

ASSESSMENT OF POLIOMYELITIS IMMUNIZATION IN KADUNA STATE

By

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DECLARATION

I declare that the work in this thesis “Assessment of Poliomyelitis Immunization in Kaduna State” was carried out by me in the Department of Sociology, Ahmadu Bello University, Zaria under the supervision of Dr. J.M Hellandendu and Dr. J.E. Gyong. The works of other investigators and authors have been duly acknowledged by means of references.

I declare also that this work has not been submitted elsewhere for a degree.

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CERTIFICATION

This thesis entitled **Assessment of Poliomyelitis Immunization in Kaduna State** meets the regulations governing the award of Masters of Science (M.Sc) degree in Sociology of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This project is dedicated to Almighty Allah for the strength, good health and opportunity to carry out this study. My late father Alhaji Muhammed Olaolu (may Allah be pleased with him) who wanted the best for me.

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ABSTRACT

Poliomyelitis immunization is a public health measure which prevents the death of children under 5 years of age. Despite the benefits of this immunization, it has been reported that there is still resistance to polio immunization. It is based on this, that this study was undertaken to assess the level of acceptance of polio immunization in Kaduna State being one of the endemic States in Nigeria, This study was premised on Symbolic Interactionism and Conspiracy Theory. Survey and in-depth interviews were the techniques used for data collection. Four hundred respondents were selected and the collected data were analysed using statistical package for the social sciences (SPSS) version 16.0. The findings revealed that acceptance is generally high in the study area and is greatly influenced by many factors such as religion, income, educational attainment of the respondents, birth position of the children, gift as motivating factor, as well as the role of religious, community and health workers. The non-acceptance was found to be more common among the Muslims of low income status. This study recommends that detailed sensitization programme through various media facilities should be carried out periodically to emphasize the reasons for the importance of paying more attention to polio immunization.

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ACRONYMS

AIDS	-	Acquired Immune Deficiency Syndrome
DPT	-	Diphtheria Pertussis Tetanus
FMOH	-	Federal Ministry Of Health
HIV	-	Human Immune deficiency Virus
UNICEF	-	United Nations Children's Educational Fund
WHO	-	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Poliomyelitis, is an infectious disease caused by poliovirus, a member of the genus *Enterovirus*. There are three serotypes of poliovirus: that is, 1, 2 and 3, these three serotypes are mainly different in their virulence. The serotype 1 is the most virulent of the three types, while serotype 2 and 3 are more sporadic (National Primary Health Care Development Agency, 2015). Human cells contain specific protein receptors to which poliovirus may attach and thereby enter susceptible cells. The virus infects cells of the oropharynx, the tonsils, the lymph nodes of the neck, and the small intestines. Infection progresses through cycles of virus replication, resulting in destruction of the infected cells. Once infection is established, poliovirus can enter the bloodstream and invade the central nervous system through the blood/brain barrier, by spreading along nerve fibers, or by both routes (WHO, 1999). When non-immune persons are exposed to wild poliovirus (Wild Polio Virus is caused naturally and not caused by vaccine containing live virus) the results may include inapparent infection without symptoms, mild illness, aseptic meningitis, or paralytic poliomyelitis

The Poliovirus can be spread to others by droplets from the upper respiratory tract during the early days of infection. More commonly, infected persons pass large numbers of virus particles through their faeces, from where they may be spread indirectly, or directly to infect others .

Poliomyelitis is a serious public health problem. It has persisted in a few countries from where it has spread to a large number of countries and posed threat to health as it did earlier between the 1950's and 1980's. In the developing world, the disease presents a constant threat to underfives, resulting paralysis with devastating

consequences for social and economic development (Lucas and Gilles, 1990). Poliomyelitis is a highly infectious disease caused by a virus that mainly affects children under the age of 5 years. The disease is transmitted through fecal oral route to invade the nervous system and cause death or total paralysis in a matter of hours for those who survive (WHO, 2003). According to Debras, Stephanie, Penny and Mia (2005), Poliomyelitis is known to be one of the major causes of physical disability worldwide, hence the need for its eradication. Viewed globally, vaccines are the most cost-effective medical intervention to prevent death occurrences and disease related to poliomyelitis (World Bank, 1990). Therefore, immunization is the gateway to health care for all children who are at the risk of this disease. The disease is of great public health concern worldwide especially among young children under 5 years of age.

The set date by WHO for polio eradication globally was the year 2000. However, this target was not achieved as about 3,500 cases of Wild Poliovirus were reported worldwide in 2001 with Nigeria contributing 27 cases (WHO Nigeria, 2001). Wild poliovirus is only endemic in six countries – Nigeria, India, Pakistan, Niger, Afghanistan and Egypt. Five States within Nigeria, India and Pakistan account for more than 75 percent of all new cases of polio worldwide and thus constitute the targets for the global eradication of the disease. The world's few remaining reservoirs of the poliovirus continue to pose significant risks due to the migration-imported polio virus, which can spread rapidly and threaten unprotected children (WHO, 2004).

It is in response to this threat of rapid spread that the WHO in 1974 set up a special programme known as the Expanded Programme on Immunization (EPI) which was adopted in Nigeria as Federal Ministry of Health policy code named National Programme on Immunization (NPI) on 1st September, 1985. Its major objective was to immunize all the children and particularly those under one year old against the six killer

diseases which the WHO, United Nations Children's Fund (UNICEF) and various government and non-governmental organizations have committed themselves to participate in the NPI exercise. The Expanded Program on Immunizations was created in 1979 and achieved over 60% coverage with all vaccines by 1990; however, in 2006 the National Coverage had declined to 35% for the third dose of Diphtheria, Pertussis, and Polio. Polio Eradication activities began in 1998 and continued to progress until 2003 when resistance in the north to Polio Eradication began and supplemental immunization days were suspended in some northern States. Polio activities resumed in 2005 and in 2008 a new strategy of Immunization Plus Days (IPDs) was introduced as well as the use of Monovalent Oral Polio Vaccine (USAID, 2008). . The vaccination programme is a typical example of a public health measure. It has many qualities and it is an essential measure which may prevent the death of large number of children. It improves the quality of lives of many children by avoiding the physical disabilities produced by this disease (FMOH, 1988).

Overall, worldwide, immunization coverage in the developed world has improved considerably during these past decade. WHO reported that immunization coverage maintained over 90% immunization coverage in 2006 (WHO, 2008) and millions of deaths were avoided as a result of immunization during this period. Despite these advances, diseases that are preventable through immunization remain major public health problem in many developing countries. By the end of the twentieth century, researchers established that, in the developing world, more than 3 million children still died annually from measles, neonatal tetanus and pertussis, while more than a quarter of a million children were crippled by poliomyelitis annually (Henderson,1999).

Efforts to eradicate poliomyelitis have been going on. Success has been achieved in

Latin American and the Caribbean countries, but Nigeria lags behind in achieving this success. Nigeria had the highest number of polio cases globally (99 cases in January 2004). A significant number of cases were found to be predominantly in the northern states (Niger, Bauchi, Kano, Zamfara and Kaduna (WHO, 2004). Speculations made by people are that this may be due to either religious, economic or other social reasons like the belief that to have the disease is better than immunization among the people (FBA, 2005). The country had witnessed a 95% decline in the number of polio cases in 2010 and was so close to the finishing line for polio eradication. However, as at July 11, 2012, Nigeria has recorded 54 new cases of wild poliovirus in 10 states compared to 25 cases during the same period in 2011. In 2012, the country declared polio eradication a national emergency (UNICEF, 2012). It is therefore imperative for a social scientist to investigate why poliomyelitis persists among communities in Northern Nigeria. There could be many reasons for this persistence such as lack of knowledge, allegations of secret agenda in immunization, parents' misconception that immunizations are fuelled by western countries' determined to impose population control on local Muslim communities, and mothers' preoccupations with other tasks to take their children for immunization (Gedlu and Tesemma 1997; Hennessey, 2000; and FBA, 2005).

According to Obadare, 2005 in Nigeria, just as the campaign by WHO to "kick polio out of Africa" was at its zenith, the Supreme Council for Islamic Affairs (SCIA), the umbrella body of Nigerian Muslims claimed in 2003, to have learnt from some internet websites, that the oral polio vaccine had been deliberately contaminated with carcinogenic, anti fertility and HIV/AIDS inducing pathogens.. Consequently, Polio Eradication Initiative (PEI) was faced with community-led opposition in several northern Nigerian states to the free Oral Polio Virus (OPV) vaccine being administered

by public health workers. Political and religious leaders began disseminating the information that the polio vaccine was adulterated / contaminated with anti-fertility agents (estradiol hormone), HIV and cancerous agents. These leaders urged the Muslim parents in the Northern states to stop the immunization of their children in order to protect their lives (Science in Africa, March 2004).

On the disagreement over the safety of Oral Polio Vaccine, the World Health Organization (2008) indicated that it has been characterized by fluctuating levels of acceptance in some parts of northern Nigeria. In Kaduna state for example, Vaccination Report (WHO, 2008) showed that there was a drop in number of children immunized as experienced in Kano, Zamfara and Bauchi states; polio immunization coverage in Kaduna State shows that 502,631 children were immunized with oral polio vaccine, in 2009, there was an improvement in the coverage with 668,175 children covered, the trend continued in 2010, the coverage increased to 692,396, while in 2011 the coverage dropped to 565,554 (WHO, 2012). Notwithstanding the fluctuation of immunizations across years, Nigeria's poliomyelitis eradication activities have significantly reduced the poliomyelitis disease burden but have not had the anticipated result of eradicating the disease. This situation has prompted the need for this study which intends to assess parents' responses to acceptance of polio immunization in Kaduna state, Northwest Nigeria.

1.2 Statement of the Research Problem

The presence of poliomyelitis in Nigeria is well established (Jacques, .2011). Although the Nigerian government has made and is still making efforts to eradicate poliomyelitis, the condition persists in many parts of the country. Consequently, there is the need to investigate the prevalence of the disease in view of the quarterly national polio immunization exercise. An Assessment of immunization services in Nigeria by

international comparative data revealed that immunization coverage is still low (UNICEF 2001). What are the factors responsible for this low coverage? Oyewole (2013) pointed that every culture has its system of health care which explains the causes of illness and its treatment. The cultural and religious beliefs of the people in Kaduna state have been observed to have greater influence on health matters. For instance, among Hausa communities, poliomyelitis is known as *Shan-inna*. According to Renne (2006) shan inna (polio) literally mean an ailment of the spirit world, in which the spirit (inna) belong to a cult known as *Bori* is believed to cause shan inna/polio. The spirit consumes the blood of the victim's limbs thereby causing paralysis. Traditional healers have special powers that enable them interact with the spirit world and thereby tries to appease the spirit by providing her demands in returns to restore the victim's limbs. Similarly, it is a cultural belief that *Inna* is a female spirit, and a loving mother. Her love for children drives her to carry them in her arms in the spiritual world (as most Hausa mothers would carry other women's children, even when they are not known to each other). In the case of *Inna*, her love for embracing and constant carrying of children in her arms make the children's limbs shrink because she does not allow them to walk (Yahaya, 2007). Some Hausa therefore believe that immunization cannot prevent poliomyelitis. Similarly, on religious grounds the Muslims in the northern part of Nigeria are said to believe that polio immunization is a Western ploy to make the Muslim population infertile. The researcher is interested in finding the extent to which these cultural values and religious beliefs affect the response to polio immunization exercise in Kaduna State.

In general, the issue of rejecting polio immunization cannot be attributed to one factor alone, hence it is a problem that needs investigation. This study is therefore set to

assess the level of acceptance of the polio vaccine by parents for their children. Therefore, the study will address the following questions-

1.3 Research Questions

1. What is the level of acceptance of polio immunization in Kaduna State for children?
2. What are the factors associated with acceptance and non acceptance of polio immunization in Kaduna state?
3. What are the socio-economic status of parents of children that have been afflicted with polio in Kaduna state?

1.4 Aim and Objectives of the Study

The aim of this study is to assess the level of acceptance of polio immunization State. To achieve this aim, the following specific objectives are formulated:

1. To assess the level of acceptance of polio immunization in Kaduna State.
2. To identify the factors associated with acceptance and non acceptance of Polio Immunization in Kaduna state.
3. To find out the socio-economic status of parents of children that have been afflicted with polio in Kaduna State.

1.5 Significance of the Study

The study identified social factors that are responsible for persistence resistance of people to polio immunization. The results of the findings shall form an objective policy framework for campaigns to create an awareness and conviction of the essence of the oral vaccination in Kaduna State. In addition, it is believed that the findings of this study will guide the Government, Non-Governmental Organizations and other sponsors of polio immunization in future plan and measures to take in planning and executing a similar health related projects in Kaduna state. Similarly, it is hopeful that this study will serve as a future reference point for further researchers in this area.

1.6 Scope of the Study

This study is limited to Kaduna State because it is one of the polio endemic states in Nigeria (WHO, 2006). It covered two Senatorial zones which are Northern and Southern senatorial zones. The study considered the social aspect of polio immunization such as the factors influencing immunization and socio economic attributes of parents of children that have been afflicted with polio disease.

1.7 Definition of Terms

Assessment: It is a process of using an instrument capable of measuring how people are influenced by culture, religion and politics. It will explain how these social factors and values affect people's action and interaction regarding their decision on acceptance or rejection of polio immunization. Wagenaar (2004) stated that it is a development of comprehensive instrument to authentically assess an issue. In his work, he presented an assessment instrument which could be used to profer essential goals for undergraduate education in Sociology. In this study, it will be used to assess the sociological factors that influence the acceptance or non acceptance of polio immunization in Kaduna State.

Polio immunization: Is a method of inducing immunity to protect the person from being infected with poliomyelitis.

Crisis: The interruption in the normal process of public health intervention (polio immunization); when the Supreme Council for Islam Affairs (SCIA) claimed to have learnt that the oral polio vaccine championed by the World Health Organization (WHO) and the United Nations Children Fund (UNICEF) has been deliberately contaminated and thereby embarked on campaign to stop the immunization exercise.

Acceptance: Agreeing to an offer of polio immunization which is determined to a large extent by the prevailing values and practices of the People.

Wild poliovirus: This is naturally circulating poliovirus that is not caused by the Vaccine containing live virus.

CHAPTER TWO

REVIEW OF RELATED LITERATURE AND THEORETICAL FRAMEWORK

2.1 Introduction

This chapter reviews literature related to immunization against Poliomyelitis and the factors associated with immunization among infants as well as the causes of the failure to take up or complete childhood immunization for infants by parents. This review identifies gaps related to polio immunization and factors associated with its coverage. The theoretical perspective underpinning this study is also presented.

2.2 An overview of polio immunization

WHO (2014) estimated that every year more than 10 million children in low and middle income countries die before they reach their fifth birthdays. It is also said that over 60 percent of 12.9 million child deaths in the world each year are caused by a combination of pneumonia, diarrheal diseases, or vaccine preventable diseases (measles, diphtheria, whooping cough, poliomyelitis, tuberculosis, and neonatal tetanus), or by some combination of the three. According to Child Mortality (2010), the child survival strategies and interventions are in line with number four of the Millennium Development Goals which focuses on reducing child mortality by 2/3 of children under five before the year 2015. This agreement was made by 188 member leaders of the United Nations in the year 2000. There are many factors that contribute to infant and child morbidity and mortality. Many of these deaths can be prevented through health intervention programs, such as immunization, adequate nutrition, provision of safe water and improved sanitation, family planning and education, and the availability of health services.

Immunization is one of the major public health interventions for reducing morbidity and mortality of children. In 1974, The World Health Assembly (WHA) created a program called the Expanded Programme on Immunization (EPI) to cover the immunization of all children in the world by 1990. It was an essential element of WHO's strategy to attain health for all by the year 2000 (UNICEF, 1983). As a member of the World Health Assembly, Nigeria Ministry of Health in 1979 started polio immunization.

Increasing immunization coverage for childhood diseases has become an important developmental issue (Delivery of Improved Services for Health [DISH], 2002; WHO, 2002; 1999) and an area that requires more research (Edmunds, Brisson, Melegaro & Gay, 2002; Fairbrother, Hanson, Friedman & Butts, 1999; Guerin, 1998). Efforts were made to intensify polio immunization coverage more than just the implementation of the routine vaccination programme. These accelerated efforts include the commitment of the EPI manager from the central to the regional level; the attention and involvement of other sectors such as the private sectors and community participation; and the provision of funds and moral support from donor agencies (Sutto et al., 1986). Nigeria's Federal Ministry of Health (FMOH) launched a program, called National Programme on Immunization which was begun in 1984 to immunize every child under five *years* of age. It is important to reiterate that irrespective of its immunization status repeated administration of OPV is known to cause no side effects (FMOH 1988). In addition, the number of immunization sites was increased from National to State and from State to Local Government Area levels. The EPI was however faced with many obstacles such as incomplete immunization and rejection of vaccines by some communities (Grant, 1984). Hence, some children did not receive the series of doses of DPT and of polio completely thus the protective effect of

immunization was reduced. The immunization of children is an important factor that contributes to the child's chances of survival.

Howlader and Bhuiyan (1999) found in Bangladesh that the chances of survival of children who have been immunized are higher than those who have not. In another study, Amin (1996) found that immunization coverage reduced infant and child mortality by about 60 per cent in West Africa.

However, efforts to immunize children have been met with a number of setbacks. Some of these setbacks in polio *immunization* coverage relate to a number of factors such as the level of sensitization by health workers and lack of political will by political leaders to mobilize and support immunization services (Waisbord, 2004). Other factors are low levels of parent acceptance of immunization for their children which has been linked with religious, political and cultural undertones (Pipe, 2005). In addition, social mobilization of various elements of society, insufficient community participation due to lack of awareness, distance from the health facility, place of delivery, migration of families, mothers' knowledge and attitudes towards immunization, cold chain issues, weather conditions and low literacy levels of the parents were identified (Ibnouf, Van den Borne & Maarse, 2007; Ndiritu et al., 2006; Sebahat & Nadi, 2006;).

2.3 Acceptability of Immunization

Realizing the need to keep the children safe from childhood diseases, the Heads of States of 10 countries of West and Central Africa launched a massive campaign to immunize 63 million children aged less than 5 years against polio in 2005 (Alyward et al 2004). This huge synchronized immunization campaign was mounted to protect Africa's substantial investment in polio eradication. That investment had recently been compromised by the ongoing polio outbreak in Northern Nigeria and nine previously

polio-free countries across Africa. To win people's support, countries that have agreed to the immunization exercise adopted new methods of house-to-house campaigns and wide media advertisement. According to Linkins, Mansour, Wassif, Hassan & Patriarca (1995), the house to house vaccine delivery has been considered more costly and more logistically difficult than fixed-site delivery, therefore many countries have been reluctant to implement it. However, results from these campaigns have proved successful by reaching many children in most countries.

Epidemiologically, according to Aylward (2005), Africa could have been polio free by the end of 2005. Strong progress to get the continent's eradication programme was on track, but the attainment of polio – free Africa depends on full engagement of traditional leader, religious leader, political leaders and community volunteers. These categories of people have an important role to play in health care delivery. However, in 2006, there was an unusual outbreak of polio in Nigeria. According to Pharmascope (2008), only four countries in the world (Nigeria, Afghanistan, India and Pakistan) were still considered to be endemic for polio. As at 19th March 2008 the African region reported 84 wild poliovirus cases in five countries- Nigeria (77), Niger (3), Chad (2) Angola (1) and Congo (1). In Nigeria, endemic transmission continues to be restricted to Northern States. In 2004, nine countries in the African region experienced wild poliovirus importation from the remaining endemic countries (Benin, Burkina Faso, Cameroon, Chad, Central African Republic, Cote D'Ivoire, Guinea, Mali, and Niger). Despite this resurgence, WHO member States continue to be committed to the eradication of polio as evidenced by the resolution made by the Health Ministers to curb the resurgence at the 54th Regional committee held in September 2004. Moreover, in January 2005, polio eradication was included as an item in agenda of the summit of the Heads of State of the African Union (AU). At the end of

2005, after massive and rapid response activities, only one country remains endemic (Nigeria). The African Region had come down to 43% (819 cases) of global cases, and 94% (770) of these were detected in Nigeria, remained the only country in the region with endemic wild poliovirus circulation.

According to Sturm (2005), over the past 150 years, innovations in immunization practices have dramatically improved the health of children and parents are increasingly asked to consider and accept new childhood vaccine but the parental attitudes and beliefs in decision making about their children's immunization have a great influence on uptake of vaccine.

Nigeria, one of the four countries that remained polio-endemic, had historically been "a global epicentre of transmission". The spokesman for the World Health Organization on polio eradication group explained that the surge in polio cases was due partly to lingering resistance of parents in giving their children the polio vaccine, though this refusal had drastically reduced when three parents who initially refused were arrested and prosecuted in Kano (IRIN, 2011).

According to the Wikipedia (2010), in the early 2000s, some Islamic religious leaders in northern Nigeria, suspicious of western medicine, advised members of their congregations not to have their children vaccinated with oral polio vaccine. The boycott was endorsed by the then Governor of Kano state, and immunization was suspended for several months. Subsequently, polio reappeared in excess in formerly polio free neighbouring countries of Nigeria and genetic test showed the virus was the same one that originated in northern Nigeria. Nigeria had become a net exporter of polio virus to its African neighbours. People in the northern states were also reported to be wary of other vaccinations, as Nigeria reported over 20,000 cases of measles with nearly 600

deaths from January through 2005. In 2006, Nigeria accounted for over half of all new polio cases worldwide.

Agbeyegbe (2007), in her research also argued that religion was a proximal factor in the boycott since the principal advocates, the Supreme Council of Sharia in Nigeria and the Jama'atu Nasril Islam were primarily concerned for Muslims in Northern Nigeria. They advocated for Muslims to boycott the immunization exercise as the vaccine was declared unsafe by these advocates. Similarly, other messages that were communicated to the public as reasons for the boycotts include; immunization not serving any useful purpose, an anti Islamic and a Western racist plot against the health of Nigerians, that OPV can spread HIV, it was also alleged that assistance in form of polio immunization causes infertility. The government acknowledged the use of contaminated vaccines but claimed that the contaminated batch had been completely exhausted etc. The messages by boycott advocates, which received extensive media publicity, incorporated many of these components-experience(The Pfizer drug trial), bias(disharmony with the west).as well as cultural and religious beliefs (Islamic sentiment).As a result, the public could have developed the perception that the advantage of rejecting the OPV far outweighs the risk of receiving the vaccination.

In 2011, fresh polio cases resurfaced in Kaduna state and the Nigeria Medical Association (NMA) Kaduna state chapter, expressed worry over the re-emergence of new cases of polio in the state during the Association's distribution of free drugs to children under-five years. The chairman of the NMA reiterated the association's commitment in partnering with UNICEF towards sensitizing and enlightening the general public on the importance attached to polio eradication. (National Mirror 08/08/2011). Polioinfo (2013) highlighted that 62 cases of wild poliovirus were reported across eight States in Nigeria in 2011 compared with 21 cases in 2010 and the

country's North is the main source of polio infection in Nigeria. However, report from year 2014 assessment according to Global Polio Eradication Initiative (2014) revealed that there are no new cases of wild poliovirus type 1 (WPV1) reported within the period of this report and Nigeria's total case count for 2014 is now six (6) (GPEI, 2014).

In an effort to eradicate polio disease, Kaduna state conducted 9 rounds of vaccination during immunization plus days in 2011, hoping to extend positive trends in promoting polio immunization and shore up stakeholders' commitment to make Nigeria polio free by 2012. The Kaduna State governor kicked off the polio-free torch campaign in February 2012 and stressed that, there are still some resistance to the polio immunization programme in the state and there is need for renewed sense of commitment and moral obligation to do something about polio eradication. Jaulmes Christein in 2008 revealed the success of Nigeria's polio Eradication initiative (PEI)'S outreach programme in mobilizing religious leaders to advocate for polio vaccination. He explained that some Koranic schools in Zaria that did not allow vaccinator before now allow vaccinators access into classrooms to administer oral polio drops (OPV) to all children under the age of 5years. In addition, the build trust and support for immunization amongst religious leaders and institutions has led to a much greater public acceptance of the vaccine (UNICEF, 2008). As at September, 2009 WHO South-West representative said Nigeria had recorded a major success in eradicating wild polio epidemics, especially in the South-west region of Nigeria, adding that there had been no reported cases of wild polio in south west in the last 22 weeks (Akanmo,2009).

Subsequently, in a study carried out in Bayelsa State south-south Nigeria showed that immunization coverage in rural communities was surprisingly better than that in the urban communities. This can be attributed to the better mobilization and

participation of the rural community in the delivery of immunization services. Greater emphasis is therefore placed on community mobilization and participation in the effort to eradicate polio, and achieve universal childhood immunization coverage (Itimi, Dienye and Ordiniola (2012) One of the polio high risk in Igabi LGA of Kaduna state have pledged their full compliance and support for immunization and vaccination against polio while promising to make their wards available for the immunization during IPDs (New Nigeria, 2009). Studies have indicated that Kaduna state is one of the wild polio virus endemic areas in Northern Nigeria (WHO; 2006), these studies have investigated the reasons for the surge of polio cases and its resistance, but literatures were not focused on the acceptance level of polio immunization in Kaduna state. This study therefore assesses the level of acceptance of polio immunization in Kaduna state with reference to Zaria and Kachia Local Government Areas.

2.4 Factors Influencing Acceptability and Non Acceptability of Polio Immunization

Many factors have been identified as the reasons, which affect the acceptance of child immunization. These factors vary from one society to another.

Social Factors - Various socioeconomic and demographic factors may influence immunization coverage of children, such as, parent's education and occupation, age of mother, prenatal care, sex of child, age of child, birth order of child, place of delivery and assistance at birth of child, household income/economic status, and parents' residence. For example, a study in rural Yogyakarta in Indonesia found that the community leaders played an important role in motivating parents to seek immunization for their children, so it was possible that illiterate mothers might have been motivated to have their children immunized (Streatfield and Singarimbun, 1988).

2.4.1 Education- A study by Rahman, Islam & Mahalanabis (1995) showed that Parent's education plays an important role in decision making to immunize their children. The formal education of parents exposes them to knowledge and the functions of specific types of immunization. For instance, a study in Ghana by Matthews and Diamond (1997) revealed that education of mothers has a significant and positive relationship with childhood immunization coverage. Rahman et al. (1995) argued that even in the presence of maternal illiteracy, educating mothers about the vaccines and vaccine preventable diseases may be highly effective in increasing immunization coverage. Ahluwalia, Helgersson & Bia (1988) however had found that education of mother was not a significant predictor of children's immunization status in Nepal. Streatfield and Singarimbun's (1990) study in Central Java revealed that the levels of immunization coverage did not follow a clear linear pattern according to educational level because of the role of community leaders in motivating the mothers to immunize their children in Central Java. Only a few studies have been conducted to explore the role of fathers in determining immunization of children. A study in Nepal by Ahluwalia et al (1988) found that children whose fathers had a high school or higher level of education were more likely to be vaccinated and receive the complete immunizations than those whose fathers had less formal education. In the Eastern Region of Ghana, Brugha, Kevany and Swan (1996) found that fathers also played an important role in decision making to send their children for immunization. These findings suggest that fathers who had a relatively high education did not only play a significant role in immunization coverage, but were also involved in using preventive health services in order to improve their children's overall health status.

2.4.2 Maternal Age – Mother’s age can also influence the completeness of child immunization. A study in Bangladesh by Bhuiya et al. (1995) found that children of younger mothers had higher immunization coverage than those mothers aged 30 years or older.

2.4.3 Occupation of Parents - Parents’ occupation has been found to be related to family income in many countries. For example, Matthews and Diamond (1997) found that father’s occupation was associated with completeness of immunization in Ghana. Bhuiya et al. (1995) in Bangladesh also found that children from better socioeconomic backgrounds had twice higher chance to receive immunization compared with children from lower socioeconomic backgrounds. But in a developed country setting, a study in Pinellas County, Florida revealed that there was no relationship between maternal employment and child immunization status (Coreil, Wilson, Wood and Liller 1998).

2.4.4 Sex of Child - The Expanded Programme on Immunization emphasizes the importance of protecting all children regardless of their sex. Studies in Bangladesh by Islam and Islam (1996) and Bhuiya et al. (1995) found that the sex of the child was one of the most important determinants of childhood immunization where male children were more likely to be immunized than female children. Male children were twice as likely to have received immunization as female (Ahluwalia et al., 1988). The data from developing countries showed that child mortality rate was higher among females than males. The lack of immunization was one of the main causes of female mortality in developing countries (Hill and Upchurch, 1994).

Among the reasons for the slow progress in attaining the goal of Child Immunization in Nigeria are the inequitable access to immunization services, low

vaccine supplies and equipment (Lambo, 2005). The six geopolitical zones in Nigeria represent different religious and political situations, economic potentials, population densities and levels of development. These regional disparities tend to reflect the range of child immunization campaign effectiveness across the country (Antai, 2009) and across communities, which could be linked with variations in vaccine supply between communities within the different regions. The South East and South South regions in Nigeria are economically deprived regions. The South South (or Niger Delta) region in particular is characterized by extensive mangrove forests, lagoons and swamps stretching over hundreds of kilometres inland. In this region, poverty, poor social infrastructure and conflicts exacerbated the environmental degradation that result from crude oil pollution. Many of the children targeted in the vaccination campaigns in the South region generally reside in impoverished and hard-to-reach settlements across the Niger Delta Region. According to Njoku (2006) vaccination teams face threats from armed militias that roam the area in search of opportunities to seize control over the local oil resources. These conditions make children in these regions inaccessible to vaccination officers. Therefore children in the South East and South South regions in Nigeria had significantly higher risks of receiving full immunization.

Ethnic differences in Nigeria generally reflect differences in social identity, attitudes and health-seeking behaviour, but also reflect disparities in socio-economic position. The Igbos (or Ibos) have high economic power, which is a characteristic that increases their propensity to migrate from areas with poor economic opportunities into areas with higher economic opportunities, more than most other ethnic groups in Nigeria (Chukwuezi, 2001). Increased socio-economic position increases the likelihood of children being fully immunized.

According to FBA (2005), prior to 2003 there was a shortage of vaccine in Nigeria, largely due to late or non release of funds. In 2003 UNICEF took over the job of international procurement and now there are adequate vaccines in the country. However, despite the presence of vaccine in the capital city, Abuja, there were still acute shortages in the States as syringes and cold boxes were not supplied at all. Attempt to establish private sector vaccine delivery have failed in many States, largely due to centrally controlled, cumbersome and impractical procedures for operation, certification and payment.

A recent Indian study found that increasing women's literacy at the community level, in addition to mothers' access to higher education such as matriculation and beyond were effective development tools for child's complete immunization status (Parashar, 2005). Therefore parents of low educational background have the tendency to reject polio immunization. Muslim in the northern parts of Nigeria believe that the Government has connived with the western world in order to vaccinate their children to prohibit them from giving birth in order to reduce the Muslim population. Similarly, decision making in the family is another key factor that determines the acceptance or non acceptance of immunization in the family since in most Nigeria cultures, the head of the family determines whether children should be taken for immunization or not (Yahya, 2007).

The belief system of an individual is also another great factor that influences such an individual's understanding, perception, and acceptance of any health care programme. The literature reviewed had shown many factors responsible for the acceptance and non acceptance of polio immunization in different societies, including the area of study but none of these studies have been able to identify the birth order of

children as associated with acceptance and non acceptance of polio immunization. Therefore, there is a knowledge vacuum in this area which needs to be filled.

2.5 Socio economic status of Parents of children affected by Polio

Several previous studies of polio immunization have found that social class, position is one of the most important factors affecting the decision of individuals to be vaccinated, such studies have indicated that the higher the socio economic status of the individual, the more likely he is to be vaccinated (Francis,1960). The Socio-economic status of individuals strongly influences their behaviour on health matters. Consequently, it has a great impact on child immunization. According to Lynch, (1996) higher socio-economic status is associated with better health. Though maternal education has no significant association with the likelihood of full immunization, household wealth and mothers' occupation are factors that influence vaccination uptake, given that they influence parents' likelihood to seek immunization for their child. It was also stressed that mothers' occupation (clerical, sales, services, skilled manual) was significantly associated with the lower likelihood of full immunization. This is not surprising, given that women in such occupations are of lower socio-economic status, and need to get permission to take time off work to get their children vaccinated. This in itself has negative consequences on the risks of full immunization. Mothers' household wealth was significantly and proportionally associated with the likelihood of full immunization, with higher position in the wealth index being associated with increased likelihood of full immunization. Similar findings have been reported in previous studies (Antai, 2009). Khan (2006) who found that living in a community with low proportion of mothers with hospital delivery was associated with lower likelihood of full immunization. This association is in line with expectations that timely access to

maternal healthcare (hospital delivery) is one of the most important preventive measures against maternal and child health outcomes.

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This section reviewed literature on socio-economic attributes of parents of children afflicted with polio disease. Household wealth has been identified as one of the likely influences of parents to seek immunization for their children This study will indicate if these attributes are applicable to parents of children affected with polio in Kaduna State.

2.6 Theoretical Framework

The understanding of the social situation of polio immunization could be rested on two theories which are used to interpret the reality from the findings in logical order.

Assessment of polio immunization is anchored on Symbolic Interactionism Theory and Conspiracy Theory. In this study, the symbolic interactionist theory (micro level theory) focuses on an individual experience of polio immunization; while the conspiracy theory (macro level theory) explains the various respondent's views on polio immunization.

2.6.1 Symbolic Interactionism

The symbolic interactionist theory analysed society by addressing the subjective meaning that people accord on event and behaviour. In this study, it examines the nature and meanings of illness experience at the individual level in the process of social interaction. Although symbolic interactionism has its origin in Max Weber's assertion

that individuals act according to their interpretation of the meaning of their world, this theory draws on the work of George Herbert Mead (1934) who believes that one self develops through social interactions. Moreover, how people communicate and interact with each other depends on how they interpret factors such as language, action and status (potential symbols). For example, one might interpret a handshake as either a friendly greeting or cool farewell, depending on the context which sometimes change. One might also interpret polio disease as caused by female spirit or virus. According to Blumer (1962), the basic principles of social interactionist theory are as follows:-

1. Human beings act on the basis of meanings that they give to objects and events, rather than simply reacting either to external stimuli such as social forces, or to internal organic stimuli such as hunger. Symbolic interactionism therefore rejects both societal and biological determinism.
2. Meanings arise from the process of interaction, rather than simply being present at the outset and shaping future action. To some degree, meanings are created, modified, developed and changed within interaction situations rather than being fixed and pre-formed. In the process of interaction, actors do not slavishly follow pre-set norms or mechanically act out established roles.
3. Meanings are the result of interpretive procedures employed by actors within interaction contexts. By taking the role of the other actors interpret the meanings and intentions of others. By means of the mechanism of self-interaction, individuals modify or change their definition of the situation, rehearse alternative courses of action and consider their possible consequences. Thus the meanings that guide action arise in the context of interaction via a series of complex interpretive procedures. (Blumer, 1962)

The issues of acceptance and non acceptance of polio immunization can be anchored on the principles of social interactionism theory; these principles also draw on

the work of William Isaac Thomas (Social construction of reality). He argued that the way we perceive ourselves to other people is partly shaped by our interactions and life experiences: how we perceive others and how others perceive us. That is, our perceptions of reality are coloured by our beliefs and backgrounds, what is real depends on what is socially acceptable and this dictate our responses to it.

In relating the above view to the objective of this study, the Hausa name for poliomyelitis is *shan-inna*, which means a shrinking of limbs caused by the mother spirit (Inna) which is different from the scientific meaning of polio disease, caused by a virus which is preventable through immunization. The hypothetical point of view of this rests on the meaning and belief of the Hausa on polio which still poses resistance and passive attitude of the people towards the acceptance of polio immunization. Thomas (1928) explained further that if people define a situation as real, it is real in its consequence. He highlighted that people are partly shaped by their interaction and life experiences. Essentially the situation of polio immunization is influenced by the experience of the people based on the Pfizer drug in 1996, during their human trial of Cerebrospinal Meningitis (CSM) vaccine-trovan scandal that resulted to death of children and deformation of others in Kano State which is still in the mind of the people and does shape their view on acceptance of polio immunization (Renne, 2006).

Blumer (1962) argued that the formation of the meanings gives rise to behaviour. People behave based on what they believed and not just on what is objectively true. Thus, people interpret one another's behaviour and it is these interpretations that form the social bond. He explained that "human beings interpret or define each other's actions instead of merely reacting, their response is based on the meaning which they attach to such actions" (Blumer,1962: 963). Therefore, the behaviour of the people towards polio immunization is basically rooted in its meaning and culturally inclined.

In the same vein, George Herbert Mead (1934) postulated that every society has a culture and that it is the culture that suggests appropriate type of behaviour for particular social roles (Haralambos and Holborn, 2004).

2.6.2. Conspiracy Theory

A second theoretical basis for this study is the Conspiracy Theory. Conspiracy theory examines how suspicious target populations resist compliance to immunization based on their past experience on health issues. The term “conspiracism” was popularized by Frank P. Mintz in the 1980s. According to Mintz, conspiracism denotes “belief in the primacy of conspiracies in the unfolding of history”. Barkum (2003) in discussing the usage of conspiracy theory as a belief which explains an event as the result of a secret plot by exceptionally powerful and cunning conspirators to achieve a malevolent end stretched further that the theory is in three folds. First, it claimed to explain public behaviour concerning a situation or an event as perceived by the people; those events that are most important but difficult to understand and confusing. Secondly, tracing all evil back to the source, that is the conspirators and their agents and lastly, it presents the secret knowledge of plotters to the masses.

Sociological historian, Holger Herwig (1914) in his explanations of the origin of first world war, argued that most of the events that led to it are hard to understand because they attracted the greatest attention from myth makers and charlatans. To him, conspiracy theory may be when evidence available in the public record does not correspond with the common or official version of events and it also sheds more light or interprets an events.

Sheik Abu Hamza (2011) is a strong proponent of these conspiracy theories. He is a leader of Finsbury Park mosque in North London. He said

“Osama bin ladin was America hero of yesterday and suddenly the America policies have decided to make him criminal of today. Some of the attacks on American interests are reactions to the double standard actions of America on the Islamic world. Osama bin ladin can never do such a huge operation of 9/11 attacks at that time.

He claimed it was an inside operation, the building cannot collapse due to fire after initially withstanding the shock of impact collision. It was rather an organization within USA trying to initiate the third world war”.

Zion and Joseph (1994) pointed out that conspiracy theories took root in people in the Middle East who have rarely been in charge of their own destinies, and as a result, have come to see the world as the product of the “sometimes overt, sometimes clandestine actions of the more powerful. Treicher (1999) in examining conspiracy theory explained that it reveals the source of mistrust, resistance, fear and disempowerment. In the context of polio immunization, conspiracy beliefs have the potential to disrupt public health initiatives that require compliance from parents.

Criticism of the Conspiracy Theory

This conspiracy theory as applied to acceptance of polio immunization has been faulted on the ground that it has been illegitimately and inappropriately used as a means to dismiss what are in fact substantial and well evidenced accusations. It is argued that those using the term are manipulating their audience to disregard the acceptance of polio immunization in a deliberate attempt to conceal the truth.

In conclusion, the principal objective of this study is to assess the level of acceptance of polio immunization. However, the goal of any immunization programme is successful eradication of a disease. As a case of polio immunization and a way of deepening our understanding of the problem, social interactionist and conspiracy theories were used by determining the magnitude of influence of misconception, distrust, fear and

religion thereby contributing new knowledge and understanding of polio eradication in Nigeria. The conspiracy theory emphasized on the believe of some people in the northern state of Nigeria that Nigeria government conspired with the western nations to reduce the Muslim population (Obadare,2005). The implication of failed disease – control programme become more damaging as the world becomes increasingly globalised (Wilson 2005, Streefland 1989).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Location of the Study

The location of this study is Kaduna State. Kaduna State was selected for the study because it is one of the wild polio virus-endemic states in Northern Nigeria (WHO, 2006). The State has twenty three Local Government Areas and three Senatorial zones, that is, the Southern zone, Central zone and the Northern zone with a total population of 6,066,562 (National Population Commission NPC, 2006). The Southern senatorial zone comprises of Jema'a, Jaba, Kauru, Zango-Kataf, Kaura, Kachia, Kagarko, and Sanga Local Government Areas. The zone is dominated by Christians and comprises of several ethnic groups such as Atyab, Adara, Ham, Bajju, Kagoro, Gwong, and many others. The major towns in this zone include Kafanchan, Kachia, Kwoi and Saminaka. There is a General Hospital in each of these towns.

The Northern zone is made up of Kubau, Ikara, Makarfi, Soba, Zaria, Gure, and Kudan Local Government Areas. The indigenes of the zone are mostly Hausa, most of who are Muslims by religion. The Central zone is made up of Birnin Gwari, Giwa, Kaduna North, Kaduna South, Chikun, Kajuru and Igabi Local Government Areas. Hausa, Gbagyi and a host of other ethnic groups are found across the Local Government Areas. In the Northern zone, Zaria, Hunkuyi, Makarfi, Ikara and Soba are the major towns. They have the following hospitals Gambo Sawaba General Hospital Zaria, Saye Leprosorium hospital Zaria, Hunkuyi general hospital, Soba general hospital, Giwa general hospital, Ikara general Hospital and Ahmadu Bello University Teaching Hospital, Zaria.

The Central zone has Kaduna, Birnin Gwari and Giwa as the major towns. Kaduna town has three major Hospitals: Barau Dikko, Gwamna Awon, Yusuf Dantsoho and General Hospital Sabon Tasha. There is one General Hospital in both Giwa and Birnin Gwari respectively. Zaria local government from northern senatorial zone and Kachia local government from southern senatorial zone are the sites for this study. The population of the two local government area is 652472 out of which Zaria has 408,198 and Kachia has 244,274 (NPC, 2006).

3.2 Types and Sources of Data

Primary and secondary sources of data were used for this study. The primary data was obtained from the respondents through survey and in-depth interview with some key informants including Community leaders, religious leaders and health workers in the study area.

The secondary data was obtained from existing literature such as journals, research articles, textbooks, internet and other materials on polio immunization. Qualitative information on polio assessment was gathered through In-depth Interview from the parents of children that were affected with poliomyelitis in order to find out their socio-economic status. The health workers, religious leaders, community leaders and a representative of Ministry of Health, Kaduna State were interviewed on poliomyelitis and its immunization in Kaduna State. The attitude of health workers, religious leaders and community leaders towards poliomyelitis and its vaccines were examined.

3.3 Study population

The population comprised parents of children between the ages of 0-10 years, that is, 2002 to 2012 in the selected areas. The rationale for selecting these respondents is to assess the uptake of polio immunization before its controversy in 2003 and 2012. Health workers, community leaders and religious leaders were interviewed because they are opinion leaders and they do influence their community members opinion on acceptance and non acceptance of polio immunization.

3.4 Sampling Techniques

Kaduna state is clustered into three senatorial zones, namely; southern, central and northern senatorial zones but the disease had persisted in only two senatorial zones according to National Primary Health Care Development Agency (NPHCDA, 2012); that is, the northern and the central senatorial zones. One local government area each was selected from northern and southern zones for this study. That is an endemic (north) and non- endemic (south) zones. Kachia local government area was selected from the southern zone while Zaria local government area was selected from the northern zone. A total of four hundred and twenty one (421) respondents were selected for the study based on the population of the two local governments (NPC, 2006). To determine the sample size, the following formular was used as recommended by Krejcie and Morgan (1970);

$$SIZE = \frac{x^2 NP (1 - P)}{d^2 (N - 1) + X^2 P (1 - P)}$$

S = required sample size

X² = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).

N = the population size.

P = the population proportion (assumed to be .50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion (.05).

Sample yielded was 383. Adding a 10% for incomplete answers, the total number came out to be 421.

Table 3.3.1: Zaria local government population and household distribution

Name of ward	No of primary health centre	No of households	Total population
Dutse Abba	4	8064	47,436
Kaura	2	4985	29,325
Kwarbai A	4	4901	28,830
Tukur-tukur	2	9075	53,387
Total	12	27025	158978

Source: Zaria Local Government cold room office (2013)

Table 3.3.2: Kachia Local Government Population and Household Distribution

Name of ward	No of primary health centre	No of household	Total population
Kachia	3	5595	46265
Gumel	2	5409	31568
Awon	15	3998	27895
Sabon Sarki	3	6463	33985
Total	23	21465	139713

Source: Kachia Local Government cold room office (2013)

According to Gyong (2011:10) A “reasonable” sampling size should be selected mainly based on the scope and resources available to the researcher.

Purposive sampling method was used to select the wards. Zaria Local Government has thirteen wards while Kachia Local Government has twelve wards. Four settlements were selected from each of the local government areas; Kwarbai ward, Kaura ward, Tukur Tukur ward and Dutsen Abba were selected from Zaria local government in the northern senatorial zone while Kachia, Sabon Sarki, Awon and Gumel wards were selected from Kachia local government of Southern Senatorial Zone. Two hundred and sixty four (264) questionnaires were administered in Zaria local government and one hundred and fifty seven (157) questionnaires were administered in Kachia local government using systematic sampling technique. A list of all the entire households in the selected area was obtained from the cold room of each local government where vaccines are distributed for immunization.

To get the required sample size for each ward, the number of household in the selected ward was divided by the total household in the four wards (each LGA) multiplied by the calculated population of each LGA (264for Zaria and 157 for Kachia). For example, for Kachia ward in Kachia LGA as indicated in Table 3.1.1 and 3.1.2

$$5595 \div 21465 \times 157 = 40.9$$

Where 21465 is the summation of the four wards.

Therefore, in Kachia ward forty one questionnaire were administered, this was done by identifying the major streets in each area and the questionnaire was administered to different houses. In each selected house, the parents of children between 0-10years were served with questionnaire (Appendix 1).

3.5 Methods of Data Collection

This study used both quantitative and qualitative research methods. According to Araoye (2004), quantitative research is based on measures of quantity or frequency. It is an orderly and structured procedure for collecting data with the use of numerical values to non numeric data of human and social interaction in a manner that permits uniform interpretation of these data. Quantitative research is basically a survey which emphasizes the collection of mass data from a large body of individuals (Gyong, 2011). Qualitative method on the other hand is used to investigate aspects of community life from various perspectives (Araoye, 2004). It provides detailed information about a social situations.

The researcher used survey and in-depth interview techniques to obtain information from the respondents. The questionnaire elicited information on respondent's attitudes, beliefs and the motivating factors for accepting polio vaccine. The survey method is appropriate which enables researcher to generate quantitative data with relative ease. The researcher engaged 12 research assistants for the household survey. The research assistants were student nurses of Ahmadu Bello University Teaching Hospital who are indigenes of the study areas and therefore familiar with the areas. These assistants were chosen because of their interest in research. They were trained on data collection procedure. The researcher and the assistants administered all the questionnaires and retrieved them.

Application was written to the Commissioner, Kaduna State Ministry of Health for permission to have access to data on polio immunization in Kaduna State. The researcher established rapport with the Monitoring and Evaluation (M and E) officer, Zaria local government through the cold room manager (in-charge of vaccine) who

linked the researcher with the health workers in all the Primary Health Centres (PHC) in the study areas.

The in-depth interview (IDI) was to elicit information from community leaders, religious leaders and health workers especially on people's acceptance and hindrances to the acceptance of polio immunization. A representative from the ministry of Health was interviewed on the efforts being made to eradicate polio in the State.

All the in depth interviews were conducted by the researcher on the following categories of information.

i. Parent of children that were affected with polio disease: Six parents of children that were afflicted with polio disease at the period of study were interviewed. The interviews were conducted with the assistance of the health workers from PHC of their various wards who have had rapport with these parents. The information from these parents was to ascertain the socio-economic status of this group and to identify the factors that hindered them from accepting the polio immunization for the affected children.

ii. Health workers: Eight health workers were interviewed to assess the information about polio immunization coverage, the people's reaction, belief and motivating factors for acceptance and non-acceptance of polio immunization as well as the issues of cold chain, adequacy of man power, and logistics which could affect the polio immunization process.

iii. Community/religious leaders: Nine community and religious leaders were interviewed. These community and religious leaders were visited earlier to seek their cooperation in providing additional information on polio immunization in their communities/congregations. These informants were selected purposively because they are opinion leaders and can influence their members decision on polio immunization.

Chairman, State Action Committee on Immunization (SACI): An interview was conducted with the Kaduna State chairman, SACI who as well represented Kaduna State Ministry of Health. He was interviewed on the efforts being made to eradicate poliomyelitis in Kaduna State.

3.6: Location of Study and Questionnaire Distribution

Table 3.6.1 shows the distribution of questionnaire in different wards

Names of Wards	Questionnaires Distributed	Questionnaires Retrieved	Percentages %
Dutse Abba	80	74	92.5%
Kaura	48	46	95.8%
Kwarbai A	47	47	100%
Tukur Tukur	89	86	96.6%
Kachia	41	36	87.8%
Gumel	40	35	87.5%
Awon	29	29	100%
Sabon Sarki	47	47	100%
Total	421	400	

For the qualitative data (in-depth-interview) 24 people were interviewed. These included Health workers, Religious leaders, Community leaders, a representative of Kaduna State Ministry of Health as well as the parents of the affected children.

3.7 Data Analysis

Data collected through questionnaire were analyzed using the Statistical Package for Social Sciences (SPSS) version 16.0 which captured the quantitative information for the work. The qualitative data that is, in -depth interview information was transcribed and sorted according to the research objectives which enabled the researcher to pool ideas and statements under a particular theme to illustrate the situation investigated.

3.8 Ethical Considerations

The participants in this study were adequately informed of the study in order to remove suspicious and build in confidence in them. The purpose of this study was clearly explained to them. Their privacy was guaranteed and all information was kept strictly confidential.

3.9 Research Variables.

In this study, the following variables were measured as indentified in the objectives of the study.

The identified variables are the acceptance and non acceptance of polio immunization which are dependent variables and this is determined by the respondent's knowledge about polio immunization. Factors like age of the respondent, religion, marital status, educational attainment and income of the respondent are determinants of whether they will take their children for immunization or not and whether immunization should be encouraged. These factors represent the independent variables.

3.10 Limitation of the Study

The terrain of the selected wards in Kachia LGA's were quite good and motorable but distant from each other and the researcher had to travel many times. This had significant increase on the cost of study unlike Zaria LGA's where the wards were near each other.

Data on poliomyelitis immunization coverage in Kaduna State before the controversy in 2003 and after the controversy which could not be accessed was a challenge for assessing the effect of the controversy on polio immunization in the state.

This study is also limited to the fact that some parents of the polio affected children were not cooperative in responding to some of the questions raised; it took the help of some health workers who intervened. Some of these questions were on reasons for their refusal to take the polio immunization for the affected children thereby omitting some necessary information.

Despite these challenges, the assessment of acceptability of poliomyelitis immunization in the study area was adequately undertaken without any serious implications on the quality of data collection and result presented.

CHAPTER FOUR

ANALYSIS AND INTERPRETATION OF DATA

4.0 INTRODUCTION

This chapter deals with the analysis and interpretation of data collected on assessment of poliomyelitis immunization in Kaduna State amongst parents of children from birth to 10 years of age. The data collected comprised of socio-demographic characteristics of respondents, acceptance level of polio immunization in the study areas, factors associated with acceptance and non-acceptance of polio immunization and socio-economic status of parents of the children that were affected by poliomyelitis.

4.1 Socio-Demographic Characteristics of Respondents

In this section, the data on the socio-demographic characteristics of the respondents and informants who participated in the study are presented.

Table 4.1.1: Some Socio-demographic Characteristics of Respondents

VARIABLE AGE GROUP (YEARS)	FREQUENCY	PERCENTAGE
Age in years		
16-25	56	13.3
26-35	163	40.9
36-45	117	29.5
46-55	46	11.8
56-65	17	4.4
66	1	0.3
TOTAL	400	100
GENDER/SEX		
Male	195	48.8
Female	205	51.3
TOTAL	400	100
MARITAL STATUS		
Married	308	77
Divorced	49	12.5
Widow/Widower	16	4.0
Separated	26	6.5
No response	1	0.25
TOTAL	400	100
HIGHEST EDUCATIONAL LEVEL		
Primary	67	16.8
Secondary	118	29.5
Tertiary/Post Tertiary	47	11.8
Vocational	25	6.3
Quranic	79	19.8
No Formal Education	64	16.0
TOTAL	400	100.0

Source: Field study, 2013

As shown in Table 4.1.1, out of the 400 participants, 163(40.9%) in this study were in the age group of 26 to 35 years; the least category was the age group 66 years and above. This indicates that most of the respondents are within their reproductive years. The Table also shows that (51.3%, n=205) of the respondents were females while the male respondents constituted the remaining 48.8% (195). It was also found that majority (77%, n=308) of them were married and the highest educational level of respondents reveals that 118(29.5%) had secondary education followed by those who had Quranic education (19.8%, n=79). Similarly, the spouses' highest education attainments were 95(23.9%) for secondary school and Quranic education 74(18.6%). Those with no formal education were (16.0%, n=64).

Other socio-demographic characteristics are similarly presented in Table 4.1.2 below, showing that a large proportion of the respondents are Muslims (61%, n=244) while Christians made up the remaining 38% (152). The spouses' religion also revealed that Muslims are higher with 61.7% (246). One of the two Local Government Areas where a larger number of the respondents were drawn for this study is a predominantly Muslim settlement. This may account for the higher proportion of Muslims in the study population. The occupation distribution of the respondents revealed that 175(43.75) of them were self employed, followed by unemployed 68(17%). The housewives among the respondents constituted 15% (60), while a number of them were farmers (26.1%, n=104) and businessmen/women (17.3%, n=69).

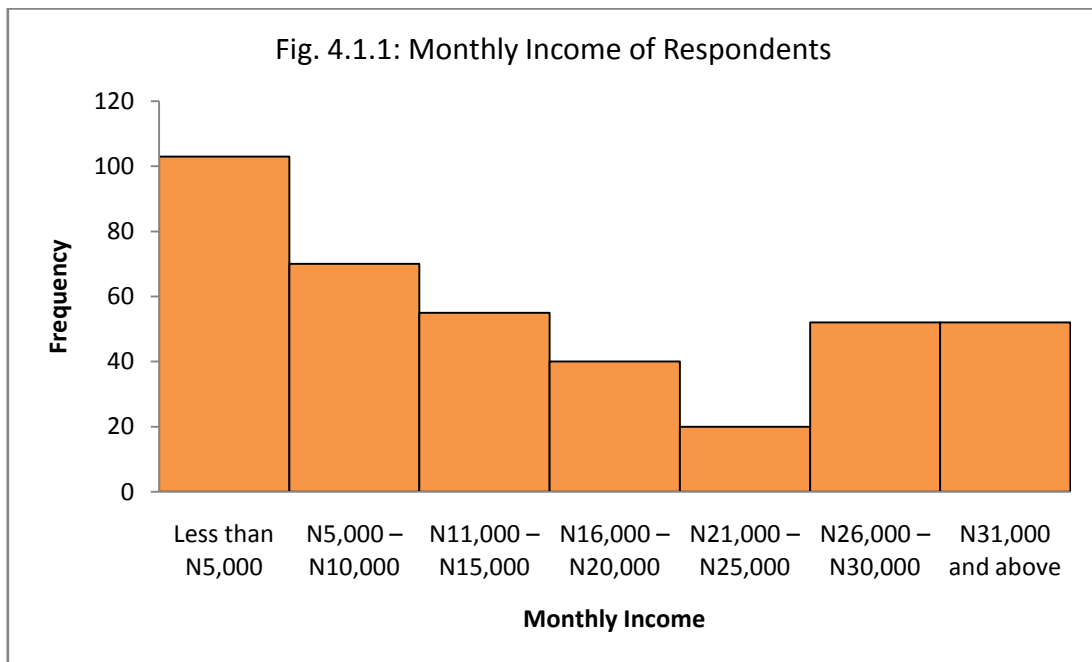
Table 4.1.2: Employment status, monthly income and religion

VARIABLE EMPLOYMENT STATUS	FREQUENCY	PERCENTAGE
Employment status		
Self Employed	175	43.75
Work Part Time	13	3.25
Unemployed/Looking For Work	68	17
Retired	5	1.25
Student	8	2.0
Employed	68	17
Full House Wife	60	15
No response	3	0.7
Total	400	100
Monthly Income		
Less Than N5,000	103	25.75
N5,000 – N10,000	70	17.5
N11,000 – N15,000	55	13.75
N16,000 - N20,000	40	10
N21,000 – N25,000	20	5
N26,000 – N30,000	52	13
N31, 000 and Above	52	13
No response	8	2
Total	400	100
Religion		
Christianity	152	38
Islam	244	61
Traditional	1	0.25
Others	1	0.25
No response	2	0.5
Total	400	100

Source: Field study, 2013

The income of the respondent (fig.4.1.1) reveals striking low earning, with a mean monthly income of ₦15, 314. 00. Most of the respondents: 228 (57%) earn below N15, 000 in a month.

Fig. 4.1.1: Monthly Income of Respondents



respondents earned between ₦21, 000 and ₦25, 000 in a month which shows that their income is very low. This is in spite of the age distribution which suggested that participants are mostly in their most productive age bracket (between ages 26 and 35), when earnings are expected to be high. The low income level may therefore be associated with the type of occupation (which is predominantly subsistence farming) and low level of formal education found in the study population.

Table 4.1.3: Number of children between 10 years and below

Variables	Frequency	Percentage (%)
1-4 children	85	21.9
5-10 children	130	33.4
11-15 children	64	16.5
16-20 children	68	17.5
Above 20 children	42	10.8
Total	389	100

Not indicated = 11

Source: Field study, 2013

As indicated in table 4.1.3, 130 (33.4%) of the respondents have 5-10 children and a good number of the respondents (10.8%,n=42) had over 20 children. These data

indicate that family sizes in the study area are large because of the polygamous tradition in some parts of the study area.

4.2 Level of Acceptance of Polio Immunization

Data presented in this section on acceptance of polio immunization among the 400 respondents. Table 4.2.1 shows the responses of the 400 parents to the questionnaire.

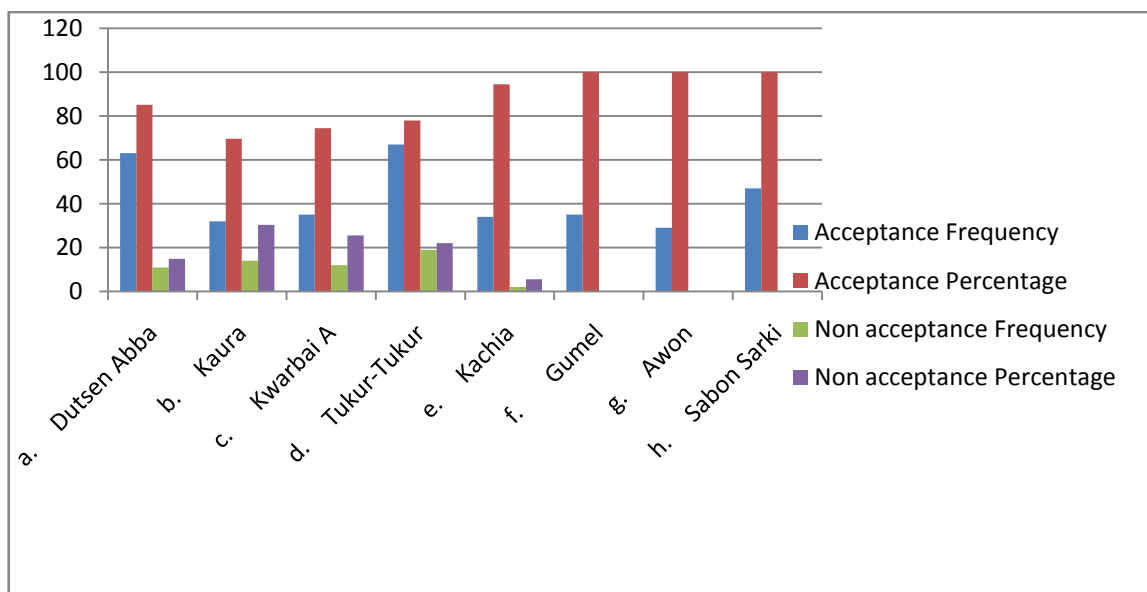
Table 4.2.1: Distribution of location of respondents by acceptance of polio immunization

Location	Acceptance	Non acceptance	Total
Zaria LGA	197 (77.9%)	56 (22.1%)	253 (100%)
Kachia LGA	145 (98.6%)	2 (1.4%)	147 (100%)
Total	342 (85.5%)	58(14.5%)	400 (100%)

Source: Field study, 2013

On the whole, table 4.2.1 shows a very high acceptance of polio immunization in the study areas. As shown, the acceptance of polio immunization is higher in Kachia (98.6%) than Zaria LGA's (77.9%). The level of acceptance was compared across the respondents' wards to give some idea about respondents' residences and their acceptance as shown in figure 4.2.2 below.

Fig 4.1.2: Wards of respondents and acceptance level



wards, the level of acceptance was 100%. The lowest level of acceptance is in Kaura ward in Zaria LGAs.

As presented above, on the aggregate, it is revealed that out of the 400 respondents, 342(85.5%) accepted polio immunization while 58(14.5%) did not accept polio immunization. This reveals that the acceptance level of polio Immunization is relatively high in the study area.

4.2.1: Awareness of polio immunization

The level of awareness about social issue or service has a direct relationship with whether or not an individual will accept or utilize a certain facility or service especially polio immunization.

On the level of awareness of polio immunization, this study shows that 360 (96.8%) of the respondents have heard of polio immunization and some of these (n= 165, 44%) got the awareness through media (Radio/Television/Newspapers). A community leader (Awon ward from Kachia LGA's) said the awareness in his community is about 95%. Another informant said the awareness is 100%. In order to re-affirm this statement and the percentages, a question was asked 'How many children do you have? And how many of them were immunized? He answered that all the 10 family members are aware and accept the immunization.

A health worker from (PHC Kachia ward) added that out of the targeted 10,600 children they usually have coverage of up to 10,200 immunized children. Another health worker from Sabon Sarki said at times some parents even get to the centre before the workers. Apart from this, information from Mazuga PHC staff of Gumel ward indicated that because of the proximity of her house to the hospital, it enhances the process of passing information easily on polio immunization. However, an informant

explained further that “From the 1990s to 2003 before the controversy, the coverage can be said to be good but later in 2004 there were about 60 cases of polio, in 2005 it went up to 90 polio cases especially in the Northern State (Kano and Kaduna). According to the Director, SACI Kaduna state, it was during this period that the State Actions Committee on Immunization (SACI) in Kaduna State was formed in order to strengthen the efforts in the eradication of poliomyelitis”.

The view of respondents on the success of the coverage level of polio immunization was assessed. According to a community leader from Tukur Tukur ward, polio immunization has been very successful. He associated the success of the coverage to the support of the mobilizers, which mainly was done through community meetings with the people to sensitize members including the women leaders. This mobilization involved going from house to house to give them talk on the importance of the immunization.

One of the mobilisers from Dutsen Abba (PHC centre), who was interviewed, corroborated the success story of the polio immunization. She said:

I have stayed long in this community, I am part of the community and the community members believe me, so whatever I tell them they agree with me. When I told them about the polio immunization that they should remove their misconceptions on polio, they agreed with me. There are also good support from the community and religious leaders.

Another informant added that “letters are always circulated to all units or department concerned so that traditional and religious leaders inform their people while town criers go round the community to create awareness and the date or days of the immunization”.

In an interview session, a religious leader from Kachia ward (Baptist church pastor) in Kachia LGA, said:

I can boldly tell you that all my congregational members fully accept and comply with polio immunization. It is not only my congregation alone but the entire community, we all accept the vaccine and as a member of the mobilizing committee, I'm involved in all the immunization programmes.

In the same vein, another discussant (Chief Imam of Kachia ward) who said he is a member of Jama'atul Nasri Islam said:

Look at the children in the compound and at the Islamiyyah, I personally immunized my child to show my people that there is no harm in the vaccine as pre-conceived. At the initial stage there were lots of challenges, some of my people refused to accept but now they all accept the polio immunization.

From the above presentation, it can be deduced that the awareness and acceptance of polio immunization is very high in the study areas.

Among those who immunized their children (n = 342), almost all of them (99.4%) indicated taking their children back for subsequent immunization schedules. This shows that these respondents did not only accept the polio immunization but also complied with the rules of the immunization by taking the complete dosage of the immunization for their children. One of the respondents while commenting on the acceptance of polio immunization stated:

I accept the polio immunization for my children but sometimes I do feel that why is it only polio immunization that is given, what about immunization against other deadly diseases that kill children.

Another respondent stated "why wouldn't I accept the polio immunization for my children when they said it protects the children from getting the disease". Similarly a respondent observed; "This medicine is free and it is good for the children".

Nevertheless, the study revealed that the acceptance level is very high but some parents were pessimistic. According to one of them,

Anything free or cheap is not easy to come by, but this one (i.e. polio immunization) they follow you to your door step with gift in addition to it.

The parents further added that: “I accept it (polio immunization) since that is what will make you people (vaccinators and officials) happy”.

Among those who did not accept; a respondent stated that “they should make every other medicine for children free if there are no inclined motives”. The implication of this is that some of these respondents accept the polio immunization not of their free will but under certain coercive influences. The non acceptance of polio immunization could as well be explained from individual perspective or mixed feelings. According to a health worker from Kwarbai ward in Zaria LGA:

All hands are on desk on this issue of polio immunization, we are doing our best to sensitize the people, but it is a personal issue which makes it difficult. At times, when you talk to people they take it personal; some agreed while some resist the immunization. Some even explain amicably that reasons are best known to them and assistance can be rendered to them in other areas other than polio immunization.

Another respondent stated:

People should look for something to do, my child is not sick so I don't need the immunization. Look out for those that need it.

The acceptance of polio immunization was also assessed from community leaders and healthcare workers through an in depth interviews.

A Community leader (from Dutsen Abba ward, Zaria LGA) explained that “there has been a high level of acceptance in the community, but the members (of the community) appear suspicious of government's sole concern about polio immunization, questioning the government focus only on polio and leaving other diseases”. To further explain on this, he vehemently added that:

Government should provide other health services not only polio immunization. Whenever the polio vaccinators are coming, they should come along with vaccines for other diseases as well.

This suggests that communities either desire more health attention in needy health areas or are suspicious of some ‘hidden agenda’ of the government and health authorities.

This suspicion appears widespread because health workers in the community are also aware of such beliefs. For example, a health worker from Primary Health Centre Rimindoko, Zaria city explained that:

Community members allow their children to be immunized, but some still refuse because of some reasons which are linked to religious belief, political and personal reasons such as the belief that the vaccines must have something in it that makes children not to have their own children later in life.

From such statements above, it is believed that the polio vaccines have contaminants.

Additional account from IDI conducted with the Mai Angwan Bishar from Kaura ward inside Zaria city explained that the first episode of immunization from Zaria Local Government was conducted in front of the Mai Angwan's house. To confirm his statement he said;

My community had never been reported by government agencies for lack of response to immunization; the director of the programme is a witness to my statement, even though, my family and other members of my community had fallen victim to poliomyelitis, so we know how devastating the disease is and we have come to agree with the immunization as part of the solution. We also don't have any problem with the drugs given in the hospital (PHC).

Kaura ward is one of the wards in Zaria LGA where there were reported cases of polio disease in the past, but it seems there is a realization of the importance of the immunization.

Similarly, a health worker from Sabon Sarki ward in Kachia LGA said "We don't have problem with parents on the issue of immunization, they bring their children for immunization regularly".

On the opinion of the respondents on polio immunization; an equal proportion (85.5% n=342) of the respondents that accepts stated that polio immunization protects their children from polio disease. It therefore seems that those who accepted the immunization for their children believe in the preventive capacity of the vaccine.

4.3 Factors associated with acceptance and non-acceptance of polio immunization

This section analyses the factors associated with acceptance and non-acceptance of polio immunization. The acceptance and non acceptance level were gauged against respondents' religion, income, and the highest educational qualification among other characteristics.

The table 4.3.1 below show the Religious affiliation of respondents and polio immunization.

Table 4.3.1: Acceptance level by religious affiliations of respondents

	Acceptance	Non acceptance	Total
Christian	152	-	152
Islam	188	56	244
Total	340	56	396

Yule $q = 0.97$ missing = 2 Source: Field study, 2013

Table 4.3.1 shows that 188 of those adhering to the Islamic religion accepted polio immunization and 56 rejected it. All the Christian respondents (152), accepted polio immunization. The Yule's Q analysis revealed that there is relationship between the rejection of polio immunization and religious affiliations.

An informant (health worker) from Rimin Doko Primary Health Centre Zaria City said:

All members of this community are Muslims, and as all know that the rejection of polio immunization is common among Muslims. We have spoken to them on several occasions on the importance of the immunization in this area.

At the Primary Health Centre Kachia ward, the matron in charge explained that;

Initially, there were nine households that rejected the immunization who were Muslims but after several consultations with the help of the Traditional leader of Kachia ward, who eventually threatened them, they had all agreed and accepted the immunization for their children.

Furthermore, the head of Islamiyyah school in Zaria City was asked if there was any other method of prevention for polio disease; He said:

None apart from prayer and the immunization. This immunization had been clarified by the Islamic Scholar, the Sultan of Sokoto. It is just that some people still held to their misconceptions about the immunization.

4.3.1: Respondents' reasons for not taking polio immunization for their children.

The 58 (100%) respondents that rejected polio immunization for their children as indicated in the table 4.3.1, were asked why they rejected the vaccine, their responses showed that 32 (55.2%) respondents rejected polio immunization for their children because of fear of side effect on their children while 32 (55.2%) of them indicated that they did not take polio immunization because they did not believe in it.

Another 39 (67.2%) of the respondents stated that they did not take polio immunization for their children because it is against their religion. Similarly, 11 (19.0%) of these respondents believed that children develop polio after taking immunization. Majority 56 (96.6%) of them rejected polio vaccination because they believe polio vaccine contains HIV virus/contraceptives. The study also revealed that 35 (60.3%) of the respondents lack confidence in the vaccinators and 30 (51.7%) did not have time for the vaccination. Most of the respondents 52 (89.7%) said they did not take polio immunization for their children due to other personal reasons which include ignorance as stated. However, these were explored at in-depth interview. An informant at Kaura

ward, Zaria City stated that religion, poverty and political undertone are some of the reasons.

Table 4.3.2: Acceptance level by income of respondents

Monthly income of respondents	Acceptance		Non acceptance		Total
	Frequency	%	Frequency	%	
Less than ₦5,000	81	78.6	22	21.4	103
₦5000-₦10,000	55	78.6	15	21.4	70
₦11000-₦15000	51	92.7	4	7.3	55
₦16000-₦20000	34	85.0	6	15.0	40
₦21000-₦25000	16	80.0	4	20.0	20
₦26000-₦30000	45	86.5	7	13.5	52
₦31000 and above	52	100			52
Total	334		58		392

No response = 8 $\chi^2 = 17.966$, df = 6, sign. Level = 0.05; P-value = 0.006 **Source:** Field study, 2013

The acceptance of polio immunization was also correlated with the monthly income of the respondents. As indicated Table 4.3.2, acceptance level is high in those that have monthly income of N11, 000.00 and above; the lowest acceptance level is found in the income group N10, 000.00 and below but generally high from N11,000.00 and above.

The chi-square analysis also indicates positive association ($X^2 = 17.966$, df = 6, P-value = 0.006) between the acceptance of polio immunization and income of the respondents.

This finding revealed narrations from most informants during the in-depth interviews. Some of the health workers in the Primary Health Centre said; “There is no record for the monthly income of the parents that bring their children for immunization,

it is only their occupation that is asked most often”. A health worker at Tukur Tukur Primary Health Centre (Zaria LGA) said:

Parents that bring their children for immunization are Civil servants, Housewives, Farmers, Businessmen and women. Some are engaged while some are not engaged in any work, we don't ask for their monthly income.

Another health worker from Awon ward in Kachia LGA said:

There is no column for monthly income of parents in our register or in their (children's) immunization card. The immunization is for everybody either rich or poor, is for all people.

The acceptance level of respondents was correlated with education level of respondents to determine if education was a factor influencing the acceptance of polio immunization for their children. Table 4.3.4 this.

Table 4.3.3: Acceptance by highest level of education of respondents

Highest educational level of respondents	Acceptance		Non acceptance		Total
	Frequency	%	Frequency	%	
Primary	58	86.6	9	13.4	67 (100%)
Secondary	110	93.2	8	6.8	118(100%)
Tertiary/ post tertiary	45	95.7	2	4.3	47 (100%)
Vocational	21	84	4	16	25 (100%)
Quranic	62	78.5	17	21.5	79 (100%)
No formal education	46	71.9	18	28.1	64 (100%)

Total	342		58		400 (100%)
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$\chi^2=22.482$, $df=5$, $sign. Level=0.05$, $P-value=0.000$

Source: Field study, 2013

The findings show that acceptance is highest among all respondents while non acceptance is comparatively higher among respondents with “no formal education” (28.1%) and respondents with Quranic education (21.5%) respectively, compared to 4.3% among respondents with higher formal educational attainment. The educational level of respondents compared with acceptance of polio immunization revealed that there is positive association between the respondents’ educational level and acceptance of polio immunization. This shows that the educational level of parents have influence on acceptance of polio immunization.

Contrarily, a health worker from Dutsen Abba explained that;

Polio immunization has nothing to do with education of the parents, at times, it is the educated parents that even give tough time.

A health worker from Gumel ward in Kachia LGA said;

All categories of parents bring their children for immunization. I only think that those parents with high educational attainment are more enlightened on its benefits and they asked questions about the immunization.

Similarly, the acceptance level was assessed using the sex of the children of the respondents as presented in Table 4.3.4.

Table 4.3.4: Acceptance level by gender of the children

Sex	Immunization Status		Total
	Acceptance (freq)	Non Acceptance (freq)	
Male	754	278	1032
Female	708	268	976

Total	1462	546	2008
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$\gamma = 0.01$

Source: Field study, 2013

In Table 4.3.4 above, the Yule's Q reveal that there is no relationship between the acceptance of polio immunization and gender of the children immunized ($\gamma = 0.01$). This is in line with decision making in the home whereby both gender are equally being taken for immunization as noted in this study.

In addition, a particular respondent who is a mother of four children stated that:

It is God that gave these children to me then why should i discriminate between them with respect to immunization. I immunized all my children irrespective of their gender.

Another respondent supported the above view that all her children were immunized irrespective of their sex. The data gathered suggested that there is no relationship between the sex of the children and acceptance level as shown in the table above: acceptance for male children 73.1% (n=754) compared to female children 72.5% (n=708).

An informant added that "I know that people bring out their children for immunization whenever the vaccinators come".

Table 4.3.5 shows polio immunization status of children in relation to birth position and gender of the children.

Table 4.3.5: Acceptance by position of the children and gender

Position of children	Male		Female		Total
	Immunized (%)	Not immunized (%)	Immunized (%)	Not immunized (%)	
1st youngest	101(46.5)	116(53.5)	95(51.9)	88(48.6)	400
2nd youngest	123(57.2)	92(42.8)	116(64.1)	65(36.1)	396

3rd youngest	150(72.8)	56(27.2)	135(69.2)	60(30.9)	401
4 th youngest	182(99.4)	3(1.6)	179(81.7)	40(18.6)	404
5 th youngest	198(94.7)	11(5.3)	183(92.4)	15(7.7)	407
Total	754	278	708	268	2008

Source: Field study, 2013

In table 4.3.5: First youngest is the youngest child in the family, follow by the second youngest, the fifth youngest is the oldest. The analysis suggest that there is relationship between non acceptance of polio immunization by position of the children with regards to increase in the percentage of non acceptance of polio immunization. Furthermore, the study revealed that the oldest children have higher rate of polio immunization for both male and female than the youngest children. These findings indicate that some parents held to the view as stated in section 4.3.1 and as: such do not believe in polio immunization since they believe it is against their religion or that polio vaccine contains HIV/ contraceptives etc.

4.3.2: Preference for mobile versus Hospital immunization

In order to reach many children and improve on immunization coverage, mobile vaccination was introduced and this has however shown tremendous preference for it as a factor that facilitate acceptance.

The findings revealed that 335(98.0%) of the respondents preferred mobile vaccinators to the hospital /clinic. In addition, most of the informants in the in-depth interview preferred mobile vaccinators to the facility area. Contrary to the above statement an informants (A health worker from Tukur Tukur PHC) said:

Government should change the system of house to house immunization, it affect the routine immunization because when they come to the facility areas (Hospital), health talks are given on how to care for their babies which is very important but most mobile vaccinators are not equipped with this knowledge.

In another interview session conducted at Angwar Dankali, the Chief Imam said “we prefer the house to house immunization because of its convenience and easy accessibility for mothers and children”..

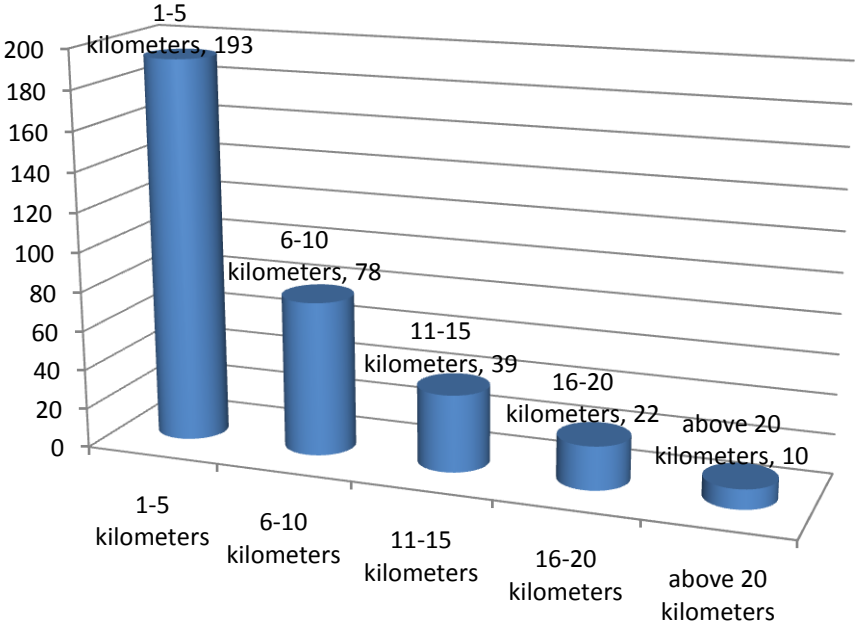
Another respondent stated:

The interference into one’s privacy is what I don’t like about the house to house immunization, anybody knocks at door and call themselves vaccinator.

Essentially from the above statement, it can be seen that people prefer the house to house vaccination (mobile) to the hospital, except the complain of intrusion to their privacy.

Another factor assessed was the distance between immunization centres and respondents’ residences as shown in the figure 4.3.2 below.

Figure 4.3.2: Distance from Residence to Immunization Center



The distance from residence to immunization centres indicate that majority of the respondents 193(56.4%) said they live about 1-5 kilometres to the centres, and

10(2.9%) above 20 kilometres with mean distance of 6.7 km. A large percentage of the respondents 342(85.5%) were satisfied with the service of vaccinators. All the in depth interview conducted were in agreement with the respondents view, that is the PHC centres are accessible and the health workers are recommendable.

Rounds of immunization mean multiple dose of the immunization, the multiple dosage is usually given when there are missed children during the period of immunization and when there is an outbreak of polio disease in an area.

On the rounds of polio immunization, 241(70.5%) of the respondents indicated their preference for several rounds of the immunization while 101(29.5%) said no to several rounds of immunization. Some respondents pointed that too much of everything is bad and probably it is the too many rounds of it that has the side effects. An informant (Sabon Sarki) said it will be good if the providers can reduce the routine immunization, because they see the routine immunization too much and stressful.

Similarly, another discussant (An Imam from Kwarbai ward) added that:

Parents often complain that multiple doses of the immunization may have side effect on the health of their children in future and thus if there could be a way such that the multiple doses can be reduced.

4.3.3: Gift as a factor for acceptance of polio immunization

Gift is something that is given to someone as a present. In polio immunization process gift is usually given as a motivator for the acceptance of polio immunization. These gifts are in form of biscuit, soap, sweet, mosquito net etc. According to a representative of the Kaduna State Ministry of Health, “this gift is called immunization Plus in which the immunization is given alongside Vitamin A. In the absence of vitamin A, other gifts such as biscuits, sweets and mosquito nets are given to motivate people for the acceptance of polio immunization”. He added that “some areas have

been noticed that they don't come out if vaccinators do not present these gifts. State and Local Governments are in charge of the provision and supply of these gift items used for the motivation”.

Respondents were asked if they received gifts before the acceptance of polio immunization to ascertain the authenticity of the Ministry's official claim.

On the aggregate, 300 (87.7%) of the respondents reported receiving gifts before allowing their children to be immunized; only 42 (12.3%) did not receive gifts but still allowed their children to be immunized. Out of the 300 respondents who reported receiving gifts, 270(90%) of them said that gifts motivated them to accept polio immunization; a few 30 (10%) did not believe that people should be motivated before taking care of their own health.

An informant (Awon Community leader in Kachia LGA) said:

This gift the government is giving is very good, it helps in motivating the people more. Although, there are a lot of complains that the vaccinators are usually short of it. I wish the government can improve on this.

The above position was further corroborated by other informants.

It is not that I don't want the gift but most of the time they will say the gift has finished or they don't have gift when they come.

However, some parents do not expect any gift, stressing that the immunization is for their children's benefit. For example, a parent said that “no gift can be compared with the advantages of immunization for my baby.” A respondent stated “even if they did not give me any gift, I will still accept the polio immunization for my children.”

A Community leader from Kaura ward in Zaria LGA said “members of the vaccination campaign (from Department of Community Medicine) used to give them gifts because of their high rate of response but nowadays they are just cooperating with them because they have already started and they don't give us any tangible things as before, the

vaccination is not even regular”. In addition to this, most of the informants during the IDIs stated that government should try and provide more of these gifts. A respondent stated: “If I have my way I will not allow my children to collect the biscuit they give them in school during immunization. I reserved my comment.”

From his statement if the respondent had his way, he would not allow his children to be immunized.

4.3.4: Manpower as a social factor for polio immunization

An assessment of manpower in some of the Primary Health Care centres visited revealed that there are health workers at virtually all the Centers but many of them are Auxiliaries. The Health worker at Primary Health Care Centre Dutsen Abba (Zaria LGA) said “We don’t have Nurses and Doctors but we have six Community Health Workers (CHEW) and six other Staff..

According to a health worker at Kwarbai ward (Zaria LGA) .

Polio immunization services does not require high technical manpower it is easy to administer since it is oral. Though the caliber of personnel include Nurses, Community Health Worker (CHEW), Community Health Officers, Environmental Health workers and anybody trained can give the oral polio vaccine.

The IDI session revealed that manpower for immunization is not sufficient at the grass roots level, according to the Chairman State Action Committee on Immunization:

There are criteria set for intake of new personnel at the local government level but people go against this criteria during recruitment; such as intake of underage persons as seen in the killing of the female vaccinators in Kano recently, sometimes the number of recruit are not even sufficient as personnel in the local government go against the set appropriate rules for improvement which leads to inadequacy.

The researcher further inquired to know whether there is a policy guiding the recruitment of personnel for the exercise, The Chairman SACI said the personnel must be an educated individual, about the age of 20 years and is mature with positive attitude

who is trained because training at the lower level is the major problem since there are about 255(two hundred and fifty five) wards in the State, there is need to be about 255 supervisors to closely observe those trainees in the ward. At the period of recruitment some people bring their underage daughters to participate in the exercise and so you can see that poverty and sentiments had been into the exercise. Other health workers from Gumel, Sabon Sarki and Kwarbai wards said they have good cold chain facilities and there is standby generator that helps in maintaining the potency of the vaccines.

Another discussant from Kachia ward (Kachia LGA) said:

The vaccinator's take home is too small compared to the nature of the work and distance they cover. Therefore, if we want vaccinators to be more committed we need to improve their take home. Despite this, majority of them are committed to the work.

4.3.5: Funding of polio immunization as a factor

The funding of polio immunization is primarily the function of Local Government Authority but because it is a National concern, the State and even the Federal Government assists as well as World Health Organisation (WHO) to finance the exercise. Most of assistance comes from the United Nation International Children Education Fund (UNICEF), For implementation. the Chairman, SACI Kaduna State explained that:

The release of funds is not satisfactory because there has not been prompt release of funds. Many times the fund may be approved early but may not be released until after the exercise, this had made the local government to go in search of loans. This, many times lead to poor implementation. It is expected that fund should be released a week or two prior to implementation but funds are released a day or two before implementation and it becomes disorganized because the arrangement will not go as planned such as inviting the media or going out to create awareness. All these need money which may be disrupted if fund is not available.

The researcher further inquired if implementation can be delayed until the release of funds. The Chairman said that there are National Immunization Days which are set

aside as general day nationwide based on the available data. Therefore, whether fund is available or not, each State is to carry out the exercise on the assigned date irrespective of the preparation including ward level training for vaccine collection.

Another informant from Sabon Sarki ward (PHC) said:

We are not involved in any financial aspects of the immunization, we don't buy the vaccines or syringes and many others, we only go to the cold room to collect the vaccines.

A health worker from Kaura ward (Zaria LGA) Added that

All vaccines are transported from Cold chain together with money which is often retired immediately after the exercise.

4.3.6: The Role of Health workers, Political leaders, Community and Religious Leaders in Polio immunization

The acceptance and full compliance with polio immunization is not only an issue but the effort and support of the political and religious leaders are important in the acceptance of polio immunization. Therefore, a number of community/religious leaders and health workers were interviewed. It seems that in some communities, leaders insist on complying with immunization schedules. For example, the District Head of Kachia emphatically, said:

For those that are not complying or accepting the polio immunization, I have made it clear to them that if they will not comply or follow my rules by complying they should leave the community.

From the above statement, some community leaders try to enforce immunization compliance even with threats of expelling non-conforming residents.

In a similar tone, A religious leader (The head of the Islamiyah) Gidan mai Mali, Zaria city said “Some members accept while some don't accept but majority of them allow their children to be immunized and those that do not allow their children to be

immunized tend to be stubborn when being persuaded. These people had been enlightened to remove their negative perception such as the belief that polio immunization hinders pregnancy and is aimed at reducing the Muslim population, He also added that there are beliefs that polio immunization is from Christians/Jews”.

In an interview with a representative of Kaduna State Ministry of Health Chairman, State Action Committee on Immunization (SACI), it was gathered that the Kaduna State Government is also doing all within its powers to ensure compliance and acceptance of polio immunization. In his own words:

...the State is doing its own round of supervision and gives supportive measure to the local government, We involve traditional leaders but the nature of the societies and lack of respect and recognition for the traditional leaders have affected this involvement.. The acceptance of polio immunization has been poor and the State has intervened effectively with the local Government Areas being the focal entry point in order to work with traditional rulers and religious leaders. Fundamentally, the former method of using town criers which was effective has been abandoned.

From his comments, it is obvious that there are challenges of accepting polio immunization within the State but various means including engaging traditional and religious leaders are being employed to improve acceptance. Although the use of these leaders still help, this approach appears to have weakened. This can be deduced from the interview with the representative of the Kaduna State Ministry of Health who said:

Unlike before when the Emir or District head sends town crier to inform people to come to his palace for immunization which prompt the people to respond positivity to emir’s call but now societal values are gone and such involvement of traditional leaders are no longer firm.

In an interview session, many of the informants said there is high level of commitment from the vaccinators. This view was also supported by some of the respondents who pleaded on behalf of the health workers that government should motivate them better by increasing their take home package.

A health worker (from Public Health Center Tukur-Tukur) said that even though there is good sensitization on polio immunization with the support of the Community leaders, they still face challenges with the community members. In his words;

Some people are of the opinion, why is it that government is not providing other health care services but only polio? Even paracetamol is not free at the health facility. While some are saying there is lack of social amenities but government is giving more effort in providing polio service instead of social amenities.

Other views also include; “Since it is free, it must contain something dangerous”; some said “The health workers/providers are not faithful about it This issue is political, religious and even trivial”.

The Director/Chairman State Action committee on Immunization (SACI) Kaduna State said:

There have actually been a lot of controversy over the years which was made “worst by the statement of some religious leaders like Dr Kaita of the Faculty of Pharmaceutical Science who shared his view that there were actually family planning strategies in that immunization in order to reduce population. Everyone believed that for a reputable pharmacist to say this there must be an element of truth in his words. Severally, in his lectures, Dr Kaita also said that some of these vaccines were contaminated in one of his presentation at Arewa House Kaduna. This negative misconception has affected Northern states especially Kano and Kaduna which has brought down the rate of acceptance in this country bringing about predominant cases in these states although few cases were recorded in the southern states too.

Some responded positively that it is good for their children’s health so why would they not take the immunization.

4.4: Socio–Economic Status of Parents of Children with Poliomyelitis

In an assessment of the socio-economic status of the parents of children with poliomyelitis disease, six parents of children who suffered from polio disease at the period of study were accessed with the help of some health workers.

The findings revealed that out of the six parents of children that were interviewed, three of them earn less than N5,000.00 in a month, two of them earn between N5000 and N10000 in a month and one of them earn between N11000 and N15000 in a month.

The study also revealed the occupation of the parents as; one is a town crier at the Emir's palace Zaria city, two farmers, and a beggar while two are petty traders.

Additional accounts from an informant (a health worker) said a parent of polio victim is usually seen sitting near the cold store at Babban Dodo (The vaccine distribution centre for Zaria Local Government) Zaria city and from all indications he cannot say specifically that this is what he does for a living.

On the whole, IDI revealed that only two of the parents had secondary education while others have no formal education but had Quranic education.

Four of the children are first children of the families, one is the 3rd child of a family of 4 and one is the second child. All the parents are Muslims from Zaria local government area. No case of polio was identified at Kachia Local Government Area.

A parent (a polio victim's parent) was probed whether the child had ever been immunized, she said no and her reason was that polio immunization prevents people from giving birth in future. On what she thought was the cause of the disease in her child, she said:

I don't really know the cause but people believe that it is Aljanu (evil spirits) that affect the child and she (the child) is undergoing an alternative treatment with the use of herbs for drinking, sometimes prayers.

In addition to this the grandmother of the child said when the child was younger; she was with her biological mother who did not take the child for immunization because she heard that polio immunization prevents people from giving birth. She said "I as a person ensured that all my children were immunized against polio, now they are all healthy and giving birth in their respective homes."

The information obtained showed that virtually all the children that were affected with poliomyelitis were not immunized against polio.

Similarly, the source of livelihood was explored and the guardian (female) of the polio victim said:

Formally I had a grinding machine but it has spoilt and presently I don't have any means of livelihood. The girl's father is a driver (commercial) but presently works as a bus conductor since the car got spoilt.

The parent was asked whether she got support from government or any organization, she said the World Health Organization representatives only comes for visitations and asked questions but not support.

A Health worker from Tukur-Tukur ward also responded that the present Kaduna State governor took interest in the girl's case, when her blood sample was taken to Abuja for further laboratory analysis, the foreign organization that was invited said "the girl's paralysis was irreversible," indicating there was nothing that could be done to treat her.

Another informant who felt that the researcher had come to mock her refused to let the health worker that accompanied the researcher in. She explained her bitter encounter with some WHO officers and health workers that visited earlier. She said:

Honestly, my husband is not happy with the health workers concerning our child. Everywhere I go to either wedding or naming ceremony, nobody want her child to play with mine because in the hospital, health workers emphasized that my child can infect their children. This stigma makes me and my family feel uncomfortable everywhere we go.

Another victim's parent from Kwarbai Ward who reluctantly agreed to be interviewed said that he is a civil servant and a farmer. When asked of his reaction when the child was diagnosed with polio, he said "we were not happy but we have taken everything in good fate and left everything to Allah." Nonetheless he would not give reason for not immunizing the child. When the parent of the polio victim was further asked if the other children were immunized he declined to answer the question. Nevertheless, some of these parents saw their children's disease conditions as "God's will" and would not blame God.

On the fate of the affected children, a health worker appealed that:

government should please come to their (the affected families) aid, because once they are diagnosed to have polio, they believe government should do something; and in an anticipation for government's response, most times such children are left unattended to by families.

Therefore, it is often believed that if at all any rehabilitation should be provided for them (affected children), government should be solely responsible.

CHAPTER FIVE

SUMMARY, DISCUSSION OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This study was carried out to assess the level of acceptance of poliomyelitis immunization in Kaduna State, with focus on two senatorial zones (northern and southern senatorial zone). The study was set to determine the parents' level of acceptance of polio immunization for their children, factors associated with acceptance and non acceptance of polio immunization and the socio-economic status of parents of children that were afflicted with polio disease.

5.1 Summary of the Major Findings

The findings revealed that most of the parents were within the age group of 26 to 35 years; indicating that the respondents were within their reproductive years. The study also found that the female respondents were more than the male respondents which may be associated with the fact that mothers are the direct caregiver of the children even though fathers provide the funds for the medical bills. Other socio-demographic characteristics found in the study include the educational attainment of the respondents which indicate that secondary education had the highest followed by Qur'anic education. In relating this to the acceptance level generally, there is high acceptance of polio immunization among all respondents but those with tertiary and post tertiary education had the highest acceptance rate, while the highest among the non acceptance level was found in respondents with "no formal education. The study revealed that a large proportion of the respondents are Muslims, and the acceptance level is higher among the Christian. The non acceptance is high among respondents that believe that polio vaccine contains HIV virus/contraceptives and respondents who

did not take polio vaccine due to their personal reasons. The monthly income of the respondents revealed strikingly low earning which may be associated with the type of occupation which is predominantly subsistence farming and low level of formal education found in the study population. On objective one which is to assess the level of acceptance of polio immunization in Kaduna State, the findings revealed that, the acceptance level is generally high in the study area as indicated in fig 4.2.1. However, the acceptance is higher in Kachia local government area than in Zaria local government area. This high level of acceptance is attributed to the people's awareness of the importance of the polio immunization with the support of mobilizers and community leaders who constantly have meetings with their people to sensitize them on the importance of polio immunization.

The second objective identified the factors associated with the acceptance and non acceptance of polio immunization in Kaduna State. Findings revealed that many factors affect the acceptance and non acceptance of polio immunization. Some of these factors include the religion of respondents, educational attainment of respondents, gender and birth position of the children, preference for mobile to hospital, gift as motivating factor, manpower, funding, role of community leader, religious leaders, health workers etc.

As to the factors that affect the non acceptance of polio immunization; religious belief was found to be the major, while other reasons found include fear of side effect, do not believe in immunization, children develop polio after immunization, lack of confidence in the vaccinators, lack of time, polio vaccine contains HIV virus / contraceptives etc.

Non acceptance of polio immunization was more among Muslims while all the Christian respondents accepted the polio immunization. The income of the respondents

shows that acceptance is high among all the respondents but it is higher among those with highest income. Acceptance by birth order of the children indicated that the oldest children had higher immunization rate than the younger children, manpower and funding were found to be insufficient. Lastly, health workers, political leaders, community leaders, and religious leaders play a great role in sensitizing people on benefits of polio immunization.

Third objective which revealed the socio-economic status of parents of children with poliomyelitis shows that three parents of the six affected children are economically impoverished. The findings also showed that two of the parents had secondary education while others had no formal but have Quranic education. The occupations of the parents show that one of them is a town crier at emir's palace, two are farmers, one is a beggar and two are petty traders.

5.2 Discussion of Findings

This study assessed the acceptance of polio-immunization in Kaduna State. It revealed that acceptance level is high in southern senatorial zone of the State, This high acceptance rate was found to be associated with the awareness of the people of the importance of polio immunization, that is, immunization helps in chances of their children survival. This is consistent with the results obtained from the study of Howlader and Bhuiyan, (1999) in Bangladesh who found that immunization status of children is an important factor in determining children's survival rate. This indicates that children who are immunized have higher chances of survival than the children that are not immunized. The study found that location of respondents and preference for mobile vaccination that is house to house immunization had tremendous influence on the acceptance rate. This type of immunization services according to Linkin et al (1995)

show that house to house vaccine delivery services had proved successful by reaching many children in most countries. However, a health worker during an in depth interview emphatically said government should change the house to house immunization because house to house vaccinators lack the knowledge of given health talk or educating the mothers on the care of their children apart from polio immunization.

The finding of this study revealed that the religion of the respondents was one of the predominant factors in the acceptance and non acceptance of vaccine. The acceptance is higher in Kachia local government area which is dominated by Christians than Zaria Local Government Area dominated by Muslims. The non acceptance is high among the Muslims as indicated in the study. Therefore, religion was found to be related to non acceptance of polio immunization. This support the trends observed in other studies like Agbeyegbe, (2007) explained that religion was a proximal factor in the boycott of polio immunization. This finding is in tandem with (Science in Africa, 2004) which stated that leaders in Northern Nigeria urged the Muslim parents in the Northern states to stop having their children being immunized. Theoretically, conspiracy theory is one of the theories used for this study. This theory focused on a belief held by people which explain an event as the result of a secret plot by exceptionally powerful and cunning conspirators to achieve a malevolent end. This explains the belief of the northern Muslims that Western countries are determined to impose population control measures on local Muslim communities through immunization (Gedlu and Tesemma 1997, Hennessey, 2000, and FBA, 2005). Similarly, Obadare explained that the issue of trust lies at the root of the immunization, the Northern Nigerian Muslims are sceptical and suspicious of Western health intervention, This scepticism was inspired by an event in 1996 when Pfizer's trovan

trial (an international pharmaceutical company) was accused of testing a new drug without ethical approval which resulted in the death of 11 children and many other deformed. This is in addition to the fuss between the Northern Nigerian Muslims and the George Bush regime's war against Islam, while Western international agencies and pharmaceutical corporations are seen as agents of American hegemony.

This study indicated that community leaders, religious leaders and health workers play significant roles in the acceptance of polio immunization, as indicated in the comments of a community leader (in Kachia LGA) who enforced immunization compliance with threats of expelling non conforming residents. In a similar study by Streatfield and Singarimbun (1988), it was found that community leaders played an important role in motivating parents to seek immunization for their children.

The study revealed that the oldest children of the family have higher rate of polio immunization than the youngest children as a result of the misconception surrounding the immunization. Since there is no literature that was able to assess this, it was one of the knowledge gap that this study identified and filled.. In this study, gifts served as motivator for the acceptance of polio immunization. This was ascertained by some of the respondents but suggested that government should improved on it.

Looking at the cultural dimension of polio immunization, acceptance and non acceptance of any health care is greatly influenced by the culture of its people and polio immunization is not left out. The cultural definition of polio among the Hausa is different from the Western definition of it (Yahaya, 2006). Therefore, immunization cannot prevent poliomyelitis.

The findings on the acceptance and non acceptance of polio immunization can be explained by the adopted theory of symbolic interactionist which states that "Human

beings act on the basis of meaning that they give to objects and events". This situation had consistently predisposed some of the Hausa Muslim communities to non compliance with polio immunization. Since polio, referred to as 'shan-inna' amongst the Hausa meaning shrinking of limbs caused by the mother spirit, it is believed that polio disease cannot be prevented by immunization since it is caused by a spirit. This belief lends some credence to the social interactionist theory being adopted as the thrust of this study where human beings act on the basis of meanings that they give to objects and events, rather than simply reacting either to external stimuli such as social forces, or to internal stimuli such as organic drives. The individuals decided not accepting the polio immunization due to their personal reasons and belief that polio disease is caused by spirit hence, it cannot be cured or prevented by immunization. The implication of this is that the total eradication of polio disease may be prolonged.

The findings on the socio-economic status of parents of children with poliomyelitis disease were found to be low. Three out of the six parents interviewed revealed they earn less than N5, 000.00 in a month, even though some claimed to be petty traders and some farmers. Only two of the parents had secondary education while others had no formal aside Quranic education. The researcher found that some of the parents live at the mercy of researchers that come to interview them. One of the parent lamented that WHO representatives that came for investigation did not turn up again or render any assistance since the last they came.

5.3 Conclusions

In conclusion, this research has been able to establish a fact that the acceptance of polio immunization in Kaduna State is high but this acceptance is greatly influenced by community and religious leaders who are opinion leaders and thereby influencing their members' decision on polio immunization.

It is also established that factors such as location of respondents, religion of respondents, logistics, and position of the child among others are all associated with acceptance and non acceptance of polio immunization. Religion and cultural factors and lack of trust are the key issues and challenges that confront the acceptance of polio. The socio economic status of parents of the affected children was also found to be low.

5.4 Recommendations

In order to improve on acceptance level of polio immunization in Kaduna State and Nigeria in general, the government and stakeholders should take cognizance of the following recommendations. These recommendations can be implemented through advocacy, community sensitization and continuous health education for the people.

1. Based on the findings which show higher acceptance rate of polio immunization in Kachia local government than Zaria local government, the local government with low acceptance rate should learn the methods adopted by the other local government which made them achieved the polio free status. This include the use of threatening words by the community and religious leaders enforcing the parents to accept polio immunization.
2. Government should pay more attention to other deadly childhood diseases and make available essential drugs to all the primary health care centres so as to reduce the suspicions on polio immunization and increase compliance.

3. In view of complaints from the respondents and some of the key informants on non availability of vaccines for diseases like malaria and de-worming exercise, detailed sensitization programmes through various media facilities should be carried out to emphasize the reasons for the emphasis on polio immunization. The people should be educated on the severity and epidemic nature of polio which spreads easily i.e. one can re-infect a whole nation or the entire world; as reason for the special attention being paid to its eradication. While doing this, participatory strategy should be employed involving all the parties such as religious and communities leaders who will in turn sensitize their people.
4. There should be prompt release of funds at all levels for proper execution of the exercise, since there are specific national days assigned for the exercise. This will help in avoiding “missed children” during the exercise.
5. The vaccinators should be health workers and indigenes of the various communities who are knowledgeable and who will be acceptable, and can health talks on health related issues. This will go a long way in reducing the cost of training and retraining of vaccinators, reduce the sentiments on recruitment of vaccinators as well as the recruitment of under aged vaccinators.
6. Based on parents’ complaint on frequency and multiple dosage of polio immunization, parents should be educated that there is no overdose and that the efficacy improves with multiple doses.

5.5 Suggestions for further studies

In view of the findings in this study, it is suggested that further studies should be done using more geographical areas since only two local government areas were used out of the 23 local government areas in Kaduna State. In addition, established Islamic organization should be explored.

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APPENDIX I

Questionnaire for Respondents on Assessment of Polio Immunization in Kaduna State.

Dear Respondents,

I am a student of the Department of Sociology, Ahmadu Bello University Zaria conducting a research on assessment of polio immunization programme in Kaduna State among male and female adults. Please answer the questions with all truth and sincerity to enhance a worthwhile study. Any information given would be treated under confidentiality hence respondents’ names are not required as information will be used for academic purpose only.

Thank you for your cooperation.

Yours sincerely,

Oyewole Mariam

Name of town/Village; LGA.....

SECTION A: Socio-demographic characteristics of respondent

1. How old are you?.....years

2. Sex
 - (A) Male
 - (B) Female

3. What is your marital status?
 - (A) Single
 - (B) Married
 - (C) Divorced
 - (D) Widow/widower
 - (E) Separated

4. What is your highest formal educational attainment?
 - (A) Primary
 - (B) Scondary
 - (C) Tertiary/post-tertiary
 - (D) Vocational
 - (E) Quranic School
 - (F) No formal education

5. What is your spouse's highest level of formal educational attainment?
 - (A) Primary
 - (B) Secondary
 - (C) Tertiary/post-tertiary
 - (D) Vocational
 - (E) Quranic School
 - (F) No formal education

6. What is your current employment status ?
 - (A) Self employed
 - (B) Working part-times
 - (C) Unemployed]\
 - (D) Looking for job
 - (E) Retired
 - (F) Student

(G) Others (Specify.....)

7. If employed what is your occupation?

- (A) Farmer
- (B) Civil servant
- (C) Businessman/woman
- (D) Others (specify.....)

8. What is your current monthly income?

- (A) less than N5000
- (B) N 5000 – 9000
- (C) N 10,000 – 14,000
- (D) N 15,000 – 19,000
- (E) N 20,000 – 24,000
- (F) N 25,000 – 29,000
- (G) N 30,000 and above

9. What is your religion ?

- (A) Christianity
- (B) Islam
- (C) Traditional
- (D) Others specify.....

10. What is your spouse's religion?

- (A) Christianity
- (B) Islam
- (C) Traditional
- (D) Others specify.....

Questions 11, 12 and 13 are for women only

11. How Many Wives does your Husband have?

- (A) 1
- (B) 2
- (B) 3
- (C) 4
- (D) 5

12. What is your position among the wives?

- (A) First
- (B) Second
- (C) Third
- (D) Fourth
- (E) Others (specify).....

13. How many children do you have?.....

Questions 14 and 15 are for men only

14. How many wives do you have?.....

15. How many children do you have altogether?.....

SECTION B: POLIO IMMUNIZATION SITUATION

16. Have you ever heard of polio immunization? Yes/No

17. If yes, what was your source of information?

- (a) From friends / colleagues
- (b) Community leaders
- (c) Radio / television / Newspapers
- (d) Hospital / clinics / patient medical store
- (e) Church/Mosque
- (e) Specify.....

18. How many children do you have presently that are 10years or younger?.....

19. Have you ever taken your child/children for polio immunization? Yes/No

20. Did you take your child/children back for immunization after the first dose? Yes/No

21. In your own opinion does immunization protect the child/children from polio disease? Yes/No

22. Please provide the necessary information in the table below which shows the children's birth position, age, sex, vaccine status, place of delivery and place of polio immunization.

Child	Age	Sex	Polio vaccine status		Polio Immunization place					Place of Delivery	
			Immunization)		Home	Hospital	Market	Church/ mosque	Others (specify)	Home	Health/ Institution
			Yes	No							
1 st Youngest											
2 nd Youngest											
3 rd Youngest											
4 th Youngest											
5 th oldest											

23. If the child/children were immunized in a particular centre what is the distance from the centre to your residence? _____ km.
24. Were you satisfied with the service of the vaccinators? Yes/No
25. Are there time vaccinators run out of vaccine they use? Yes/No
26. Were the vaccinators friendly? Yes/No
27. Are they committed to their work? Yes/No
28. Do you prefer the mobile vaccinators to the hospital/clinics? Yes/No
29. What is your reaction towards the mobile vaccinators whenever they come to your house?.....
30. Do you like the several rounds of the immunization? Yes/No
31. Do the vaccinators enlighten you on the importance of the immunization? Yes/No
32. Would you like your child to take the full required dose of immunization? Yes/No
33. What is your view on the polio immunization programme?
34. If any of your child/children has (ve) never been immunized against polio, which of the following best explains why? (tick 3 most important reasons)
- (A) fear of side effect
 - (B) I do not believe in immunization
 - (C) It is against my religion
 - (D) Children develop polio after immunization
 - (E) Polio vaccine contains HIV Virus/Contraceptives
 - (F) My husband does not approve it
 - (G) Lack of confidence in the people that vaccinate the children
 - (H) I don't have time
 - (I) If you have any other important reasons specify_____
35. When the mobile vaccinators come do they ask if and when the child was immunized? Yes/No

36. How had been the vaccinators behavior?
37. Do you receive gifts from the vaccinators? Yes [] No []
38. What was the gift (s)?
39. If yes to question 39 do such gifts motivate you to go for immunization?.....
40. Would you encourage other parents to immunize their
Child /children against polio? Yes /No.

APPENDIX II

AN IN-DEPTH INTERVIEW GUIDE FOR COMMUNITY(POLITICAL AND RELIGIOUS LEADERS) ON POLIO IMMUNIZATION IN KADUNA STATE

1. Awareness of polio immunization by the community members.

Probe for:

- The community's knowledge of polio immunization
- Whether it prevent polio disease.
- Other methods of preventing polio disease.

2. Perception of the community members of polio immunization.

Probe for:

- Opinion of the community on the issue of polio immunization.
- Community's response to polio immunization.
- Reasons for the community's response to polio immunization.
- Whether the community members allow their child/children to be immunized.
- Any case(s) of polio in the community in the past and present.
- Support of the community towards eradication of polio disease.
- Who should administered the vaccine and the preferred place for immunization.
- Commitment of health workers.

3. Security situation

Probe for:

- Concern for security of vaccinators.

4. community involvement

- Are the community involved in the transportation of vaccinators?
- If the vaccinators do not come what actions do the community take?
- Do the vaccinators inform the community members when they are coming?

5. Suggestions on ways of improving polio immunization in the community.

APPENDIX III

IN-DEPTH INTERVIEW GUIDE FOR HEALTH WORKERS ON POLIO IMMUNIZATION IN KADUNA STATE

1. Health policy on immunization.

Probe for:

- Policy guiding the immunization process.

2. Coverage situation

Probe for:

- Polio immunization coverage.
- Factors that hinder or encourage immunization in the area.
- opinion of the people about polio immunization.
- Category of children that have been vaccinated.
- Parental backgrounds of the children that have been vaccinated.
- Number of polio cases attended to.
- Number of death from cases of poliomyelitis.
- Parental background of the children that were affected with poliomyelitis.
- Determinants of community acceptance or rejection of polio immunization.
- Form of polio disabilities witnessed in the area.
- Provision of rehabilitation for disabled.

3. Issue of personnel

Probe for:

- Adequacy of manpower.
- Caliber/Quality of health workers.
- Who should administer the polio immunization.
- Commitment of the health workers or vaccinators.
- Availability of the vaccine.
- Issues of cold chain.
- Support from the community and religious leaders on eradication of polio disease.

4. Availability of fund for the immunization

Probe for: Logistics/Transportation

- Availability and adequacy of funding of polio immunization.
- Prompt release of fund.
- Management of fund.

5. Security situation

Probe for:

- Concern for security of vaccinators.

6. Community involvement

- Are the community members involved in the transportation of vaccinators?
- When the vaccinators did not come, what actions do they take?
- Do the vaccinators inform the community members when they will come?

7. Challenges faced and how they can be overcome.

APPENDIX IV

ANNEXES

Annex 10.1 High Risk LGAs 2011-2012 Polio Infected States

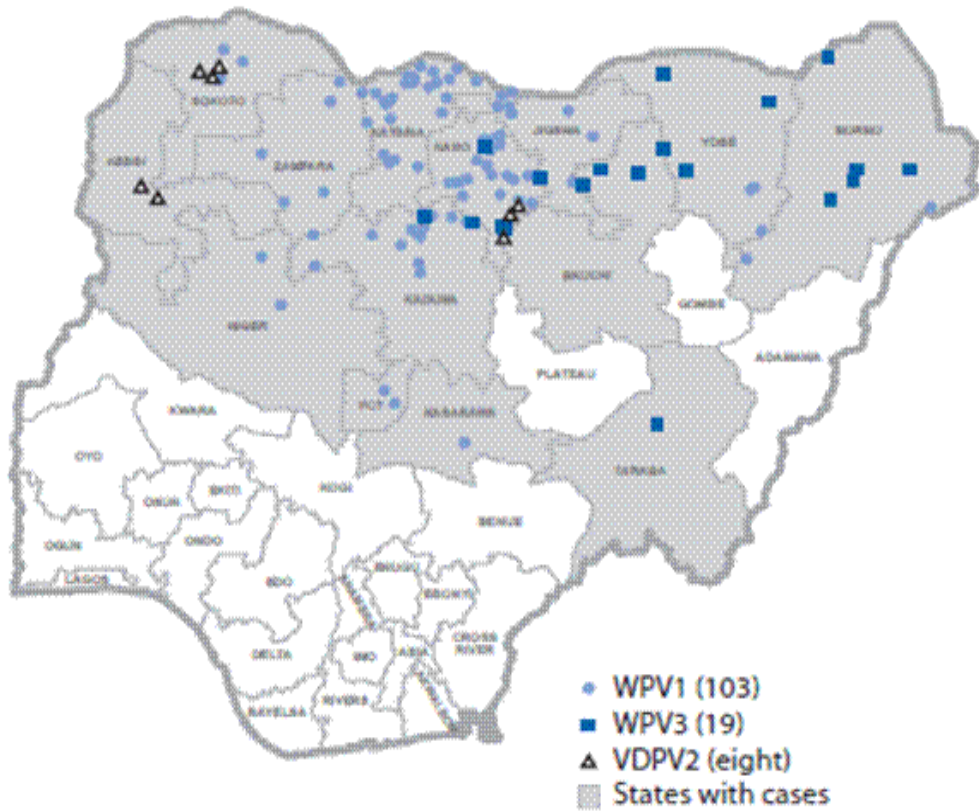
State	LGAs at high risk (traditional methodology)	Vulnerable LGAs (Global Good Analysis, Dec 2011)
Bauchi	Very High Risk: Bauchi, Ningi,	Very Vulnerable: Bauchi,

	Toro, Katagum, Darazo, Ganjuwa, Alkareli, Shira	Ningi, Toro, Gamawa, Katagum, Alkaleri, Shira, Ganjuwa, Darazo, Misau, Dambam, Tafawa, Giade
Borno	Very High Risk: Marte, Kukawa, Maiduguri, Bama, Damboa, Jere, Abadam, Konduga,	Very Vulnerable: Maiduguri, Jere, Damboa, Gwoza
Jigawa	Very High Risk: Ringim, Guri, Babura, Roni, B/Kudu, Dutse, Gumel, Gwiwa, Yankwashi	Very Vulnerable:
Kaduna	Very High Risk: Zaria, Igabi, Markafi, Kubau, Lere, Kaduna South, Soba, Kaduna North	Very Vulnerable: Zaria, Kaduna South, Igabi, Sabon Gari, Soba, Giwa, Kaduna North, Chikun, Birnin Gwari, Lere
Kano	Very High Risk: Kumbotso, D/Tofa, Gezawa, Bichi, Nasarawa, D/Kudu, Gaya, Rogo	Very Vulnerable: Nasarawa, Ungogo, Kano, Gwale, Kumbotso, Kiru, Sumaila, D/Tofa, Dala, Takai, D/Kudu, Bunkure, Bichi, Fagge, Wudil, Gaya, Minjibir, Gezawa, Zaria, Dambatta, Makoda, Tarauni, T/Wada, Gwarzo, Gabasawa, Bebeji
Katsina	Very High Risk: Jibia, Mani	Very Vulnerable: Katsina, Daura, Mai Adua, Funtua, Batsari, Mani, Batagarawa, Kankara, Kaita, Ingawa, Kafur, Kankiya, Dutsin Ma, Bindawa, Zango
Kebbi	Very High Risk: Aliero, B/Kebbi, Gwandu, Bagudo, Jega	Very Vulnerable:
Niger	Very High Risk: Bida	Very Vulnerable:
Plateau	Very High Risk: Shendam	Very Vulnerable:
Sokoto	Very High Risk: Wamako, Isa, Ilella, S/Birni, Sokoto North, Sokoto South, Gwabadawa, Kware, D/Shuni, Yabo	Very Vulnerable:
Yobe	Very High Risk: Bursari, Jakusko, Karasuwa, Nguru, Nangere, Tarmua, Gujba	Very Vulnerable: Fune
Zamfara	Very High Risk LGAs: Gumi, Shinkafi, T/Mafara, Bukuyyum, Bakura,	Very Vulnerable:

Source: National Primary Health Care Development Agency: 2012 Nigeria Polio Eradication Emergency Plan

APPENDIX V

Poliomyelitis Cases Distribution by State (Nigeria 2012)



Source:cdc.gov, 2012