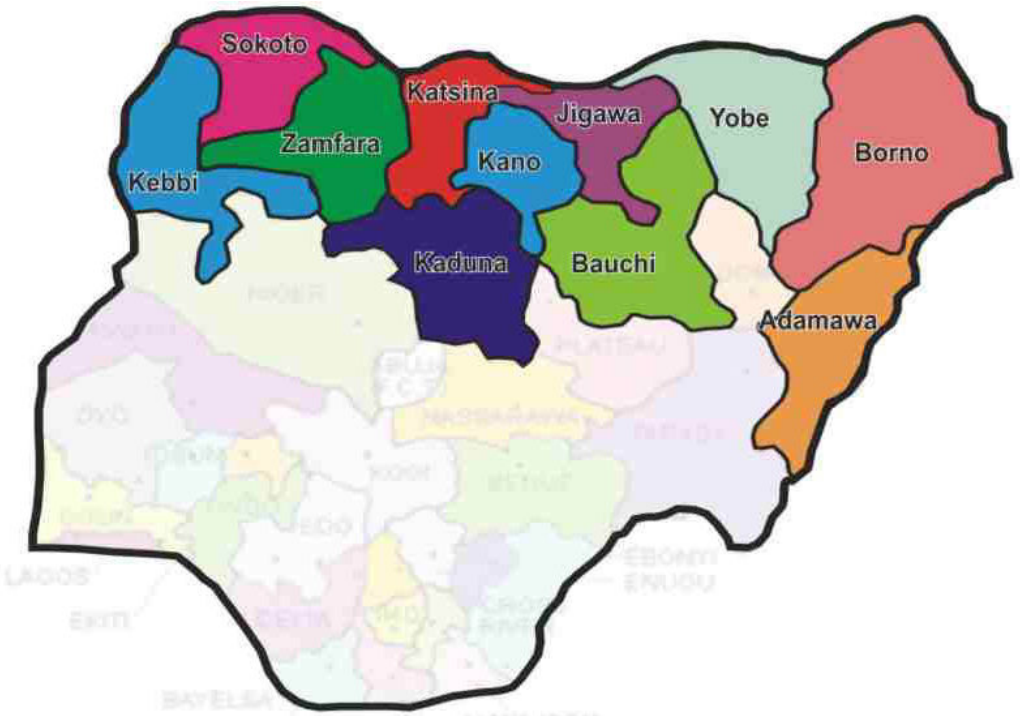
STUDY REPORT

KNOWLEDGE, PERCEPTION AND BELIEFS ABOUT CHILDHOOD IMMUNIZATION AND ATTITUDE TOWARDS UPTAKE OF POLIOMYELITIS IMMUNIZATION IN NORTHERN NIGERIA



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PREFACE i

A team of community physicians and medical consultants drawn from the Bayero University Kano and the Ahmadu Bello University Zaria were commissioned by the National Programme on Immunization (NPI) to undertake a study on knowledge, perception and beliefs about childhood immunization and attitude towards uptake of poliomyelitis immunization in eleven states of northern Nigeria that are known to be high risk areas for the transmission of poliomyelitis infection.

The team collected information on awareness of the usefulness of vaccines in disease prevention, other measures perceived as preventive against diseases, perception on whether immunization carries unwanted effects, level of acceptance of immunization, and reasons for acceptance or rejection of poliomyelitis vaccine.

The team of investigators in this study wishes to express its gratitude to all persons who facilitated the successful implementation of the study. Special mention, however, is due to the following:

- State Commissioners of health in the eleven states
- State Primary Health Care Directors in the eleven states
- Principals of Schools of Health Technology in the eleven states
- Chairmen, traditional and religious leaders and Primary Health Care Coordinators of local governments involved in the study
- All of the field personnel who were engaged during the study; for commitment to high quality work a times under difficult conditions; and
- The study respondents for their patience and cooperation.

Our gratitude also goes to the staff of the computer unit of the Aminu Kano teaching hospital who had to work long hours to finish analysis of results of this study.

Professor M. Kabir
Principal Investigator

ABBREVIATIONS ii

AKTH	Aminu Kano Teaching Hospital
AIDS	Acquired Immune Deficiency Syndrome
BCG	Bacille Calmette Guerin
BUK	Bayero University Kano
CDC	Centers for Disease Control
CSM	Cerebro-spinal Meningitis
DPT	Diphtheria Pertussis Tetanus vaccine
EPI	Expanded Programme on Immunization
FOMWAN	Federation of Muslim Women's Association of Nigeria
FGD	Focus Group Discussion
HIV	Human Immunodeficiency Virus
IDI	In-depth Interview
IPDs	Immunization Plus Days
KII	Key Informant Interview
LGA	Local Government Area
NIDs	National Immunization Days
NPI	National Programme on Immunization
OPV	Oral Polio Vaccine
PEI	Polio Eradication Initiative
PHC	Primary Health Care
SIAs	Supplemental Immunization Activities

SNIDs	Sub-national Immunization Days
TB	Tuberculosis
US	United States
USA	United States of America
UNICEF	United Nations Children's Fund
VPDs	Vaccine Preventable Diseases
WHO	World Health Organization
WPV	Wild Polio Virus

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EXECUTIVE SUMMARY

Despite various initiatives and campaigns, immunization coverage in most parts of the developing world including Nigeria has remained low, thereby contributing to high mortality and morbidity among children. Important among reasons for this low coverage are problems arising from knowledge, attitude and perceptions regarding vaccination. This study carried out in eleven states in Northern Nigeria (where poor uptake/rejection of immunization is reportedly high) was to provide information on awareness of mothers/caregivers/opinion leaders of protective properties of vaccines against childhood diseases, other methods they perceive as useful for protecting children against diseases, their belief in vaccination having unwanted effects, their level of acceptance of vaccination, their reasons for acceptance or rejection of poliomyelitis vaccination, and their reasons for poor uptake/rejection of immunization.

Awareness of protective properties of vaccines

Very low percentages were recorded among respondents who believe vaccines can protect against tuberculosis with Zamfara state recording 16.3% and Kebbi state recording 33.1%. Kaduna state, however, recorded a high figure of 81.4%. Respondents in all the eleven states recorded low percentages when asked if vaccines protect against pertussis with Zamfara state having the lowest figure of 8.6%. High figures were, however, recorded on the question of protective properties of vaccines against measles with a range of 95.0% in Kaduna state to 74.9% in Bauchi state. Only Kaduna state recorded up to 50% on the question of protective properties of yellow fever vaccine and only the same Kaduna state plus Katsina state recorded up to 50% on the question of protective properties of tetanus vaccine.

In most of the eleven states high figures of respondents were recorded when asked about protective properties of poliomyelitis vaccine.

Other methods perceived as useful for protection against diseases

They included proper waste management, adequate ventilation, and adequate nutrition. Respondents with some knowledge of transmission of measles and malaria mentioned these methods.

Apart from the aforementioned, some respondents mentioned use of herbs, prayers, use of holy water and wearing amulets as useful in protection against diseases. No state, however, recorded a figure of up to 30% of its respondents who mentioned any of these measures as protective against diseases (range was 0.7% – 26.3%).

Level of acceptance/rejection of vaccination

Very high figures were recorded of respondents who would accept their children to be vaccinated with a range of 93.8% in Kaduna state to 80.2% in Zamfara state.

When asked for their reasons, those that said children should be immunized gave the following reasons: it is effective in protecting children, it is not against my religion, it doesn't introduce HIV/other infections as it is being peddled, it doesn't cause sterility.

Respondents who did not accept their children to be immunized gave as their reasons: vaccines are not effective, immunization is against my religion, fear vaccines transmit HIV/AIDS, fear that vaccines cause sterility, others advised against immunization.

Reasons for acceptance of poliomyelitis immunization

For those that accept polio vaccine, reasons given include; polio vaccine protects against the disease, my husband accepts the vaccine, it doesn't transmit HIV as was claimed, not against my religion, It doesn't cause sterility as was rumoured and I don't believe the negative things said against the vaccine.

High figures were recorded amongst respondents who believed poliomyelitis vaccine protects against the disease with Adamawa having the highest figure of 87.7% and Bauchi with the lowest figure of 57.4%. On the other hand very low percentages of below 20% of respondents in all states were recorded among those who accepted poliomyelitis vaccine for other reasons stated.

Reasons for rejection of polio vaccines

The proportion of respondents who rejected polio vaccine ranged from 6.0% in Kebbi to 20.0% in Zamfara state. Kano, Jigawa, Sokoto and Bauchi states had rejection rates of more than 15.0% each.
For those who reject polio vaccine, reasons given include; Children develop polio even after the vaccination, fear of side effect, I have no faith in the vaccine, I don't feel my child needs it, contains HIV, contains contraceptives and it is contrary to my religion.

Of those who reject polio vaccine, when asked what could be done to change their mind towards the vaccine, some said nothing could change their mind, change the source of the vaccine, change vaccinators and improved priority to other diseases like malaria and measles.

Reasons for poor uptake/rejection of immunization

Study data indicate that there are reasons common to all the eleven states that account for rejection of immunization. The poliomyelitis vaccine, especially doses administered during supplemental immunization activities are particularly detested. The most important reason for this is the misconception that it is a ploy by outsiders (enemies of Islam) to reduce the Muslim population through fortification of the vaccine with contraceptives. Another popular rumour making rounds is the purposeful spread of the HIV virus through the vaccine, which respondents claimed is another way of reducing the population of Muslims. The lack of a clear position on immunization in the religion of Islam is also not helping matters. Another reason found for rejection of immunization particularly polio immunization include the apparent disparity between felt needs of the people and the health care system. Respondents felt solutions should be found to malaria, acute respiratory infections and other visibly more prevalent illnesses including malnutrition rather than concentrating on poliomyelitis.

Other reasons given include side effects observed following previous immunizations. Mothers complained that injections given during supplemental immunization campaigns have led to fever, swollen thighs and inability of their children to walk for days. The apparent lack of skills of ad-hoc workers, most of whom are non-indigenes and hence not known to the communities, recruited for supplemental immunization exercises also contributes to rejection of immunization. Most mothers do prefer obtaining immunizations at health facilities rather than house-to-house delivery even though some respondents complained about harsh

treatment by health workers in health facilities. In some cases older members of a family influence against accepting immunization while other respondents opined that since spirits cause polio there was no need for taking any preventive measure against it.

Recommendations

1. There is a need to intensify Public health education on the vaccine preventable diseases using radio programmes. Emphasis should be paid to poliomyelitis, the wrong perception on its aetiology, its association with infertility and HIV/AIDS should be dispelled.
2. The National Programme on Immunization must ensure availability of all vaccines at all times. The study revealed that shortages are more encountered with BCG and Measles vaccine, so this should be looked into.
3. All components of immunization should be free including the cost of needles and syringes. This should always be made available alongside the antigens.
4. Since men are the major decision-makers for childhood immunization, male participation in the planning, implementation and evaluation of immunization services is very essential.
5. There is the need for NPI to conduct periodic dialogue with Islamic religious leaders on the education of their followers who reject immunization services in the study area.
6. The possibility of including immunization programmes in the UBE curriculum should be considered. This will cultivate a positive attitude towards immunization among children-the future parents/caregivers.
7. There must be periodic capacity building for immunization personnel on client-oriented care, injection safety and other relevant skills.
8. As rejection is commoner with polio vaccine during house-to-house campaign, this strategy should be de-emphasized. Routine immunization strategy should be accorded the highest level of priority. There must be a paradigm shift from campaigns to routine.

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CHAPTER 1. INTRODUCTION

Five million children die in the developing world each year, and another five million are mentally or physically disabled due to the six vaccine preventable diseases namely diphtheria, pertussis, tetanus, measles, poliomyelitis and tuberculosis. The annual death rate from these diseases is approximately 220,000 with 10-26% of these occurring in infancy and early childhood.[1]. Medical scientists recognised that many diseases could be prevented if people, especially children, could be given timely injections of killed or attenuated agents of those diseases[2]. In 1974 the World Health Organization (WHO) launched its Expanded Programme on Immunization (EPI).

Routine immunization in Nigeria

Nigeria began implementation of EPI in 1979, and by 1990 coverage had reached 80% for BCG (first contact) and 48% for measles (last contact). The years following 1990 then witnessed major decline in coverage, due to low political will and social support, inadequate funding and poor community involvement and participation. In view of the critical need to enhance the effectiveness of immunization, which was fast declining, meet the global challenges of immunization, and to reflect Federal Government ownership, the EPI programme was re-visited and re-named National Programme on Immunization (NPI) in 1995. NPI was established under act No.12 of august, 1997 as a parastatal of the federal ministry of Health. The organization is charged with the responsibility to effectively control through provision of vaccines, logistic and technical support to states and LGA and monitoring & supervision, the occurrence of the following deadly diseases: Tuberculosis, Poliomyelitis, Diphtheria,

Whooping Cough, Tetanus, Neo-natal tetanus, Measles, Yellow fever, Hepatitis B & CSM. In 2003, the NPI commissioned a detailed coverage survey. It showed coverage of 29% for BCG, 25% for measles and 13% fully immunized with all doses. This is one of the lowest national coverage rates in the world. The national figure masks significant regional variations with some states in northern Nigeria having full coverage rates below 1%. Routine immunization coverage in Nigeria is still low with a national average of 38% for Jan-Dec 2005 and 50% Jan-May 2006. Nigeria provides immunization services within the framework of the 5- year (2006-2010) Strategic Activity plan for routine immunization sustainability.

Specifically, the major objectives of the current routine immunization services in the country are to develop and promote activities geared towards reduction of childhood mortality and morbidity through adequate immunization coverage for all infants and pregnant women, and to strengthen routine immunization performance through strengthening of ward delivery system to reach 65% DPT3 coverage by December 2006.

Polio Eradication Initiative

In 1988, the World Health Organization (WHO), Rotary International, the United Nations Children's Fund (UNICEF), national governments and the US Centers for Disease Control and Prevention and an extensive global partnership of international agencies, bilateral donors, non-governmental organizations, foundations, and the private sector resolved to eradicate poliomyelitis globally by the year 2000. Further to the above, in 1996 at Yaounde-Cameroon, the African Heads of Government re-stated their commitment to this Global Goal, directing all African Countries to commence national PEI activities. In April and May 1999, Nigeria became the first African Country to conduct the House-House

Strategy for Polio Supplemental Immunization Activities. NPI in collaboration with States and LGAs have at date conducted several Polio SIAs comprising of NIDs, SNIDs and Mop-up Operations. However, failure to ensure adequate routine and supplemental immunization contacts is responsible for both the low routine immunization coverage and the persistent wild poliovirus transmission in Nigeria.

Although outstanding progress has been made towards interrupting the transmission of wild poliovirus globally with the number of polio-endemic countries worldwide haven fallen drastically from 125 countries with over 350 000 cases in 1988. However, up to date wild poliovirus still circulates in Pakistan, Afghanistan, India and Nigeria. The situation in Nigeria remains a cause for serious concern because as at 14th July 2006, Nigeria had 542 cases of wild poliovirus as compared to 302 cases for the same period in 2005, with the intense transmission in northern Nigeria[14]. Moreover, as at Mid-November 2006, 1589 WPVs were isolated globally. Out of this, 985 (61.9 %) were reported from Nigeria alone. This gives a 46.6% increase over a-year period compared to the same time the previous year. The eleven northern states collectively contributed 956 (97.1 %) of the isolated viruses. In Nigeria, two prototypes, WPV1 and WPV3 are responsible for the infections, with 792 of the former, and 193 of the latter reportedly isolated. With 27 new cases reported from the high risk states within a-week period in November 2006, it appears that a significant number of the virus is still circulating[15].

This sad state of affairs necessitated the need for a study particularly in the eleven Northern states of this country namely Kano, Jigawa, Kaduna, Katsina, Sokoto, Zamfara, Kebbi, Borno, Bauchi, Adamawa and Yobe to determine the extent and basis for wrong approach of immunization as an

important preventive measure with a view to offering helpful recommendations.

The specific objectives of the study are as follows:

1. To determine if mothers/care givers/opinion leaders are aware that vaccines protect against diseases
2. To determine what other methods mothers/care givers/opinion leaders perceive are useful for protecting their children against diseases.
3. To find level of acceptance or rejection of immunization by mothers/caregivers/opinion leaders.
4. To find out reasons why mothers/care givers/opinion leaders accept/reject poliomyelitis immunization.
5. To determine the actual reason(s) of poor uptake/rejection of immunization in the 11 high risk states.
6. To make recommendations based on the findings.

2. STUDY METHODOLOGY

2.1 STUDY AREA

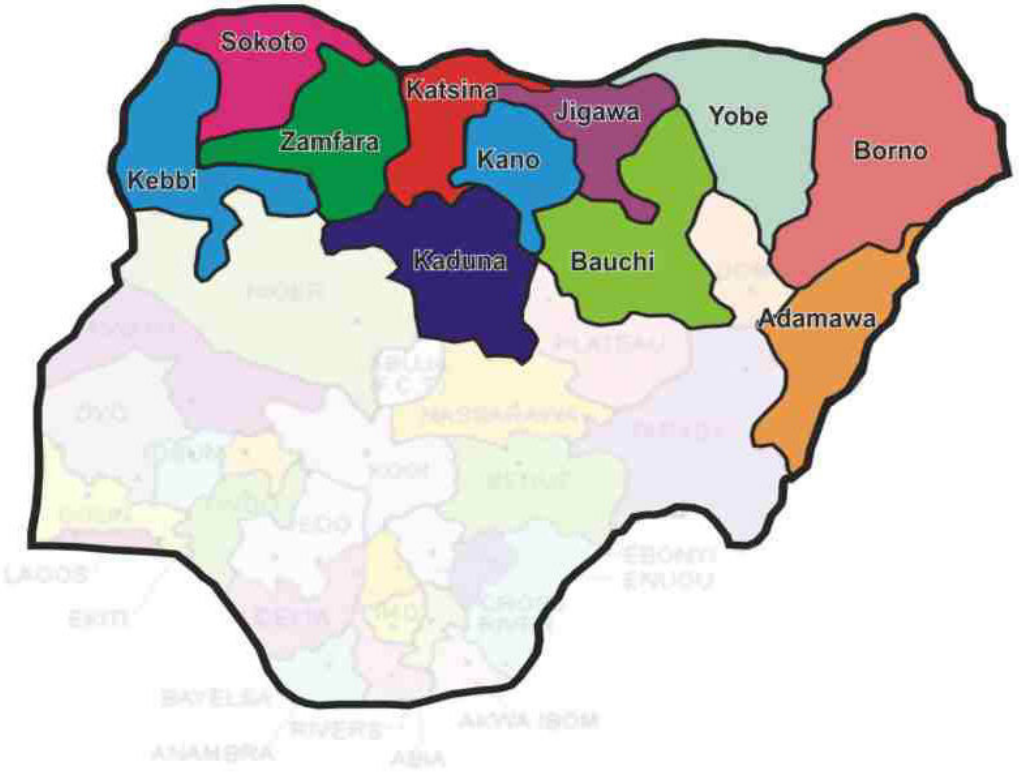
The scope of this assessment applies to 11 States of northern Nigeria where wild polio virus is still circulating. These high-risk polio states include Kano, Katsina, Kaduna, Zamfara, Sokoto, Kebbi, Jigawa, Bauchi, Yobe, Borno and Adamawa state. These states share borders with Niger and Chad Republics to the North, Cameroon to the east and Benin Republic to the West. To the south, it is bounded by the, north central, South East and South West states. An estimated 53% of the 130, 000,000 people in Nigeria are from the northern part of the country. Of the 774 LGAs in the country, 419 are located in the North. A total of 75.9% of the landmass of the country is in the North which has a lower population density compared to the South of the country. The lowest population density of 32.8 people per square kilometer is found in Borno State. The mean zonal population densities are 51 and 213 people per square kilometer in the North East and North West respectively.

While significant religious, cultural, gender relations and language differences exist between the North east and west, there are key factors which bind these regions together making them more closely connected to each other than to any other region in the country. Binding factors include the prevalence of the Islamic religion, the dominance of Hausa as the language of communication, agriculture as the mainstay of economic activity, the communal nature of civil society organizations and the preponderance of rural settlements within a wider context of rural poverty. Northern Nigeria is comprised of a more homogenous Hausa/Fulani, Hausa speaking Moslem population in the core Northern States. As one moves southwards to the middle belt, the population

becomes less homogenous, with an increasing number of diverse ethnic groups. Languages, socio-cultural patterns of the people are equally diverse. As one moves southwards, there is an increase in the proportion of Christians. Some states located in the north are using the Sharia legal codes.

Poverty in this zone is comparatively higher than in the South. Generally, the North West zone has the highest poverty rate of 77% followed by a rate of 70% in North East. These rates are all higher than the rates in the Southern parts of the country (cited in UNICEF 2001). The North also has the worst educational indicators, with literacy levels, school enrolment and retention rates decreasing the further one moves to the northern border of the country. The female literacy rate in the South East is almost three time higher than the rates of 21% in the North East zone and 22% in the North West zone while the male literacy rate of 74% in both the South East and South West zones is 1.7 times the rates in the Northern zones. Illiterate and without economic power, women are excluded from decision making in critical areas of health and education of the household.

MAP OF NIGERIA SHOWING THE ELEVEN POLIO HIGH RISK STATES



2.2 ETHICAL CONSIDERATION

Consent for this study was obtained through letters issued by the National Programme on Immunization (NPI) to the state Commissioners of health of the eleven Northern states (For the attention of their respective Directors of Primary Health Care). The letters were submitted to the Honourable Commissioners by the team leader for the study in each state.

In addition, informed consent of respondents was also obtained in all the states.

2.3 STUDY POPULATION FOR QUANTITATIVE STUDY

These were all adults in three selected local governments in the eleven states.

2.4 TARGET POPULATION FOR QUALITATIVE STUDY

The qualitative assessment focused on mothers, fathers, other caregivers, opinion leaders [religious leaders-Islamic, Christian], traditional leaders and political leaders.

2.5 STUDY DESIGN

A cross sectional descriptive study was employed. Data was collected using quantitative and qualitative methods.

2.6 SAMPLING TECHNIQUE (Quantitative study)

All the eleven states were involved and a Multi stage sampling technique was employed in each state. In the first stage, the LGAs were stratified into urban and rural LGAs. One urban and two rural LGAs were then randomly selected. Having randomly selected one urban LGA where there was more than one, two rural LGAs were also randomly selected. The two rural LGAs were selected from the other two senatorial zones outside that from which the urban LGA was selected. This was to enable representation of all parts of the state. The second stage was a random selection of three wards from each of the selected LGA. The third stage was random selection of 7 settlements from each of the selected wards. The fourth stage was the random selection of 30 households from each of the 7 settlements and the fifth stage was selection of one respondent from

each of the selected households by balloting. This was adapted from the WHO/EPI cluster sampling technique for assessing immunisation coverage.

11 states x 3 LGAs x 3 Wards x 7 Settlements x 30 Households/Respondents = 20,790 respondents

LIST OF STATES AND SELECTED LOCAL GOVERNMENTS

State	Urban Local Govt.	Rural Local Govt.
Kano	Tarauni	Bagwai Kura
Sokoto	Sokoto North	Bodinga Rabah
Kaduna	Kaduna North	Kachia Makarfi
Bauchi	Bauchi	Ningi Giade
Adamawa	Yola South	Mubi south Demsa
Kebbi	B/Kebbi	D/Wasagu Augie
Borno	Jere	Damboa Konduga
Yobe	Damaturu	Fune Geidam
Jigawa	Dutse	M/Madori Kazaure
Zamfara	Gusau	K/Namoda T/Mafara
Katsina	Katsina	Bakori Sandamu

2.7 DESCRIPTION OF QUESTIONNAIRE FOR QUANTITATIVE STUDY

A pre-tested structured mostly close-ended interviewer questionnaire was used to collect data from respondents. It was in 6 parts, the first part inquired about socio-demographic information of the respondents, the second part asked if respondents were aware that vaccines protect against diseases, the third part determined which other methods respondents perceived were useful for protecting their children against diseases, the fourth part found out if respondents believe immunizing children carries unwanted effects, the fifth part asked whether or not mothers accept immunization while the fifth and sixth parts determined reasons of the respondents for rejection of poliomyelitis vaccine as well as reasons for rejection of other vaccines.

2.8 DATA ANALYSIS (Quantitative study)

Data was analyzed using the Epi-Info statistical software package (CDC Atlanta Georgia USA). Descriptive statistics was depicted using absolute numbers, simple percentages, range and measures of central tendency (mean, median) as appropriate.

2.9 QUALITATIVE ASSESSMENT PROTOCOL

A qualitative study to gain insights into the knowledge, attitudes, perceptions and practices of childhood immunization was undertaken. The assessment was conducted in three local government areas each in the 11 high-risk states in Northern Nigeria. The qualitative component of the study included key informant interviews (KIIs) with Opinion leaders and focus group discussions (FGDs) with mothers/fathers/other caregivers. The data gained from the assessment was triangulated with

that obtained from the quantitative assessment to make recommendations for improved uptake of childhood immunizations.

Target Populations

The qualitative assessment focused on mothers, fathers, other caregivers, opinion leaders [religious leaders-Islamic, Christian], traditional leaders and political leaders.

Methodology

The qualitative study was carried out through **Focus groups discussions (FGDs)** and **Key informant interviews (KII)** divided by category of target population, LGA and State. Two **FGDs** were conducted for groups of 8-10 mothers, fathers and other caregivers in each of three LGAs per state. Participants were selected purposively from areas of block rejection/non-compliance.

Fieldwork teams comprised of a Moderator and Note taker. Each team conducted the FGDs and KIIs in the three LGAs of the state. The team (moderator and note taker) met at the end of the day to debrief and to summarize their notes and generate ZY tables for their respective LGA. The total number of FGDs and KIIs per target population conducted in each of the local government area was provided in the matrix below.

The FGD teams and interviewers in each LGA were supervised by the state consultant who was responsible for compiling and analyzing data collected from each of the LGAs and for writing up preliminary findings.

FGD and KII guides had been developed for each of the target populations and was translated into local languages as

necessary/appropriate. FGDs and KIIs were conducted in the language that target populations understood best.

Focus Groups

Focus group discussions (FGDs) were conducted among target population members in groups of 8 to 10 participants each.

Efforts were made to recruit participants and organize FGDs and KIIs as much as possible in advance to avoid delays during the data collection period. Formal letters requesting approval to conduct FGDs and KIIs were sent to the appropriate authorities and gatekeepers where necessary.

Geographic Sites

Efforts were made to select target populations/respondents from various geographical settings within each local government area. The proposed selection of sites included block rejection areas in urban, peri-urban and rural areas in three LGAs in each of the 11 high-risk states.

Areas of Analysis

The data of this assessment provided information that will be used in improving uptake of childhood immunizations. The main areas of analysis for the assessment were:

1 Level of awareness of the protectiveness of vaccines against diseases
2 Identification of other methods perceived as useful for protecting children against diseases.
3 Beliefs about unwanted effects of childhood immunization

4 Level of acceptance/rejection of immunizations
5 Reasons for acceptance/rejection of poliomyelitis immunization.
6 To determine the actual reason(s) of poor uptake/rejection of immunization in the 11 high risk states.

Each of the areas of analysis specifically identified these issues in relation to poliomyelitis immunization and other childhood immunization.

Target group	**Methods**
Mothers	2 FGDs
Fathers	2 FGDs
Other Caregivers	2 FGDs
Religious Leaders	2 KIIs (1 Islamic, 1 Christian)
Traditional leaders	2 KIIs
Political leaders	2 KIIs
Total per LGA	**6 FGDs, 6KIIs**
Total per State	**18 FGDs, 18 KIIs**

i) Review and Adaptation of Tools

As part of the process of conducting the assessment, a workshop was organized in Aminu Kano Teaching Hospital, Kano to enable consultants and the principal investigator review the tools and make contributions. The tools were pre-tested for comprehension, appropriate language/terminology, etc. Thereafter the revised tools were adapted. Specifically, for the qualitative component FGD and IDI guides were developed and adapted for each of the target populations. The discussions and interviews were conducted in the language that target populations

understood best-Hausa, English language, Fulfulde, Kanuri and Pidgin English.

Similarly, for the quantitative assessment, an interviewer-administered questionnaire with close-ended questions was developed, pre-tested and used.

ii) Training of Research Assistants

Training was organized in each state by the consultant in charge of the state to orient the research teams about the conduct of the research as well as the use of the tools. Generally the purpose of the state-level training was to familiarize the research assistants with the tools and standardize the data collection procedures under the direct supervision of the consultants. Presentations were made on qualitative research methodology, conduct of FGDs and IDIs: Tips on note taking and tape recording; Consent and confidentiality; review of the tools and qualitative data management. This was followed by role-plays and field-testing of FGDs and IDIs. Similarly, for the quantitative component of the study, the training also familiarized the research assistants with the assessment protocol and the data collection tools.

2.10 LIMITATIONS OF THE STUDY

1. The survey coincided with preparation for the Immunization Plus Days (IPDs). Some of the principal officers at the LGA level such as the PHC coordinators and NPI managers were very busy.
2. There were some denials on polio rejection among some of the respondents (both quantitative and qualitative).

3. The political leaders were difficult to approach and in some instances did not consent to be interviewed because of some political reasons.
4. There were differences in the quality of interviewers and data collectors, which was especially obvious in in-depth interviews and FGDs, where more probing was done by good interviewers and moderators and thus the information was ‘richer’.

CHAPTER 3. FINDINGS

3.1 Socio-demographic characteristics of respondents

Out of the 1,890 questionnaires administered in each of 11 northern states of Kano, Katsina, Kebbi, Sokoto, Zamfara, Kaduna, Adamawa, Yobe, Borno, Bauchi and Jigawa, the number of completed questionnaires that could be analysed are displayed in Table 1 with the corresponding response rates.

Table 1: Number of completed questionnaires per state

S No.	State	Questionnaires completed No. (%)
1.	Kaduna	1,882 (99.6%)
2.	Kano	1890 (100.0%)
3.	Katsina	1873 (99.1%)
4.	Kebbi	1858 (98.3%)
5.	Zamfara	1889 (99.9%)
6.	Sokoto	1889 (99.9%)
7.	Adamawa	1890 (100.0%)
8.	Bauchi	1789 (94.7%)
9.	Borno	1885 (99.7%)
10.	Yobe	1859 (98.4%)
11.	Jigawa	1872 (99.0%)

Overall there were 20,576 respondents in the 11 states. They comprised of 11,780 (57.3%) mothers, 7,117 (34.6%) fathers and 1,679 (8.2%) other caregivers. Mothers' ages ranged from 14 to 59 years, whereas fathers ages ranged from 17 to 91 years. Similarly, the ages of other caregivers ranged from 15 to 86 years. The mean ages were 37.6± 7.6, 43.2±6.4 and 38.7±4.8 years respectively for mothers, fathers and other caregivers.

There were 10,622 (51.6%) Hausa, 3,003 (14.6%) Fulani and 1,926 (9.4%) Kanuri respondents. Others were Ibo 716 (3.5%), Yoruba 877 (4.3%) and other tribes 3,432 (16.7%).

The majority 16,312 (79.3%) of respondents were Muslims, 4,056 (19.7%) were of Christian faith and the remaining 208 (1.0%) belong to African traditional religion**.**

Majority 9,201 (44.7%) of the respondents had Qur'anic education without any formal education, 5,455 (26.5%) had primary school education and 4,513 (21.9%) had secondary and post-secondary education. The remaining 1,205 respondents had Adult education.

Respondents were engaged in farming 5,145 (25.0%), small-scale businesses/petty trading 3,674 (17.9%) and the civil service 2,602 (12.6%). Others were students 509 (2.5%) or were engaged in a host of other trades in the non-formal sector 7,787 (37.8%).

3.2 Common childhood diseases

It was evident from the study that most of the respondents are aware of childhood illnesses. Most respondents mentioned; febrile illness, Malaria, Cough, Catarrh, Diarrhoeal diseases, Measles, Whooping cough, Skin diseases and Abdominal aches. A father said, *"The major health problems of children in this community include malaria, typhoid fever, pneumonia, stomach ache"*. A 21 year old mother of three said *"Our children are affected by cough, catarrh, fever, at times diarrhoea; there is also measles, tuberculosis. There is HIV, others have boils all over their body, and polio causes the leg of the child to be paralyzed"*. Other less common health problems of children mentioned by some respondents include; Hepatitis, Tetanus, Poliomyelitis, Malnutrition, HIV/AIDS and

Tuberculosis. A caregiver remarked, "*For polio, it is not regularly seen, HIV/AIDS it is around but since one has not seen it, one will not say much of it".*

3.3 Perceived causes of Childhood illnesses including Poliomyelitis

Majority of the respondents attributed childhood illnesses to such factors as bad food, bad water, the weather condition (heat), poor environmental sanitation, inadequate childcare, mosquito bites and insufficient food intake. An interesting finding from the study is the lack of knowledge on what causes poliomyelitis as well as wrong perception of the causes of the disease. The study revealed that most of the respondents do not know the exact cause, attribute it "*Inna*" [A feminine spirit], to God, evil spirits, witchcraft or other unscientific phenomena. This finding was consistent in all the states and the various groups of respondents. For instance, a father of four remarked that, *"There is no specific thing that one can say is the cause of polio"*. A traditional leader suggested, *"Polio is a disease caused by bacteria"*. Similarly, a political leader said, *"Polio is contracted through air*". A spiritual leader said, *"Polio is from God, it is caused by genies who are aimlessly roaming about"*. A caregiver also opined that, *"It is as a result of witchcraft".*

In some states, a few respondents had a fair knowledge in the sense that they were able to relate polio to water despite being ignorant of the causative agent. For example, a mother of five said, "*Polio is caused by dirty water".*

3.4 Parental knowledge of vaccines and their perceived protectiveness against diseases

The proportion of respondents that have heard of childhood immunization range from 86.5% in Kebbi state to 98.9% in Kaduna state as shown in Table 2.

Table 2: Proportion of respondents that were aware of childhood immunization

S No.	State	Proportion aware of childhood immunization
1.	Kaduna	98.9%
2.	Kano	94.4%
3.	Katsina	97.7%
4.	Kebbi	86.5%
5.	Zamfara	94.5%
6.	Sokoto	89.5%
7.	Adamawa	92.4%
8.	Bauchi	94.9%
9.	Borno	94.1%
10.	Yobe	96.3%
11.	Jigawa	92.5%

The proportions indicating that vaccines could be used to protect against yellow fever, diphtheria, polio, pertussis and cerebrospinal meningitis in the 11 states are indicated in Table 3. Specifically, the proportion of respondents who indicated that polio could be vaccinated against ranged from 56.9% in Sokoto state to 87.8% in Katsina state.

Other respondents reported that vaccines are available against pneumonia, malaria and diarrhoea.

Table 3: Proportion of respondents accepting that vaccines could protect against the diseases indicated

S No.	State	Tuberculosis	Polio	Pertussis	Measles	Y/Fever	Tetanus
1.	Kaduna	81.4%	**84.6%**	35.8%	95.0%	50.8%	58.9%
2.	Kano	79.6%	**78.9%**	14.1%	89.4%	25.7%	29.7%
3.	Katsina	66.7%	**87.8%**	37.8%	83.4%	44.8%	53.4%
4.	Kebbi	33.1%	**73.1%**	15.7%	75.2%	32.5%	22.9%
5.	Zamfara	16.3%	**70.6%**	8.6%	73.6%	17.4%	10.1%
6.	Sokoto	47.4%	**56.9%**	11.7%	81.7%	23.6%	30.2%
7.	Adamawa	75.0%	**61.4%**	17.7%	92.0%	27.1%	37.9%
8.	Bauchi	48.2%	**72.5%**	28.8%	74.9%	30.2%	39.5%
9.	Borno	57.8%	**76.1%**	11.7%	87.4%	22.9%	27.2%
10.	Yobe	62.2%	**85.6%**	22.5%	91.2%	18.1%	48.5%
11.	Jigawa	53.0%	**69.2%**	15.8%	86.4%	29.5%	43.7%

When asked about ideal time for administering BCG, 80.1% of respondents in Kaduna state said it should be given immediately after birth compared to only a mere 45.5% of respondents in Yobe state. Up to 54.5% of respondents in Yobe state did not know when BCG should be administered. The proportion of respondents that were able to correctly indicate when BCG, Polio and Measles vaccines should be administered are shown in Table 4.

Table 4: Proportion of respondents that correctly indicated when each of the vaccines indicated should be administered

S No.	State	BCG	OPV0	OPV1	OPV2	OPV3	Measles
1.	Kaduna	80.1%	65.6%	56.2%	44.8%	44.4%	82.4%
2.	Kano	56.8%	39.7%	20.9%	21.8%	18.2%	46.3%
3.	Katsina	63.5%	55.3%	56.6%	50.1%	47.1%	61.5%
4.	Kebbi	67.4%	54.6%	55.7%	41.9%	38.7%	54.9%
5.	Zamfara	52.1%	49.7%	34.4%	23.7%	25.1%	43.9%
6.	Sokoto	71.3%	66.5%	57.2%	53.8%	52.5%	68.9%
7.	Adamawa	58.6%	51.8%	42.8%	39.2%	32.3%	65.5%
8.	Bauchi	71.9%	67.3%	61.8%	57.4%	57.5%	71.3%
9.	Borno	67.3%	46.6%	33.3%	28.7%	30.1%	55.3%
10.	Yobe	45.5%	30.6%	34.7%	26.4%	23.2%	41.6%
11.	Jigawa	65.4%	64.0%	52.8%	46.3%	48.6%	74.6%

When parents were asked the minimum number of doses of polio vaccine that is required to protect their children, the responses ranged from 1.6% of respondents in Bauchi state saying children need only one dose of polio vaccine to 23.2% of their counterparts in Kano state. In Adamawa state, up to 43.9% of respondents said, rightly, that a minimum of four doses of the vaccine is required to protect a child against poliomyelitis. Table 5 shows that a substantial proportion (52.9%) of parents in Yobe state were ignorant of the number of doses of polio vaccine required.

Table 5: Respondents' perception of the number of doses of polio vaccines that are required to protect a child

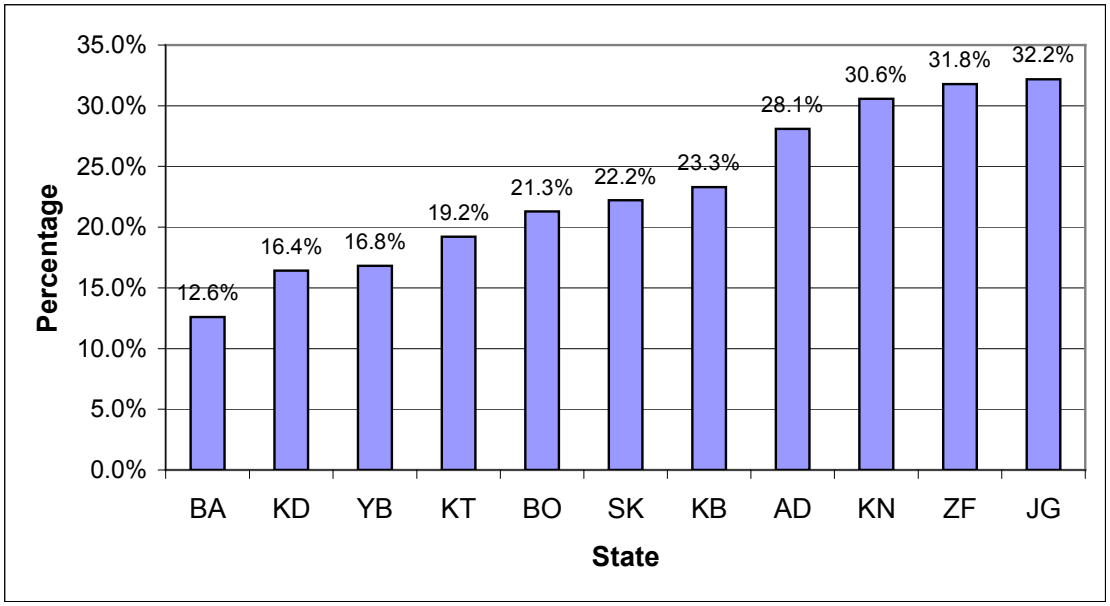
S No.	State	One dose	Two doses	Three doses	Four doses	> Four doses	Don't know
1.	Kaduna	3.8%	3.8%	67.8%	4.7%	0.9%	19.1%
2.	Kano	23.2%	2.9%	18.1	12.6%	2.6%	40.5%
3.	Katsina	1.9%	5.3%	18.8%	41.8%	6.3%	25.6%
4.	Kebbi	6.4%	13.4%	24.8%	29.3%	4.8%	21.3%
5.	Zamfara	16.1%	17.8%	13.9%	12.6%	4.6%	34.9%
6.	Sokoto	5.0%	15.1%	21.9%	24.7%	14.1%	19.0%
7.	Adamawa	5.5%	6.3%	26.9%	43.9%	14.8%	2.2%
8.	Bauchi	1.6%	5.6%	14.3%	22.4%	5.7%	50.4%
9.	Borno	4.9%	8.7%	13.7%	23.2%	4.6%	44.8%
10.	Yobe	1.8%	2.4%	24.1%	14.5%	3.7%	52.9%
11.	Jigawa	3.9%	11.4%	28.6%	30.8%	8.5%	16.8%

When respondents were asked if it is harmful to administer more than four doses of polio vaccines to a child, 31.8%, 30.6% and 23.3% of respondents in Zamfara, Kano and Kebbi states said yes, that it is harmful. This is shown in Table 6 and Figure 1.

Table 6: Proportion of respondents who perceived that administering more than four doses of polio vaccine is harmful to the child

S No.	State	Proportion
1.	Kaduna	16.4%
2.	Kano	30.6%
3.	Katsina	19.2%
4.	Kebbi	23.3%
5.	Zamfara	31.8%
6.	Sokoto	22.2%
7.	Adamawa	28.1%
8.	Bauchi	12.6%
9.	Borno	21.3%
10.	Yobe	16.8%
11.	Jigawa	32.2%

Figure 1: Proportion of respondents who perceived that administering more than four doses of polio vaccine is harmful to the child



3.5 Other methods perceived as useful for protecting children against diseases

The study also shows that majority of the respondents are aware of some of the preventive measures against common childhood illnesses. The commonest method mentioned by most respondents is through immunization. Other methods mentioned include; environmental sanitation, water/food hygiene, adequate ventilation and adequate nutrition. The respondents who mentioned these methods were those with some knowledge of how some of the childhood illnesses are transmitted especially malaria and measles.

Regarding the various preventive strategies, a 35-year-old mother of six was quoted as saying, *"Yes the diseases can be prevented through immunization which we use to collect at the hospital and sometimes at our doors".* A father of four also said, *"They do immunize us, but we don't know of which disease".* A political leader gave preventive strategies for malaria thus, *"For prevention of malaria, is to clear areas where mosquito breeds, measles is immunization, TB I don't know of immunization, but I know cleanliness can prevent it".*

A traditional leader said, *"These diseases can be prevented through medicine in the hospital, immunization, good water, clean food and for measles and malaria by immunization".* When asked what messages he delivers to his subjects during Friday sermon about protection against diseases, a religious leader said, *"For malaria is good environmental sanitation, no mosquito, no malaria, for measles is better ventilation and good housing".*

However, the study also found some incorrect knowledge on the preventive strategies of the childhood diseases among some respondents. For example, some believe that there are vaccines for the prevention of malaria while some of the respondents believe that poliomyelitis can only be prevented through immunization. One of the respondents had this to say, *"There is no other method of prevention of polio apart from immunization except by trial and error through the use of talisman/amulet locally known as 'guru and laya'"*. Other means of protection suggested by respondents include Use of herbs derived from leaves roots, stem or bark of trees, Religious approach through prayers to God for protection, adequate diet to the child and good environmental sanitation. For example, a political leader said, *"we use leaves from the top of the hill and other local herbs, they help to prevent"*.

A substantial proportion of respondents opined that there were alternative protective measures against childhood diseases. They mentioned the use of herbs, prayers, drinking Zam Zam water, medicinal incense, wearing charms, use of holy water and casting out demons. The proportions stating the alternative protective methods in the different states are given in Table 7.

Table 7: Responses on alternative methods of preventing childhood diseases

S No.	State	Herbs	Prayers	Zam zam water	Medicinal incense	Wearing charms	Use of holy water
1.	Kaduna	14.9%	11.6%	5.5%	2.8%	1.2%	2.4%
2.	Kano	21.9%	16.8%	1.6%	1.4%	6.9%	1.6%
3.	Katsina	23.4%	24.8%	7.0%	11.7%	6.8%	3.6%
4.	Kebbi	4.9%	25.8%	4.6%	14.9%	4.9%	3.9%
5.	Zamfara	10.9%	26.3%	1.8%	2.4%	5.2%	2.6%
6.	Sokoto	12.5%	27.8%	1.9%	7.6%	4.5%	4.6%
7.	Adamawa	21.6%	8.9%	1.5%	3.1%	3.3%	2.3%
8.	Bauchi	11.7%	20.5%	0.7%	0.9%	4.3%	0.6%
9.	Borno	14.6%	37.9%	6.0%	5.9%	3.5%	3.7%
10.	Yobe	26.2%	20.1%	1.9%	2.7%	4.7%	0.7%
11.	Jigawa	14.6%	18.4%	3.9%	13.9%	4.6%	0.9%

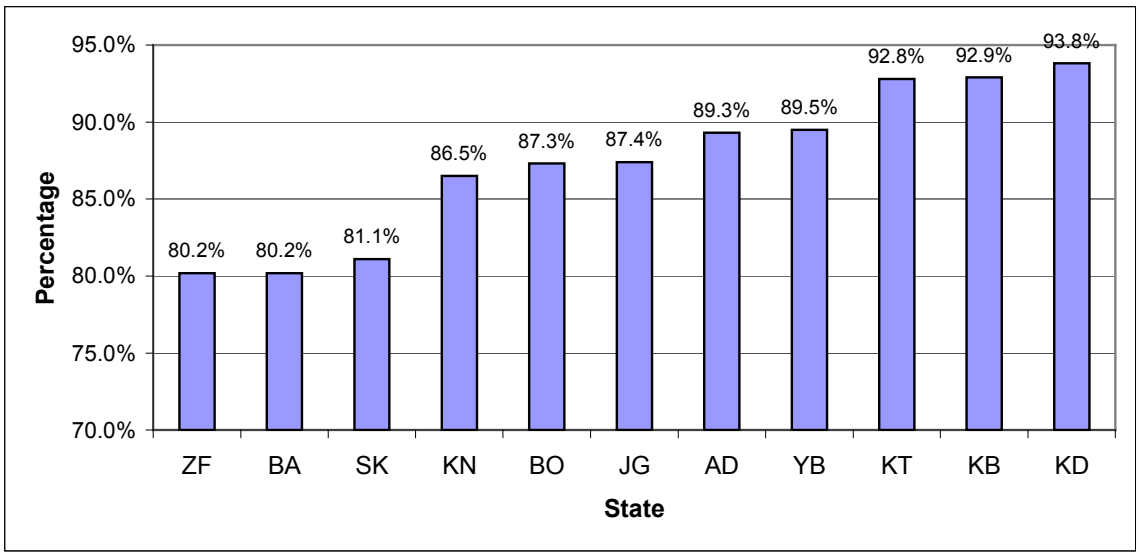
3.6 Level of acceptance/rejection of childhood immunizations

When asked whether respondents accept that children should be immunized, 93.8% of respondents in Kaduna state answered in the affirmative, while 80.2% of respondents accepted in Bauchi and Zamfara states. This is shown in Table 8 and Figure 3.

Table 8: Proportion of respondents accepting that children should be immunized

S No.	State	Proportion
1.	Kaduna	93.8%
2.	Kano	86.5%
3.	Katsina	92.8%
4.	Kebbi	92.9%
5.	Zamfara	80.2%
6.	Sokoto	81.1%
7.	Adamawa	89.3%
8.	Bauchi	80.2%
9.	Borno	87.3%
10.	Yobe	89.5%
11.	Jigawa	87.4%

Figure 2: Proportion of respondents accepting that children should be immunized



When asked for their reasons, those that said children should be immunized gave the following reasons; it is effective in protecting children, it is not against my religion, It doesn't introduce HIV/other

infections as it is being peddled, it doesn't cause sterility. For respondents that rejected childhood immunizations, their main reasons are shown in Table 9.

Table 9: Respondents' reasons for rejecting childhood immunizations

S No.	State	Not effective	Against religion	Fear of HIV/AIDS	Fear of Sterility	Others advised against	Others
1.	Kaduna	46.6%	12.1%	24.2%	11.7%	4.9%	0.5%
2.	Kano	29.9%	22.7%	11.9%	9.1%	14.4%	11.9%
3.	Katsina	48.9%	18.9%	9.4%	9.9%	11.6%	1.3%
4.	Kebbi	46.9%	27.3%	9.3%	3.8%	11.5%	1.1%
5.	Zamfara	16.4%	19.0%	6.8%	23.0%	18.6%	16.0%
6.	Sokoto	53.4%	24.3%	12.1%	4.8%	3.8%	1.7%
7.	Adamawa	82.8%	11.1%	2.9%	1.7%	1.4%	0.2%
8.	Bauchi	43.7%	19.7%	12.7%	11.3%	11.1%	1.6%
9.	Borno	51.5%	22.5%	8.8%	7.1%	6.6%	3.5%
10.	Yobe	47.3%	17.0%	8.7%	17.0%	8.7%	1.3%
11.	Jigawa	64.2%	12.0%	7.0%	7.6%	5.9%	3.3%

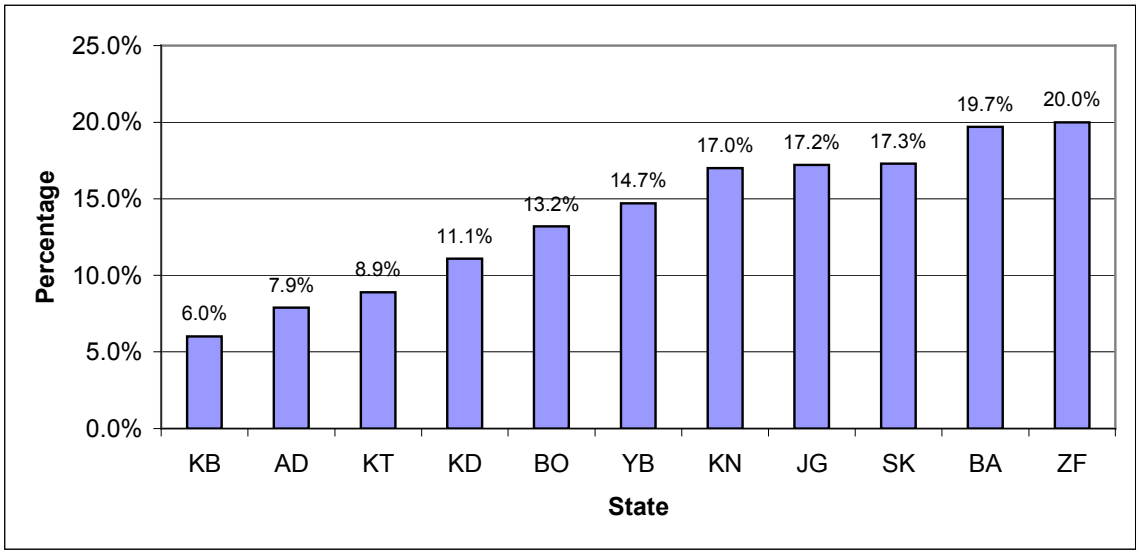
3.7 Rejection of oral polio vaccine

When asked specifically whether respondents accept polio vaccine for their children, majority of respondents said yes they do. The remaining minority said no, they don't. The proportions rejecting polio vaccine range from 6.0% in Kebbi state to 20.0% in Zamfara state as shown in Table 10 and Figure 2.

Table 10: Proportion of respondents rejecting polio vaccine

S No.	State	Proportion
1.	Kaduna	11.1%
2.	Kano	17.0%
3.	Katsina	8.9%
4.	Kebbi	6.0%
5.	Zamfara	20.0%
6.	Sokoto	17.3%
7.	Adamawa	7.9%
8.	Bauchi	19.7%
9.	Borno	13.2%
10.	Yobe	14.7%
11.	Jigawa	17.2%

Figure 2: Proportion of respondents rejecting polio vaccine



The proportion of parents reporting that their last child had received Polio vaccine ranges from 9.6% in Zamfara state to 56.2% in Kaduna state. The

proportions receiving the various doses of polio vaccine are shown in Table 11.

Table 11: Proportion of respondents reporting that their youngest child received doses of polio vaccine indicated

S No.	State	OPV0	OPV1	OPV2	OPV3
1.	Kaduna	71.6%	72.5%	62.3%	56.2%
2.	Kano	64.4%	60.4%	51.4%	36.1%
3.	Katsina	64.6%	62.4%	54.4%	54.9%
4.	Kebbi	33.8%	25.5%	22.1%	29.4%
5.	Zamfara	15.3%	15.4%	13.5%	9.6%
6.	Sokoto	37.9%	37.2%	22.0%	18.6%
7.	Adamawa	55.6%	57.2%	51.6%	40.5%
8.	Bauchi	45.4%	51.4%	34.9%	26.9%
9.	Borno	36.5%	39.9%	24.8%	28.3%
10.	Yobe	55.3%	63.6%	52.5%	53.2%
11.	Jigawa	50.4%	68.3%	53.5%	41.7%

3.8 Reasons for acceptance of oral poliomyelitis immunization

For those that accept polio vaccine, reasons given include; polio vaccine protects against the disease, my husband accepts the vaccine, it doesn't transmit HIV as was claimed, not against my religion, It doesn't cause sterility as was rumoured and I don't believe the negative things said against the vaccine. Proportions giving these reasons in the different states are shown in Table 12.

Table 12: Reasons for accepting polio vaccine

State	Protects against diseases	Doesn't cause sterility	Doesn't transmit HIV	Not against my religion	Husband accepts immunization	I don't believe in rumours
Kaduna	68.8%	4.2%	6.1%	5.5%	10,7%	4.7%
Kano	83.6%	7.0%	3.2%	4.0%	0.9%	1.3%
Katsina	73.5%	11.6%	5.9%	3.3%	3.2%	1.9%
Kebbi	81.2%	3.7%	1.9%	2.7%	4.5%	5.6%
Zamfara	48.7%	6.9%	8.5%	7.4%	10.5%	9.8%
Sokoto	68.9%	8.8%	7.5%	5.0%	5.7%	3.9%
Adamawa	87.7%	5.5%	1.3%	4.5%	0.8%	2.3%
Bauchi	57.4%	9.8%	10.4%	9.6%	6.8%	6.0%
Borno	85.8%	4.7%	4.5%	1.7%	2.0%	1.4%
Yobe	73.8%	14.7%	5.8%	1.9%	2.3%	1.2%
Jigawa	58.3%	11.7%	6.2%	9.7%	9.5%	4.6%

3.9 Reasons for rejection of polio vaccines

For those who reject polio vaccine, reasons given include; Children develop polio even after the vaccination, fear of side effect, I have no faith in the vaccine, I don't feel my child needs it, contains HIV, contains contraceptives and it is contrary to my religion. The proportion offering the various reasons in the different states are given in Table 13.

Table 13: Reasons for rejecting polio vaccines

State	No felt need	Fear of side effects	No faith in vaccine	Not effective	Religion	Contains HIV	Contains contraceptives
Kaduna	10.8%	26.8%	11.7%	37.2%	0.87%	5.2%	2.2%
Kano	21.3%	29.0%	24.7%	7.7%	4.0%	9.0%	4.0%
Katsina	18.4%	25.7%	25.7%	8.6%	7.9%	4.6%	6.6%
Kebbi	11.6%	18.1%	17.4%	22.5%	7.3%	19.6%	3.6%
Zamfara	21.9%	16.3%	18.1%	10.2%	11.5%	7.6%	10.0%
Sokoto	34.9%	23.6%	18.9%	9.6%	8.5%	3.5%	0.9%
Adamawa	27.7%	23.1%	20.0%	12.3%	13.9%	1.5%	1.5%
Bauchi	20.0%	22.3%	20.9%	7.0%	12.7%	11.8	2.3%
Borno	27.7%	26.2%	25.0%	9.8%	5.1%	3.5%	2.7%
Yobe	22.5%	26.7%	22.9%	1.7%	5.4%	12.1%	6.3%
Jigawa	22.8%	21.9%	22.8%	9.7%	10.9%	11.3%	0.6%

Of those who reject polio vaccine, when asked what could be done to change their mind towards the vaccine, some said nothing could change their mind, change the source of the vaccine, change vaccinators and improved priority to other diseases like malaria and measles.

3.10 Actual reason(s) for poor uptake/rejection of immunization in the 11 high-risk states

3.10.1 Kaduna state

Reasons for rejection of vaccination

There are many reasons for the rejection of vaccinations among mothers, fathers and other caregivers in Kaduna state. While most mothers value vaccines highly and consider them effective, the polio vaccine, especially doses administered during supplemental immunization activities is particularly detested. The most important reason is the misconception that it is a ploy by outsiders (enemies of Islam) to reduce the Muslim population. This they claimed is through administration of polio vaccines fortified with contraceptives. Another popular rumour making rounds is the purposeful spread of the HIV virus, which respondents claimed is another way of reducing the population of Muslims.

A 32 year old mother of four likened vaccines to fertilizer, she said, "*Previously when fertilizers were applied on the farms, they were very effective in increasing yield, but after repeated application like the polio vaccines, the farms have deteriorated leading to decreased yield*". So, she opined that if children were given polio vaccines over and over again, like it is done now, in not too distant future, one would start seeing untoward effects such as decreased fertility.

Secondly, the apparent disparity between felt needs of mothers and the health care system infuriates parents. Mothers felt solutions should be found to malaria, acute respiratory infections and other visibly more prevalent illnesses including malnutrition, but to their dismay, they are

always followed to their homes and farms for polio immunization. A 34 year old mother of five said, "*We are surprised that the hospital is filled with patients yearning for mercy from government, instead of providing succour for the sick through free drugs, health workers come to our homes requesting to administer free vaccines to our healthy children! This is absurd indeed*!

Thirdly, side effects observed following previous immunizations could lead to subsequent rejection. Mothers complained that injections given during supplemental immunization campaigns have led to fever, swollen thighs and inability of their children to walk for days. This has made them suspicious of the skills of adhoc workers recruited to carry out supplemental immunization campaigns. They preferred injections in the buttock and prefer these to be given in hospitals by well-trained health workers. They also prefer hospital immunization because the can go back to the hospital if anything goes wrong as opposed to house to house immunization.

Grandmothers and Aunties can also negatively influence younger mothers.
A 21-year-old mother of two said, "*I use to accept polio vaccines for my child, but, one day when the vaccinators have finished giving my child the vaccine, my mother-in-law cautioned me against it. From then on I no longer agree*".

Most mothers preferred obtaining immunizations at health facilities rather than house-to-house delivery. Their reasons include; the workers in the hospitals are the ones that provide us with antenatal care, delivery services and curative services. So they are well known to them. They trust

them more than adhoc workers. They said if hospital staff wanted to harm them they could have done that during earlier visits. But, they are not sure of the skills of health workers that are recruited for house-to-house immunizations. A 28-year-old mother of three said "*These workers (house to house) are always in a hurry, we don't know them and we don't know where to find them if something goes wrong, but we know the health workers in our health facilities and we trust them*".

Fathers do not consider polio as a problem because they cannot remember seeing any new cases in their community. They considered poor environmental sanitation, maternal malnutrition and "*sanyi*" [Hausa-cold] as main causes of these illnesses. They mentioned the use of vaccines, environmental sanitation, personal hygiene and traditional herbs as preventive measures against these diseases. A 34-year-old father of three said, "*In the evening during rainy season, mothers should not allow their children to go outside the house in order to protect them from evil spirits including a feminine spirit called "Inna", mothers should place their young babies on their backs and cover them with warm clothing. This is protective against "shan inna" and other childhood illnesses caused by "sanyi"*.

Fathers

Fathers said vaccines are effective in protecting their children against childhood illnesses. However, opposition to polio vaccine is due to several reasons. Firstly, some parents are ignorant and gullible to rumours and misinformation. Secondly, parents prefer to see equal or more efforts by government in addressing more visible childhood illnesses such as measles, malaria and acute respiratory infections. So, in protest to lack of concern for their felt need, they want to seek the attention of government

to their problems through rejecting what the government wants. A 46-year-old father of 6 in Kawo Kaduna said, *"I believe polio vaccine is effective, but we in Kawo do not allow our children to be vaccinated for polio in protest for the lack of concern for measles, fever, diarrhoea and vomiting and other childhood illnesses that we see everyday. This makes us very suspicious of the real motive of government"*

He added that, *"Look at the millions that the government has spent on polio and the number of endless polio campaigns, but there is little or no concern for the diseases that really affect our children. Even you, won't you be suspicious?"*

Another 51-year-old father of 14 said, "*Even the inclusion of the other diseases on the vaccination schedule is deceit because when vaccinators come, their emphasis remains on polio, polio and polio…*
Another participant a 41-year-old schoolteacher disagreed with the previous respondent and stated, *"It is not only polio vaccines that are provided by the health workers. There are vaccines for measles and tuberculosis, which are administered at the same time. I reject all these. People are just ignorant, they just need more information on how diseases are controlled or eradicated".* He posed an additional question for those that reject polio vaccines based on religious grounds. He said "*Now that Saudi Arabia, the centre of Islam is insisting on evidence of polio immunization even among adults before they go on pilgrimage, what will the opponents of polio do?*"

A 45 year old father of 7 said *"There is something that is worrying our people-the Hausas-in particular. What I know is that the Whiteman is trustworthy-what ever they manufacture, they label it so. If the Whiteman*

wants to destroy the whole of Nigeria, they can easily achieve that with the knowledge God has given them. The rejection of polio by our people based on fear of conspiracy or misplaced priority is unfounded. Do we manufacture the curative drugs, syringes, salt, sugar, panadol and Maggie cube? Why don't we reject them?

One of the participants opined that some people reject polio vaccines for political reasons. If the individual is in the opposition party, he will oppose any programme that is supported by the local or state governments.

When asked what can be done for fathers to accept polio vaccine, a strong opponent of the polio vaccine in Kawo, Kaduna said "*The only way we would accept polio vaccines is only when the same effort and resources are pumped into preventing the real diseases affecting our children*". He gave an instance when mothers were told to come and immunize their children against measles. However, when one third of the mothers got the vaccines, the rest were told to go home because the vaccines were finished, meanwhile, there were loads and loads of polio vaccines, which the mothers refused.

Surprisingly, fathers' preferred house-to-house delivery of vaccines as against the preference of hospital administered vaccines by mothers. Their reasoning was however different. The men were considering the financial implications of going to the hospital-transport money, money for feeding etc, which they must provide for. Mothers preferred hospitals because of familiarity with the health workers, trust, health education and opportunities for other curative services. Women also cherished the rare opportunity of getting out of the house (especially those in seclusion-

purdah) once in a while to meet friends and colleagues in the hospital and on their way back.

Religious leaders

Vaccines are considered effective by this category of respondents because of the decrease in number of cases of measles following immunization. They considered the rejection of vaccines as erroneous and blame it on ignorance and misinformation. They said some people reject vaccines without having any basis for that apart from hearsay. They opined that it is the responsibility of leaders, including religious leaders to identify technically sound individuals in the area of health, form a committee and discuss anything new that comes to the Muslim community. The religious leaders are then informed of the benefits and any ill effects are also discussed. It is the responsibility of religious leaders to examine the information obtained from technical people and see what the religious scripture and teachings say about such new things. But a situation where religious leaders take positions on technical issues of which they know nothing about it is unfortunate and that is what is causing all the rejection of polio vaccines. About vaccines, one of the Islamic scholars in Kaduna state said, "*For those that are old enough to remember the devastating effects of "Yan Rani" [Hausa for smallpox], it was the mass vaccination of people that led to the disappearance of the disease. So, the polio campaign is also to eradicate the disease so that our children don't get crippled*".

Recommendations

They said ways of improving the acceptance of polio vaccines include public enlightenment especially during prayer sermons in the mosques and during 'Sallah' celebrations. They also suggested the inclusion of

community and religious leaders at the planning stage of anything that the government wants to introduce. They said it is always more difficult to convince people after they have heard rumours, but that we must persist until all parents accept the vaccines.

They also suggested that only female health workers should be going into houses to vaccinate children for two reasons; it is easier for a woman to be given permission to enter houses in northern Nigeria, and also, female health workers are also mothers in the first place, so other mothers believe they will not deliberately harm their children.

They also advised authorities to fear God and remember that citizens are entrusted to them by the creator. Therefore, they need to be sure of what they recommend for their people, otherwise they will be held accountable on the Day of Judgment. They will also loose credibility among their populace if they discover otherwise.

It is also very important to enlighten people before the introduction of new programs. People should be informed of how priorities are set so that misinterpretations, rumours and misinformation will not prevail. It is particularly difficult to counter rumours if people are not given clear information initially. They recommended channels such as media, mosques and traditional town criers.

Traditional leaders

This group also complained that they were usually informed late. They need sufficient time to mobilize their people for immunizations. They requested for more roles during planning and implementation rather than contacting them for their blessings at the eleventh hour.

One of the traditional leaders said "*The change in immunization site from the buttocks to the thighs has generated a lot of problems among our subjects. Parents, especially mothers complained that the thigh gets swollen and the child is unable to walk for days"*. This has led some mothers to reject immunizations on subsequent occasions.

Recommendations

They also feel immunizations should be administered by trained health workers only-not adhoc staff that are poor trained. Leaders should be involved early in the programme. Youth leaders should not be forgotten, since they are influential among their cohorts.

Mothers were generally ignorant of the causes of childhood illnesses. They however attributed polio to a feminine evil spirit that is called Inna, which is why polio paralysis is called "Shan Inna" [Hausa= Inna's paralysis].

A 34-year-old mother of five summed up the reasons given for rejection of the polio vaccines. She said "*When we come to health facilities looking for vaccines that will protect our children against diseases like measles, we will be told that vaccines are not available, but health workers follow us to our houses with polio vaccines, which we refuse in protest*". Another 26-year-old mother of three said, "*When our children are injected in the thigh, they are unable to walk for days. We want them to use the buttocks as they use to do before*".

Another minor concern of mothers regarding vaccines includes fever following the administration of some vaccines. However, some mothers

consider the slight fever as a sign that the vaccine has started working, especially since it usually disappears with the administration of paracetamol.

The rejection of the polio vaccines was also attributed to a perceived misplaced priority. For instance, a 29-year-old mother of four in Makarfi said "*Polio vaccine is being rejected because of the extra concern and focus of government and health workers on it in the face of other glaring health problems like malaria, of which little attention is given by the government"*. They said before the overemphasis on polio, mothers came out in troops with their children to receive all vaccines that are brought to the chief's palace. But the neglect of other diseases has led to mistrust of the real motive of government and traditional leaders. It is seen as a ploy by people in authority to make money on poor masses.

3.10.2 Bauchi state

According to the responses of the participants during FGDs and IDIs, reasons for rejecting immunization were found to be similar in all the three selected LGAs in Bauchi State.

They include; belief in rumours being spread that OPV contains contraceptives and will make their children sterile. Some fathers reject immunization because of the controversies between groups of religions leaders concerning the authenticity of childhood immunization in Islam. While some religious leaders believe in immunization others do not believe in it.

Some mothers reject OPV but accept measles vaccine because OPV is not a felt need for them. They admitted that malaria and measles are more serious problems to them than Poliomyelitis. Another group of women

associated the rejection of immunization with low of level of awareness among mothers. They admitted that now that Federation of Muslim Women's Association (FOMWAN) has been incorporated into the enlightenment campaign more women are accepting immunization for their children.

Fear of side effects was another reason for rejection of immunization in Bauchi State. A father admitted that some children in his neighbourhood had swollen limbs and were unable to walk following immunization and because of that other neighbours refused their children to be immunized.

The calibre of personnel assigned to immunize the children made some parents and other caregivers to reject OPV in the past. A father suggested that health professionals should be assigned to immunize children rather than the young girls that were involved in the past.

A 43-year-old father of six said, "*We are appealing that professional staff should always be used so as to avoid situation where children suffer swollen legs when injected*".

The fact that childhood immunizations are free makes some people to be suspicious of the government's motive behind it especially because no other health services especially drugs are free. A 47-year-old father in Bauchi LGA said, "*The fact that it is free cause suspicion especially because no medicine is free*".

Lack of western education is another reason why caregivers reject immunization. According to a father in Bauchi "*People who are uneducated are those who reject the vaccines because of lack of education and enlightenment"*.

OPV vaccine is more rejected by the parents in Bauchi than other vaccines because of the suspicion that it contains contraceptives. A traditional ruler said, "*Now that all intending pilgrims to Saudi Arabia will have to be vaccinated with OPV, this will increase the suspicion*".
Some parents were of the opinion that since spirits invoke poliomyelitis, then polio paralysis cannot be prevented by OPV. Similarly, some parents did not consider polio high on their priority list of problems. They would rather prefer that they be given food. The Kano polio controversy was cited as one of the reasons why some religious leaders are still suspicious of polio vaccines.

The fact that most workers recruited for supplemental immunization activities are not indigenes of those settlements makes parents more suspicious that it is an outside agenda to depopulate them with contraceptive fortified vaccines and AIDS virus.

3.10.3 Adamawa state

Reasons for rejection of polio vaccines

Among most of the respondents studied, there was consistency in the responses as to why some children do not receive polio immunization. The main reason given is the rumours associated with polio vaccines that is, it is meant to sterilize the offspring. A few of the respondents gave some other reasons such as some chemicals or micro organisms are introduced into it to harm the children. Ignorance about the vaccines was also mentioned by some respondents. A mother of three said, *"Some believe it is for family planning and stops childbearing"*. Another respondent, a 34-year-old father of four said, *"Even myself I do reject*

polio because of the prevention of pregnancy". A political leader said, *"Many people believe in the rumours that vaccines are dangerous, the western world is preventing Nigeria from growing".* Another political leader retorted that, *"Others feel there is HIV in it and people believe this rumours because the government is paying more attention to polio and less in malaria"*

The study explored the specific groups that are known to reject immunization as well as their characteristics and the reasons for such rejection. The study found that rejection was more for the house-to-house campaign when polio vaccines are administered to children. The study also found that majority of the respondents were of the opinion, that only some members of the community reject immunization services. In the study area, the groups that were identified to reject polio and other immunizations are; those with no formal education, rural dwellers, settlers from other parts of Nigeria like Hausas, Kanuris and Shuwa Arab, migrants from Niger Republic, few indigenous population, the Fulani and Hausas, some part of the Muslim community, some Islamic religious leaders and those easily convinced by rumours

Respondents from the study areas were quoted thus regarding the characteristics of those who reject immunization, poliomyelitis in particular. A 42 year old caregiver said, *"The illiterates, the bush people reject it. Christians like it best. Fulani do not like it".* A religious leader said, *"Some hide children during immunizations. Those from Niger, some settlers from Kano and Sokoto".* A father in apparent reference to the Kano episode said, *"Among the religions, the Christians accept it, for Muslims,the conflict of Kano has enlightened us concerning immunization, the problem is awareness".*

Similarly, the respondents gave various reasons for such rejections. In the opinion of majority of the respondents, the reasons for rejecting poliomyelitis vaccines include the following:

- the misconception that poliomyelitis vaccine contain substances that could prevent their offspring from giving birth later in life;
- too much emphasis as well as too frequent poliomyelitis immunization campaign using the house-to-house strategy;
- the non-payment of user-charges for the immunization services;
- some misconception about the side effects of poliomyelitis vaccines that it could actually cause paralysis and other side effects in the child;
- the suspension of poliomyelitis immunization in Kano state.

A traditional leader had this to say: *"Some reject it because it is free of charge and emphasis was on polio"*. A mother said, *"For rejection, the Fulani are the ones, they even hide their children. Some believe it makes the child cry at night"*.

Acceptance of immunization services

The study also explored on the members of the community that are known to accept polio and other immunization services, their characteristics and the various reasons why they accept and encourage others to do so. Majority of the respondents identified the following group of persons and institution who accept and encourage others to follow suite:

- ❖ the Christian community
- ❖ the educated Muslim community;
- ❖ mothers
- ❖ churches

- ❖ media
- ❖ health workers
- ❖ political leaders
- ❖ traditional leaders

Some of the respondents were quoted thus: A traditional leader said, *"Health workers, traditional rulers, Muslim Leaders, Christian Leaders accept and encourage it"*. A mother traditional leader said, *"In the Christian community, no rejection"*.

The study also identified the reasons for accepting and encouraging others on immunization services. Such reasons include:

- knowledge of the usefulness and protective value of immunization;
- accepting and encouraging others on immunization is a civic and moral responsibility on the leaders;
- members of the community also need to contribute towards reducing the childhood diseases;
- immunizations do prevent against diseases.

Some of the respondents were quoted thus: A political leader said, *"Politicians, ward heads, village heads accept it and encourage others because it is a responsibility on us*". A father said,*" The educated accept it, because it protects and prevents from diseases"*. A religious leader also said,*" The religious, political and traditional leaders accept and encourage it because it is their responsibility. They know the importance, they want to help the country"*.

The survey explored from the various respondents some of the challenges/problems militating against effective delivery of immunization services. The major ones mentioned by majority of the respondents include the following:

- Lack of awareness among the populace:
- This is more in the rural areas and among the non-educated.
- Lack of vaccines in the health facilities
- The commonly mentioned vaccine was BCG.
- Inappropriate recruitment/selection of vaccinators/local guides during house-to-house campaigns
- Long waiting time at the health facilities.
- Poor attitude of health workers
- Circulating rumours and misconception about poliomyelitis vaccines is used to prevent pregnancy/childbearing among offspring.

Other problems mentioned by some respondents include:

- Cost of consumables, needles and syringes during immunization.
- Failure by some parents to take their children for complete course of immunization.
- Inadequate equipment (logistics like lack of storage capacity (fridges) and erratic power supply.
- Inadequate remuneration for health workers
- Non-timely payment of salaries/allowances of health workers.

Respondents' suggestions on how to improve immunization services

In order to overcome some of the bottlenecks militating against the delivery of quality immunization services, most of the respondents proffered the following solutions:

- Continuous public enlightenment on the importance of immunization. One of the respondent said: "*The government should also enlighten the public concerning immunization most especially those in the rural areas"*. And another one added:*" ignorant neighbours should be encouraged to come for immunization"*.
- Ensure availability of all vaccines at all times. A mother of three was quoted thus:*"I advise that vaccines like BCG should be available"*. A caregiver had this to say,*"We are begging government to please provide the BCG which is not available"*.
- Needles and syringes should be provided free of charge in the hospitals.
- During house-to-house immunization campaign, qualified female health workers should be recruited and used.
- Prompt payment of health workers' salaries and allowances.
- Change of attitude of health workers
- Minimize time wasting at the health facilities.

3.10.4 Kano state

In all the 3 LGAs the response rate was very remarkable. Both the male and female respondents were readily forthcoming. Similarly the political, religious and traditional leaders responded unconditionally. All respondents are aware of the immunization services that occur periodically in the state. They are also aware that it is meant to protect their children against particular diseases. It was also noted that a large number of the respondents believe that an improvement in general sanitation will go a long way in preventing diseases. They do not seem to know other methods of prevention.

Most of the respondents have doubts about the exact contents of vaccines. They wonder if the vaccines have harmful contents. However, few believe that there are no harmful agents in the vaccines. Even though they do not want the vaccines, they still bring out their children for inoculation because of fear of the authorities.

Acceptance in the vast majority is mainly due to fear of what the authorities may do if they refuse to accept the vaccines. They feel that children that are not immunised may be penalised, for instance by denying them education in the future.

The main reasons for being sceptical on the immunisation issue are:
Fear that the vaccines may contain harmful agents like HIV or other unknown organisms, fear that it may cause sterility; their fear was heightened about two years ago when the Kano State Government officially announced the same fear.

Majority feel that their main problem is not polio because they see it once in a while, unlike problems like malaria, gastro enteritis, measles and whooping cough which are more prevalent and which cause high mortality.

Recommendations

1. State governments should be warned against using any method of discouraging its citizens from accepting immunisations.
2. Local opinion leaders as selected in this study should be trained and be used in enlightenment campaign. We recommend the use of 'Islamiyya teachers' who teach married women.

3. The enlightenment should include the reasons for emphasis on polio.
4. Government should be clearly seen to be addressing other disease conditions affecting the communities side by side with the polio campaign. Examples include showing more interest in sanitation or providing oral re-hydration centres with free services as close to the people as possible.

3.10.5 Kebbi state

Various individuals and groups of respondents have expressed many reasons for the rejection of polio vaccine and other childhood immunization. The three senatorial districts in Kebbi State have been described as some of the high risk areas where circulating wide polio viruses occur in Nigeria. This has in a way affected the effort by the National Programme on Immunization, World Health Organization and donor agencies in combating the WPV circulation and eventual eradication.

According to a community leader in Augie Local Government Council it is "*ignorance*" on the part of the parents that do not allow them to get their children immunized. Similarly a religious leader in the same area describe it as being "*ungodly*" to administer any form of vaccine or medicament into the body with a notion that it protects the body from disease. He further buttressed his point by citing from the religious scriptures that according to Shehu Usman bin Fodio, the founder of Sokoto Caliphate in one of his books, "*One is only allowed to take treatment when the disease has occurred, not any vaccine to prevent the occurrence of the disease*" other groups of people interviewed also

expressed their minds on the issue of rejection of polio vaccine. However, most people admit to the fact that ignorance, and illiteracy of the parents is the reason for the rejection. Only very few people cited religious fundamentalism as a reason for rejecting the polio immunization.

The response in Birnin Kebbi and Zuru Senatorial district did not differ much from that of Kebbi north senatorial district. Groups of people consisting of mothers, fathers and caregivers, have expressed that, following Immunization Plus Day (IPD's), in Danko-Wasagu; "*unskilled, unprofessional vaccinators*" and "*unhygienic techniques*" by team of vaccinators has resulted in cases of injection abscesses" good number mentioned continuous "*pain at injection site*" and most have been bothered about the "*attitude*" as well as "*shabby appearances*" of vaccinators as some common reason why people in that area do not allow their children to be immunized by these teams of vaccinators.

Detailed interviews with groups of mothers in the communities in Kebbi State did not identify any specific group of people that are known to be rejecting polio immunization as well as other childhood immunizations. However very few of the respondents in Augie and B/Kebbi admit that, a religious sect, called "*Izala*" is known to be adamant and the main group that "*reject the vaccine*". But similar responses in Danko-Wasagu admit to the fact that "*Fulani women*" do not accept the vaccination. In Birnin – Kebbi it is the "*Qur'anic schools*" that are known to reject polio vaccine. These Qur'anic schools have the belief that the "*Almajiris*" under one teacher, some below the age of five are not always reachable by the vaccination team.

Furthermore a respondent opined, "Perhaps because the 'Almajiri' teachers are not the biological parents of the pupils, and fear of what the

parents reaction might be leads to rejection". All these have been identified as core-reasons why polio vaccine and other childhood immunizations are being rejected in some parts of Kebbi state.

3.10.6 Katsina state

Almost all parents in Katsina state mentioned fever as the most common health problem among children. Many of them also mentioned cough and catarrh as next common health problem. Other respondents identified measles, diarrhoea and vomiting. Only a few respondents mentioned poliomyelitis as a childhood health problem. Majority said they rely on hospital for preventive methods, but a few mentioned some traditional methods, none of the respondents mentioned traditional way of preventing polio. Most of the respondents said they believe it protects children from polio, but one respondent said her nephew had mild polio despite receiving doses of polio vaccine. Majority of the respondents said there is a positive opinion about vaccines including polio vaccine because they have noticed a difference in health status between children that were immunized and those that were not. However, some older members of the community had negative attitude towards vaccination because they claimed they were not given polio vaccine during childhood, but they are not afflicted with the disease. Parents also complained that their children are unable to walk for days after receiving immunization-especially when administered in the thigh. Parents also mentioned fever following vaccination. However, respondents said they have not noticed any side effects of polio despite the rumours about AIDS and contraceptives.

Most respondents said there is no group rejection but one respondent from the urban area admitted that there are groups in Katsina that reject

all vaccines especially polio vaccine. These groups are "*Yan Abba Abu*", "*Yan Kala Kato*" and "*Yan Shia*". Most respondents said the only group that accepts vaccines including polio and encourages her members to accept polio vaccines is the "Sunni". Most urban respondents said they prefer to go to hospital to receive immunization, but rural respondents liked house-to-house or fixed post in front of village head's house. Mothers are not happy with the quality of workers that are recruited to administer vaccines from house to house. Some of them don't look like health workers, they are rude and in a hurry to finish. About challenges, a mother of two said she lost her marriage because she was caught smuggling her children to get immunized against the wishes of her husband. The story went back to him and she was promptly divorced!

3.10.7 Jigawa state

Reasons for rejection of childhood immunization

Concerning the reasons why some children do not get immunised, participants at focus group discussions mentioned a number of reasons. The House to house strategy implemented during the National Immunisation Days (NIDs) produced negative reactions in the target groups; some were suspicious of the content of the vaccines given freely to their children, especially as they had to pay for drugs in the hospital. An Interviewee asked and added that he demanded an answer why people should be forced to pay for treatment of serious diseases in hospitals, where the Health Workers often harass their lives. Paradoxically they are followed to their bedrooms with polio vaccines.

"Does this not indicate a false altruism? Is it because your lords Americans have given you a lot of Dollars that you are promoting this polio?" He asked.

Opinion leaders interviewed in the same area revealed that the people suspect that the vaccine is a family planning method and may contain HIV/AIDS virus. One of them said;

" No! They believe that Immunisation is a way of family planning. Some say it carries HIV/AIDS."

Another Opinion leader said,

"When only routine immunizations were given, those who go to the hospital received it; but when polio campaign began, they started asking questions."

It is pertinent however to note that some children are not immunised because of other reasons. Some parents have a wrong perception about immunisation. A mother of a

Two-year-old child during an FGD believed that Tetanus Toxoid given to pregnant mothers protect the children against many diseases; she therefore did not see any reason for immunising the child again after she had received a dose of it during her last pregnancy. In addition, a good number of the participants fear the side effects of especially the parenterally administered vaccines, hence its low uptake rate.

A Community leader during an Interview puts it that;

"During the last Immunisation campaign, it took my intervention to prevent the eruption of violence in my neighbourhood which could have arisen because many of the children given one of the injections were unable to walk due to pain. If such injections are to be given again, I can't guarantee that any parent in this area including myself will accept it".

From a different perspective, one of the respondents living in urban part of the state mentioned during an FGD that because one has to get to a hospital if one's child is to receive the immunisation, and that he hates bureaucracies of hospitals, worsened by long waiting time, he has vowed

not to go for any; his children can be immunised only if the vaccinators follow them home with it.

Other reasons could largely be attributed to misunderstanding of religious teachings.

Some Participants of the FGDs were of the belief that it was against the Religion of Islam to make any attempt at prevention as one man said;

"Allah is the only one that can protect."

However other participants argued against this stance and stated that Islam does not frown at prevention. If anything, the religion encourages prevention in the Hadith of the Prophet, which says that if there is an epidemic of an infectious disease in an environment people should not travel in or out of the area to guard against importation or exportation of the disease.

For some few parents they just did not feel there is need for immunisation especially against polio, which according to them, does not kill. During an interview, one Community leader said;

"*How many people does polio kill? I can't remember the last time I saw a case. What about Malnutrition, Malaria, typhoid, Hypertension or even mental Illness? It is only when parents are well that the children can be properly catered for, give us immunisation against these diseases and poverty. These are certainly more important problems than Polio. What is the Government doing about them? You should advise them properly"*.

Some participants were highly suspicious of the whole arrangement of achieving prevention through immunisation, as they do not simply understand why so much emphasis could be laid on immunization to the detriment of simple preventive measures like use of prayers, charms/amulets, water purification and use of herbs.

The belief about fatalism appeared to have been popular among some segments of the community as some of the interviewees mentioned that

there exists in their midst, people who believe that whatever is destined to happen must happen, for that reason, they are of the opinion that, there is no need for any form of protection.

There appear to be some disagreement between male and female participants of FGDs with each group pointing accusing fingers at each other. Whereas men said some women are simply careless, the women on the other hand, accused some men of not being co-operative. A male participant said:

"However you try to move along with civilization, women will always deter you."

On the other hand, one women's leader who participated in the FGD said:

"Nothing is as frustrating as having a husband that will not allow you to take good care of your children".

One major hindrance to uptake of immunisation in Jigawa state according to participants of FGDs is lack of satisfaction with the way they were being treated by the health workers. They mentioned their experiences of having been yelled at for coming to the centre late, or forgetting their cards, or being scolded for their babies dresses being dirty. Others recalled the many hours they had to wait before their children were ultimately immunized at the health centre, a situation they found unacceptable. In addition, some opinion leaders mentioned lack of reliability of services or absence of health staff to vaccinate children.

A prominent political Leader said:

"*With the present economic downturn, many health workers are often times not at their duty post, they go out trading while clients visit the health centres several times without meeting them. Sometimes they work only for few hours at times that may not be convenient to the clients. In addition, sometimes the workers are there but the vaccines are out of*

stock. The problems are endless. Some of the women come from a very far distance. Should they have any bad experience they may not want to come back".

From the FGDs, it is clear that some cases of non-compliance to immunization were based on sentiments. The involvement of Rotary International (which is viewed by some 'civilised northern elites' as a cultist group and that of United States of America (believed to be perpetrating violence, destroying countless number of lives and properties in many Muslim countries including Afghanistan, Iraq, Sudan and openly antagonistic to Syria, Iran, Algeria, Libya) did not attract pleasant comments from many participants and interviewees. A participant lamented, "*I find it difficult to explain the reason behind why USA should be following people to their homes giving their children an Immunisation that will be beneficial when they are killing their brothers and sisters in other lands*".

A number of questions were at different times openly thrown during FGDs, each receiving the approval of, or attracting applause from the other participants.

"Why should they spend this huge amount of money on other people's children? What do they stand to gain?"

Another discussant retorted:

"If they should dislike Arabs who have similar skins with theirs, how can they like us Blacks?"

A Community Leader interviewed opined that unless prominent personalities in Government and the Medical profession who came out openly to condemn Polio vaccine now come out to denounce their earlier statements with convincing reasons, he sees no way of finding solution.

3.10.8 Zamfara state

Several reasons were given by respondents in Zamfara state as to why parents reject immunizations, particularly polio immunizations. These reasons include; opposition by religious leaders; opposition by political leaders, especially those that have lost elections. They oppose anything that government shows interest in it. Other factors include non-inclusion of traditional leaders in the program. These leaders are either not informed or are informed quite late. Another issue raised by most respondents is the fear that polio vaccines cause sterility and AIDS. Parents also complained of side effects that include fever and painful swellings at injection sites following DPT.

There is also a fundamental ignorance of what causes polio. Respondents believed that polio is caused by evil spirits rather than microbes. Therefore, they cannot understand the need for a vaccine for something that is caused by spirits. Other factors that triggered rejection include other state government's rejection of the vaccine. The basis for rejection by some participants is the belief that there is no basis for disease prevention or vaccination in Islam. There was also a high level of pervading ignorance and illiteracy regarding vaccination and other health programmes.

Community members also complained that they were not involved with the planning and implementation of immunization programmes. They want a say in the selection of vaccinators so that only trusted, well-trained and familiar workers are recruited.
The elderly argued that they did not receive polio vaccines and they have grown up without polio. Discussants also believed the negative

propaganda that is being spread about harmful effects of polio vaccine, especially by those opposed to America and the Western world in general.

Another issue that was mentioned as impeding the acceptance of polio vaccines is the poor composition of vaccination teams in terms of age, gender, ethnic and maturity balance. People also wandered why the government does not fulfil all the promises about the provision of free drugs, ITNs and other essentials of life. All they get is more and more doses of free polio vaccines. Respondents also doubt the sincerity and safety of the polio vaccines because of the emphasis being placed on a disease they no longer see.

Some parents believe that polio vaccines do not confer protection against infection. They also considered polio a low priority among their list. They would prefer emphasis on malaria, measles, cough and malnutrition. The change in injection site from the buttock to the thighs in the case of DPT with an attendant increase in adverse effect of painful swellings and inability of the children to walk for days is another factor promoting rejection. The poor and rude attitude of some health workers was also detested. They also lamented on the unskilled or unprofessional health personnel recruited for house-to-house campaigns. Another stumbling block to acceptance of immunization is the opposition and disapproval of some husbands. They also said there was an inadequate enlightenment by government, political and religious leaders regarding immunizations.

3.10.9 Sokoto state

From the qualitative component of the study, the following were identified as some of the reasons for rejection of vaccination in the state: Following the initial pronouncement by leaders, especially religious and political leaders that the vaccines contain anti fertility agents to sterilize children the people were sacred. To their dismay, these same leaders made no counter pronouncements even after tests confirmed that the vaccines were safe. Another factor that fuelled rejection of the polio vaccine in Sokoto state was the fact that polio vaccines were taken from house to house, to be administered free of charge whereas other visibly effective vaccines that protect children against more life threatening diseases such as measles and tuberculosis are either out of stock or in short supply.

Parents also complained of the fact that vaccines are given out free of charge, while drugs such as paracetamol have to be bought in our hospitals. This makes them furious and they just don't understand why government overspends on vaccines especially polio vaccines. They need someone to explain the logic behind such a policy.

People are also tired of the repeated rounds of house-to-house campaigns and they are not told when this is going to come to an end.
They do not consider polio as a serious problem, they have no felt need, especially with regard to polio vaccine as people see measles and whooping cough as a more serious problem than poliomyelitis.

Participants also decried the attitude of some of the vaccinators who do not have courtesy when they visit houses to administer vaccine during

house-to-house campaigns. They dress shabbily and are always in a hurry to finish and go. Some of them don't even look like the quality of health workers deployed to conduct house-to-house immunization exercise.

Discussants want to see more of their youths and health workers they know and trust. They believe that those that come to administer vaccines are recruited from outside their community because there is something the government is hiding from them. Non-involvement of people especially youth from the localities during immunization exercise further confirms their suspicion of a conspiracy theory. There is another rumour circulating that the vaccines still contains anti fertility agents but the political leaders were bought over to pacify people, that is why they are involved.

The masses are surprised that some educated people including highly placed health workers, elites and rich people reject polio vaccines for their children. This rejection seen by masses in pockets of some elite's houses further strengthens their suspicion that it is about checking the population of the poor in developing countries, especially Muslim countries.

The perceived overdose of polio vaccine that is administered to children time without number has created doubts in the minds of the people. They use to believe that every drug has a maximum dose, including vaccines, but they are told that polio can be given time and time again without being injurious to their children; this seeming contradiction of western medicine confuses them.

3.10.10 Borno state

Mothers

Reasons given by mothers for rejecting polio vaccines in Borno state include fear of vaccine constituents. They are not sure of the contents of the vaccines. They also said their religious leaders are also not sure of the real contents. However, one of the mothers, a primary school teacher disagreed. She insisted that the vaccine is safe. Mothers said, although most of them accept polio immunization, a few of them reject it because of their husband's opinion and some anti-vaccine sermons given in mosques by religious leaders. Some of their husbands also reject the vaccine based on the rumour that it contains contraceptives. They said their husbands and community elders are not well informed about the safety of polio vaccines. They were also rejecting polio vaccines in protest against government's lack of concern about real childhood health problems.

Fathers

Fathers in Borno state were suspicious of the polio vaccine on account of multiple doses of polio as against other vaccines. They said they will always tell them that their children can take many more doses of polio vaccines as against once only for measles immunization. Even the one dose of measles vaccine is hard to come by in government hospitals but you will always have them coming to your house with loads and loads of polio vaccine. The protection claimed by polio vaccinators is hardly visible, since most of the parents were not given polio vaccine as children, but they are not affected by polio anyway. Fathers also complained that not enough information is made available to them concerning vaccine safety, side effects, doses and intervals. The

vaccinators are always in a hurry to give the vaccine, fill their forms and off they go.

Although, most fathers believe that the vaccines are protective, but their final decision depends on whether their traditional and religious leaders accept the vaccines or not. They suggested enlightenment campaign with facts about the source, side effects and reasons for repeated polio vaccine campaigns. Another factor that encourage rejection is the recruitment and use of untrained medical and paramedical personnel to administer the vaccine. Some of the workers dress shabbily and do not respect our culture and privacy. Lack of knowledge is a contributory factor to rejection. For instance some of the discussant asked, “How is polio spread from person to person?”, “Who can spread polio?”, “How many times can the polio vaccine be administered?”. They are also unhappy with the fact that sometimes-regular vaccines are not available in small health centers, but they have stocks of polio vaccines. They suggested that incentives should be given to acceptors of polio vaccines.

Caregivers

Caregivers said they follow the instructions of the parents of the child, especially the fathers. If he instructs otherwise, they cannot accept the vaccines because they could be sacked or sanctioned. In fact, some caregivers’ were not forthcoming with their opinions during the discussion citing fear of persecution. They also said members of the community need life saving vaccines like measles, whooping cough and eclampsia. Instead of providing those, government is always coming to the houses time and time again with free polio vaccines.

Some do not really believe in polio because there are no longer new cases.

Religious leaders

Religious leaders believe the vaccines could sterilize children and introduce HIV infection deliberately to the vaccinated children. Some of them said even the repeated vaccinations does not seem to eradicate the disease as they were promised it would do.

Traditional leaders

Traditional leaders blamed poor enlightenment campaigns and education of leaders and general populace alike. They have observed that there is improved uptake of the vaccine after the initial stiff resistance from the people. They suggested consistent public enlightenment with clear messages.

They said majority of their people accept polio vaccine but more enlightment is needed. They said, "*We do not want outsiders to administer the vaccine*".

Ignorance of the people is the main concern. They suggested that people that can speak their language should come and educate the community

3.10.11 Yobe state

Reasons for rejection among mothers in Yobe state include the fact that they are not sure of the purpose of persistent polio immunization campaigns to the detriment of other childhood health problems. They are also afraid that the vaccines are fortified with contraceptives. Some of them reject polio vaccine because of the fear of the unknown. They believe that long after polio immunization, their children could be rendered sterile. Other fears include the transmission of the HIV virus as a deliberate attempt at slowing the population growth among Muslims. Other reasons suggested were ignorance among their people, lack of faith

in the polio vaccine, carelessness of some parents and mistrust of government's real intentions about polio vaccines. Those that are known to reject polio vaccines are usually the unenlightened, whereas community leaders and some religious leaders are known to encourage their populace to accept polio vaccines. While some mothers preferred hospital vaccinations, most men preferred house-to-house delivery with a different set of well-trained health workers to minimize cost on their part. They suggested that children that are overage should not be given the vaccines; similarly those that are ill should also avoid taking immunizations.

Their suggestions for improvement include; public enlightenment programmes, improve health care through provision of adequate drugs and health workers in their hospitals and clinics; provision of equal doses of other vaccines and not only overwhelming them with repeated polio campaigns. They would want to see the same qualified personnel that work in health facilities to come and administer polio vaccines and other vaccines in their homes. They prefer health workers that are familiar to them, so that if any side effects happen they would go the hospital and meet them. But a situation whereby unknown faces come to vaccinate their children, if any thing goes wrong, they wont know where to see them again. They suggested that vaccines for measles, malaria and other diseases such as cough should be made available on the scale as polio vaccines are provided. If polio vaccines are free, the other vaccines should be free.

Fathers trusted trained health workers living in their communities. They also trust the religious and traditional leaders, but are sceptical of political leaders. Reasons for rejection of polio vaccine includes; uncertainty of

the purpose of repeated polio vaccinations. Fear of contraceptives that are purposefully mixed with the vaccines to sterilize their children, they are also afraid of the real motive of the western world. Some of the discussants said ignorant people are less likely to accept immunizations in general and especially polio vaccines because of the rumours they hear about it.

When asked about the way forward, they suggested financial support from government, patience and change of attitude of vaccinators and health workers and that government should embark on research to establish safety of vaccines.

CHAPTER 4. CONCLUSIONS AND IMPLICATIONS FOR ACTION

CONCLUSIONS

Based on the findings of the study, the following conclusions can be made:

- The respondents are aware of common childhood illnesses prevalent in the study area. The common ones include febrile illness, malaria, respiratory tract infections, measles, diarrhoeal diseases, skin disorders and whooping cough. It is also evident that most of the respondents have a fair understanding of the causes of such illnesses. There was however general lack of knowledge on the cause of poliomyelitis as well as various wrong perceptions about the cause with most of the respondents attributing them to genie, evil spirit and God.
- The study revealed that majority of the respondents are aware of some of the preventive measures against childhood illness such as immunization, environmental sanitation, water/food hygiene, adequate nutrition and ventilation. Interestingly, there was general paucity of knowledge on how to prevent poliomyelitis besides giving immunization.
- Knowledge of vaccine preventable diseases was limited among most of the respondents studied as most of them could hardly enumerate all the VPDs. Level of knowledge was better among mothers' group followed by fathers, caregivers and fathers. Similarly, most of the respondents still believe that apart from immunizations, the VPDs could be prevented using such methods as use of local herbs, praying to God for protection,

adequate diet for the child as well as good environmental sanitation. For poliomyelitis, nearly all the respondents are not aware of other preventive strategy besides immunization.

- Majority of parents, caregivers and other opinion leaders studied believed that immunization protects against childhood diseases. This is more pronounced for measles and tuberculosis. An important minority opinion among the respondents is that vaccines are not protective but rather a means of reducing the population.
- The attitude of most caregivers/mothers towards immunization services is positive and this lies on the efficacy of the vaccines to protect against disease.
- There was a poor attitude towards polio immunization among some of the respondents who believe that it contains anti-fertility agents. This was common among Muslims, rural Fulani, the illiterates and some settlers like Hausas, Kanuris and Shuwa Arabs.
- Decision-making on immunizing a child lies on the father in most of circumstances in the study area.
- Majority of the caregivers, mothers and other opinion leaders do not believe that immunization has untoward effects except for a few who believe it has such effects as causing infertility, paralysis, abscess and only a few believe it can result to infections like HIV/AIDS.
- Most mothers/caregivers would prefer qualified health workers to administer polio vaccine and other vaccines to their children. It is also their opinion that the immunization should preferably be carried out at the health facility. However, Husbands, the

religious, traditional and opinion leaders prefer it be carried out at homes.

- The study also found out that the main reasons why some children do not receive poliomyelitis vaccination is the rumours associated with the vaccine that is meant to sterilize their offspring as well as introduce other harmful chemicals and microorganisms that could harm their children. Ignorance about the disease poliomyelitis, how it is transmitted and prevented also contributes significantly to the lack of acceptance of the vaccine in the study area.
- The study also found that there are some groups who are known for rejecting polio vaccines and other vaccines. These include some Muslim communities, the rural Fulanis, some Islamic religious leaders, the uneducated, few literate ones, and other groups, notably Hausas, Kanuris, Shuwa Arabs and migrants from Niger Republic. Rejection of polio vaccine was commoner during house-to-house campaign.
- Acceptance of immunization services in the study area is common among the Christians, educated and traditional, religious, political leaders and some Muslim communities.
- The frequency of the polio immunization and non-payment of charges as well as the priority accorded to it in preference to other endemic and more severe diseases like malaria and measles also significantly contributes to rejection.
- The study found that most of the respondents are not aware of contraindications to immunization except for fever and age. However, there were a lot of perceived contraindication especially among the parenteral vaccine, which include “Daji”, a local term for perceived malignant conditions, side effects

following previous immunizations and before a child takes a meal.

- Regarding satisfaction with immunization programmes in the study area, most mothers/caregivers and opinion leaders were satisfied. The major reasons proffered for this include the efficacy of the vaccines, attitude of the health workers and some other benefits like health education during immunizations.

CHAPTER 5. PROGRAMME RECOMMENDATIONS

RECOMMENDATIONS

In the light of the findings of the survey conducted, the following recommendations are proffered:

A. GENERAL

9. There must be an organized programme for the education of the public on the vaccine preventable diseases using appropriate channels of communication. The radio is one of such considering its popularity and frequency of use in the study area.
10. Public health education messages should include the causes, risk factors, transmission/spread, various preventive strategies, side effects and contraindications to immunization.
11. Emphasis should be paid to poliomyelitis, the wrong perception on its aetiology, its association with infertility and HIV/AIDS should be dispelled.
12. The National Programme on Immunization must ensure availability of all vaccines at all times. The study revealed that shortages are more encountered with BCG and Measles vaccine, so this should be looked into.
13. A mechanism such as recognition, incentives like anti-malaria/ITN should be given to caregivers/mothers whose children are fully immunized. This will motivate them, others as well as ensure continuity of care.
14. All components of immunization should be free including the cost of needles and syringes. This should always be made available alongside the antigens.

15. Since men are the major decision-makers for childhood immunization, male participation in the planning, implementation and evaluation of immunization services is very essential.
16. The National Programme on Immunization should conduct periodic health systems research to identify the dynamic bottlenecks hindering the effective delivery of routine immunization at household and community levels.

B. SPECIFIC

1. There is the need for NPI to conduct periodic dialogue with Islamic religious leaders on the education of their followers who reject immunization services in the study area.
2. NPI should hold special dialogue on a periodic basis with particularly the Hausas, Fulanis, Kanuris, Shuwa Arabs and migrants from Niger Republic with a view to mobilizing them to accept immunization services. They could be involved or co-opted in such activities as community mobilization.
3. The possibility of including immunization programmes in the UBE curriculum should be considered. This will cultivate a positive attitude towards immunization among children-the future parents/caregivers.
4. The fixed post-immunization strategy should be given all the necessary support by NPI to deliver quality routine immunization services. The nomadic Fulanis were found to be among those who commonly reject immunization. The mobile strategy should be utilized and all the resources to effectively executive it should be provided especially in hard-to-reach populations.

5. With the present democratic dispensation in place, politicians and political leaders must be fully involved by NPI especially in mobilizing their subjects towards immunization services.
6. There must be periodic capacity building for immunization personnel on client-oriented care, injection safety and other relevant skills. This will go a long way to address such issues as side effects of injection and poor client-provider interaction.
7. As rejection is commoner with polio vaccine during house-to-house campaign, this strategy should be de-emphasized. Routine immunization strategy should be accorded the highest level of priority. There must be a paradigm shift from campaigns to routine.
8. There must be mechanism in place to integrate immunization with other primary health care services such as environmental sanitation, vector control, nutrition, etc. This will go a long way in reducing the fears, mutual suspicions, high expenditure on vertical programmes like immunization.
9. Prepare packages on frequently asked questions for all health workers, especially before vaccination campaigns or introduction of new vaccines.
10. Involve ethnic, religious and political minorities in information activities.
11. Schedule EPI campaigns outside the timeframe for family planning or AIDS awareness campaigns.
12. Keep TV, radio and other media on board.
13. Disseminate a single set of messages through the same channels as those used by the rumour mongers. Everyone from the dispensary attendant to the Minister of Health needs a copy of the key messages, with no confusion about the official line.

14. Do not raise the rumour mongers' profile by identifying and denouncing them. Our job is informing the public about vaccines, not denouncing our opponents.
15. Monitor vaccinations in areas reached by rumours. Do not overreact where there is no decline in vaccinations. Quantify impacts. Do your vaccination tally sheets tell a different story from what you anticipated? Do not respond to a decline in vaccinations, which does not, in the event, materialize.
16. Meet with your opponents as well as your friends.
17. Combat ignorance with knowledge, not with coercion.

6. REFERENCES

1. Yakubu AM. Current EPI coverage. *Niger J Med.* 1995;9:11-13
2. Bland J and Clements J. Protecting the World's children: the story of WHO's immunization programme. *World Health Forum*. 1998;19:162-174
3. Limtragol P., Stoekel J., Charoenchai A., Panichacheewakul P.Immunization, full coverage the aim. *World Health Forum*. 1992;13:15-16
4. Azubuike M.C and Ehiri J. E. Action on low immunization uptake. *World Health Forum*. 1999 ;19:362-364
5. Editorial. *Bull World Health Organ.* 1999;68:199-208
6. Balcher D.W. A mass immunization campaign in rural Ghana. Factors affecting participation. *Public Health Rep*. 1978; 93:170-176
7. Friedie A.M. An epidemiological assessment of immunization programme participation in Philippines. *Int J Epidemiol*. 1985;14:135-141
8. Cutts.F. I. Evaluation of factors influencing vaccine uptake in Mozambique. *Int J Epidemiol*. 1989;18:427-433
9. Eng E. The acceptability of childhood immunization to Togolese mothers. A socio-behavioural perspective. *Health Edu Q.* 1999;4:97-110
10. Unger J.P. Can intensive campaign dynamise frontline health services? The evaluation of immunization campaign in Thies health district, Senegal. *Soc Sci Med*. 1991;32 :249-259
11. Subramanyam K. Vaccine distribution-an operations research study. *Rev Infect Dis*. 1989;11 (Suppl.3): S623-S628

12. Stienhoff M.C. Evaluation of the opportunities for and contradictions to immunization in a tropical paediatric clinic. *Bull World Health Organ*. 1985;68:769-776
13. Cutts F.T. Application of multiple methods to study the immunization programme in an urban area of Guinea. *Bull World Health Organ*. 1990;68 :769-776
14. NPI (National Programme on Immunization) Invitation to delegates, National Dialogue on Immunization delivery, Abuja, Abuja, 2006
15. WHO Line listing of Wild Polio Virus, November 2006

CHAPTER 6 APPENDICES

APPENDIX A

STUDY TOOLS

Knowledge, perception and beliefs about childhood immunization and attitude towards uptake of poliomyelitis immunization

A.1 QUESTIONNAIRE Target group: Mothers/Fathers/Other caregivers

State _____ LGA _____

Respondent: (a) Mother (b) Father (c) Other caregiver (Specify) _____

SECTION 1: SOCIO-DEMOGRAPHIC INFORMATION

1.1 Age (yrs) _____

1.2 Sex M ☐ F ☐

1.3 Marital status (a) Single (b) married (c) divorced (d) widowed (e) separated

1.4 Educational level (Highest level) (a) Qur'anic only (b) primary (c) secondary (tertiary) (d) Adult education

1.5 Occupation _____

1.6 Tribe (a) Hausa (b) Fulani (c) Ibo (d) Yoruba (e) Kanuri (f) Others (specify) _____

1.7 Religion (a) Islam (b) Christian (c) Traditional (d) others (specify) _____

For Female respondents

1.8 If a married woman, indicate husband's occupation _____

1.9 If a married, husband's educational level (Highest level): (a) Qur'anic only (b) primary (c) secondary (tertiary) (d) Adult education

1.10 How old is your last child (months) _____

SECTION 2: KNOWLEDGE AND PERCEPTIONS

2.1 have you ever heard about immunization? Yes☐ No☐

2.2 Against which diseases can a child be immunized? *(Don't read out, tick the ones mentioned)*

☐TB	☐ Hepatitis
☐Tetanus	☐ Malaria
☐Pneumonia	☐ Pertussis
☐Yellow fever	☐ Diarrhoea
☐Diphtheria	☐ CSM
☐Poliomyelitis	☐ Others (Specify)----------

2.3 Apart from immunization, is there any method of protecting children against diseases? Yes ☐ No☐ Don't know☐

2.4 If yes, what other methods do you believe can protect children from diseases? (*Don't read out option, mark the ones mentioned*)
(a) Taking herbs (b) wearing charms (c) prayers (d) drinking washings of the verses of Holy Qur'an (e) Use of holy water (f) Zam Zam water (g) Casting out Demons (h) Medicinal incense (i) Others (specify)_____

2.5 At what age should a child **start** receiving immunization?

(a) Immediately after birth
(b) Two weeks after birth
(c) After weaning
(d) When child has started walking
(e) After 40 days (postpartum)
(f) when the child is sick (g) Others (specify)_____

2.6 At what age is the vaccine against tuberculosis (BCG vaccine) administered?

(a) Immediately after birth
(b) Others (specify)_____
(c) Don't know

2.7 What is the minimum number of doses of Polio vaccine required to protect a child? (a) one (b) two (c) three (d) four (e) five (f) don't know

2.8 At what age is the first dose of polio vaccine administered?
(a) At birth (b) 6 weeks (c) 10 weeks (d) 14 weeks (e) don't know

2.9 At what age is the second dose of polio vaccine administered?
(a) At birth (b) 6 weeks (c) 10 weeks (d) 14 weeks (e) don't know

2.10 At what age is the third dose of polio vaccine given?
(a) At birth (b) 6 weeks (c) 10 weeks (d) 14 weeks (e) don't know

2.11 At what age is the fourth dose of polio vaccine given?
(a) At birth (b) 6 weeks (c) 10 weeks (d) 14 weeks (e) don't know

2.12 If a child receives more than the minimum number of doses of polio vaccine, is it dangerous to the child? Yes ☐ No ☐
don't know ☐

2.13 How many doses of the DPT vaccine are required to protect a child?
(a) one (b) two (c) three (d) four (e) five (f) don't know

2.14 When is the vaccine against measles administered?
(a) 9 months (b) Others (specify)_____ (c) don't know

3. ATTITUDE TOWARDS CHILDHOOD IMMUNIZATION

3.1 Do you accept that children should be immunized?

Yes☐ No ☐

3.2 If "No" Why?
☐ Immunization is not effective in offering protection
☐ Immunization is against my religion
☐ Fear of introducing HIV/Other infections
☐ Fear of causing sterility in a child
☐ I have been advised against immunization
☐ Others (Specify)_____

3.3 If "Yes" Why?
☐ It is effective in protecting against disease
☐ It is not against my religion
☐ It does not introduce HIV/Other infections
☐ It does not cause sterility in a child
☐ I have not been advised against it
☐ Others (Specify) ----------

3.4 If a married woman, does your husband accept immunization for his children?

Yes ☐ No ☐

3.5 If "Yes" Why?

☐ It is protective
☐ It is safe
☐ It is not against religion
☐ Does not accept what is being said against immunization
☐ Others (Specify) ----------

3.6 If "No" Why

☐ It is not protective
☐ It is not safe to use
☐ It is against religion
☐ Accepts what is being said against immunization
☐ Others (Specify) ----------

4. PRACTICE OF CHILDHOOD IMMUNIZATION

4.1 Has your child been immunized against the childhood diseases?

Yes ☐ No ☐

4.2 If "Not" Why?

☐ Not aware of services
☐ Against religion
☐ Does not protect
☐ Introduces HIV/other infections
☐ Causes sterility in the child
☐ Advised against it
☐ Husband does not approve
☐ Vaccine not available
☐ Missed opportunity

4.3 If "Yes" Why?

☐ Not against my religion
☐ Vaccine protects
☐ Does not introduce HIV/other infections
☐ Does not cause sterility in the child

4.4 Have you immunized your youngest child?

Yes ☐ No ☐

4.5 If "Yes, do you have your child's immunization card?

Yes ☐ No ☐

4.6 If "Yes" which of these immunizations has he received?

☐ BCG
☐ OPV0
☐ OPV1
☐ DPT1
☐ OPV2
☐ DPT2
☐ OPV3
☐ DPT3
☐ Measles
☐ Yellow fever
☐ Hepatitis

5. ATTITUDE TOWARDS UPTAKE OF POLIOMYELITIS IMMUNIZATION

5.1 Do you accept polio immunization for your child?

Yes ☐ No ☐

5.2 If yes, has your youngest child received polio vaccines?

Yes ☐ No ☐

5.3 If yes, how many doses of polio vaccine has he/she received?
Indicate the number of times_____

5.4 If "No" Why do you reject polio vaccine?

- ☐ No felt need
- ☐ Fear of side effect
- ☐ No faith in immunization
- ☐ Children develop polio even after immunization
- ☐ It is contrary to my religious belief
- ☐ It contains HIV virus
- ☐ It contains contraceptives
- ☐ Others (Specify)_____

5.5 If "No", what should be done to change your mind about polio vaccine?

(a) Nothing can change my mind
(b) Change the source of vaccines
(c) Change those that administer the vaccine
(d) Change the method of vaccine delivery
(e) Others (specify)_____

5.6 If "Yes" Why did you accept polio vaccine?

- ☐ Polio immunization protects against disease
- ☐ Polio vaccine does not cause sterility in children
- ☐ Polio vaccine does not transmit HIV/Other infections
- ☐ The immunization is not against my religion
- ☐ Husband accepts the immunization
- ☐ I do not believe the negative things said about the vaccine
- ☐ Others (Specify)_____

A.2 FOCUS GROUP DISCUSSION GUIDE WITH MOTHERS/FATHERS/CAREGIVERS

The moderator introduces him/herself and the recorder, talks about the purpose of the FGD, and sets the ground rules.

INTRODUCTION
(BEFORE THE FORMAL BEGINNING OF THE SESSION THE MODERATOR SHOULD ENGAGE THE PARTICIPANTS IN SMALL TALK OR DO AN ICE-BREAKING EXERCISE TO HELP EVERYONE RELAX).

Good morning/afternoon/evening. My name is_____ and I am with a team conducting an assessment on behalf of NPI and Partners in this community. The aim of this study is to assess knowledge, attitude and practices regarding childhood immunizations for the improvement health of children.
Our discussion should last for about approximately one hour.

I will help guide the discussion and make sure everybody has a chance to speak. My colleague _____ will be taking notes during the discussion so that we do not forget any of the points discussed. Although s/he will be recording the points raised, s/he will not write down any names, so whatever you say will be confidential.

We will also be recording this session with a tape recorder. You should be re-assured to know that anything we record will be kept in absolute confidence and will not be revealed to anyone outside our assessment group. We do this because we think that we can get a better and more accurate picture of what you say than just by taking notes. If we forget something or fail to write it down, we can go back and listen.

CONTINUE HERE WITH OTHER GUIDELINES FOR INFORMED CONSENT AND GET SIGNATURES FROM ALL DISCUSSANTS ON INFORMED CONSENT FORM.

Please remember that you are the experts and we are here to learn from you. Please don't tell us what you think we might want to hear. Tell us what you REALLY think. Tell us your views whatever they are. And remember that we are not looking for right or wrong answers.

Now that we have introduced ourselves, let me explain the ground rules. They are very simple. For example, please don't interrupt anyone and try to give everyone a chance to speak. . If you disagree with another person then you can respond to them when they have finished speaking. Are there other rules we would like to add? (THEN PROCEED WITH THE TOPICS WHEN YOU FEEL THAT PEOPLE ARE RELAXED.)

1. What do you think are the major health problems of children in this community? (*Probe for fever, cough, measles, diarrhoeal diseases, malnutrition, HIV/AIDS, polio, etc*) (*Is poliomyelitis a problem in this community?)*
2. What are the causes of these diseases? (*What causes poliomyelitis?*)
3. Are these diseases preventable? (If yes, how, what are the different ways of preventing childhood illnesses) (*Probe for specific diseases, tuberculosis, measles, tetanus, diphtheria, poliomyelitis, malaria, all vaccine preventable diseases)*
4. Which childhood illnesses have vaccines that could prevent the occurrence of the disease? *)(Particularly, is poliomyelitis vaccine preventable?)*
5. Apart from immunization, are there any other method(s) of prevention against these diseases? (*Probe for traditional, religious etc)(Ask specifically about poliomyelitis)*
6. Do parents/caregivers believe that vaccines protect against childhood diseases? (*Specifically ask about poliomyelitis)*
7. What are the opinions of mothers about immunization in this community? (*Positive, negative, indifferent); why do they hold each of these views?(ask specifically about poliomyelitis*)
8. What are the opinions of fathers regarding childhood immunization? (*Positive, negative indifferent) (why do they hold these views?)(Ask specifically about polio vaccine)*
9. What are the opinions of other caregivers about immunization?(*Specifically polio vaccines)*
10. Do you believe that immunizing children carries some unwanted/adverse/side effects? (*Probe for types, their experiences and stories they have heard) (ask specifically about polio vaccine*)
11. Who decides on whether a child receives immunization? *(Either at home or in the health facility) [father, mother, grandmother or any other caregiver](Ask specifically about polio vaccine)*

12. What group of people do mothers/caregivers trust regarding immunizations? (*Polio vaccine in particular*)
13. Why do some mothers/caregivers take their children for immunizations?(*Specifically polio immunization*)
14. What are the reasons why some children don't receive immunizations?(*Polio immunization in particular*)
15. Are there any specific group(s) of people that are known to reject immunization for their children? (*Polio vaccines in particular) (What are their characteristics-educational, cultural, religious etc), probe for reasons for rejection among these groups)*
16. Are there any specific groups that are known to accept and encourage others to immunize their children? *(Specifically polio vaccines) (What are their characteristics-educational, cultural, religious etc) (Why do they accept and encourage others)*
17. Are there situations where a child should not be given immunizations? *(Probe for examples of contraindications for immunization)(Ask specifically about polio vaccines)*
18. Where do mothers/caregivers prefer to receive immunizations (*Fixed posts/Door to door etc)? Why do people prefer such a method of delivery?)*
19. What is the opinion of mothers/caregivers about immunization services? (*Polio vaccines specifically) (Probe for the different modes of delivery?)*
20. Are mothers/caregivers satisfied with these services? (*If not why not, if yes what are the good things that satisfy mothers)*?
21. What is the experience of mothers/caregivers regarding the effectiveness of immunization? (*Polio vaccines in particular) (Does it protect their children, any vaccine failures? cite examples*)
22. Do mothers take their children for immunization in this community? (*What are the challenges/Problems faced). How can these be overcome?*
23. Suggest ways for improving immunization in this community. (*Particularly polio vaccines)*

WRAP UP

1. Do you have any questions or suggestions that you would like to make about the issues we have discussed?

This is the end of the interview. Thank you for your participation.

Note: Time interview ended

A.3 IN DEPTH INTERVIEW GUIDE

INTRODUCTION

Good morning/afternoon/evening. My name is_____ and I am with a team conducting an assessment on behalf of NPI and Partners in this community. The aim of this study is to assess knowledge, attitude and practices regarding childhood immunizations for the improvement health of children.

This study is being conducted to learn more about how people perceive childhood immunizations. The findings of the study will be useful in helping us to develop ways of improving the health of children in this community. You are assured of confidentiality on all information you volunteer. No reference will be made to your name if the findings of this assessment study are published. You may refuse to answer any question that you are not comfortable with. However, your open and candid answers to the questions will be highly appreciated.

ASK: Would you like to be interviewed? Yes or No?

IF YES, PROCEED TO IDI INFORMED CONSENT FORM AND PARTICIPANT DATA

IF NO, TERMINATE

24. What do you think are the major health problems of children in this community? (*Probe for fever, cough, measles, diarrhoeal diseases, malnutrition, HIV/AIDS, polio, etc*)
25. What are the causes of these diseases? (*Ask for what causes poliomyelitis*)
26. Are these diseases preventable? (*If yes, how, what are the different ways of preventing childhood illnesses) (Probe for specific diseases, tuberculosis, measles, tetanus, diphtheria, poliomyelitis, malaria, all vaccine preventable diseases*)
27. Which childhood illnesses have vaccines that could prevent the occurrence of the disease? (*Is poliomyelitis vaccine preventable?)*
28. Apart from immunization, are there any other method(s) of prevention against these diseases? (*Probe for traditional*, *religious etc*) (*Is polio preventable through other means?)*

29. In your opinion, do vaccines protect against childhood diseases? (*polio in particular?) (probe for reasons for holding this view*)
30. How do people perceive immunization in this community? (*polio immunization in particular)(Positive, negative, indifferent); why do they hold each of these views?*
31. Do you believe that immunizing children carries some unwanted/adverse/side effects? (*Polio vaccine in particular)(Probe for types, their experiences and stories they have heard*)
32. Who decides on whether a child receives immunization in this community? (*polio vaccine in particular)(either at home or in the health facility*)
33. In your opinion who should administer vaccines to children? (*polio vaccines in particular)(where should it be administered and why?)*
34. Do parents in this community accept childhood immunizations? (*If yes why, if no, why not?) (do they accept some and reject some? Whay about polio vaccine in particular?*
35. What are the reasons why some children don't receive immunizations? (*particularly polio vaccines?)*
36. Are there any specific group(s) of people that are known to reject immunization for their children? (*do they reject all vaccines or only some vaccines? Ask about polio vaccine in particular)(what are their characteristics-educational, cultural, religious etc), probe for reasons for rejection among these groups*
37. Are there any specific groups that are known to accept and encourage others to immunize their children?(*do they also accept polio vaccines) (what are their characteristics-educational, cultural, religious etc) (why do they accept and encourage others)*
38. Are there situations where a child should not be given immunizations? (*probe for examples of contraindications for immunization)(probe for perceived contraindication for polio vaccine*)
39. Where do mothers/caregivers prefer to receive immunizations (*Fixed posts/Door to door etc)? why do people prefer such a method of delivery*
40. What is your opinion about immunization services (*probe for opinion about the different modes of delivery)*
41. Do you think mothers/caregivers are satisfied with these services? (*if not why not, if yes what are the good things that satisfy them?)*
42. In your opinion, are childhood immunizations effective? (*does it protect children, any vaccine failures? cite examples*)
43. Do parents/caregivers take their children for immunization in this community? (*What are the challenges/Problems faced). How can these be overcome?)*

44. Suggest ways for improving immunization in this community

WRAP UP

2. Do you have any questions or suggestions that you would like to make about the issues we have discussed?

This is the end of the interview. Thank you for your participation.

Note: Time interview ended

APPENDIX B PHOTOGRAPHS TAKEN DURING STUDY