resources which are now available, it is hoped that the objectives will be achieved by 1987 when the program will be evaluated.

2.7 Immunization Activities in Oyo state

Following the initiation of the EPI (Now NPI) by WHO in 1977, Nigeria launched her own chapter of the NPI in 1979. The programme was revised in 1984. The objective of the programme in Nigeria was to achieve 60% of the target population by 1987, and 80% by 1990. The different states of the federation also launched their own chapters of the programme. Oyo State for instance, launched hers in 1985. Following this, the local government chapters were launched and selected health centres were designated "NPI implementation centers" (Oyerinde, 2010).

Much effort had been made in Oyo State, Nigeria, since 1985 to expand immunization activities against measles, poliomyelitis, pertussis, diphtheria, tetanus, and tuberculosis. Mobile teams and fixed immunization centers give vaccines to 0-2 children at 2 contacts, 3 months apart (1st contact-BCG, DPT-1, and polio-1; 2nd contact-measles, smallpox, DPT-2, and polio-2 vaccines). From mid-1985 to April 1986 this strategy was first implemented in the Irewole Local Government Area (pilot area, estimated population in 1976 was 374,000). Unexpectedly high vaccination coverage was achieved: 92.9% for 1st contact antigens, and 84.5% for 2nd contact antigens. Almost all of these immunizations (over 90%) were given by

the mobile team. Based on that experience, it was assumed that 1 mobile team would be capable of immunizing 3645 children and approximately the same numbers of women of childbearing age during 1 month (20 or more working days): therefore, 2 mobile teams following each other at 3-month intervals should be capable of providing during a 1-year period 2 basic immunizations to all eligible in a territory covering a population of 700,000, corresponding to 2-3 local governments areas. 20 mobile teams would be necessary to cover the whole territory of the State in 1 year and to visit the allotted localities year by year. In mid-1976 gradual expansion of immunization activities (Expanded Program of Immunization) began in the Oyo State, using mostly the mobile strategy. The number of mobile teams increased from 2 in 1985 to 5 in 1986, 7 in 1987, and 11 in 1988. Yet, their efficiency, as compared with that observed in the pilot zone, was less satisfactory. In contrast, the fixed centers improved the performance. It is concluded that while planning an EPI, priority should be given to the development of the fixed immunization centers rather than of the mobile teams operating over large territories. Such an approach seems to produce better and more lasting results.

Consequently, the Epidemiological Unit of the Preventive Division of the Oyo State Ministry of Health embarked on an Expanded Programme of Immunization in the state. It established mobile units covering the different zones in the state for the immunization of children who are four years and under, against the six main killer diseases tuberculosis, poliomyelitis, tetanus, whooping cough, diptheria and measles.

All women of childbearing age (fifteen to forty-five years) are given two doses of tetanus toxoid each. The work of these mobile units is supplemented by the health centers and child welfare clinics distributed all over the state. Special units have been established for the control of communicable diseases like leprosy, malaria and tuberculosis. The addition of the School of Midwifery in Shaki and two new Schools of Nursing in Oyo and Ogbomoso in the early 1980s to the existing health institutions in the state has improved training facilities for the different grades of Health and Medical personnel.

In Oyo State, Three hundred and twenty five of these or twenty three percent are General and Private Hospitals while 374 or 26.47 percent are public and private maternity clinics. Other important facilities include dispensaries, which make up about 21.63 per cent, and Rural Health Centers and General Clinics which make about twelve percent each.

While the health facilities are generally spread all over the state, the largest share of these (about thirty two percent) are located within the five Local Government Areas of Ibadan alone while the remaining twenty eight local government areas share the rest. Another feature of health delivery in the state is that government owns about fifty eight percent of the facilities while the remaining forty two percent are owned by private establishments.

Immunization Activities in Akinyele LGA

Oyo State had been maintaining the status of polio Free State until the outbreak of Wild Polio Virus (WPV) detected in about 7 Local Government of the State in 2007 in which Akinyele Local Government is one of the affected LGA. Hence this study was highly necessary. There had been quite a number of activities sponsored by some International NGO with WHO and UNICEF leading in order to reduce the prevalence of outbreak of vaccine preventable disease through immunization. Update of confirmed cases of Wild Polio Virus in the State had increased to 25 as at 2009 May.

Table 2.3: Status of Immunization activities in Akinyele Local Government Area (LGA)

Year	State Average	Akinyele LGA
2004	27%	18%
2005	24%	42%
2006	44%	43%
2007 (as at Oct' 07)	36%	28%

Source: Preliminary Report of Investigation of Wild Polio Virus case in Akinyele LGA, Oyo State (6th November, 2007).

2.8 Conceptual framework

Increasing Public understanding of the benefits of vaccination is a key objective of the Global Vaccine Action Plan (GVAP), which provides the framework for immunization efforts across the world and was endorsed by the World Health Assembly in 2012. The Plan aims to improve health by extending by 2020 and beyond the full benefits of immunization to all people, regardless of where they are born, who they are or where they live (www.who.int/topics/immunization/enl).

WHO Strategic Agenda

The current country cooperation strategy focuses on the following:

Strategic Agenda

Improving Stewardship/Governance. In particular the areas of focus are to assist ministries of health (at Federal and States) in developing enabling management tools policies and legislation, in developing medium term plans and expenditure frameworks in collaborating with other sectors; in advocating to government; in improving health security and the management of emergencies.

Strengthening Health System within the context of PHC. The WCO continues to advocate for the passing of the National Health Bill; in meantime, it has supported the FMOH in developing the National Strategic Health Development Plan (NSHDP 2010-15).

Scaling up Priority Intervention-support to polio and routine immunization continues to be intensified. There has been a 53% decline in un-immunized children during first quarter of 2013 compared to same period in 2012.

(www.who.int/countryfocus/cooperation_strategy/ccsbrief_nga_en.pdf?ua=1)

The conceptual frame work applied to this study is the Health Belief Model (HBM). The model was developed in the 1950's to explain preventive health behavior, particularly the relation of health behavior to utilization of health services such as screening and immunization programs.

The key components of the model are modifying factors (demographic characteristics); perceived susceptibility and severity of the disease; perceived threat; benefits and constraints; cues to action and likelihood of taking recommended action. The model is interactive because each step influences the others. The individual's readiness to comply with a recommended action is based on three dimensions. Perception of "threat", the motivating

and enabling or discouraging and constraining forces that determine what individuals will do and the compliance behaviors actually exhibited.

Perceptions are modified by an individual's personal characteristics and social setting as well as by his/her perceptions of the nature and extent of changes and costs that the recommended action is likely to require. In addition, stimulus to action is recognized in cues such as previous personal experiences with the illness, current experience of symptoms, information and opinions of significant others.

The explanation of HBM was simplified by whether individuals:

1. Belief that they are susceptible to a particular health problem.
2. Regard the problem as serious.
3. Are convinced that treatment or preventive actions are effective.
4. In expensive.
5. Receive a prompt to take action.

They also gave some weakness of the model to include:

1. Health beliefs compete with a person's other beliefs and attitudes.
2. Belief formation may actually follow behavior rather than precede it.
3. The actual cognitive processes may be difficult to measure, that is, to find accurate indicators of beliefs, feelings, and perception.

HBM is highly indebted to Kurt Lewin who believed that the world of perceivers determines the action of those perceivers. The components of the Health Belief Model are used to explain the health education diagnosis of poor routine immunization coverage in Akinyele LGA area of Oyo State.

Modifying factors: Females culturally take the role of taking care of children at home. Thus whether a child is taken to clinic for immunization could be influenced by the caregiver status. A single parent might be incapacitated to take his/her child for immunization. While a married and responsible wife would need to get the consent of her husband to take the child for immunization. This could also be influenced by the experience of (positive/negative) of friends, colleagues, and mother-in-law. The awareness and knowledge about the child hood killer disease by the public is also a determining factor for taking a child out for immunization. Thus sensitization, community mobilization, advocacy, giving health talks on media and jingles are essential.

The role of belief and religion cannot be overemphasized especially when it is believed that whatever happens to a man is an act of God. The manifestation of the effects of disease of non-immunized child would not be resolved in that manner. This is being complemented by the educational level of the mother or caregiver. A learned or informed mother would know the implications.

Tribe of residents dominating in a particular local government is also a modifying factor, for example a community dominated by Hausas may be difficult to convince them on the significance of immunization services since it's a major belief that vaccine can render a male child impotent.

Perceived susceptibility: It is also believed that a child could be infected since vaccines preventive diseases are common, that is if these diseases do not exist, there vaccines would not be as rampant as they are. This may also be influenced by the level of awareness and education. In the same vein these immunizable infections like measles, polio, tuberculosis, hepatitis etc. may be viewed as due to environmental factors and not act of God or witchcraft. Awareness personal testimony, advocacy, media, jingles and health talks could influence informed action. While manifestation of flaccid arm paralysis and Pertussis for example could be seen as catchable disease and a child might be susceptible to it.

Perceived benefits: The accruing benefit when a child is immunized like good health, not falling sick as often as a non-immunized child, economic, non-absenteeism from school and good physical growth when a child is vaccinated could influence an informed action. Also a mother or a caregiver could perceive that extra doses of vaccines during national immunization days (NIDs) or Supplemental Immunization would boost children's immunity and could greatly ginger the mother or caregiver of taking a bold step of releasing her child or ward of age 5 and below for vaccination.

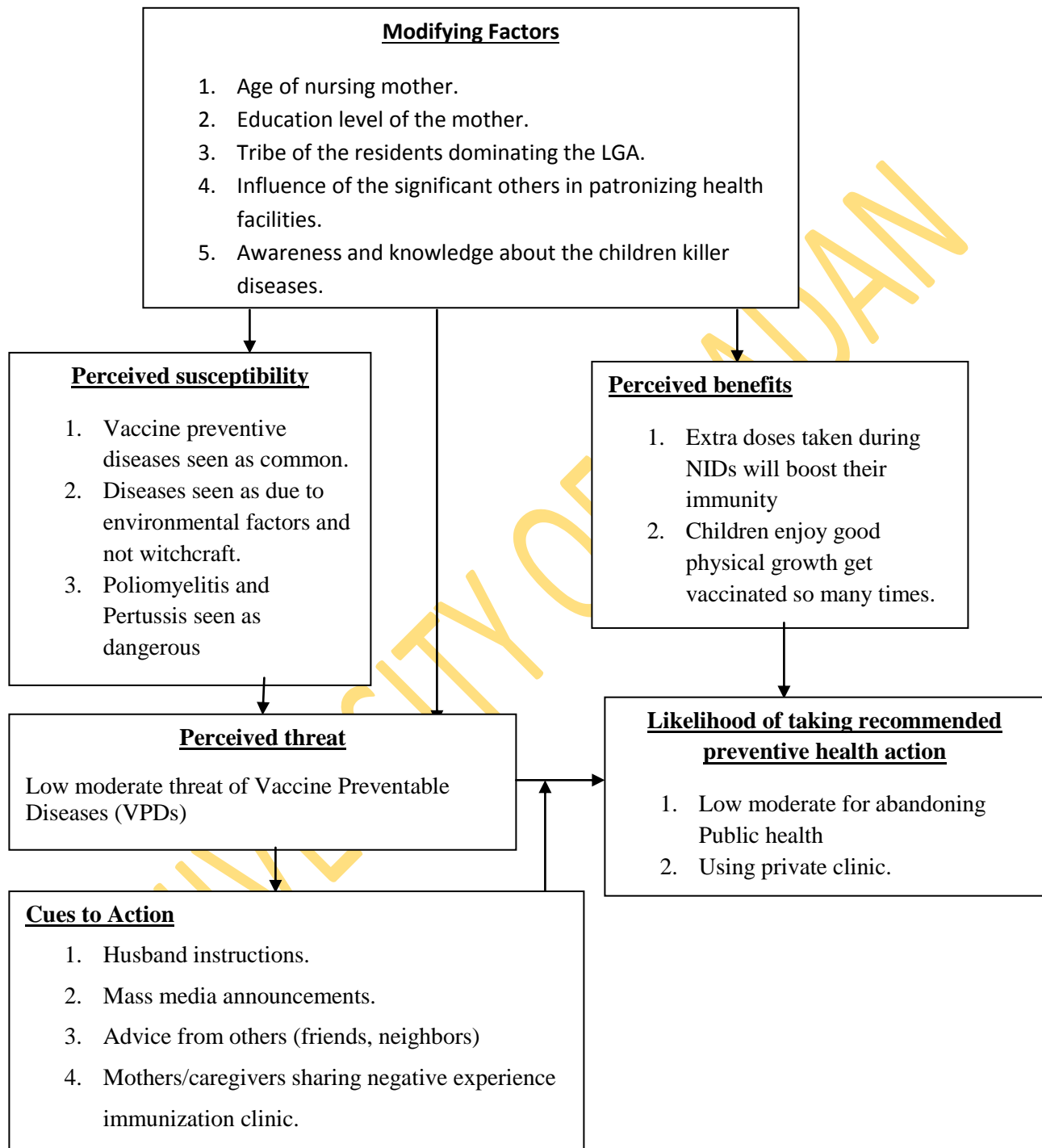
Perceived threat: The negative experience shared by friends, colleagues or co-residence about side effects of immunization and vaccine preventable disease could have great influence on the utilization of immunization services. This could also be influenced by the level of enlightenment, advocacy to traditional community and political leaders on the nature of substances called vaccines. Type of tribe or region could have a pronounced influence on the informed decisions on the adverse or side effects of vaccination. The availability of vaccines at the designated centre could be a deterrent factor.

Likelihood of taking recommended preventive health action: The health benefits (perceived) by the mother or caregiver and/or the perceived threat would be a determining factor whether a child would be released for vaccination. This also would be influenced by the level of education, awareness of health education and attitude of health workers.

Cues to action: The promptness to adopt healthful behavior of taking a child out for Immunization or not could be as a result of multiple factors that is social demographic, perceived susceptibility, perceived benefit and perceived threat. For example, securing a husband's consent could prompt a mother or caregiver to take her child for immunization, mass media announcements on the importance of immunization, nature of vaccines could influence an informed action. Also advice from friends, neighbors etc could influence the extent of utilization of immunization services.

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Figure 1: Health Belief Model (HBM) Applied To Factors Influencing Utilization Services in Akinyele Local Government Area of Oyo State.



Adapted from source: Ross and Mico (1980) Theory and practice of Health Education.

CHAPTER THREE

METHODOLOGY

3.1 Study Design and Scope

This study was community based, cross sectional descriptive survey aimed at determining predisposing, enabling and reinforcing factors influencing completion or non-completion of immunization schedules among mothers and care takers of children aged 12-59 months in Akinyele LGA of Oyo State. Additional information was obtained from programme planners. and implementers of immunization activities in this LGA.

3.2 Description of Study Area

Akinyele LGA came into existence in August 1976 having been part of former Ibadan North District Council Authority for several years. In 1989, Ido Local Government was carved out of the LGA.

Akinyele LGA is one of the six semi urban LGAs in Oyo State. It has 12 political wards with an estimated total population of 217, 340 (i.e. 4% of the total State population)-NPC 2006. Under one and under five population are 8694 and 43468 respectively (Preliminary Report of Investigation of Wild Polio Virus Case in Akinyele LGA, Oyo State, November, 2007). It is one of the fastest growing LGAs in the State, new communities are emerging daily without the supporting infrastructures.

There are fourteen Primary Health Care Centers, one general Hospital and 32 Private Hospitals and Maternity homes (Oyo State Health Bulletin, 2005). The LGA had its Headquarter at Moniya which is bounded at the North by Afijio LGA, South by Ibadan North LGA, West by Ido LGA and East by Lagelu LGA. The LGA is typically rural and very vast with over 740 villages and 4 semi urban settlements namely Ojoo, Sasa, Orogun and Moniya.

Politically the LGA is divided into 12 Wards namely Ikereku, Olanla/Labode, Aroro, Onidundu, Moniya, Akinyele, Iwokoto, Ojoo, Ijaye, Alabata, Olorisaoko and Iroko.

Farming and trading are the major occupations of the people inhabiting this LGA with few Local industries like Concrete industry, Steel construction and Plastic industry. The heterogeneous inhabitants of this LGA are felt mostly in the semi-urban regions like Ojoo/ Sasa and Orogun where almost all Nigerian tribes could be conveniently located.

Predominate tribes are the Yorubas with Yoruba culture. The major religions in the LGA are Christianity and Islam with more Muslim inhabitants. Special population in this LGA could be found in the far to reach areas. The names of these settlements and wards that they fall within are: Atan, Igbo-owe, Kankun, Onibonla, Elekuru and Ajibode settlement belong to Ijaye, Moniya, Ojoo, Ikereku, Iwokoto and Ojoo respectively.

Hard to reach areas include Camp David, Kege Oke, Kege Isale all in Ijaye Ward of the LGA.

The confirmed cases of Wild Polio Virus were found in Ojoo Ward and Ikereku ward respectively, hence this study.

3.3 Population

3.3.1 Study Population:

This included mothers and caretakers of children whose ages are less than five years old.

3.3.2 Target Population:

The study sample was drawn from mothers and caretakers of children between 12-23 months.

3.4 Eligibility Criteria

To be eligible for recruitment into the survey, the mothers/ caregivers was required to give consent, live in the LGA and have children whose ages are between 12-59 months.

3.5 Sample Size Calculation:

Sample size will be calculated using this formula:

$$N = Z^2 \alpha p q / d^2 \quad \text{where } N = \text{minimum sample size}$$

$$Z\alpha = \text{Level of significant} = 1.96$$

P = Prevalence = coverage of OPV in the LGA which was reported 28% at October 2007 Supplemental Immunization Activities (SIA). (Preliminary Report of Investigation of Wild Polio Virus Case in Akinyele LGA, Oyo State. 6th November 2007).

$$\begin{aligned}
 q &= 0.5 \\
 d &= \text{absolute deviation} = 5\% \\
 N &= \frac{(1.96)^2 \times 0.28 \times 0.5}{(0.05)^2} \\
 N &= \frac{0.537824}{0.0025} \\
 N &= 215.1
 \end{aligned}$$

Therefore, a total of 215 respondents would be selected from each of the 3 performing zones in the LGA, making a total of 645 respondents.

3.6 Sample Selection Procedure:

Records of immunization services of children under 5 years were obtained from the Akinyele LGA headquarters, Moniya and the whole 12 wards were grouped into three using systematic random sampling to select a list for each group. The first house in the community was selected using the spinning bottle method and following the direction until the entire houses were exhausted. Any household containing an eligible respondent was selected in each house visited. However, balloting was used to select an eligible household in case there are more than one eligible household in any house visited.

Table 3.1: Low, Moderate and High Immunization coverage in Akinyele LGA

Name of Wards	Target Population
Low	
Ikereku	137
Iroko	147
Akinyele	171
Aroro	225
Olanla	235
Iwokoto	240
Moderate	
Onidudu	304
Alabata	402
Olorisa Oko	461
High	
Ijaye	900
Moniya	2150
Ojoo	2425

Source: Akinyele LGA, 2008

Table 3.2: Low wards and their settlements in Akinyele LGA

Name of Wards	Name of settlements
Ikereku	Beyioku Akande Babmogba Ese Oke Olorombo
Iroko	Ojerinde Akinkunmi Molade Olorogbo
Akinyele	Seriki Jeje Aladie Tabiyi
Aroro	Adiro Ile-Ola Lajunwon Ojenran Aba Epo Olayiwola Aba Odan Alaru
Olanla	Atapa Ojo Bale Lanlere Ogunjinmi Labode Olunlosin Olokuta Folarin Osanso Osanyindeyi Egunjobi
Iwokoto	Ogundele Animasaun Fijomaya Akake Fasola

Source: Akinyele LGA, 2008

Table 3.3: Moderate Wards and their settlements in Akinyele LGA

Name of Wards	Name of settlements
Onidudu	Ojerinde Molade Abebi Iyaloja Abaja
Alabata	Ori Apata Olobimeji Baagi Adebunmi Akoje Opa Kanike Lasidi
Olorisa Oko	Ejitolu Eleja Olorisa-Oko Elekuru

Source: Akinyele LGA, 2008

Table 3.4: High wards and their settlements in Akinyele LGA

Name of Wards	Name of settlements
Ijaye	Oyatawe Ojutaye Bande Apero Osanlu Olowode Adetola Ajobo-Isale Ololade
Moniya	Sawmill Akinsona Ayerokun Labi Abiola Oke-Ola Balogun Barracks Aponmode Tose
Ojoo	Igbona Idi-Ori Ebedi Alfonso Sasa Oluana Osho Mogaji Ajibode Balogun Ojoo

Source: Akinyele LGA, 2008

3.7 Instruments for data collection.

Both qualitative and quantitative methods were employed to obtain data to achieve the objectives of this study.

3.7.1 Qualitative method: This study began with collection of qualitative information that would help inform the development of a quantitative survey and to expand understanding of perceptions of immunization and childhood killer diseases, factors influencing consent to immunize children and parental concerns, especially those of parents who had refused a vaccine. Two methods were employed to obtain qualitative information which includes:

(i) **Focus Groups Discussions (FGDs):** FGDs (Appendix I, III and, IV) were conducted among two groups of people namely providers/health workers that were involved in routine immunization and parents of children aged between 12 and 23 months. Each group discussion comprised of 8-10 respondents. Both the parents' and providers' FGDs covered four major themes namely: knowledge and perceptions about immunizations, barriers that impede obtaining immunizations, facilitators that enhance obtaining immunizations and suggestions for change.

(a) **Parent's FGDS:** A total of six FGDs (i.e. two in each zone) were conducted among homogenous groups of mothers/caregivers. The communities that participated in the FGDs were selected from the generated lists from the 3 coverage zones.

In parent Focus Groups Discuss, scripted questions asked for sources of information about immunizations and the most trusted ones, what information parents want to know and how they want it delivered, and whether they had refused any immunization and for what reason. If parents had concerns about any vaccine, these concerns were probed. Parents' beliefs about vaccines and the disease they prevent were also be elicited.

(b) **Provider FGDs:** The provider FGD respondents were obtained from a randomly generated list of workers in the PHC unit of the LGA that had been involved in immunization exercise. In providers' focus groups, scripted questions were aimed at elicited providers experience with parents who were hesitant to a vaccine or refuse some or all vaccines. When appropriate, the discussions probed for specific concerns expressed by the parents, subsequent providers responses, and immunization outcomes (i.e. did the child eventually get immunized and if so, at that visit or a later one). The specific immunization refused and reasons for refusal.

All Focus Groups were moderated by the researcher. He was assisted by a note taker and an observer. Each discussion was audio-taped. The FGD guide was translated into Yoruba - the local language - to ensure that the messages of the discussions were properly passed across to respondent members of the group. Responses from the FGDs will assist in the development of questionnaire.

ii. Key Informant Interviews (KIIs):

Key Informant Interviews (KIIs) were conducted with managers of NPI at the state and LGA levels. At the state level, two interviews were held with the State Director of PHC and Disease Control and the State NPI manager. Similarly, 2 interviews were held with the PHC coordinator and NPI manager at Akinyele Local Government Area, making a total of 4 interviews (see Appendix V, page 86).

3.7.2 Quantitative method:

Based on the findings of the FGDs, a semi structured questionnaire (Appendix II) was developed to obtain information on immunization and immunizable diseases among mothers and caregivers of children aged 12-23 months in the area. The questionnaire was divided into seven sections that included the following:

- Socio-demographic information: of mothers in particular as well as others who act as caregivers. This helped to provide necessary information such as age, marital status, and level of education and so on.
- Knowledge of immunization: knowledge about vaccine-preventable diseases, history of vaccines received by the child and reasons for competing/not completing vaccinations for children. In addition information about child's vaccination was obtained from the vaccination card (where available) or by maternal history and transferred into the questionnaire.

3.8 Validity and Reliability

Several steps were taken to ensure the validity of the instruments for data collection. First, the instruments were translated into Yoruba (the local language). Second, the instruments were pre-tested among mothers and caregivers of children in Oluyole Local Government Area another rural LGA in Ibadan metropolis. Using 10% of the calculated

sample size i.e. the questionnaires were administered to 50 respondents. This is to create opportunity to ascertain its suitability and appropriateness to field situation after corrections were made on the instruments. It also creates opportunity for removing irrelevant questions and eliminates ambiguities. 10% of the intensity questionnaire (500 was later administered in my study area) was administered i.e. 50 questionnaires.

The findings among others were 47(94%) of the respondent were mothers while grandmother and aunt were 2(4.0%) and 1(2.0%) respectively. Their mean age was 30.0 ± 5.6 years.

Twenty-seven (54.0%) respondents were able to mention at least 3 vaccines preventable diseases (VPD) while 11(22.0%) could mention at least two. 28(56.0%) of the respondents obtained information about immunization from health centre staff. 18(36.0%) believed that the immunization days are too frequent. Majority 30(60.0%) of the children's fathers are civil servants, while 6(12%) and 4(8.0%) were traders and students respectively. Others are farmers' artisans and clergy personnel.

Majority of the respondents 38(76.0%) are from monogamous family while 12(24.0%) are from polygamous family.

3.9 Training of Research Assistants

Ten research assistants were engaged in collection of the data used for the study. They include nine pharmacy technicians and a pharmacist, comprising three males and seven females. They were properly oriented on the nature of the research work and the contents of the questionnaire including how to gather the necessary information thus, administering the questionnaire and, carrying out focus group discussions. Practice sessions were carried out to master the art of administering the questionnaire to the target population. These individuals had good understanding of the local language (Yoruba) spoken in the LGA, as well as adaptive skills required to blend in with members of the community.

3.10 Data collection

The data collection process involved the following steps:

- Identification/visit to communities and selected houses.
- Identification and establishment of rapport with eligible participants including a

disclosure of the study.

- Interviewing of the participants with questionnaires.

All the questionnaires administered were collected immediately by hand and compiled for analysis. Also, all data obtained from group discussions and interviews were collected together and analyzed accordingly.

3.11 Data Analysis

3.11.1 Qualitative Data analysis: Data retrieved from the Focus Groups and KII were analyzed qualitatively. The analytical process involved series of steps aimed at the reduction of the data and the classification of information into ideas or themes. The research questions and interview guides provided initial structure for analysis of the data. Audiotapes were transcribed verbatim. The raw data was reviewed line by line to identify common words, phrases, or patterns that might reflect a central theme. Words, phrases, sentences, and paragraphs that express one idea were grouped together. Interview excerpts related to the same theme were catalogued together. Final report of the qualitative findings were drawn from identification of major themes, examples from the transcripts (in the respondents own words) interpretative statements and through notes taken by the facilitators in each group.

3.11.2 Quantitative data analysis: All validly completed questionnaires were entered into a computer and analyzed with SPSS software version 15.0. Both descriptive and inferential statistics were computed. Simple frequency tables of maternal and child characteristics were made. Chi square test were conducted to explore the association between maternal/caregiver characteristics, other variables and completion of immunization.

3.12 Ethical considerations

The recruitment of respondents was based on their permission. Informed consent was obtained by explaining to the participants that the data collected would be used for research purposes, kept confidential and that participation was voluntary. To maintain confidentiality of the participants during and after the collection of data, data were kept in a secured place where public access to it was restricted. No name of respondents was written on the questionnaire in order to ensure anonymity.

3.13 Limitations of the Study

Several constraints were experienced during the course of the research which include unwillingness of some community members and some caregivers to respond favorably in terms of giving answers to the questionnaire, financial costs involved in printing, transportation during the course of the research, making phone calls as well as providing refreshments both for the research assistants and some respondents who participated in the group discussions.

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CHAPTER FOUR

RESULTS

The findings from this study are presented in this section. They are organised into the following subsections: socio-demographic characteristics of the mothers and care givers, awareness and knowledge about immunization, perception about immunization and immunization schedules respectively. Other were subsections include timeliness/status of immunization and expected vaccination schedule and current/actual vaccination, experience of immunization and factors that hinder the acceptance of immunisation.

4.1: Socio-demographic Characteristics

A total of 500 respondents were interviewed and majority 420 (84.0%) are Yorubas. 19 (3.8%) and 26(5.2%) respondents are Ibos and Hausa respectively. 495 (99.0%) of them were female while 5(1.0%) were males. Respondents mean age was 29.6 years ($SD\pm 7.6$). 294 (58.8%) of them were Muslims, while 206 (41.2%) were Christians. 213 (42.6%) respondents had undergone formal secondary education, while only 13(2.6%) of the respondents had tertiary education. However, 92(18.4%) had no formal education and only 20 (4.0%) and 149 (29.8%) had Quranic and primary education respectively. Other information are presented on Table 4.1 and Figure 2.

Table 4.1: The socio-demographic characteristics of respondents

Characteristics	Number (N=500)	Percentage (%)
Age group (years) Mean=29.6, STD=7.6		
15-24	106	21.2
25-34	292	58.4
35-44	60	12.0
45-54	28	5.6
55-64	12	2.4
65-74	2	0.4
Sex		
Male	5	1.0
Female	495	99.0
Ethnic Group		
Yoruba	420	84.0
Ibo	19	3.8
Hausa	26	5.2
Akwa Ibom	13	2.6
Edo	15	3.0
Non-Nigerian	7	1.4
Marital status		
Single	19	3.8
Married	450	90.0
Separated/Divorced/Widowed	31	6.2
Occupation		
Farming	56	11.2
Trading	251	50.2
Artisan	140	28.0
Civil servant	19	3.8
Unemployed	34	6.8
Religion		
Christianity	206	41.2
Islam	294	58.8
Level of Education		
No formal Education	92	18.4
Quranic Education	20	4.0
Primary Education	149	29.8
Secondary Education	213	42.6
Tertiary Education	26	5.2
Family role of respondents		
Mother	464	92.8
Grand mother	25	5.0
Aunt/Neighbor/Friend	6	1.2
Father	5	1.0

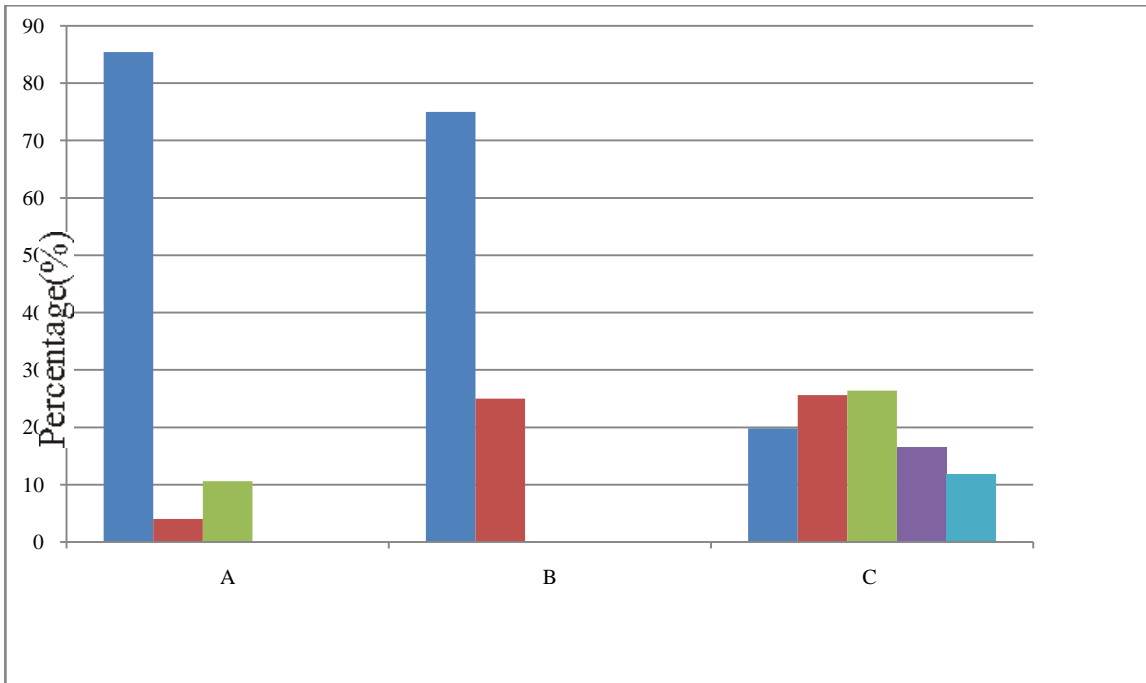


Figure 2: Bar charts showing specific socio-demographic characteristics of respondents

Category A: Living arrangement

- Lives with Husband
- Lives with parents
- Lives alone/Separated/Divorced

Category B: Type of Family

- Monogamy
- Polygamy

Category C: Number of children per mother/care giver

- One
- Two
- Three
- Four
- Five and above

4.2: Awareness/Knowledge about immunization

This section contains findings on the respondents' level of awareness and knowledge about immunization. Respondents that have heard about child immunization before amounted to 95.4%, while only 4.6% indicated not having heard about it. Among the respondents, 79.5% were of the opinion that immunization prevents childhood killer diseases, while 13.8% of the respondents felt its usefulness was to prevent infections. However, 6.7% were of the opinion that they had no knowledge of what immunization does. When respondents were asked to mention at least 3 diseases that immunization can prevent, the response given indicated that some of the respondents had accurate knowledge about vaccine preventable disease while others did not (i.e. those who mentioned diseases not classified among vaccine preventable diseases). Details are shown in Table 4.2. Similarly, when the respondents were asked about their sources of information about immunization, the following was on top of the list: radio (56.6%) and health centre staff (48.3%). Other details are shown in Table 4.3.

Table 4.2: Diseases that can be prevented by administration of immunisation as mentioned by respondents

N = 500

Types of Diseases	Number of Respondents	Percentage (%)
Polio	379	85.2
Measles	260	58.4
Cholera	143	32.1
Convulsion	97	21.8
Whooping cough	82	18.4
Cough	72	16.2
Diphtheria	65	14.6
Tuberculosis	62	13.9
HIV	28	6.3
Hepatitis	19	4.3
Yellow fever	16	3.6
Tetanus	8	1.8
Typhoid	7	1.5

Table 4.3: Respondents' sources of information about immunization

N = 500

Source of information	Number of Respondents	Percentage (%)
Radio	252	56.6
Health centre staff	215	48.3
Health volunteer in the village	76	17.1
Members of family/Neighbour	66	14.8
Television	65	14.6
Newspaper/Magazines	50	11.2
Immunization cards	36	8.1
Posters and hand bills	19	4.3
Village head	9	2.0
Church/Mosque	1	0.2

4.3 Respondents' perceptions about immunization and immunization schedules

Table 4.4 shows respondents' opinion about immunization and immunization schedules. The respondents were presented with a set of statements relating to immunization and immunization schedules in their community. They were requested to indicate whether they agree, disagree and if they were in doubt or that they were not sure. The distributions of their views or opinions are presented in Table 4.4.

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Table 4.4: Respondents' perceptions about immunization and immunization Schedules

	Frequency			Total
	Agree (%)	Disagree (%)	Not sure (%)	
Immunizing a child will increase his Intelligence Quotient	282 (56.4)	107 (21.4)	111(22.2)	500
The perceived side effects (i.e. fever, swollen body parts) are evidence that the vaccine is working	246 (49.2)	170 (34.0)	84 (16.8)	500
Good vaccines are only available at hospitals	134 (26.8)	296 (59.2)	70 (14.0)	500
The National Immunization days is too frequent	109 (21.8)	324 (64.8)	67 (13.4)	500
There is too much emphasis on child immunization at the expenses of other problems	94 (18.8)	352 (70.4)	54 (10.8)	500
The disadvantages of immunization outweighs the benefits	58 (11.6)	378(75.6)	64(12.8)	500
Taking too much vaccines can lead to sterility later in life	35 (7.0)	379 (75.8)	86 (17.2)	500
The vaccines are meant for children who already have or are susceptible to certain diseases	30 (6.0)	406 (81.2)	64 (12.8)	500
The costs of obtaining vaccine is too much, I prefer spending such money on food for the family	29 (5.8)	432 (86.4)	39 (7.8)	500
It is not important to vaccinate female child as they are very strong and don't die so easily	27(5.4)	404 (80.8)	69(13.8)	500

4.4 Timeliness/Status of Immunization

Respondents were asked if they had ever obtained vaccine for their youngest child. Majority which constituted 460 (92.0%) respondents said they had ever done so. When the respondents were asked about sources of vaccines obtained for their under 5 children, the topmost three sources were: Primary health care centress, state hospital and, mobile staff. Other sources were also mentioned as shown in Figure 3.

On the average, the number of vaccines taken by the children was 5 and the maximum was 9 while the least was 1. In addition, respondents provided information on how long it took for their children to get immunized. The average time taken for the children to be immunized was 87 minutes. Majority of the respondents (70.0%) were certified to have collected appropriate number of vaccines per age for their youngest children after going through their immunization cards.

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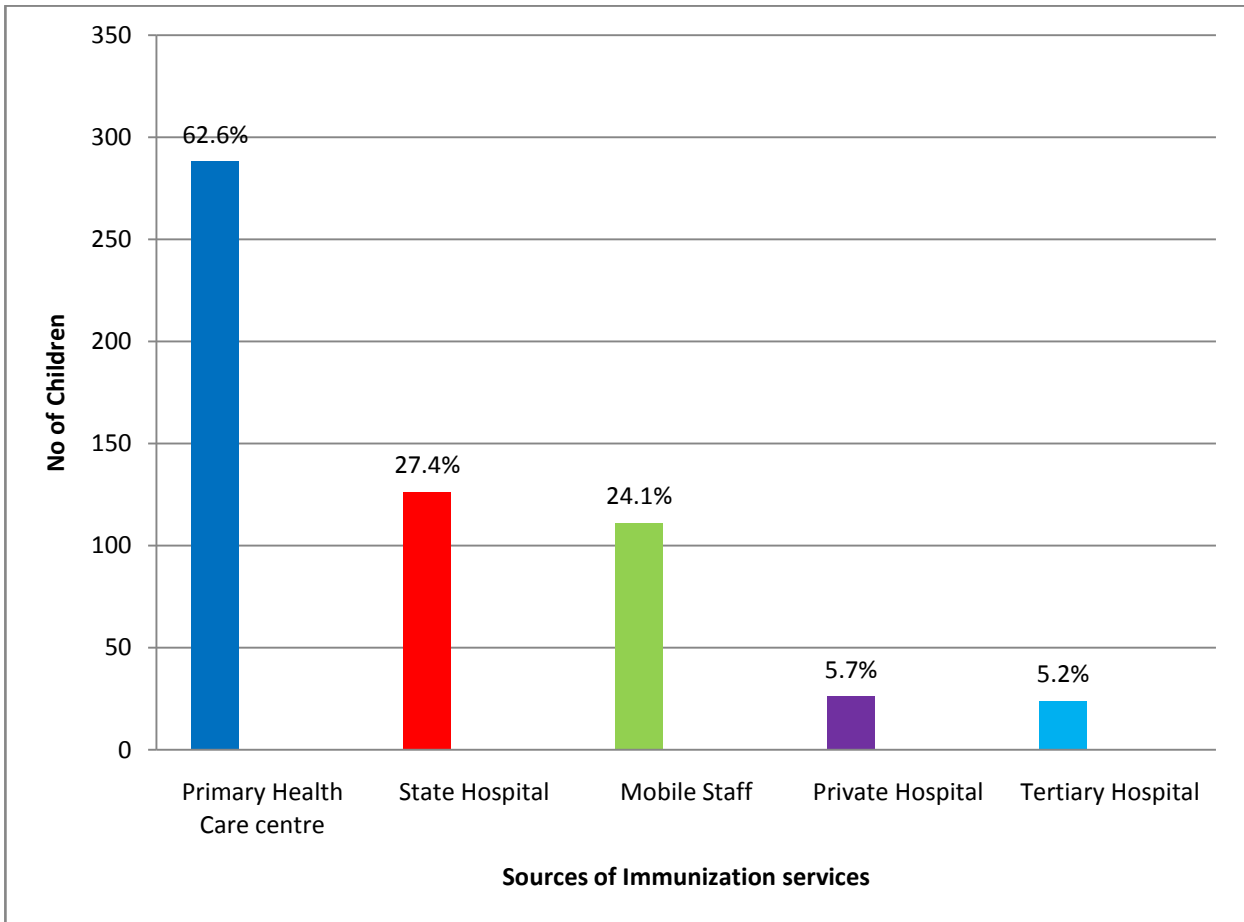


Figure 3: Respondents' sources of vaccines obtained for under 5 children

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When the respondents' children immunization cards were examined, some children were found to have missed the following vaccines. 91 (31.5%) children were found to have missed vaccines A (DPT¹, OPV⁰, HBV² (second dose) at 6weeks), while 87(30.1%) respondents' children were found to have missed vaccine B (BCG, OPV⁰, HBV¹ (first dose) at birth). Similarly, 53 (18.3%) respondents' children were found to have missed vaccines C (DPT², OPV2 at 10 weeks). See other details in Figure 4.

The respondents were presented with a set of statements relating to why they missed immunization for their children. They were also given the option of stating other views not represented among the stated ones. Topmost reasons adduced for this behaviour by the respondents include Children sickness (45.7%) and careless attitude of the mother (26.8%). Other reasons are shown in Table 4.6.

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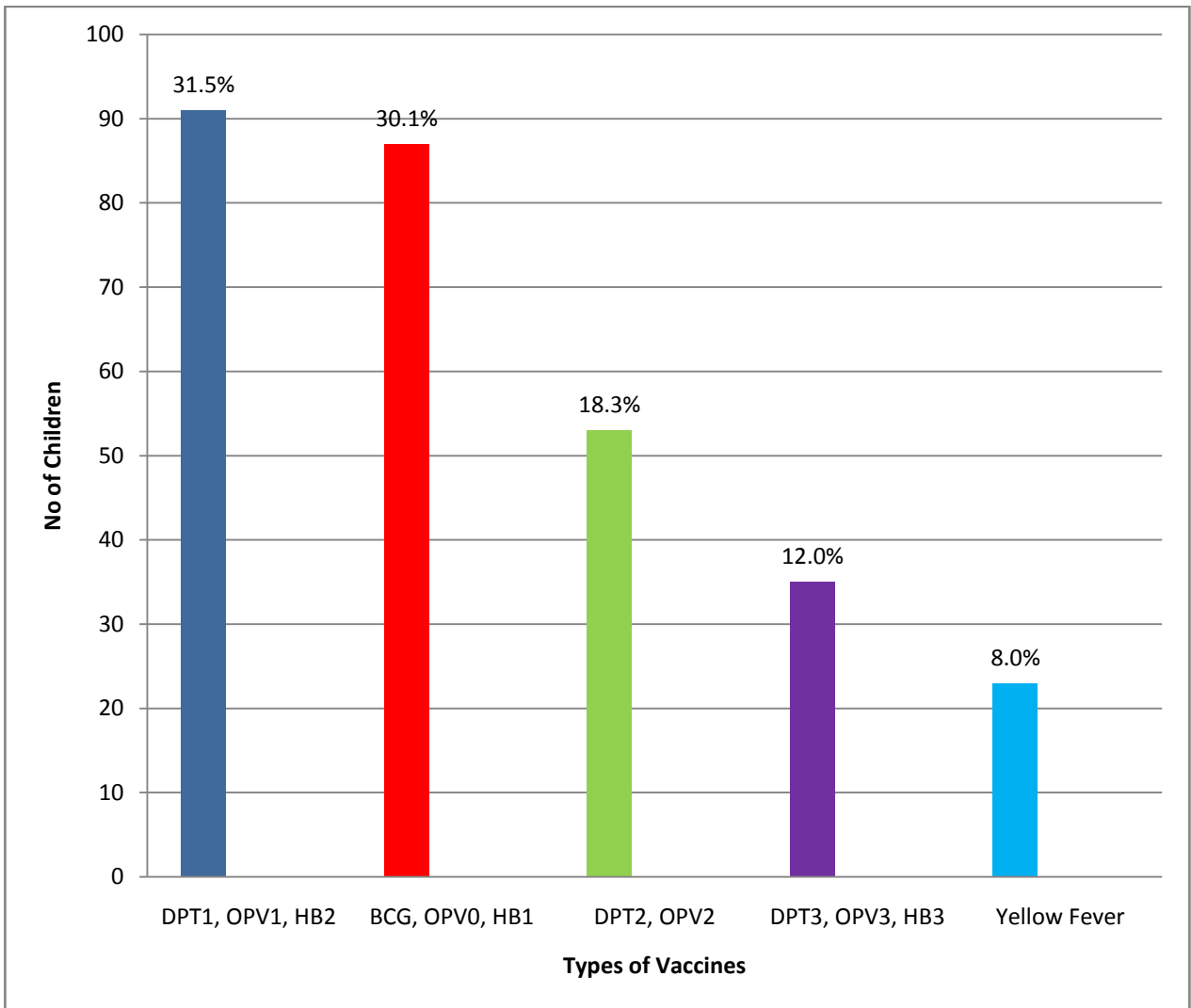


Figure 4: Vaccines missed by the youngest children of the respondents

- DPT1, OPV1, HB2 (second dose) at 6 weeks
- BCG, OPV0, HB1 (first dose) at birth
- DPT2, OPV2 at 10 weeks
- DPT3, OPV3, HB3 (third dose) at 14 weeks
- Yellow fever at 9 months

Table 4.6: Reasons adduced for missing immunization by mothers**N = 138**

Reasons	Yes (%)	No (%)
of the child	63 (45.7)	75(54.3)
Careless attitude of the mother	37 (26.8)	101(73.2)
Husband prevented administration	35(25.4)	103(74.6)
Travelling without immunization card	63(45.6)	213(154.4)
Delays/long wait at the health centre	29(21.0)	109(79.0)
Health worker did not inform mother about the next appointment	26(18.8)	112(81.2)
Vaccines were not available at health center during time of visit	21(15.2)	117(84.8)

The study also sought to find out how mothers/care givers obtain information/remember the next immunization appointment. The respondents were also allowed to disclose other avenues outside the stated options. Several respondents provided more than one source of information (See Table 4.7 for details).

Similarly, when respondents were asked about factors that encourage them to get their children immunised, the four topmost sources were: availability of the vaccines (49.8%), health workers' encouragement (34.1%), adverts from mass media (8.2%), and husbands' encouragement (4.3%). Others did not respond to the question and or their comments were irrelevant (details in Table 4.8).

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Table 4.7: Respondents' sources of information about the next immunisation Appointment.

N = 500

Source of information for vaccines obtained for children	No	%
Immunization Card	293	58.6
Health workers	168	33.6
Mass media	145	29.0
Family member/Neighbour	72	14.4

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Table 4.8: Factors that encourage mothers/care givers to get their children immunized.

N = 460

Factors that encourage utilisation of immunisation	Yes	(%)
Availability of the vaccines	229	49.8
Health workers encouragement	157	34.1
Adverts from Mass media	38	8.2
Husbands' encouragement neighbor	20	4.3
Neighbor's encouragement	6	1.3
Compulsory and free for children	6	1.3
Living close to health centre	4	0.9

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4.5 Experience of side effects of immunization

Respondents were asked if their children ever experienced any side effect(s) after vaccination. Slightly less than half, 221(48.0%) respondents out of the 460 respondents that ever had their children immunised said their children ever experienced side effects. The side effects experienced by the respondents' children were: fever 186 (84.2%), pain and swelling 107 (48.4%), abscess and pus formation 69 (31.2%), hardening of the vaccination site 44 (19.9%) and mass formation at vaccination site 17 (7.7%) (See table 4.10 for details).

About 125(56.6%) respondents of the 221 whose children ever experienced side effects were of the opinion that the side effects were common and normal. Majority, 178(80.5%) respondents of those whose children experienced some side effects managed them at home, while 16 (7.2%) respondents had to take their children to the health centre. However, 27(12.2%) respondents did nothing about the side effects experienced by their children. In addition, 172 (77.8%) respondents of the 221 whose children experienced side effects said they were informed about it before immunisation. Health centre sources were responsible for majority 165(95.9%) respondents. See details in Table 4.11.

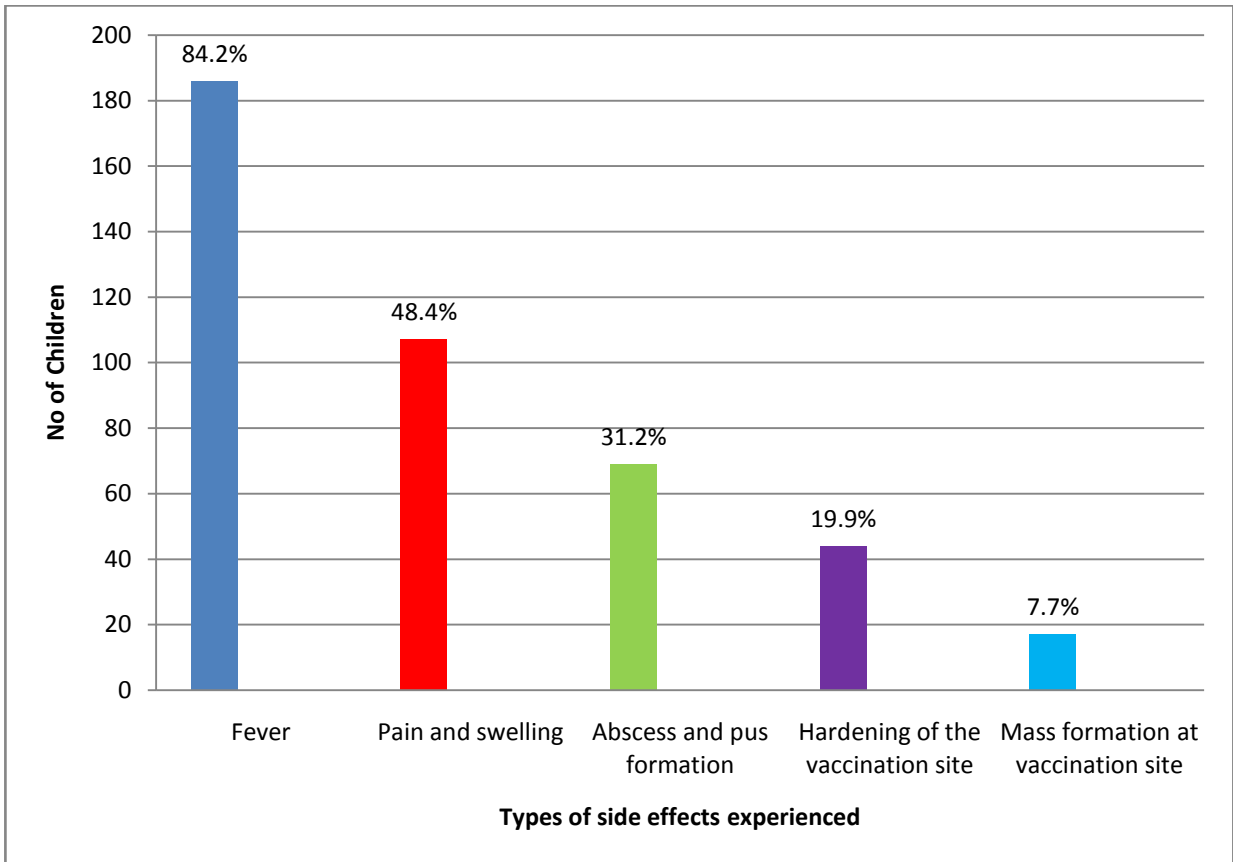


Figure 5: Side effects ever experienced by respondents' children

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Table 4.11: Respondents' sources of information about side effects

N = 172

Sources of information	No.	%
Health centre sources	165	95.9
Neighbors/Colleagues	12	7.0
Other family members	8	4.7
Mass media	4	2.3

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4.6 Factors that hinder acceptance of immunization

This study also examined the factors that hinder acceptance of immunization. In this study, 40 (8.0%) respondents had never obtained vaccines for their children before. The respondents were presented with a set of statements relating to personal factors that hinder acceptance of immunization. They were requested to indicate whether they agree or disagree and they could also state other views not represented. The distributions of their views or opinion are presented in table 4.12. The two topmost factors that hinder acceptance of immunisation were respondents who did not know about immunization and its benefits 25 (62.5%) respondents and fear of potency or side effects of immunization represented by 21 (52.5%) respondents. Details are in table 4.12.

Similarly, table 4.13 shows the health facility and staff factors that hinder acceptance of immunization. Closing down of health facility which represented 26 (59.1%) respondents' view and illness of the baby 19 (43.2%) respondents were the two major health facility and staff factors responsible for hindrances immunization use. See details in Table 4.13.

Table 4.12: Personal factors that hinder acceptance of immunization

N=40

Statements	Yes (%)	No (%)
I do not know about immunization and its benefits	25 (62.5)	15 (37.5)
Fear of potency or side effects of such vaccines	21 (52.5)	19 (47.5)
Experience of others	19 (47.5)	21 (52.5)
Information I heard about the northerners	19 (47.5)	21 (52.5)
I was discouraged the first time	19 (47.5)	21 (52.5)
It is against my belief/religion	18(45.0)	22(55.0)
Father/Husband not supportive	18(45.0)	22(55.0)
I traveled	14(35.0)	26 (65.0)
Don't have money to pay for such vaccines	4 (10.0)	36 (90.0)

Table 4.13: Health facility and staff factors that hinder acceptance of immunization
N = 40

Statements	Yes (%)	No (%)
The health facility was closed when I arrived	26 (59.1)	18 (40.9)
The child was not immunized because of illness	19 (43.2)	25 (56.8)
Distance of health facility	19 (43.2)	25 (56.8)
Staff was rude and disrespectful	19 (43.2)	25 (56.8)
Staff not well prepared	19 (43.2)	25 (56.8)
The health workers were not there	18 (40.9)	26 (59.1)
I had to wait a long time	14 (32.6)	29 (67.4)

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4.7 Findings from Focus Group Discussions

FGDs were conducted namely (i) FGD with mothers/caregivers of children under 5 years and (ii) FGD with Health workers who are involved in immunization services and two key informant interviews were conducted with policy maker who are involved in PHC implementation of which immunization services is a component at LGA and state levels respectively.

4.7.1 Perception of mothers' about childhood killer diseases and immunization

Findings from focus group discussions showed that majority of the participants were aware of vaccine preventable diseases and gave local names for some of the diseases such as measles (*Eyi*) and Polio (*romo lowo romo lese*). Awareness about the Government programmes for immunization was also indicated. Many attested to being accustomed to seeing government health workers moving within communities to immunize children. It was agreed by many that NIDs campaign was the main channel through which their level of awareness about immunization services was enhanced. There was a low knowledge as to how these diseases are transmitted.

On local belief, some participants did not believe in taking injection for measles, as it is believed that measles infection is spiritual or a demonic attack and that is why it's called "Sanpona" (god of Infections). They further believed that if they take infection, it would worsen the condition even for the immunized child which could ultimately lead to his death. They further stressed that what they perceived an infection to be measles is to use bitter leaf with palm oil decoction and at times palm wine to rub the body of any person suffering from measles.

Nor these all the providers who participated also expressed shock on the perception of mothers and caregivers about measles as they believe that any drug used to prevent its occurrence could stimulate its manifestation. They said health workers were at times prevented to administer injectables to any child suffering from measles infection. This is evidenced in that if they complied at first visit, there is always the problem of follow up as the clients believe that measles abhors injections.

4.7.2 Reasons why parents refuse to immunize that children

Majority of the caregivers adduced to non-availability of vaccines at health centers at the time of visit as well as waiting for long as the major barriers for utilization of immunization services within the LGA. Some complained about late arrival of the health workers as they themselves had tight schedules. Some uttered “*Olorun loku mo igba ti won ledee*” meaning “only God knows when they could arrive” and they could not wait endlessly. Some even said they did not have enough seats while waiting for arrival of vaccines.

Also, non-challant attitude of health workers to the users of immunization services as at times their attitude is resentful. “They shout on you when you ask them question at times” one of them asserted. Some said some health workers were reluctant and were not ready to clarify questions asked from them.

Some mothers also said side effects like pus and abscess formation at the site of injection, fever among other things are some of the reasons they did not like to take their children for immunization. Some said “*Olorun ma je ki enia fi owo ara re, se ara re*” meaning God forbids one from doing himself intentionally. One even narrated how a child hospitalized after taken vaccine from one of her neighbours which she said might be as a result of immunization of the child.

Nor these all, the poor utilization of immunization services was traced to inadequate media jingles and some claimed they did not hear or no reminder. They also complained of irregular electricity supply that could allow them to hear some jingles and campaigns on the media. This is because according to them, they relied on unconfirmed information that “fitters” from person to person.

On the part of FGD for health workers they complained about non-challant attitude of mothers and caregivers of non-utilisation of immunization services. They said when they asked mothers why they missed some immunization schedules they gave flimsy excuse like “*Oja oja lo bo si*” meaning “the appointment day fell on the market day” and before they finish the health workers might have left.

The health workers also said some might say they travelled or the child fell sick. Carelessness on the part of the mothers and caregivers was the major reason for the inconsistency in meeting up the immunization schedules as some misplaced their immunization cards and as such could not remember the next appointment date.

The health workers (providers) also complained about interrupted power supply and as such they could be break in the maintenance of cold chain supply and this invariably lead to delay in taking vaccines to appropriate designated stations.

Few said illiteracy is one of the reasons why some mothers could not bring their children for routine immunization. Thus, they could perceive poor assimilation of information imparted and as some could not “recollect” information almost immediate when asked during health talks and also some of the mothers and caregivers considered time spend fro health talks as mere wasting of their time.

4.7.3 Information provided to mothers during immunization days

Some of the mothers who participated in the FGD said they always understood the message especially during health talks because the health workers also interrupted everything they said in native language especially Yoruba language and they claimed that some information at times were got through the media especially radio. Some also attested that some information like the next appointment day were got through immunization cards and also saw teams of health workers moving from community to community during supplemental immunization activities sensitizing the residents to either patronize routine immunization at their nearest health centres or if there is upcoming immunization days or mop ups.

On the part of FGD conducted for health workers who were involved in immunization activities, when asked about information they normally give to mothers they chorusedly said “we even tell them in the language they will understand”. Thus this corroborated the responses of mothers and caregivers on the same point.

They also responded that there always be chorus songs to cheer up every meeting and make them to summarize what was said. But the health workers complained of inconsistency and absenteeism or lack of follow up of some mothers. It was observed that not all that started with them finished with them and some even send more elderly female children to bring their children for immunization.

When the health workers were asked occasions that may warrant immunization not holding, they cited example when vehicle that convey vaccines broke down or a case during political problem in which movements were restricted.

When asked situation when a child could be prevented from being immunized, they said if from their professional point of view they deem unfit for child like child sickness or a situation when a child is suffering from the infection in which he wants to be immunized.

Further when probed on information they give mothers during immunization days they said they most centered on childhood preventable killer diseases like poliomyelitis, measles, tuberculosis, yellow-fever, hepatitis, diphtheria, pertussis among others. They said at every meeting they talk about importance of vaccines especially for children under the age of 5 years. They also used the opportunity to disabuse the minds of people on rumours about vaccines and advised them that whenever children are having infections, they should go to the nearest health facility for medical attention instead of home treatment or self-medication.

4.7.4 Suggestions on how to improve immunization services

The mothers and caregivers who participated in the FGD said availability of vaccines in right quantities would greatly improve and encourage them of patronizing immunization activities. They said “*A o mope ti aba de be a o rigba a*” meaning “if we know that when we get there we will get vaccines.

The mothers also said timely and punctuality of the health workers at their duty posts would improve immunization services. They said further that the health workers need to be more courteous.

The mothers further said media awareness should be intensified to serve as reminder especially for national immunization days.

Suggestions from the Health care workers were that community leaders should be used to encourage members of the community to be receptive of immunization activities carried out by health workers. They also want to appeal to the government to be consistent with the provision of necessary equipment and materials that would make the dissemination of services easier. An appeal for prompt payment of remunerations for services rendered by as health workers was also made to serve as an incentive or motivation for proper discharge of services.

4.8 Findings from Key Informant Interviews

4.8.1 Challenges facing effective delivery of immunization services and government efforts on immunization

All the personnel interviewed at the state and LGA levels agreed to the successful progress of immunization coverage both in the state and LGA as the Government is paying attention to giving full support to the global eradication of vaccine preventable diseases especially polio. The government is also seeking partnership with several notable support-organizations and groups to in order to increase the efforts of effective immunization coverage. However, it was mentioned that for some caregivers, refusal of vaccines was on religious grounds.

There is incorporation of the immunization services cost in the yearly budget of the government, with fund allocation for each activity at both local and state levels. The planning, implementation of immunization programme is also being saddled with officers in order to improve its coverage services. There is also yearly micro-plan at local government which featured among other things name of wards, total population, target population, names of vaccines and monthly target. However, we are faced with inadequate finding “they said.

At the state level micro-plan featured among other were things total population, OPV target (0 to 59 months) population of less than 1 year, pregnant women population, number of LGA, number of wards, number of health facilities and number of health facilities providing routine immunization. Advocacy and Sensitization are held involving political, traditional, religious leaders, media chiefs, educational institutions e.g. SPEB, TESCOM.

Social mobilization is always carried out by making use of town announcers to disseminate information to the wards/communities. Sensitization rallies held for both R1 and SIAs. School Mobilization activities were also conducted in some communities. The pupils mobilized on R1 were able to mobilize their mothers/neighbours for R1 activities.

As for the problem that are responsible for poor turnout for immunization services. Poor funding form government to foot immunization programme, ignorance as part of the mothers as some of them do not know the significance of immunization services.

4.8.2 Suggestion on how to improve immunization services

The government should involve religious, traditional and community leaders in promoting awareness about the need for child immunization, especially with regards to being consistent with the schedules. They said “Government should continue to provide enlightenment campaign programmes in the communities”. Proper and effective monitoring systems would be adopted to ensure the effective utilization of immunization services, both on the part of the providers and the caregivers. “Assurance should also be given with regards to consistent review of the remunerations given to the health workers involved in immunization exercises”.

The suggestion to the political holders as employers of health workers that they should see government activities as stewardship as not play partisan politics with immunization programme i.e. Government should continue all the laudable projects being started by the proceeding government and not seeking personal glory.

CHAPTER FIVE

DISCUSSION

The results of the study are discussed under the following sub-headings: socio demographic characteristics, knowledge and awareness about immunization, perceptions about immunization services and status of immunization, and factors that encourage or discourage mothers to get their children immunized. Also highlighted are the implications of the findings for Health Education. The findings from focus group discussions have been integrated into the various sub-headings.

5.1 Socio Demographic Characteristics

Results of the study indicated that the ages of the respondents ranged between 15-75 years, with the majority of the respondents being females (83.4%). This high female to male ratio indicates that the mothers are the major care givers and that the immunization of any child depends largely on the mothers rather than the fathers since the mothers tend to care for and spend more time with the child. However, majority of the female respondents were married (90%) which indicates that the husband's authority is also exercised as to deciding whether a child receives immunization or not. This highlighted the male dominance in family affairs as it was responsible for refusal of immunization by some mothers (25.4%) when the vaccination teams visited the houses during the house-to- house immunizations. This is supported by the findings made by WHO (2003) listing husband's refusal as one of the factors for low immunization coverage in some areas.

Majority of the respondents were Yorubas and this wasn't surprising as the study was conducted in the south- western region of the country. As for religion, the Muslims dominated the Christians thus indicating that the major religion practiced within the LGA is Islam. Many of the respondents had primary and secondary forms of education alluding to the presence of many schools within the LGA to provide basic education. On the other hand very few had tertiary form of education, this could be as a result of the fact that majority of the respondents engaged in trading (50.2%) as it the major type of occupation practiced within the LGA. This is supported by the presence of several markets and business centers in the LGA. Thus, many

may not have the interest in white collar jobs, hence, not see the need to get a tertiary form of education.

5.2 Knowledge and Awareness about Immunization

Majority of the respondents have heard about immunization and had a high level of awareness about several programs of immunization services being carried out in the state. Many of the respondents even have knowledge of some of the diseases that immunization can prevent, some even mentioning the diseases with their local names. This high level of awareness about immunization services was due mainly to the campaign efforts by the Federal, State and Local governments in Nigeria as well as the International community. The NIDs campaign was a great source of awareness as supported by the study conducted by WHO in 2002 with regards to knowledge about polio virus in Nigeria. According to the findings, majority of the respondents get their information about immunization from the radio (56.6%) and health center staff (48.3%). Thus, the mass media is the primary way by which most people get their information and the effective work of primary health care workers also contributes to effective dissemination of information about vaccination.

The care givers involved in the FGDs all acknowledged that they were aware of immunization programmes being carried out in the state as evident by the publicity of the program especially through the mass media. They laud it as a noble program carried out by the government. They also expressed their knowledge about VPDs and as such the importance of the immunization programmes which they all hoped would eventually lead to the eradication of such diseases.

Comparing the effect of awareness to response by Christians and Muslims indicated that a good number of the Christians that were aware of the immunization services released their children for immunization especially for polio vaccination while many among the Muslims though aware of the programme did not release their children for immunization. This non-compliance due to religious beliefs by the Muslims is supported by the fact that most of the cases of Wild Polio Virus and low immunization coverage are in the northern states where Muslims are dominant (PATH, 2012).

5.3 Perceptions about Immunization services and Status of Immunization

From the results of the study, majority of the respondents have good perception with regards to immunization. Quite a number believe in the fact that the immunization programme is very important in improving the intelligence of their children in the future. The respondents also view the side effects of vaccination as a sign that the vaccines are working. On the other hand, there are misconceptions shown by some of the respondents, though few. Some of them held to the opinion that immunization wasn't meant for healthy children and that the emphasis laid on immunization programmes were too much compared to other problems facing the country. Some respondents had misconceptions about the type of disease that vaccination would prevent. 6.3% of the respondents believed that HIV could be prevented. These misconceptions are not surprising as other documented studies on immunization coverage also report this (Daniel, Thomas, Robbins, Frederick, 1997).

Majority of the respondents indicated that the major source of vaccines were Primary Health Centers, while others obtained theirs from State Hospitals and mobile staff. Most of the respondents are quick to present their children for their first immunization, but quite a number are not regular with the schedules mainly due to child sickness (45.7%) and carelessness or nonchalant attitude of the mothers (26.8%). However, other factors contribute to some mothers missing their schedules which include unavailability of the health workers or insufficient vaccines. This could occur due to internal problems within the health sector such as strike embarked by health workers which will cause a strain in some mothers meeting up with their schedules at that time.

5.4 Factors that encourage/discourage mothers to get their children Immunized

For many of the respondents, availability of vaccines (49.8%) and good relationship and encouragement from the health workers (36.2%) move them to get their children immunized. Great credit can be given to the Government as well as other International bodies for their support in terms of providing the necessary infrastructure as well as materials used for immunization programmes. Also, funding from international bodies or support groups have helped to create much awareness about VPDs. However, there are several factors that hinder the mothers from presenting their children for immunization. These factors are either personal (i.e. dependent on the caregiver) or dependent on the health personnel. These

personal factors include nonchalant attitude of the mothers or care givers who give flimsy excuse of not being aware of the immunization programmes, fear of side effects as a result of vaccination, religious beliefs and so on.

Among these factors two stand out more which are the nonchalant attitude of care givers (62.5%) and fear of side effects (52.5%). Several of the mothers do not regard immunization of their children as important and as such may either not present their children at all or not complete the immunization schedules. This could be as a result of the low level of education which may lead to ignorance about immunization programmes. The nonchalance of such care givers make them ignore the publicity media known to be the sources of information which is widely spread about immunization.

Side effects expressed by care givers as a result of vaccination include, among others: Fever, pain and swelling at the injection site, pus and abscess formation and so on. These side effects corroborate with the research carried out by Daniel et al., (1997) which, among others, rates fever as the greatest side effect as a result of vaccination. Fears of these side effects either as a result of personal opinions or due to the experience of others who have taken their children for immunization discourage several of the respondents within the LGA from presenting their children for immunization. Some among the parents had the misconception that the vaccination will give rise to swelling and pain which would in turn cause other problems for their children. Religious beliefs also and the non approval of immunizations by some husbands have also discouraged some of the care givers from immunizing their children.

From the FGDs, some of the respondents complained of not being told when next to come for immunization especially in the case where such immunization are being carried out from house-to-house. Most times, when the care givers ask questions pertaining to immunization, the health workers are either unfit to give the right answers or totally shun the caregivers. This suggests that some health teams assigned to move within the streets from house to house may not have a competent health professional to accompany them. Discouragement from immunization as a result of health personnel experienced by the respondents include: having to wait too long on queues in order to get their children vaccinated, distance of health centers from their homes, members of the health team not being fully prepared or, rudeness from the health workers. Another factor which brings about

discouragement from immunization is the child to be immunized being sick. Thus, care givers may conclude that it may not be necessary to carry out any form of immunization.

Yuan (2000) observed that the biggest barrier to immunization is waiting too long in queues at health facilities. This point highlights the problems experienced by many care givers who assemble at a point at which the health personnel available to render immunization services is small compared to the number of care givers present. Most often several mothers have to stay on queue under intense sunlight to wait their turn to get their children immunized. Hence, when such mothers experience that for the first time, they may be discouraged from completing their immunization schedules, which will eventually lead to low immunization coverage within the region.

From the perspective of the health workers involved in the FGDs, there is progress of immunization coverage within the LGA. They also appreciate the support they get from most of the communities they visit (in the case of those who move about). The progress was attributed to the support from the Government and other international bodies in terms of supplies to the Tertiary Hospitals, State Hospitals and other Primary Health care centers. The health workers though expressed their complaints at the difficulties they experience with some care givers due to nonchalance. This leads to missing immunization schedules on the part of some of these care givers which in turn prevent the health workers from maintaining proper records. This hinders proper immunization coverage within the LGA.

5.5 Implications for Health Education

Health Education is the Profession of educating people about Health (Mckenzie et al., 2009). Health Education as the first essential element of Primary Health Care (PHC) aims at developing the capacity of the people to act in a way that will benefit them in relation to Health matters. WHO in 1998 defined Health Education as “comprising of consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to the individual and community health.”

The above definitions imply that people will take constructive health action when they fully understand the implication of that action, provided it does not conflict with other goals that are more important. Thus from the main findings of the study of factors influencing the

utilization of immunization services, many respondents do not follow through on presenting their children for immunization or completion of the immunization schedules as a result of (though not limited to) the following: nonchalant attitude of mothers, fear of side effects, religious belief and level of education. Some respondents believe that NIDs were given greater attention than other health related matters. So, many among the respondents are not fully mobilized to comply with routine immunization.

The aim of Health Education is to enlighten and educate people to embrace the programme, promote complete compliance with immunization schedules through the adoption of positive attitude and perception. Thus, health education using the appropriate strategies such as action oriented advocacy to religious and community leaders will help in enhancing acceptance of the programme by the people. Social mobilization, community sensitization through the organization of health talks with mothers during pre-natal and post-natal clinics, routine immunization visits and inter-personal communication activities to focus on following through with immunization schedules. Advocacy social mobilization will be used to obtain support at all levels and dispel negative rumors about vaccination.

From the FGDs, some of the respondents complain about the very few workers involved in the immunization exercise. They suggest the government employ or recruit more workers to get involved with the immunization programmes which will both serve as a means of creating job employment for many and enhance effective coverage of immunization. Others recommend that the Government should pay more attention to how the immunization programmes are being carried out so as identify these setbacks and promptly rectify them. The FGDs held with the health workers showed some of them complaining about lateness in their payments from the Government at certain times which may discourage them from carrying out their duties effectively. Some also wish to appeal to the government to increase the funds allocated to the health staff especially for those who have to move about, taking these vaccines to people's homes. All the health workers recommend that more awareness should be created to educate the general public of the need to immunize their children and to most especially complete such immunization schedules. The increased publicity will also help to remove the various misconceptions that some care givers have with regard to immunization.

More attention should be given to VPDs by conducting multiple antigen campaigns to encourage care givers to accept the various vaccines. This approach is supported by Nuwaha et al., (2000) who said that vitamin A supplementation increased NIDs national coverage in Uganda. It is also vital to provide reasons to care givers why serious attention is given to immunization programmes to promote full compliance, thus help to eradicate VPDs.

5.6 Conclusion

In conclusion, this study aimed at documenting mothers' and caregivers' knowledge and perceptions of immunizations and childhood killer diseases in Akinyele Local Government Area of Oyo State, Identified factors influencing compliance with recommended immunization schedules for children and assessing immunization status of children 12 – 23 months in the selected populations. It was found out that there was a high level of knowledge about immunization which didn't translate into full compliance with immunization schedules, thus, affecting the immunization status of a number of children within the LGA. Factors influencing utilization of immunization services include but not limited to the following: nonchalant attitude of mothers, fear of side effects, religious belief and level of education. Health education strategies, such as public enlightenment, community mobilization and advocacy may be needed to address these problems.

5.7 Recommendations

The following recommendations are made based on the findings of this study:

1. Many of the respondents are aware of the immunization programme, but this did not translate to full compliance with immunization schedules. Thus, awareness campaigns should include information to help parents and care givers as to the necessity of following through with immunization schedules. This will help curb the nonchalant attitude of some care givers.
2. The misconception by some respondents that healthy children need not be immunized as they were not susceptible to the diseases borders on the fact they are not aware on the nature of these VPDs. Hence, social mobilization activities should also be aimed at removing this misconception. Messages should be designed to provide care givers with basic knowledge about VPDs.

3. It was also discovered that refusal for immunization was based on religious beliefs, this should therefore be handled through the involvement of Religious Leaders. There should be interactive sessions whereby questions are asked and answers are given to address their concern and fears.
4. On the low turnout for routine immunization and the opinion that immunization is given too much attention over other health matters, the National Programme on Immunization Agency should conduct advocacy to the Local Government Authority to give greater attention to routine immunization services which is part of the PHC that is directly the responsibility of the LGAs. The local government authority should also carry out community mobilization to create demand for routine immunization.
5. On the aspect of the health staff, government should address the need and make the dissemination of PHC by health workers effective. The health workers should also be people friendly thus create a platform for full compliance by the people towards immunization schedules. At least one qualified health professional should be among any team designated to move from house-to-house for immunization. This will enable all questions about the programme to be fully answered and thus further remove the fears and misconceptions that many people have.
6. Recruitment and employment of more health workers to be involved in immunization services.
7. Improve remuneration of health workers who are involved in immunization services to serve as incentives and thus better commitment.
8. Sustenance of the programmes of immunization by the governments at all levels even when the partners cease their assistance and support.

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APPENDIX I

FACTORS INFLUENCING UTILIZATION OF IMMUNIZATION SERVICES IN AKINYELE LOCAL GOVERNMENT AREA OYO STATE

Introduction

I am _____ of the Department of Health Promotion and Education, College of Medicine, University of Ibadan. I would like you to participate in a study to assess factors influencing coverage of Immunization Services in this Local Government Area. Your participation in the study and the responses provided will assist in improving service delivery for childhood immunization thereby reducing the occurrence of childhood killer diseases. I assure you that all information provided will be used for research purposes only. The information you give will be kept confidential, and your name will not be written down on this questionnaire. Your most open and sincere answers are needed to make this study successful, so we would like you to answer all questions as completely and honestly as you can.

Thank you.

Focus Group Discussion Guide for mothers and caregivers of children under 5 years

1. What do you understand by immunizations?
(Probe for: the common names by which it is called in the community, the diseases it aims at preventing, the age group and group of people that it is most needed).
2. Why do you think Childhood immunization is necessary?
3. Who decides whether a child should receive immunization at household level in this community? (Probe for: who decides on whether a child goes for immunization who is responsible for taking the child for immunization, and other key persons in the decision-making process).
4. What are the factors that hinder you from getting children immunized in this community?
5. What are the factors that motivate you from getting children immunized in this community?
6. What are your suggestions for getting more children immunized on schedule?

APPENDIX II

FACTORS INFLUENCING UTILIZATION OF IMMUNIZATION SERVICES IN AKINYELE LOCAL GOVERNMENT AREA OYO STATE

Introduction,

I am _____ of the Department of Health Promotion and Education, College of Medicine, University of Ibadan. I would like you to participate in a study to assess factors influencing coverage of Immunization Services in this Local Government Area. Your participation in the study and the responses provided will assist in improving service delivery for childhood immunization thereby reducing the occurrence of childhood killer diseases. I assure you that all information provided will be used for research purposes only. The information you give will be kept confidential, and your name will not be written down on this questionnaire. Your most open and sincere answers are needed to make this study successful, so we would like you to answer all questions as completely and honestly as you can.

Thank you.

Focus Group Discussion Guide for Health Workers

1. In your own view, how do mothers perceive childhood killer diseases and immunizations in this community?
2. Kindly give reason why parents refuse to immunize their children? (how common is this, which category of parents is this common, what reasons were given for refusing immunization for their children? which specific vaccine was refused, what did you do as health worker to persuade such refusing parent? What was the outcome of your persuasion? – did the child eventually get immunized? If yes, when? Was it at that or later visit?
3. What information do you normally give to mothers on immunization days?
4. Have there been occasions in which immunizations may not hold at all? If yes, what were the causes?

5. Why will you resist your child (ren) from been immunized?
(Probe for: child has low birth weight, late coming and inability of mother to bring card on day of immunization).
6. What are your suggestions for getting more children immunized on schedule?

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APPENDIX III

FACTORS INFLUENCING UTILIZATION OF IMMUNIZATION SERVICES IN AKINYELE LOCAL GOVERNMENT AREA OYO STATE

Introduction

I am _____ of the Department of Health Promotion and Education, College of Medicine, University of Ibadan. I would like you to participate in a study to assess factors influencing coverage of Immunization Services in this Local Government Area. Your participation in the study and the responses provided will assist in improving service delivery for childhood immunization thereby reducing the occurrence of childhood killer diseases. I assure you that all information provided will be used for research purposes only. The information you give will be kept confidential, and your name will not be written down on this questionnaire. Your most open and sincere answers are needed to make this study successful, so we would like you to answer all questions as completely and honestly as you can.

Thank you.

Key Informant Interview Guide for Programme Managers

1. What are the challenges facing the effective delivery of immunization services in this LGA/state (probe for challenges in the following areas –
 - i. The programme including: planners, logistics, supports, supervision, and reimbursement.
 - ii. The workers involved in the vaccination exercise
 - iii. Mothers of children
2. What can you suggest as ways forward?

APPENDIX IV

FACTORS INFLUENCING UTILIZATION OF IMMUNIZATION SERVICES IN AKINYELE LOCAL GOVERNMENT AREA OYO STATE

Introduction

I am _____ of the Department of Health Promotion and Education, College of Medicine, University of Ibadan. I would like you to participate in a study to assess factors influencing coverage of Immunization Services in this Local Government Area. Your participation in the study and the responses provided will assist in improving service delivery for childhood immunization thereby reducing the occurrence of childhood killer diseases. I assure you that all information provided will be used for research purposes only. The information you give will be kept confidential, and your name will not be written down on this questionnaire. Your most open and sincere answers are needed to make this study successful, so we would like you to answer all questions as completely and honestly as you can.

Thank you.

Instruction for filling this questionnaire

Kindly fill this questionnaire by ticking (✓) the appropriate responses or writing your answers in the spaces provided where applicable.

A. Socio-demographic Characteristics

1. Relationship of respondent with child:

Mother Grand-mother Aunt Neighbor

4. Others (specify)

2. Age:.....

3. Sex: Male Female

4. Religion: Christianity Muslim Traditional

5. Level of Education: No formal Education Quranic education

Adult education Modern Education Primary education
 Primary education not completed Secondary education
 Secondary education not completed Tertiary education
 Others (specify)

6. Ethnic group: 1. Yoruba 2. Ibo 3. Hausa
4. Others (specify)
7. Occupation: 1. Farming 2. Trading 3. Unemployed 4. Student
5. Artisan 6. Civil servant 7. Others (specify)
8. Father's occupation: 1. Farming 2. Farming 3. Unemployed
4. Student 5. Artisan 6. Civil servant 7. Others (specify)
9. Type of family: 1. Monogamous 2. Polygamous
10. Living arrangement: 1. Lives alone 2. Lives with parents
3. Lives with husband 4. Separated 5. Divorced 6. Widowed
11. Number of children: 1. One 2. Two 3. Three and above

B. Knowledge about immunization

12. Have you heard about the word childhood immunization before?
1. Yes 2. No (if No go to Question 14).
13. If yes, what does it mean?
.....
14. Kindly mention three diseases that child immunization aims at preventing.
.....
15. Where did you obtain information about Immunization?
1. Health volunteer in the village 2. Member of family 3. Health centre staff
4. Media 5. Postal and bills 6. Others (Specify)
16. At what age should a child receive measles vaccine?
17. How many times should oral polio be received?
18. At what age should a child complete his/her vaccinations?

C. Sources of information about Immunization

19. How do you obtain information about immunization days?
 1. Immunization cards
 2. Head of village
 3. Radio
 4. Television
 5. Others (specify)
20. Is there any person or medium that gives information that discourage people from vaccinating their children in this community? 1. Yes 2. No
21. If yes to Q20 above, kindly mention such person or medium.
22. Do you think such information has any effect on parents' compliance with vaccination for their children? 1. Yes 2. No
23. Kindly give reason(s) for your response to Q25 above.
.....

D. Perceptions about immunization and immunization schedules

Statement	Yes	No	Don't Know
Immunization is organized for children in Nigeria and other African countries only			
The National Immunization days is too frequent			
The repeated immunization schedules can lead to vaccine overdose			
Taking too much vaccines can lead to sterility later in life			
The perceived side effects (i.e. fever, swollen body parts) are evidence that the vaccine is working			
It is not important to vaccinate female child as they are very strong and don't die so easily			
The vaccines would have been spoiled before it gets to the grassroots and may be injurious to the child			
The vaccines are meant for children who already have or are susceptible to certain diseases			
I lack confidence in competence of the people who vaccinate during campaigns			
Good vaccines are only available at hospitals			
The costs of obtaining vaccine is too much, I prefer spending such money on food for the family			
Immunizing a child will increase his Intelligence Quotient			
The disadvantages of immunization outweighs the benefits			

E. Timeliness/status of Immunization

24. How old is/are your child(ren).....?

- 1. Less than 2 years
- 2. More than two years.

25. Did you ever obtain vaccines for him/her? 1. Yes 2. No

(If response to Question 25 above is no, interviewer should go to next section)

26. If yes, where did you obtain immunization services for the child?

- 1. Tertiary hospital
- 2. State hospital
- 3. Private hospital
- 4. PHC centre
- 5. Mobile staff
- 6. Others (Specify)

27. How many vaccines was the child able to take?

28. On the average, how long did it take for the child to be immunized?

- 1. 1-10mins
- 2. 11-15mins
- 3. Above 15mins

29. Do you think you have obtained the appropriate number of vaccines for his/her age? 1.

- Yes
- 2. No
- 3. Don't know

30. Interviewer should confirm child's immunization status from card to confirm if mother's claim is 1. Correct 2. Incorrect

(Interviewer should administer Questions 31 and 32 to cases of missed vaccination either by mothers report of from immunization card)

31. Briefly describe which of the vaccines was missed?

.....

32. Interviewer should record the expected vaccination schedule/point and current/actual vaccination status by filling the following if card is available by ticking the following.

Vaccine type	Expected	Actual
BCG, OPV0, HB1 (first dose) at birth		
DPT1, OPV1, HB2 (second dose) at 6weeks		
DPT2, OPV2 at 10 weeks		
DPT3, OPV3, HB3 (third dose) at 14 weeks		
Yellow fever at 9months		

33. What factors made you miss the immunization schedule?

1. Child fell sick
2. Traveled, left card at home.
3. Vaccines were not available at health centre
4. The health centre was not opened
5. Delays/Long wait at the health centre
6. Husband did not allow me to go
7. Health worker did not inform me about the next appointment
8. Others (specify)

34. How do you obtain information/remember the next immunization schedule/honour follow-ups? 1. Immunization card 2. Information from health worker 3. Media
4. Family member/Neighbor

35. What factors encourage you to get your child immunized?

.....
.....

F. Experience of Immunization

36. Did the child experience any side effect(s) after vaccination?

1. Yes
2. No

(If no, skip to next section)

37. If yes, which of the following side effects did you experienced in your child?

Side effect	Yes	No
Fever		
Abscess and pus formation		
Pain and swelling		
Mass formation at vaccination site		
Hardening of the vaccination site		

38. What were your perceptions about these side effects?

1. Common and normal
2. Not common and abnormal

39. What did you do before the signs disappear?

1. Nothing
2. Managed the child at home
3. Had to take the child to health centre

40. Were you informed about the various side effects beforehand?

1. Yes 2. No

41. If yes, who informed you?

1. At the health centre 2. Through the media
3. Neighbours/colleagues 4. Other family members

G. Factors that hinder acceptance of immunization

(This section should be completed by respondents that answered No to Question 33 above or dropped out early in the recommended immunization schedule)

42. Which of the following factors discourage compliance with or encourage early drop-out from the recommended immunization schedules for your child?

Factor	Yes	No
<p>Personal factors</p> <p>I do not know about immunization and its benefits</p> <p>It is against my belief/religion</p> <p>Father/Husband not supportive</p> <p>I traveled</p> <p>I was discouraged the first time</p> <p>Information I heard about the north</p> <p>Experience of others</p> <p>Fear of potency or side effects of such vaccines</p> <p>Don't have money to pay for such vaccines</p>		
<p>Health facility and staff factors</p> <p>The health facility was closed when I arrived</p> <p>The health workers were not there</p> <p>The child was not immunized because of illness</p> <p>I had to wait a long time</p> <p>Distance of health facility</p> <p>Staff was rude and disrespectful</p> <p>Staff not well prepared</p>		
<p>Vaccine related factors</p> <p>Collecting money</p>		

APPENDIX V

**FACTORS INFLUENCING UTILIZATION OF IMMUNIZATION SERVICES IN
AKINYELE LOCAL GOVERNMENT AREA**

DUMMY TABLE

N=500

Question	Item	Freq	%
Section A	Demographic Characteristics		
1	Relationship of respondent with child:		
	1. Mother	464	92.8
	2. Grand-mother	25	5.0
	3. Aunt	6	1.2
	4. Neighbour	1	0.2
	5. Friend	4	0.8
2	Age of the Respondents: Mean=30, STD=7.6, Min=15, Max=75		
3	Sex:		
	1. Male	83	16.6
	2. Female	417	83.4
4	Religion:		
	1. Christianity	206	41.2
	2. Muslim	294	58.8
5	Marital Status;		
	1. Single	19	3.8
	2. Married	450	90.0
	3. Separated	18	3.6
	4. Divorced	3	0.6
	5. Widow	10	2.0
6	Level of education:		
	1. No formal Education	92	18.4
	2. Quranic education	20	4.0
	3. Adult education	4	0.8
	4. Modern Education	3	0.6
	5. Primary education	124	24.8
	6. Primary education not completed	18	3.6
	7. Secondary education	166	33.2
	8. Secondary education not completed	47	9.4
	9. Tertiary education	26	5.2
7	Ethnic group:		
	1. Yoruba	420	84.0
	2. Ibo	19	3.8
	3. Hausa	26	5.2
	4. Minority (Edo, Akwa Ibom).	28	5.6
	5. Foreigners	7	1.4

8	Occupation: 1. Farming 2. Trading 3. Unemployed 4. Student 5. Artisan 6. Civil servant 7. Clergy	56 251 25 7 140 19 2	11.2 50.2 5.0 1.4 28.0 3.8 0.4
9	Father Occupation: 01. Farming 02. Trading 03. Unemployed 04. Student 05. Artisan 06. Civil servant 07. Clergy 09. Trader 10. Business men 11. Skilled personnel (Doctors, Engineer etc) 12. Not Relevant 13. Religious Leaders 14. Butchers 15. Motor bicycle Riders (Okada) 16. Building Material business men 99. No Response	66 40 14 7 232 44 8 31 13 14 16 2 6 2 2 2	13.2 8.0 2.8 1.4 46.4 8.8 1.6 6.2 2.6 2.8 3.2 0.4 1.2 0.4 0.4 0.4
10	Type of family: 1. Monogamous 2. Polygamous	375 125	75.0 25.0
11	Living arrangement: 1. Lives alone 2. Lives with parents 3. Lives with husband 4. Separated 5. Divorced 6. Widowed	28 20 427 13 4 8	5.6 4.0 85.4 2.6 0.8 1.6
12	Number of children: Mean=3, STD=1.5, Min=1, Max=9 1. One 2. Two 3. Three 4. Four 5. Five 6. Six 7. Seven 8. Eight 9. Nine	99 128 132 82 43 7 2 4 3	19.8 25.6 26.4 16.4 8.6 1.4 0.4 0.8 0.6
Section B	Knowledge about Immunization		
13	Have you heard about the word childhood immunization before?		

	(If No go to Question 16)	477	95.4
	1. Yes	23	4.6
	2. No		
14	If yes, what does it mean?		
	1. Vaccinating children against childhood killer diseases	379	75.8
	2. Administering alternated virus to prevent infections	66	13.2
	3. Not Relevant	4	0.8
	4. I don't know	8	1.6
	9. No Response	43	8.6
15	Kindly mention three diseases that child immunization aims at preventing: N=1286	322	25.0
	01. Polio	260	20.2
	02. Measles	3	0.2
	03. CSM	65	5.1
	04. Diphtheria	82	6.4
	05. Whooping cough	16	1.2
	06. Yellow fever	19	1.5
	07. Hepatitis	8	0.6
	08. Tetanus	12	0.9
	09. DPT	3	0.2
	10. Any other/Not Relevant	2	0.2
	11. Epilepsy	97	7.5
	12. Convulsion	1	0.1
	13. Malaria	28	2.2
	14. HIV	143	11.1
	15. Cholera	62	4.8
	16. Tuberculosis	72	5.6
	17. Cough	3	0.2
	18. Fever	20	1.6
	19. Cancer	7	0.5
	20. Typhoid	5	0.4
	21. Pain	1	0.1
	88. Don't know	55	4.3
Section C	Sources of Information about Immunization		
16	Where did you obtain information about Immunization? N=809	76	9.4
	01. Health volunteer in the village	65	8.0
	02. Member of family	215	26.6
	03. Health centre staff	50	6.2
	04. Media	19	2.3
	05. Posters and bills	36	4.4
	06. Immunization cards	9	1.1
	07. Head of village	252	31.1
	08. Radio	65	8.0
	09. Television	1	0.1
	10. My discipline	1	0.1
	11. Television	1	0.1
	12. Neighbor	1	0.1
	13. Church/Mosque	18	2.2
	99. No Response		

17	At what age should a child receive measles vaccine? Mean=9, STD=7.5, Min=0, Max=84		
18	How many times should oral polio be received: Mean=4, STD=1.6, Min=0, Max=9		
19	At what age should a child complete his/her vaccinations: Mean=26, STD=24.4, Min=1, Max=96		
19A	Is there any person or medium that gives information that discourage people from vaccinating their children in this community? (If No go to Q20) 1. Yes 2. No	136 346	28.2 71.8
19B	If yes to Q20 above, kindly mention such person or medium. (N=136) 1. Traditional medical people 2. Some women/Neighbor/People 3. Hausa 4. Religious personnel 5. Health Worker 6. Mass Media	6 113 4 6 3 4	4.4 83.1 2.9 4.4 2.2 2.9
Section D	Perceptions about Immunization and Immunization schedules		
(Q20)	The National Immunization days is too frequent:		
1	1. Agree 2. Disagree 8. Not Sure 9. No Response	109 321 67 2	21.8 64.3 13.4 0.4
2	There is too much emphasis on child immunization at the expenses of other problems: 1. Agree 2. Disagree 8. Not Sure 9. No Response	94 346 54 5	18.8 69.3 10.8 1.0
3	Taking too much vaccines can lead to sterility later in life: 1. Agree 2. Disagree 8. Not Sure 9. No Response	35 374 86 4	7.0 74.9 17.2 0.8
4	The perceived side effects (i.e. fever, swollen body parts) are evidence that the vaccine is working: 1. Agree 2. Disagree 8. Not Sure 9. No Response	239 170 84 6	47.9 34.1 16.8 1.2
5	It is not important to vaccinate female child as they are very strong and don't die so easily: 1. Agree 2. Disagree 8. Not Sure 9. No Response	27 399 69 4	5.4 80.0 13.8 0.8
6	The vaccines are meant for children who already have or		

	are susceptible to certain diseases: 1. Agree 2. Disagree 8. Not Sure 9. No Response	30 400 64 5	6.0 80.0 12.8 1.0
7	Good vaccines are only available at hospitals: 1. Agree 2. Disagree 8. Not Sure 9. No Response	134 285 70 10	26.9 57.1 14.0 2.0
8	The costs of obtaining vaccine is too much, I prefer spending such money on food for the family: 1. Agree 2. Disagree 8. Not Sure 9. No Response	29 422 39 9	5.8 84.6 7.8 1.8
9	Immunizing a child will increase his Intelligence Quotient: 1. Agree 2. Disagree 8. Not Sure 9. No Response	278 107 111 3	55.7 21.4 22.2 0.6
10	The disadvantages of immunization outweighs the benefits: 1. Agree 2. Disagree 8. Not Sure 9. No Response	58 372 64 5	11.6 74.5 12.8 1.0
Section E	Timeliness/Status of Immunization		
21	How old is your child ...? (Mean=22 months, SD=13.0, Min=1month, Max=60 months) 1. Less than 2 years 2. More than two years	11 489	2.2 97.8
22	Have you ever obtained vaccines for him/her? (if No go to Q39) 1. Yes 2. No	460 40	92.0 8.0
23	If yes, where did you obtain immunization services for the child?		
1	Tertiary hospital 1. Yes 2. No	24 436	5.2 94.8
2	State hospital 1. Yes 2. No	126 334	27.4 72.6
3	Private hospital 1. Yes 2. No	26 434	5.7 94.3
4	PHC centre 1. Yes 2. No	288 172	62.6 37.4
5	Mobile staff		

	1. Yes 2. No	111 349	24.1 75.1
24	How many vaccines was the child able to take? Mean=5, STD=2.3, Min=0, Max=9		
25	On the average, how long did it take for the child to be immunized? Mean=87, STD=50.9, Min=20, Max=360		
26	Do you think you have obtained the appropriate number of vaccines for his/her age?	319 141	69.3 30.7
27	Interviewer should confirm child's immunization status from card to confirm if mother's claim is: 1. Correct 2. Incorrect	322 138	70.0 30.0
28	Briefly mention which of the vaccines was missed?		
1	1. BCG, O PV0, HB1 (first dose) at birth:	87	30.0
	2. DPT1, OPV1, HB2 (second dose) at 6weeks:	91	31.0
	3. DPT2, OPV2 at 10 weeks:	53	18.0
	4. DPT3, OPV3, HB3 (third dose) at 14 weeks:	35	12.0
	5. Yellow fever at 9 months	23	8.0
29	Interviewer should record the expected vaccination schedule/point and current/actual vaccination status by filling the following if card is available by ticking the following		
1	BCG, O PV0, HB1 (first dose) at birth: 1. Yes 2. No	87 51	63.0 37.0
2	DPT1, OPV1, HB2 (second dose) at 6weeks: 1. Yes 2. No	91 47	65.9 34.1
3	DPT2, OPV2 at 10 weeks: 1. Yes 2. No	53 85	38.4 61.6
4	DPT3, OPV3, HB3 (third dose) at 14 weeks: 1. Yes 2. No	35 103	25.4 74.6
5	Yellow fever at 9 months: 1. Yes 2. No	23 115	16.7 83.3
30	What factors made you miss the immunization schedule?		
1	Child fell sick: 1. Yes 2. No	46 81	36.2 63.8
2	Traveled, left card at home 1. Yes 2. No	33 94	26.0 74.0
3	Vaccines were not available at health centre: 1. Yes 2. No	21 106	16.5 83.5

4	The health centre was not opened: 1. Yes 2. No	16 111	12.6 87.4
5	Delays/Long wait at the health centre: 1. Yes 2. No	29 98	22.8 77.2
6	Husband did not allow me to go: 1. Yes 2. No	35 92	27.6 72.4
7	Health worker did not inform me about the next appointment: 1. Yes 2. No	26 101	20.5 79.5
8	Careless attitude of the mother: 1. Yes 2. No	37 90	29.1 70.1
10	Too busy: 1. Yes 2. No	30 97	23.6 76.4
11	Child not up to age: 1. Yes 2. No	21 106	16.5 83.5
13	Blood kept following: 1. Yes 2. No	3 124	2.4 97.6
15	Cough: 1. Yes 2. No	3 124	2.4 97.6
16	TB: 1. Yes 2. No	3 124	2.4 97.6
17	Fever: 1. Yes 2. No	1 126	0.8 99.2
31	How do you obtain information/remember the next immunization schedule/honour follow-ups?		
1	Immunization card: 1. Yes 2. No	243 147	62.3 37.7
2	Information from health worker: 1. Yes 2. No	181 209	46.4 53.6
3	Media: 1. Yes 2. No	94 296	24.1 75.9
4	Family member/neighbour: 1. Yes 2. No	75 315	19.2 80.8
5	None:		

	1. Yes 2. No	10 380	2.6 97.4
32	What factors encourage you to get your child immunized?: N=480 01. Availability of the vaccines 02. Health workers good relationship 03. To prevent childhood diseases 04. Due to broadcast on TV 05. Environmental factor 06. Prevention of measles 07. Don't know 08. Not relevant 09. No Response 11. My husband encourage me to take it 12. Neighbor 13. Living close to health centre 14. Compulsory and free for children 99. No Response	229 150 1 31 3 3 6 1 16 20 6 4 6 4	47.7 31.3 0.2 6.5 0.6 0.6 1.3 0.2 3.3 4.2 1.3 0.8 1.3 0.8
Section F	EXPERIENCE OF IMMUNIZATION:		
33	Did the child experience any side effect(s) after vaccination? 2. No	221 238	48.3 51.7
34	If yes, which of the following side effects did you experienced in your child? (N=221)		
1.	Fever 1. Yes 2. No	186 35	84.2 15.8
2.	Abscess and pus formation: 1. Yes 2. No	69 152	31.2 68.8
3.	Pain and swelling: 1. Yes 2. No	107 114	48.4 51.6
4.	Mass formation at vaccination site: 1. Yes 2. No	17 204	7.7 92.3
5.	Hardening of the vaccination site: 1. Yes 2. No	44 177	19.9 80.1
35	What were your perceptions about these side effects? 1. Common and abnormal 2. Not common and abnormal	125 96	56.6 43.4
36	What did you do before the signs disappear? 1. Nothing 2. Managed the child at home 3. Had to take the child to health centre	27 178 16	12.2 80.5 7.2
37	Were you informed about the various side effects beforehand? 1. Yes	172 49	77.8 22.2

	2. No		
38	If yes, who informed you? (N=172)		
1	At the health centre: 1. Yes 2. No	165 7	95.9 4.1
2	Through the media: 1. Yes 2. No	4 168	2.3 97.7
3	Neighbours/colleagues: 1. Yes 2. No	12 160	7.0 93.0
4	Other family members 1. Yes 2. No	8 164	4.7 95.3
39	For those that did not receive immunization at all for their children (This section should be completed by respondents that answered NO to Question 22 above) Section G: Factors that hinder acceptance of immunization Which of the following factors discourage compliance with or encourage early drop-out from the recommended immunization schedules for your child?		
	PERSONAL FACTORS: (N=40)		
1	I do not know about immunization and its benefits 1. Yes 2. No	25 15	62.5 37.5
2	It is against my belief/religion 1. Yes 2. No	18 22	45.0 55.0
3	Father/Husband not supportive 1. Yes 2. No	18 22	45.0 55.0
4	I traveled 1. Yes 2. No	14 26	35.0 65.0
5	I was discouraged the first time 1. Yes 2. No	19 21	47.5 52.5
6	Information I heard about the north 1. Yes 2. No	19 21	47.5 52.5
7	Experience of others 1. Yes 2. No	19 21	47.5 52.5
8	Fear of potency or side effects of such vaccines 1. Yes 2. No	21 19	52.5 47.5
9	Don't have money to pay for such vaccines 1. Yes 2. No	4 36	10.0 90.0
39	HEALTH FACILITY AND STAFF FACTORS (N=40)		

1	The health facility was closed when I arrived 1. Yes 2. No	2 38	5.0 95.0
2	The health workers were not there 1. Yes 2. No	3 37	7.5 92.5
3	The child was not immunized because of illness 1. Yes 2. No	7 33	17.5 82.5
4	I had to wait a long time 1. Yes 2. No	9 31	22.5 77.5
5	Distance of health facility 1. Yes 2. No	2 38	5.0 95.0
6	Staff was rude and disrespectful 1. Yes 2. No	2 38	5.0 95.0
7	Staff not well prepared 1. Yes 2. No	1 39	2.5 97.5

UNIVERSITY OF BADAUN

APPENDIX VI

CODING GUIDE FOR DATA ANALYSIS

Que	Item	Code
	Section A : Socio-demographic Characteristics	
1.	Relationship of respondent with child: 1. Mother 2. Grandmother 3. Aunt 4. Neighbour 5. Others	1 2 3 4 5
2.	Age at last Birthday	Actual
3.	Sex: 1. Male 2. Female 3. No Response	1 2 9
4.	Religion 1. Christianity 2. Muslim 3. Traditional Religion 4. No Response	1 2 3 9
5.	Marital Status 1. Single 2. Married 3. Seperated 4. Divorced 5. Widowed 6. No Response	1 2 3 4 5 9
6.	Level of Education 1. No formal Education 2. Quranic Education 3. Adult Education 4. Modern Education 5. Primary Education 6. Primary Education (not completed) 7. Secondary Education 8. Secondary Education (not completed) 9. Tertiary Education 10. Others (Specify) 11. No Response	1 2 3 4 5 6 7 8 9 10 99
7.	Ethnic Group 1. Yoruba 2. Ibo 3. Hausa 4. Minority (Edo, Akwa Ibom) 5. Foreigners 6. No Response	1 2 3 4 5 9
8.	Occupation	

	1.Farming 2.Trading 3.Unemployed 4.Student 5.Artisan 6.Civil servant 7. Self employed 8. No Response	1 2 3 4 5 6 7 9
9.	Father's Occupation 1.Farming 2.Farming 3.Unemployed 4.Student 5.Artisan 6.Civil Servant 7. Driver 8. Trader 9. Business men 10. Skilled Personnel i. e Doctor, Engineer 11. No Response	1 2 3 4 5 6 7 8 11 10 99
10.	Type of Family 1. Monogamous 2. Polygamous 3. No Response	1 2 9
11.	Living Arrangement 1. Lives Alone 2. Lives with Parent 3. Lives with Husband 4. Separated 5. Divorced 6. Widowed 7. No Response	1 2 3 4 5 6 9
12.	Number of Children 1. Open to Specified number	Number of children
Section B: Knowledge about immunization		
13.	Have heard about the word childhood immunization before (If NO, Go to Question 16) 1. Yes 2. No	1 2
14.	What does immunization means 1. It prevents of childhood disease 2. Gives children good health 3. No Response	1 2 9
15.	List all diseases that child immunization can prevent 1.Poliomyelitis 2. Measles 3. CSM 4. Diphtheria 5. Whooping Cough	1 2 3 4 5

	6. Yellow Fever 7. Hepatitis 8. Tetanus 9. DPT 10. Any Other/Not Relevant 11. Epilepsy 12. Convulsion 13. Malaria 14. No Response	6 7 8 9 10 11 12 13 99
Section C: Sources of information about Immunization		
16.	Where did you obtain information about Immunization* 1. Health volunteer in the village 2. Member of family 3. Health centre staff 4. Media 5. Posters and bills 6. Immunization cards 7. Head of village 8. Radio 9. Television	1 2 3 4 5 6 7 8 10
17.	At what age should a child receive measles vaccine (Months)? 1. 9 months 2. Others are incorrect	Actual
18.	How many times should a child receive oral polio? 1. 4 times 2. Others are incorrect	Actual
19.	At what age should a child complete his/her vaccinations? 1. 9 months 2. 2-5years 3. Other are in correct	Actual
19 a	Is there any person or medium that gives information that discourages people from vaccinating their children (If No, Go to Question 20) 1. Yes 2. No	1 2
19b	If yes to Q19a above, kindly mention such person or medium 1. Traditional medical people 2. Some women/Neighbour/People 3. Hausa 4. No Response	1 2 3 9
Q20	Section D. Perceptions about immunization and immunization schedules	
20. 1	The national immunization days is too frequent 1. Agree 2. Disagree 3. Not Sure	1 2 3
20.2	There is too much emphasis on child immunization at the expenses of other problems 1. Agree 2. Disagree	1 2

	3. Not Sure	3
20.3	Taking too much vaccines can lead to sterility later in life 1. Agree 2. Disagree 3. Not Sure	1 2 3
20.4	The perceived side effects (i.e. fever, swollen body parts) are evidence that the vaccine is working 1. Agree 2. Disagree 3. Not Sure	1 2 3
20.5	It is not important to vaccinate female child as they are very strong and don't die so easily 1. Agree 2. Disagree 3. Not Sure	1 2 3
20.6	The vaccines are meant for children who already have or are susceptible to certain diseases 1. Agree 2. Disagree 3. Not Sure	1 2 3
20.7	Good vaccines are only available at hospitals 1. Agree 2. Disagree 3. Not Sure	1 2 3
20.8	The costs of obtaining vaccine is too much, I prefer spending such money on food for the family 1. Agree 2. Disagree 3. Not Sure	1 2 3
20.9	Immunizing a child will increase his Intelligence Quotient 1. Agree 2. Disagree 3. Not Sure	1 2 3
20.10	The disadvantages of immunization outweighs the benefits 1. Agree 2. Disagree 3. Not Sure	1 2 3
Section E: Timeliness/Status of Immunization		
21.	How old is your youngest child 1. Less than 2 years 2. More than 2 years	1 2
22.	Have you ever obtained vaccines for him/her?(If No go to Q39) 1. Yes 2. No	1 2
23.*	If yes, where did you obtain immunization services for the child 1. Tertiary hospital 2. State hospital 3. Private hospital 4. PHC centre 5. Mobile staff	Yes=1 No=2

24.	How many vaccines was the child able to take 1. 9 numbers 2. Others are in correct	Actual
25.	On the average, how long did it take for the child to be immunized 1. 5 minutes 2. 2-3hours	Actual
26.	Do you think you have obtained the appropriate number of vaccines for his/her age? 1. Yes 2. No 3. Don't know	1 2 3
27.	Interviewer should confirm child's immunization status from card if mother's missed any: 1. Correct 2. In Correct	1. Yes Card 2. No Card 1 2
QUESTIONS 28, 29 & 30 FOR THOSE THAT MISSED VACCINATION EITHER BY MOTHERS REPORT OF FROM IMMUNIZATION CARD IN QUESTIONS 26 & 27)		
28.	Briefly mention which of the vaccines was missed. 1. Poliomyelitis 2. Measles 3. Cerebrospinal meningitis (CSM) 4. Diphtheria 5. Whooping Cough 6. Yellow Fever 8. Hepatitis 9. Tetanus 10. DPT (1,4,8) 99. No Response	1 2 3 4 5 6 7 8 9 99
29.	Interviewer should record the expected vaccination schedule/point and current/actual vaccination status by filling the following if card is available by ticking the following. 1. BCG, O PV0, HB1 (first dose) at birth 2. DPT1, OPV1, HB2 (second dose) at 6weeks 3. DPT2, OPV2 at 10 weeks 4. DPT3, OPV3, HB3 (third dose) at 14 weeks 5. Yellow fever at 9months	Yes=1 No=2
30	What factors made you miss the immunization schedule? 1. Child fell sick 2. Traveled, left card at home. 3. Vaccines were not available at health centre 4. The health centre was not opened 5. Delays/Long wait at the health centre 6. Husband did not allow me to go 7. Health worker did not inform me about the next appointment Others (specify)	1 2 3 4 5 6 7 8
31.	THIS QUESTION IS FOR THOSE THAT COMPLETED THE IMMUNIZATION SCHEDULE FOR THEIR CHILD(REN) How do you obtain information or remember the next immunization	

	schedule or honour follow-ups? 1. Immunization card 2. Information from health worker 3. Media 4. Family member/Neighbor 5. None	Yes=1 No=2
32.	What factors encourage you to get your child immunized 1. It prevents of childhood disease 2. Gives children good health 3. Prevent malaria 4. Prevent children from running temperature 5. Because they are announcing it on radio that it is good for health 3. No Response	1 2 3 4 5 6
	Section F: Experience of Immunization (for those who had obtain vaccination at least ones	
33.	Did the child experience any side effect(s) after vaccination? (If NO, end of the interview) 1. Yes 2. No	1 2
34.	If yes, which of the following side effects did you experienced in your child/ren 1. Fever 2. Abscess and pus formation 3. Pain and swelling 4. Mass formation at vaccination site 5. Hardening of the vaccination site	Yes=1 No=2
35.	Perceptions about immunization side effects that are common 1. Common 2. Not Common	1 2
36.	What did you do before the signs disappear 1. Nothing 2. Managed the child at home 3. Had to take the child to health centre	1 2 3
37.	Were you informed about the various side effects beforehand (If No, Go question 39) 1. Yes 2. No	1 2
38.	If yes, who informed you 1. At the health centre 2. Through the media 3. Neighbours/colleagues 4. Other family members	1 2 3 4
	Section G. Factors that hinder acceptance of immunization (FOR THOSE THAT DID NOT RECEIVE IMMUNIZATION AT ALL FOR THEIR CHILD(REN) (This section should be completed by respondents that answered NO to Question 22 above)	
39 A	Personal factors	

39.1	I do not know about immunization and its benefits 1. Yes 2. No	1 2
39.2	It is against my belief/religion 1. Yes 2. No	1 2
39.3	Father/Husband not supportive 1. Yes 2. No	1 2
39.4	I traveled during the period of immunization 1. Yes 2. No	1 2
39.5	I was discouraged by some people 1. Yes 2. No	1 2
39.6	I heard Information from the northerners that it reduces child bearing 1. Yes 2. No	1 2
39.7	I heard the experience of others that it causes increases in temperature, abscess 1. Yes 2. No	1 2
39.8	I have concern about side effects of vaccines 1. Yes 2. No	1 2
39 B	Health facility and staff factors	
39.1	The health facility was closed when I arrived 1. Yes 2. No	1 2
39.2	The health workers were not there 1. Yes 2. No	1 2
39.3	The child was not immunized because of illness 1. Yes 2. No	1 2
39.4	I had to wait a long time 1. Yes 2. No	1 2
39.5	Distance of health facility 1. Yes 2. No	1 2
39.6	Staff was rude and disrespectful 1. Yes 2. No	1 2
39.7	Staff not well prepared 1. Yes 2. No	1 2