FACTORS RESPONSIBLE FOR REJECTION OF POLIO IMMUNIZATION CAMPAIGN A CASE STUDY OF TARAUNI L.G.A. KANO STATE

BY

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DECLARATION

I hereby declare that this project has been written by me and it is a record of my research work carried out under the supervision of Dr KABIRU SABITU. It has not been presented in any previous application for higher degree. The work of other investigators are acknowledged and referred to accordingly.

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CERTIFICATION

This thesis entitled "Factors responsible for rejection of polio immunization campaign a case of study of Tarauni L.G.A. Kano State" meets the regulations governing the award of the Degree of masters in Public Health of Amadu Bello University, Zaria and is approved for its contribution to science, knowledge and literary presentation.

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PRESENTATION OF ATTESTATION

This is to certify that, the necessary corrections to the thesis titled Factors responsible for neglect of polio immunization campaign. A case study of Tarauni Local government Area of Kano State written by Dr. Mukhtar Bala Muhmmed pointed out during the oral examination have been made to our satisfaction.

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DEDICATION

This work is dedicated to:-

(1). The Almighty Allah for direction and infinite mercies and by whose grace, I am privileged to undertake this research work.

(2). My mother and father for their love and upbringing.

(3). My wife and children for their love, encouragement and constant prayers while I was away in search of more knowledge.

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ABSTRACT

Poliomyelitis is currently the targeted disease to be eradicated by the year 2005 through immunization after eradication of smallpox in the 70s. However vaccine rejection is one of the obstacles for achieving this objective. In this study factors responsible for rejection of OPV (oral polio vaccine) in Tarauni Local Government Area of Kano State were studied.

A descriptive cross sectional study was conducted amongst 1135 fathers of under five children in Tarauni LGA. Immunization coverage, level of rejection of OPV, reasons for rejection and statistical association between rejection and some demographic variables were obtained with the aid of questionnaire.

Fully immunization children were found to be only 47.3%, partially immunized children were 37.1% while non-immunized children were 15.6%.

Some of the major reasons for rejection of the OPV were fear of contracting HIV/AIDS, vaccine will affect children fertility later in life and loo many repetition of the immunization.

Age and religion belief and literacy level were found to have statistical association with OPV rejection (coefficient of association + 0.96) while religious belief, marital status and occupation have no relationship with OPV rejection.

The study concluded that, there is high rejection of OPV in Tarauni L.G.A. Measures to improve the coverage and reduce rejection were suggested including intensive health education by the PHC department of the Local Government, friendly attitude of the vaccinators and provision of incentives to the parents and children.

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CHAPTER ONE

INTRODUCTION

The term poliomyelitis is derived from Greek words referring to inflammation (itis) of the grey (polios) matter of the spinal cord (myelos). The shortened term polio is commonly used by the public and medical professionals, and the disease has also been referred to as infantile paralysis.

According to figures from the world health Organization (WHO) approximately 7,100 cases of polio were reported throughout the world in 1991.[1] Expert suspect that misdiagnosis and under-reporting may make these numbers inaccurate. Thus the actual number of polio cases may be roughly five times the reported figure, perhaps more than 20,000 cases occurring primarily in Africa, the middle east and south Asia.[1]

While still a health threat in many parts of the world, polio also represents one of the greatest medical success stories of the 20th century. The number of polio cases found world wide today constitute a 90% reduction from the number of cases reported in the late 1980s.[1] Most health experts credit this achievement to a mass immunization programme called the global polio eradication initiative (P E I) that WHO initiated in 1988 to eradicate polio worldwide by the year 2005.

In May 1988, the world health assembly committed to world health organization (WHO) to achieving the goal of the global eradication of poliomyelitis by the year 2000 which later changed to 2005. This is in collaboration with United Nations children fund (UNICEF), Rotary international, the United States center for disease

control and prevention (CDC) and as number of governments (Federal, States Local Governments) and non-governmental organizations. Thus goal is defined as:

(a). No cases of clinical polio associated with wild poliovirus

(b). No wild poliovirus found worldwide despite intensive effort to do so. The three primary strategies for achieving this goal are:

1. The establishment of high level of national commitment to ensure the availability of adequate personnel and the financial resources to achieve the goal.

2. The administration of polio vaccine in the manner most effective to interrupt transmission of and polio virus. This includes.

   (a). Attaining high routine coverage with at lease 3 doses of oral polio vaccine (OPV).

   (b). Conducting national immunization days (NIDS).

   (c). Conducting mopping up immunization when polio is reduced to focal transmission.

3. The implementation of action oriented surveillance for all possible cases of poliomyelitis. This include case investigation, isolation of virus from stool and limited outbreak response immunization[3]

Polio is one of the only a limited number of disease (other includes measles and guinea worm) that can be eradicated. Polio can be eradicated because:

(a). Polio only affects man and there is no animal reservoir.

(b). An effective inexpensive vaccine exist – oral polio vaccine (OPV).

(c). The virus can only survive for a very short time in the environment.

Since 1996, Nigeria has been holding annual NIDS. From 1996 to 1998 fixed post strategy was used. After a global review of the progress towards the attainment of the global goal in February 1999, Nigeria was identified by the international community as one of the remaining 8 major reservoirs of wild poliovirus. [4] It was then recommended that Nigeria revises her fixed – post strategy and adopt the house to – house one for acceleration of progress. Nigeria

became the first country in Africa to adopt the house – to house strategy beginning with the 1999 sub-NID'S (SNIDS) which were held in 15 states of the federation. [4] Subsequently, there have been national NID in 1999 and SNIDS in 6 states in 2000.Kano State has been a beneficiary of all the NID'S and SNIDS.

Tarauni Local Govt Council has been participating actively in the National Programme of Immunization (NPI) programme including NID'S and SNIDS. During the SNIDS 2001. A total of 138,097 children were immunized with OPV in July 2001 during the second round while in the 3rd round NIDS conducted in November 2001, a total of 140,411 children were immunized as against the

apparent target population of 174 391 children in the micro plan. This represents immunization coverage of 79.% and 80.5% in the rounds respectively. [4]

Cases of rejection of the immunization programmes have been recorded in almost all the rounds of the NIDS campaigns in the Local Govt. This project sets out to find the possible reasons for the rejection of the polio immunization in Tarauni Local Govt area of Kano State.

JUSTIFICATION

Poliomyelitis is a serious disease because of the disability it causes in form of paralysis and at times leading to death. Nigeria is identified as one of the

remaining 8 major reservoirs of wild poliovirus. Based in the above findings house – to house strategy was adopted beginning with the 1999 NIDS. Since then, there has been remarkable improvement in terms of coverage during each round of the NIDS. However in spite of the achievement, wild poliovirus continue to circulate freely in the country. [20]

Records have also shown that misconception about immunization programme leading to rejection is common in almost every part of the country especially the northern part. These misconceptions include:

(a). That OPV contains HIV/AIDS virus.

(b). That OPV contains family planning materials.

(c). That there are too many repetitions of OPV administration Misconceptions leading to rejection may be one of the major contributing factors of high incidence of wild poliovirus circulating in the country. Therefore steady of this kind in area like Tarauni Local Govt in desirable.

AIMS AND OBJECTIVES

General Aim

To identify the factors responsible for rejection of polio immunization in Tarauni Local Government area.

Specific Objectives:

1. To asses the level of polio immunization coverage in the Local Government
2. To determine the level of rejection of polio immunization in Tarauni Local Govt.
3. To identify the reasons for the rejection of polio vaccine during the 2002 national immunization days (NIDS).
4. To determine the relationship between rejection and some demographic variables of the respondents.
5. Based on the above finding to made appropriate recommendation for improvement.

CHAPTER TWO

LITERATURE REVIEW

The vaccine era began in 1796 when Edward Jenner an English medical Doctor inoculated an eight-year-old boy with material from a cowpox lesion and later showed that the boy was protected against small pox. In 1798 after repeating the experiment a number of times with identical results, Jenner published his findings and coined the term vaccine from the latin word vaccinus meaning "of cows". Almost a hundred years after Jenner's discovery, Louis Pasteur found that other immunizing agents could be produced by inactivating the microbes that caused the infectious disease. [1]

Since the introduction of vaccines by Jenner more than 200yrs ago, about nine major disease of man have been controlled to a greater or lesser extent through the use of vaccines. Some of the diseases included smallpox, Diphtheria, pertussis, Tetanus, Yellowfever, Measles, Rubella, Tuberculosis and poliomyelitics.

Immunity against polio can be stimulated in two ways - as a result of natural infection or through immunization. Polio infection provides lifelong immunity to the disease but the protection is limited to the particular type of poliovirus involved. [1]

Unfortunately it fails to provide cross-protection against the other 2 types of the poliovirus. [1,3]

Two different kinds of polio vaccine are available –an inactivated (killed) injectable poliovaccine (IPV) originally developed in 1955 by Dr Jones Salk, and a live attenuated (Weakened) oral polio vaccine (OPV) development by Dr Albert Sabin in 1961. Both vaccines are highly effective against all the three types of poliovirus. But there are significant differences in the way each vaccine works. [1]

The action of oral polio vaccine (OPV) is two pronged – it produces antibodies in the blood (humeral to serum immunity) to all the three types of poliovirus. In the event of infection, this will protect the individual against polio paralysis by preventing the spread of poliovirus to the nervous system. OPV also produces a local immune response in the lining (mucous membrane) of the intestines – primary site for the poliovirus multiplication. The antibodies limit the multiplication of the 'wild' (Naturally occurring) poliovirus inside the gut, preventing the effective infection.[1]

This intestinal immune response to OPV is probably the main reason why mass campaign with OPV can readily stop person-to person transmission of the wild poliovirus. [3]

OPV is an oral vaccine. It does not have to be administered by a trained health worker, can be given by volunteers and unlike most other vaccines does not require sterile injection equipment. The vaccine is relatively cheap – a major consideration when governments have to purchase massive quantities of vaccines for use during national Immunization days (NIDS). The short term shedding of vaccine virus in the stool of recently immunized children means these are where

hygiene and sanitation are poor and the incidence of polio is likely to be high-immunization with OPV can result in the massive immunization to persons within close contact. As discussed above, the unique ability of OPV to induce intestinal-local immunity is probably responsible for the extra ordinary effect of OPV mass campaigns in interrupting wild poliovirus transmission. Due to these advantages, OPV remains the vaccine of choice for the eradication of polio which would not be feasible with IPV.

Although OPV is safe and effective, in extremely rare cases (approximately 1.2.5. million doses of the vaccine) the live attenuated vaccine virus in OPV can cause paralysis either in the vaccinated child or in a close contact [1]. Immune deficiency of the recipient may be among the causes. This extremely low risk of vaccine – associated polio paralysis (VAPP) is well known to and accepted by most public Health programmes in the world because without OPV, hundreds of thousands of children would be crippled every year [5]. Immunization programmes in countries where the risk of wild poliovirus caused polio has come down to zero are now considering combined immunization schedules using both OPV and IPV.

Inactivated polio vaccine (IPV) needs to be injected and works by producing protective antibodies in the blood (serum immunity) thus preventing the spread of poliovirus to the central nervous system. However, it induces only very low level of immunity to poliovirus locally inside the gut [1]. As a result, it provides individual protection against polio paralysis but unlike OPV cannot prevent the spread of wild polio-virus IPV is not a live vaccine, the polio virus is inactivated and immunization with IPV carries no risk of VAPP. Immunization with IPV triggers

an excellent response to the immune system in most IPV recipients. Unlike OPV, IPV confers only very little immunity in the intestinal tract. When a person immunized with IPV is infected with wild polio virus, the virus can still multiply inside the intestines and be shed in stool – risking continued circulation. For this reason, OPV is the vaccine of choice whenever a polio outbreak needs to be contained even in countries which rely exclusively on IPV for their routine immunization programmes. Other disadvantages of IPV include the price (over five times that of OPV) the cost of the syringe and the need for a trained health worker to administer the vaccine using sterile injection procedure[5].

In May 1988, at its annual meeting in Geneva, the world health assembly, the governing body of the World Health Organization (WHO) resolved to eradicate polio from the world. The global eradication of polio involves both halting the incidence of the disease and the worldwide eradication of the virus that cases it – poliovirus. Polio is one of only a limited number of diseases (others include Measles and guinea worm disease) that can be eradicated. Polio can be eradicated because

1. Polio only affects humans and there is no animal reservoir.

2. An effective, inexpensive vaccine exists – OPV.

3. Immunity is life – long.

4. The virus can only survive for a very short time in the environment.

The polio eradication strategy is based on the premise that poliovirus will die if it is deprived of its human host through immunization. The strategy is similar to that used for smallpox eradication in 1977. Smallpox is the only disease so far to have been eradicated. Other diseases can be controlled through immunization, but never eradicated. For example, in the case of tetanus, the bacteria that causes the disease (clostridium tetani) is widespread in the environment and can survive independently from human host. The strategy development by WHO and its partners to eradicate polio is four-pronged. [1]

1. Routine immunization.

2. Supplementary additional doses of OPV during National Immunization day's (NIDS).

3. Mop-up campaigns.

4. Certification standard surveillance for all cases of acute flaccid paralysis (AFP) and wild poliovirus.

A cornerstone of the polio eradication strategy is the need to ensure high level of routine immunization coverage with three doses of OPV among children under one year of age-not just at national level but at regional and district levels as well. While routine immunization alone cannot eliminate or eradicate the disease good routine OPV coverage reduces, the incidence of polio and makes eradication

feasible. If uniformly high immunization coverage is not maintained, pockets of non-immunized children build up favouring continued spread and out breaks of poliovirus. [1]

WHO through the expended programme of immunization (EPI) has established a global target of at least 90% immunization coverage in the year 2000 against six diseases – Diphtheria, Tetanis, Pestussis, Tuberculosis, Measles and polio [1]. During 1977, 82% children were fully immunized – a 22% increase over 1988, when the polio eradication initially was launched. When polio has been eradicated globally, immunization against polio will be no longer needed.

In the meantime, region and areas where eradication has been achieved, such as the America or the western pacific, must continue to ensure high levels of immunization coverage to prevent the re-establishment of poliovirus, if it is re-introduced from other countries through international travelers migrant population front conflict areas, or population subgroups who refuse even routine immunization. [1,4]

The second part of the four pronged strategy involved mass immunization campaigns, known as National Immunization days (NIDS). This supplementary immunization is intended to compliment not replace routine immunization. The aim of mass campaigns is to interrupt circulation of wild poliovirus by immunizing every child under 5 years of age with three doses of OPV regardless of previous immunization status. During 2000, 550 million children under 5 year or about 2/3 of the world children under five were immunized during national immunization

days in over 80 countries [11]. The idea is to catch children who are either not immunized or only partially protected and to boost immunity in those who have been immunized. This way, every child in the most susceptible age group is protected against polio at the same time – instantly depriving the virus of the fertile seedbed on which its survival depends.[11]

NIDS were conducted in 3 rounds, one month apart. Because OPV does not require a needle and syringe, volunteers with minimal training can serve as vaccinators, increasing the numbers of vaccinators well beyond the existing staff of a country's ministry of Health. For example a recent NID in India deployed two million volunteers to immunize other 150 million children in just few days [2,26]. Three to five years of NIDS are usually required to eradicate polio, but some countries require more time especially those where routine immunization coverage is low. NIDS are normally conducted during the cool dry season because logistics are simplified, immunological response to OPV is improved and the potential damage to heat sensitive OPV is reduced.

The third part of the four pronged eradication strategy is surveillance the intelligence network that underpins the entire eradication initiative. Without the investigative framework, it would be impossible to pinpoint where and how wild poliovirus is still circulating or to verify when the wild virus has been eradicated. Surveillance allows new cases to be identified where none had bean before and can detect importation of wild poliovirus. Effective polio surveillance requires an

expert team of Doctors, virologist, epidemiologist and national immunization programme staff backed up by a global network of laboratories. [1]

WHO, in collaboration with national governments has established a network of 148 laboratories to provide virological surveillance: National laboratories, regional reference laboratories and global specialized laboratories.

In the early stages, polio may be difficult to differentiate from other forms of acute flaccid paralysis, such as Gullein bairre syndrome, transverse myelitis or traumatic neuritis [1,2]. Surveillance for AFP is unusual because it does not target a specific disease (e.g polio) but a symptom (acute flaccid paralysis). The first links in the surveillance chain are health workers in all health facilities from districts health centers to large hospitals. They must promptly report every case of AFP in any child under 15 years. In addition public health staff makes regular visits to hospital and rehabilitation centres in search of polio case which may have been over looked or were misdiagnosed.

WHO emphasizes that all AFP cases should be reported. The number of cases reported each year is used as an indicator of a country's ability to detect polio – even in countries where the disease no longer occurs. A country's surveillance system should be sensitive enough to detect at least 1 case of AFP for every 100,000 children under 15 years. even in the absence of polio. This means that AFP is a very rare condition in a country of 20 million total population (8 million children under 15 years) only about 80 cases (1 per 100,000 less than 15 years) per year are expected [5].

Because of the initial similarity with real polio, all patients with the symptoms of acute flaccid paralysis regardless of the initial clinical impression must be reported and subjected to virological examination, even if doctors are confident on clinical ground that the case is not polio. To exclude the possibility of polio, faecal (stool) specimens have to be obtained and tested for the presence of poliovirus. Because shedding of the virus is variable, two specimens – taken 24 hours apart are required for analysis. Speed is essential, since the highest concentration of poliovirus in the stools of infected individuals are found during the 1st 2 weeks after the onset of paralysis. Stool specimens have to be carefully sealed in containers and stored immediately inside a refrigerator or packed between frozen ice parks at 4-8^{0}c in a cold box ready for transportation to the laboratory. Undue delays or prolonged exposure to heat on the way destroy the virus. Specimen should arrive at the laboratory within 72 hours of collection. Otherwise they must be frozen (at -200c) and then transported frozen, ideally packed with dry ice or cold packs. The procedure is known as the reverse cold chain [19].

At the laboratory virologist begin the task of isolating poliovirus and identifying which if any of the 3 types of wild virus is involved. If poliovirus is isolated, the next step is to distinguish between wild (naturally occurring) and vaccine related poliovirus. This is necessary because the oral vaccine infact consists of attenuated live polioviruses and resembles wild virus in the laboratory. Once

wild poliovirus has been identified, further tests are carried out to determine where the strain may have originated. By determining the exact genetic make up of the virus, wild viruses can then be compared to others and classified into genetic

families which cluster in defined geographical areas. The newly found poliovirus sequence is checked against a reference bank of known poliovirus allowing inferences about the geographical origin of the newly found virus. When polio has been pinpointed to a precise geographical area it is possible to identify the source of importation of the poliovirus – both long range and cross border. Appropriate immunization strategies can thus be determined to avoid further spread of the poliovirus [1].

When very few or no cases of polio are occurring, the final strategy is implemented. This involved door to door immunization (mop-up campaign) in high risk districts where the virus is known or suspected to be still circulating. Priority areas include those where polio has occurred in the previous 3 years and where access to health care is difficult. Other criteria including over crowding, high population morbidity, poor sanitation and low routine immunization coverage. In Peru after the last reported case of polio, in 1991 almost 2 million children were immunized on one-week door-to-door campaign[1].

Almost all countries in the world have had to deal with expressed concern on immunization. This is not particular to Nigeria. In the United Kingdom during the 1970's, public concern regarding the safety of pertussis vaccines led to the rapid decline in immunization coverage rates. Prior to this time, coverage was over 80% with an average of 2000-8000 cases reported annually [5]. After the coverage rates decreased to 30%, the number of pertussis cases soared to over 100,000 resulting in deaths and hospitalization which could have been prevented. After two large epidemics and some education about the disease and the vaccine, the public slowly

regained trust in the vaccine and the immunization programmes. As a result immunization coverage reached 95% in the mid 1970's with the lowest number of pertussis cases in U.K history. [13]

In Africa, concerns on immunization are ripe, the reasons not being far fetched[16]. Because of a predominance of traditional and misunderstood religious beliefs, disease is often believed to be caused by evil spirit or accepted as being destined and should not be prevented. It is understandable therefore why immunization may occasionally come in conflict with cultural and traditional beliefs and commendable when people earnestly begin to seek clarity and understanding of the immunization service in order to achieve the safeguarding of life of the vulnerable few in the society [16]. Back home in Nigeria, National programme on immunization (NPI) and partners i.e members of inter agency coordinating committee, the apex body that overseas immunization in Nigeria (Headed at the National level by the Honorable Ministry of State for Health – Dr (Mrs) Amina Ndalolo) recently conducted a study (April – August 2001) on the barrier and inhibitors to full participation in immunization activities in 4

states of the federation, selected based on recent confirmation of Acute flaccid paralysis due to wild polio virus [4]. The states include Zamfara, Benue, Yobe and Lagos States. The findings were revealing – identifying these barriers to arise from:-

1. Lack of confidence in Modern medicine.

2. Poor reputation of injection / immunization service.

3. Fear of contracting HIV/AIDS.

4. Linkage with family planning.

5. Service provider attitude.

6. So many repetitions of immunization.

7. Policy and logistics.

Others issues raised include fear of side effects and immunization being a phenomenon form the west devised to eliminate Muslims. The study described detailed factors militating against sustainable immunization in Nigeria [4].

The knowledge attitude and practices of parents to immunization in these areas were carefully discussed. The survey result at present is being analyzed and a detailed plan for meeting the concerns raised will be developed with all stakeholders including the people concerned. The challenge remains for all tiers of government to work in coalation and harmony with all – relevant stakeholders recognizing the contributions already made of interested members of society to address these misconceptions as they affect the end – users. [7,8,9]

The success of immunization and other preventive measures has led to improved standards of health and the gradual control of infectious disease in many parts of the world. However a phenomenal increase in the number of cases of disease previously thought controlled has become an issue of grave concern. The reason are complex and not fully understood. Changes in lifestyles, migration,

urbanization tourism, overcrowding, relaxation in immunization and lowered socio economic conditions are all though to play a part in this. [4]

The Federal Govt finances the procurement of all the routine vaccines in use for immunization in Nigeria. All vaccines are procured through the United Nation Children Fund (UNICEF) for national immunization programs and meet WHO requirement. The suppliers for the vaccines go through the WHO pre-qualifying process which involves an examination of the vaccines characteristics, adherence to good manufacturing practices standards during vaccine production and the activities of the National control authority (NCA) in our case NAFDAC. WHO considers vaccines to be of Known good quality provided the NAFDAC controls the quality of the vaccine as defined by WHO [5].

The safety and efficiency of vaccines are demonstrated during the clinical trials conducted before licensing. These trials undergo different phases under controlled condition evaluating the efficiency and safety of the vaccine to fulfill conditions required for registration. In addition to all these, all vaccines must come with cold chain monitors, some have the vaccine vial monitors (VVM). VVM is seem on all OPV vials that are in the country and indicates whether or not the vial had been exposed to temperatures in excess of the acceptable standards for potency. [5]

A society survives by propagating her cultural values reflecting her identity. To ensure that new members of the society integrate easily, set of values Norms, traditions and beliefs are transmitted through channels which may originate from within the family units or outside it. Maternal education is a social factor that has

been identified to significantly after disease outcome in children Ojofeitimi and Odusote 1982 in south west Nigeria found that women of low socio economic level employed traditional method in addition to immunization to protect their infants. [4] Maternal education in the north is significantly lower then counterparts in the southern part of Nigeria. Other factors such as male opinionating may also be a reason which health indicators in the north significantly differ from the indicator in the south [4].

In a workshop on immunization; the Islamic perspective, Muhammed bin Usman presented a paper. It reads as follows. To immunize is to cause some one to have immunity against some thing feared or dreaded. If the above given definition is accepted, then it becomes crystal clear that immunization is more of a preventive than curative measure. In the light of the foregoing therefore, no right thinking person most especially a Muslim can deny the suitability of any preventive measure recognized by sharia against illness. That illness can be physical, mental, spiritual, psychological or social. Therefore, preventive measure that do not counter with sharia are acceptable. Three things should be clear.

1. Looking for cure from illness.

2. Prevention in Islam.

3. Immunization of today.

Man is created by Allah (God) for a purpose that is to worship [9]. For him to carry out this, divinely ordained assignment, has to be healthy both on preventive and

curative basis. Health in Islam is more than apparent absence of physical ailment as man is made up of 2 components that are intricately interwoven.[9] They are physical and spiritual. It was stated in this write up that those countries with mandatory immunization suffered more than those who have no such rules.[9]

A compulsory immunization programme introduced in the Philippine between 1917 and 1919 brought on the largest smallpox epidemic in the history of that country with 162503 cases and 71,453 deaths of all vaccinated. [10]

Furthermore for more than fifty years the population of Australia and New Zealand have been practically immunized yet they have not been more free from small pox than thoroughly vaccinated countries – Italy the Philippines, Mexico and British India –all of these have been scourged with epidemics [10]. It was also discoursed by Dr Christopher Rent that there were 2800 cases of polio in the USA in 1951 but when the government subsidize supply of polio vaccines, the rate soared to an all time high of well over 55000 cases [10]. Dr Bunard Greenberg, Head of Biostatistics of the University of north carlina school of public Health remarked that not only did polio increase substantially 5% from 1951 – 1958 and 80% from 1958 – 1959 after the introduction of mass and frequent compulsory immunization programme, but statistics were manipulated and statements made by the public Health service to give the opposite impression [10]

The common factor in outbreaks of polio, highlighted by recent epidemics in Albania (1996), Pakistan (1995), Sudan (1993) and in former Zaire (1995) is a failure to immunize [12]. The reasons for this vary from one outbreak to another, but

in each case the existence of a group of immunized individuals has enabled the poliovirus to seed itself and spread widely. The size of the group can range from a small isolated group which refuses vaccine on religious or cultural grounds to entire cohorts in countries bereft of vaccine. In some poorest countries, low immunization coverage is often due to poor health infrastructure development and a failure to reach the majority of the population with basic health services. It may also be the result of a drop in donor support for vaccine (Pakistan Sudan) or a political upheaval that disrupts existing health system (Albania). Elsewhere in countries beset by civil war, immunization rapidly becomes low priority and vaccine supply may dry up. Even when emergency supply of vaccine are made available (in Afghanistan and Sudan for example) children on the move are trapped inside the conflict zone become increasingly difficult to reach. With not just one but a full complement of four doses of OPV before their first birthday [17].

In Albania a drop in immunization coverage in the early 1990s was compounded by a build-up of children who were given vaccine that turned out to be ineffective due to breaks in the cold chain [17]. Maintenance of a cold chain can be thwarted by war, neglect, political upheaval or by a Sudden drop in donor support. Low immunization coverage may also be the result of missed opportunity for immunization in countries where donors subscribe to a lot of unnecessary contraindications. In Azerbaijan for example, which had an outbreak of over 70 cases of polio in 1993, a 7 month stoppage in vaccine supply following independence is believed to have been compounded by

needless, delays in immunizing children due to false contraindications. [13] When one or more of these conditions is in place, the introduction of polio-virus is the final spark that is needed for an outbreak of polio. The source of the virus may be indigenous as in the case of Pakistan or imported possibly from a visitor from another country – into a polio free country like Albania. [14]

In May 1993, polio cases were reported in Nyala, a large town of over 220,000 people in western Sudan. By the end of the year the outbreak has spread throughout Sudan - with over 250 cases reported in all but one of the country nine states. Hardest hit was Darfur state where the first case occurred. The effects of a recent drought and a large influx of people displaced by civil war. Only 20% of children were fully immunized against polio [14]. Of the 252 confirmed cases, nationwide, almost 40% were vulnerable to infection because they had received only one dose of OPV. Information on injection history, which was available for 65 of the children – revealed that as many as 80% had received an intramuscular injection (most commonly chloroquine to combat malaria or penicillin) around the time they became infected with polio. Intramuscular injections are believed to heighten the risk of paralysis during injection with poliovirus. Stool specimen from suspected cases were sent to national health laboratory in Khartoum and poliovirus type I was isolated from 19 out of 23 specimen the poliovirus isolate was then sent to a WHO accredited regional reference laboratory in Cairo. Where it was confirmed as a wild

poliovirus. Finally studies of the genetic sequencing of the virus at the research laboratory for infections disease (RIVM) in the Netherlands and at Pasteur

Institute in Paris revealed that the virus was most closely related to the one found during a concurrent polio outbreak in the Central African Republic. [14]

The main reason for the 1993 outbreak was continuing low immunization coverage and a built up of children susceptible to polio. Coverage with three doses of OPV has dropped from a peak of only 62% nationwide in 1990 to 52% in 1993 [22]. In Darfur state only one in five children were fully immunized. The declining coverage was blamed on a drop in donor funding for immunization, failure to sustain a resource – intensive strategy of mobile teams and poor management. As a result, the vaccine delivery system – involving resource – intensive mobile teams of health workers – could no longer be sustained [16]. The situation was compounded by a recent drought and by large movements of people displaced by the war. In response to the 1993 polio epidemics, the Sudanese Government has recognized its national immunization programme. Fixed immunization posts have been established using local health post and health centers that are within walking distance of communities

A social mobilization campaign was mounted to inform communities about the changes of strategy carried out by the mass media Sudanese Red Crescent society, women's organization, youth clubs and non-governmental organization. Meanwhile responsibility for health services was devolved from national to state level as 17 additional states were established. This ensured that immunization programme staff at state level responsible for managing smaller areas. [16]

Between May and August 1995, there was a sharp increase in the number of polio cases reported among young children in the Lahore and sheilhupra districts of the Punjab in Pakistan. The outbreak was unexpected because Pakistan had just completed its second round NIDS. A year earlier after the first round of NIDS the number pf cases had fallen by 70%. [14]. Of the 70 children involved in the latest outbreak almost 80% were under two and only one was over five. Over half of them had received two doses of polio vaccine during the recent NIDS in each case at least 3 weeks before the onset of paralysis. As the center for Disease control and prevention in Atlanta analyzed stool samples to identify the virus, WHO sent a fact – finding mission to the Punjab to determine the cause of the outbreak. This included detailed investigation of suspected polio cases, including history and immunization records [15]. It also involved a detailed review of hospital records, immunization coverage, the vaccine supply and surveillance data over the past three years. [18]

Logistical problems in delivering the vaccine during the NIDS were quickly ruled not. Vaccine lots for each of the 2 rounds had arrived in Pakistan less than a week before the scheduled date for each NID and breaks in the cold chain were unlikely. Moreover detailed analysis of patient records and surveillance data revealed that the polio outbreak had started not immediately after the NIDS but several weeks before. It was highly probable that some of the children were already incubating the disease when they were immunized during the NIDS. The data also showed an increase in polio cases in other districts immediately before the NIDS – indicating that wild, poliovirus transmission had never been interrupted in the Punjab. A

closer look at - 64 children's immunization record revealed that although just over half had been immunized during the NIDS, less than a third of them had received at least 3 doses of polio vaccine during routine immunization and almost half had never been immunized against polio. Routine immunization coverage data indicated that the problem was widespread in the Punjab. Between January 1993 and June 1995 coverage with 3 doses of OPV among children less than one, plummeted from 80% to 25% in Sheikhupura district and from 79% to 59% in Lahore [18]. Throughput the Punjab as a whole polio immunization coverage dropped from 81% in 1993 to 40% bin 1995. The reason for this drop in coverage was not difficult to work out. Records of the supply of OPV for routine immunization in the Punjab revealed that supplies had been frequently interrupted – partly due to a drop in donor funding. Between July 1994 and June 1995, Punjab received only 10% of the total number of doses that the provincial health authorities requested [18]. As immunization coverage falls, the scene was set for the build up of a group of immunized children large enough to seed an epidemic. The national immunization days had not been enough to halt the epidemic – possibly because they were carried out during the high season for polio transmission and at a time when an outbreak was already underway. Since the outbreak, Pakistan has continued to conduct NIDS and circulation of wild poliovirus has been reduced[18].

There was massive turn out on 8th April 1996 when almost every child under five was immunized against polio during Albanias first NIDS [14]. It was a precautionary measure. For over a decade the country had experience no confirmed cases of indigenous polio. The last clinically confirmed case occurred in 1983 but the virus

involved was never identified. Indigenous wild poliovirus had not been found in Albania since the last epidemic in 1978. But epidemiologist from WHO and national authorities were aware but while Albania had succeeded in closing the door against polio, the door had not yet been securely bolted. Political and social upheaval during the early 1990's had created the ideal conditions for a re-emergence of the disease [1].

After the fall of communism, Albania opened up its one hermetically sealed borders to the rest of the world – introducing the risk of imported disease. Internally, the lifting of travel restrictions sparked off large population movements to urban centres – placing additional strain on already poor hygiene and sanitation system. To make matters worse, routine immunization coverage in some areas had plummeted when the supply of vaccines were upheavals of the early 1990's – leaving many young children vulnerable to polio and other infectious diseases [12]. There was also evidence that until 1993heat sensitive polio vaccine had not been consistently stored under refrigeration and children may have been given heat - damaged vaccine. Small clusters of children with unexplained paralysis added to the growing unease. If poliovirus was reintroduced into Albania, epidemiologists know that it could circulated rapidly among the sizable pool of children who were not fully immunized. By the time the first case of polio paralysis emerged, the virus would be already well established. To close the gap in immunity to Albanian ministry of Health organized two national immunization days in consultation with WHO and UNICEF, but it was already too late. Little more than a week after the

first case of polio paralysis was reported in child of 12 months [14]. Three more cases when reported during may and a further eight cases in June [14].

Virologist at the institute of public Health in Tirana collected faecal sample from suspected polio cased and succeeded in isolating poliovirus type 1. These finding were later confirmed by the regional reference laboratory network the institute superiore di samta in Rome – National Institute of Public health and environmental protection (RIVM) in Bicthoven in the Netherlands and the national institute of public health in Helsinki). But where had the poliovirus originated? [1].

The Laboratory search was initially hampered by the presence of vaccine virus in some of the original samples – a normal finding after NIDS. The first 2 cases involved young children who had been immunized during the recent NIDS. At first virologist were not sure whether they were dealing with individual cases of polio caused by a vaccine virus or by a wild poliovirus. But when the number of cases increased during the summer month (13 in July, and 27 in August), it became clear that most were in the 10-30 age group – not among recently immunized children. In this case, it was highly improbable that a vaccine virus had to blame. As more faecal sample were made available, virologist succeeded in identifying both the type and most likely source of the virus. It was a wild polio virus with a genetic make-up that revealed it originated from Asia, most probably in the India – Pakistan subcontinent. The NIDS on 8th April had been coincidental and not the catalyst for the outbreak. And it had succeeded in protecting the youngest children. Re – analysis of samples from the early cases confirmed that both wild and vaccine virus were present. By early October there were 109 confirmed cases of polio in

Albania and 12 people had died [14]. The ages of those affected ranged from 4 months to 47 years but most cases (almost 70% were among teenagers and young adults. By July the outbreak had spread to neghbouring Greece (5cases) and over the next 3 months 24 cases were confirmed among children under 3 in the Kosovo – Metrohija area of the federal Republic of Yugoslavia (Sabia and Montenegro). Concern grew over the possible spread of poliovirus by the large number of migrant workers who travel back and forth to Albania. An estimated 700,000 Albanian live in neigbouring countries namely – Italy, Greece, the Federal Republic of Yugoslavia and the Former Yugoslav Republic of Macedonia [15].

As donated polio vaccine began arriving in Albania in October for the first round of a mass immunization campaign targeted at the entire population under 50 years (over three million people) a joint appeal was launched by WHO and UNICEF for US $1.3milliom to help find a second round a month later. Some of the money was also ear marked for efforts to improve early detection of new cases and strengthen local case management capacity, as well as to step the possible spread of the virus to other countries. Meanwhile WHO advised all neighbouring countries to review contingency plans for dealing with possible outbreaks in the region. In September and November over 200,000 children under five were immunized during mass campaigns in the Kosovo and meetrohija regions of neoghbouring Yugoslavia and a further 460000 children aged 5-14 were immunized in school based programmes. In Greece, the five cases of polio were among non-immunized children from a monitoring ethnic group living in the Salonika and greater Athens areas. Supplementary immunization was made available to this group of people, who are

known to have had very low immunization was also carried out in Bosnia and Herzegovina and in the Yugoslav republic of Macedonia. To prevent any further importations of wild poliovirus NIDS are scheduled for spring 1997 in six countries of the region [17]. By the end of 1996, 139 cases of polio have been reported in Albania and 16 people had died. The outbreak in the Federal Republic of Yugoslavia involved 24 cases and there were five cases in Greece. The polio outbreaks in the 3 neighbouring countries were a sharp reminder of the cases with which poliovirus can be re-imported into the country and seed itself among vulnerable groups with no immunity to the disease. Although WHOs European region has high level of immunization coverage overall and a low incidence of polio, there have been outbreak every year for the past five years [17]. Political and economic change, with or without armed conflict, have triggered outbreaks in Tajikistan (1991), Azerbaijan (1993), Uzbekistan (1994) and Chechnya in the Russian Federation (1995). Elsewhere, low immunization coverage among minority populations and religious "refusers" helped seed out- breaks in Bulgaria (1991) and the Nether land (1992). Each of these outbreaks was caused by the importation of a virus that originated in Asia. In 1991 cases of polio were reported in WHO European region 188 cases in 1996 [14].

The current programme of NIDS in Bangladash, India and Pakistan is expected to lead to a dramatic reduction in the number of polio cases and lower the risk of exportation of the wild poliovirus form the south Asia [18]. Meanwhile, the contemination of operation MECACAR in '8 neighbouring countries in the middle

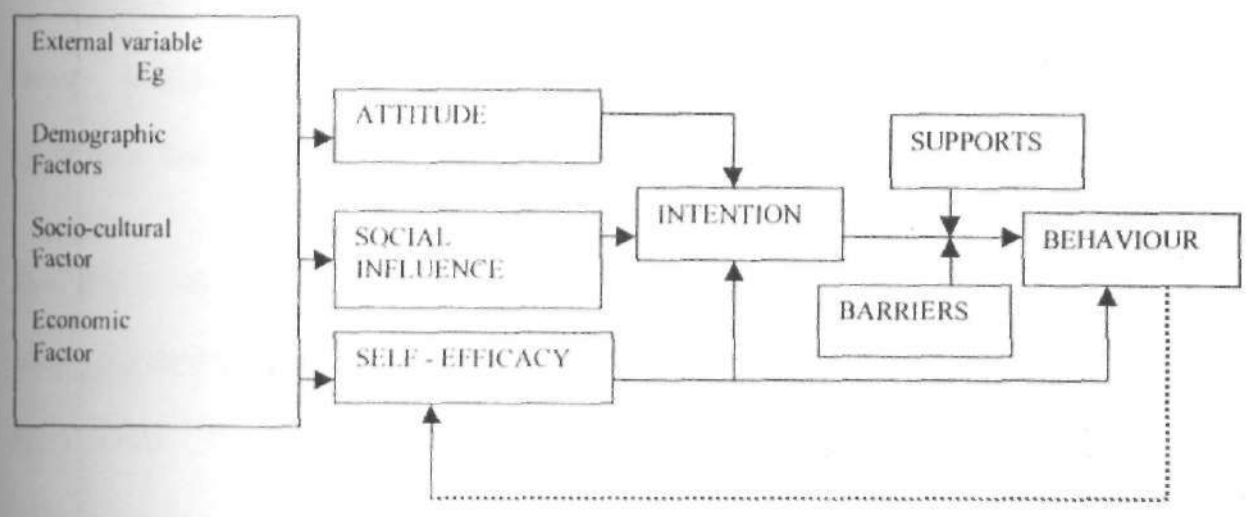
test, Caucasus and central Asia's republics should interrupt the circulation of the virus within these countries as well as its export to other European countries [18].

A study was done in the Bushenyi District in Uganda to investigate the factors influencing attendance for polio NIDS using the Attitude – social influence – self Efficiency (ASE) model as a guiding theoretical frame work. The data collected in the Bushenyi District of south – western Uganda in 6 focus group discussion about outcomes of attendance at NIDS, about who decides on attendance and about attendance barrier and supports the purpose of NIDS – eradicating polio-was not known to the informants. The main reason mentioned for attending NIDS and other immunizations was to weaken childhood diseases or to strengthen the children's capability in fighting diseases, whether they are immunized or not. However, it was strongly believed that the previous NIDS had caused a serve malaria epidemic with a very high mortality and this led to most parents not attending the next. Sources of social influence were mostly opinion and local leaders in communities, health workers, friends and relations. Opinion leaders who do not immunize their children were said to hinder attendance at NIDS by other lay people. NIDS cards in the other hand were regarded as valuable means of support for attendance. Thus to improve immunization coverage, there is need for issuing NIDS cards, for using health education to change the belief that NIDS cause malaria and to encourage local leaders to attend NIDS [25].

Uganda has adopted the WHO goal of polio eradication by the 2000 (Ministry of Health 1996). AS a result, NIDS were instituted in 1996 as an additional strategy to the routine immunization against polio. These take place twice a year for all

children under 5 years of age regardless of polio immunization status. According to the Uganda national Expanded Programme on immunization (UNEPI) of the ministry of Health, the report coverage for 1996 and 1997 NIDS was 95% for the whole countries (Ministry of Health 1998). However, much lower NIDS coverages were recorded in South-western Uganda during the first round of 1998 NIDS. In Bushenyi district for example, NID immunization coverage for 1996 and 1997 was 98%, but dropped to a worryingly low 67% for the first round of 1998 [25]. The reason for such low coverage remained unclear, although the ministry of Health attributed this to hostile media, decampaigning by some opposition groups and fear that the polio vaccine had been contaminated with the human immunodeficiency virus (HIV). These reasons are however not based on systematic research and it is therefore not clear to what extent they contributed to the low vaccination coverage. Moreover, they do not explain fully why individual parents and/or guardians decide for or against taking their children for NIDS. There was an urgent need for research based on problem – oriented social psychology to investigate factors associated with compliance. Such studies have a good chance of identifying effective intervention. We aimed to identify psychosocial factors associated with polio NIDS vaccination compliance in Bushenyi district of south – western Uganda, as are requisite for designing suitable interventions [25].

The Attitude – social influence – self efficiency (ASE) model (flow chart below) predicts various health behaviours including compliance with vaccination.



The ASE model is comparable to the planned behaviours model (Ajzen 1991). In the former, behaviour such as compliance with polio NIDS, vaccination is considered a result of behaviour intention. Three main psycho - asocial factors predict health – related behaviour intention: attitude, social influence and self efficacy. A persons attitude towards attendance is a result of the consequences he/she expects from social influence as a result of relevant social norms, support or discouragement from important others to attend NIDS and whether important others attend NIDS themselves or not. Self – efficacy expectations can be seen as a persons belief of ease to attend for NIDS and the ability to cope with barriers that may hinder attendance. The implication of the model is that a persons health behaviour can be modified by targeting attitudes perceptions of social norms, social support and self – efficacy expectations. According to the ASE model,

external variable such as social – demographic factors do not influence behaviour directly, whereas behavioral determinants and intention do self – efficacy not only influence behavoiur intention but also has a direct influence on behavoiur.

Finally, previous behaviour, or trying to repeat it will lead to a feedback mechanism that may in turn influence behaviour determinant [25].

Similarly a study was undertaken on 500 children under the age of 5 years belonging to a low income group in north India. All were attending hospital in New Delhi. Only 25% were found to have received complete primary immunization as per the National immunization schedule (BCG at Birth, 3 doses of DPT + OPV at 6, 10 and 14 weeks and measles vaccine at 9 months). The major reasons for non-immunization of the children were migration to a native village (26.4%), domestic problems (9.6%) the immunization was located too far from their home (9.6%) and the child was unwell when the vaccination was done (9%) 12% of the mothers could not give any reason for non-immunization in addition to the migration of children to rural areas, the other significant finding was an indirect effect of intensive OPV administration as part of polio eradication initiative. The lack of awareness and fear of side effects constituted a small minority of reason s for non-immunization. [26]

Since the inception of a universal children immunization programme and special campaign such as national Immunization Days, popularly called pulse polio immunization programme (PPIP), there has been a significant reduction in the induce of vaccine preventable diseases in India. Despite these programmes, almost

2% of children are believed to be immunized and almost an equal number received delayed immunization ([2]). The success of any immunization programme depends to a large extent on the provision of services by health care agencies. Once this is ensured, it's almost exclusively dependent on timely utilization of care givers of children. Despite the provision of these services free of cost by the Govt agencies, there is under utilization by the community. This situation seem to have worsened since the inception of PPIP in 1995. The proportion of fully immunized children during 1996-1997, 1997-1998, and 1998-1999 was 61%, 57% and 51% respectively, suggesting a declining trend[26].

The major reasons cited for missed immunization are presented below. The most common was the migration of children to native village.

	Reasons	%
1.	Child taken to village	26.4%
2.	Domestic problems	9.6%
3.	Vaccination centre too far	9.6%
4.	Child sick	9.0%
5.	Health worker did not vaccinate child	7.2%
6.	No disease occurred in unimmunized older children in the family	5.3%

7.	Mother unaware of vaccination	5.3%
8.	Adverse effect following previous vaccination	4.2%
9.	Pulse polio immunization enough for all diseases	2.9%
10.	Health workers at vaccination centres rude and unmannered	2.5%
11.	Miscellaneous	3.6%
12.	No reason cited	12.%

Thus the present study highlights the dismal routine primary immunization status of children less than 5 years belonging to low income group family in Delhi while it hightlights certain hitherto unreported issues like migration of children from community and the indirect impact of PPIP in routine primary immunization. It appears that the main cause for such behaviour in the lack of parental motivation in order to solve this problem, the education of parents is a key strategy, along with modifications in currently followed practices.

CHAPTER THREE

METHODOLOGY

BACKGROUND INFORMATION

The present Kano State covers an estimated area of 20,710 square kilometers. It is bounded on the eastern and northern parts by Jigawa State and to the east and southern part by Bauchi State. Kaduna State is located to the south and Katsina to the west and northwest [20].

Administratively, Kano State is divided into 44 Local Government Areas with combined projected population of 7,260,544 which is predominantly of the Hausa/Fulani tribes. The state capital is cosmopolitan in nature. Majority of the populations are Muslim and subject to traditional authorities which make it imperative to seek the support of traditional and religious leadership [20].

The NIDS target population of Kano State (Children 0-59 months) is estimated to be 3,825,424 based on the 2001 microplan [21]. About 22% of this target population is found in the metropolis viz Kano Municipal, Tarauni, Dala, Gwale, Fagge and Nassarawa LGAS. [21].

Tarauni Local Government was curved out of the old Kano Municipal Local Government Council by the administration of the late General Sani Abacha in November 1996. It is among the 183 others all over the country created at the same time. The word Tarauni means simply gathering people. [22].

The Local Government has a population of about 221,729 people most of whom are traders and farmers with a small percentage constituting workers at federal, state and local governments and non-governmental establishments. The major ethnic groups in the local government are Hausa/Fulani with other groups, Yoruba, Igbo and others who came to the local government as traders, mechanics welders and a host of other exceptions. Majority of the inhabitants are Muslims with other religious groups such as Christians who came from other parts of the country in search of livelihood. The administrative secretariat is situated at Unguwa Uku at the former NRC (National Republican Convention) political party office along Kano – Zaria Road [22].

The local government areas comprises of 12 administrative districts namely Kundila, Gyadi-Gyadi, Tarauni, Kauyen Alu, Karkasara, Unguwa Uku, Hausawa, Hotoro and Walawai. Others are Yar Akwa, Babban Giji and Daurawa. These 12 districts are further sub divided into 30 villages

headed by the Tafidan Kano, district head of Tarauni Alhaji Nasiru Ado Bayero.

Tarauni local government has 5 health districts which include Dan Awuya, Unguwar Gano, Tarauni, Unguwa Uku and Hotoro Danmarke. There are 11 health facilities in the local government offering routine immunization service. These are Tarauni Health Clinic, Unguwa Uku Health Clinic, Babban Giji Health Post, VVF Hospital along Zoo Road, Annuri Hospital, Kundila Health Clinic, Ja'oji Clinic, Kauyen Alu Health Clinic, Yar Akwa Health Clinic and Aminu Kano Teaching Hospital. [22].

The polio immunization in the local government was started in 1998 with routine immunization and NIDS. There was a mop-up campaign in 1999. There are 11 teams for routine immunization while NIDS having 270 teams with AFP surveillance having six teams in the local government. [22].

STUDY DESIGN

It was a descriptive cross sectional study.

SAMPLING TECHNIQUE

In conformity with the aims of the investigation, the investigation was confined among the children under five years of age vis-à-vis their

parent. This implies that the investigation units should be on the families having at least one child under five years of age. Necessarily therefore, the sampling units are the families having at least one child under five years and the observational units are the children under five years vis-à-vis their parents.

Total population of Tarauni Local Government = 221,729. There are approximately 5 people per family. Therefore, the expected number of families are 221729/5 = 44346

This is the size of the universe from which an adequate number of families are to be sampled following a sampling technique appropriate to the realities on the ground.

A multistage sampling with primary sampling unit as administrative districts and secondary units as villages and ultimate sampling unit be families appeared an appropriate sampling scheme. Two administrative districts, Hausawa and Karkasara as primary sampling units were selected at random. From Hausawa, Hausawa Arewa village and from Karkasara, Sallarai village were again selected.

Using PHC numbering from the local government PHC department, the total households for Hausawa Arewa were 704 while the total households for Sallari, were 631.

SAMPLE SIZE (ULTIMATE UNITS)

Number of families to be selected were decided on the following formula.

$$n = \frac{Z^2pq}{d^2}$$

p = proportion of families having at least one child under 5 years = 90% (determined from a rapid pilot survey of 131 families, giving 118 families having at least on child under five).

Z - standard normal deviant = 1.96

q - 1- p = 0.1

d - reliability coefficient = 0.05

n - sample size

$$n = \frac{1.96^2 \times 0.9 \times 0.1}{0.05^2}$$

$$n = \frac{0.3457}{0.0025} = 1383$$

Thirteen Hundred and Eighty Three families were proportionately chosen at random from the two villages as shown below:

$$n = \frac{1.96^2 \times 0.9 \times 0.1}{0.05^2}$$

Village	No. of family chosen
Hausawa Arewa	$\frac{704}{1335} \times 1383 = 729$
sallari	$\frac{631}{1335} \times 1383 = 654$
Total	= **1383**

Out of the selected 1383 families investigated only 1135 had at least one child under 5 years. These 1135 families in total had 2049 children of 5 years of age.

LIMITATION OF THE STUDY.

In carrying out this study a lot of constrains were faced. Amongst the major constrains were financial limitations and lack of personnel. Local government staff had to be recruited and trained to assist in the investigation. Time factor was also one of the major constrains.

ETHICAL ISSUES

1. Formal permission was obtained for the chairman of the local government and the PHC coordination.

2. Also informal permission were obtained from the traditional ruler.

3. Informed consent for participation for the study was obtained before commencement of the study.

4. Provision of Helsinki declaration were adhered to.

CHAPTER FOUR

RESULTS AND FINDINGS

This study was conducted with the aim of finding out the factors responsible for rejection of polio immunization during the 2002 NIDS in Tarauni Local Government Area of Kano State. A total of 1,135 respondents were involved in the study which was carried out in December 2002. The total number of children involved in the study were 2049. The results are as follows.

The questionnaire (attached) was canvassed among the parents of selected families. They were the respondents giving information about the children.

The demographic characteristics of the respondents have been represented in the following tables 1 – 9.

DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS

TABLE 1.

Age Distribution of the Respondents of the household sampled

Age (Years)	Number	Percentage
15-19	76	6.7
20-24	129	11.4
25-29	157	13.8
30-34	208	18.3
35-39	235	20.7
40-44	300	26.4
≥45	30	2.6
Total	**1135**	**100**

Table 1 above shows the age distribution of the 1135 respondents sampled in the project in Tarauni. L.G.A. 26.4% of the respondents are between the ages of 40-44 years.

TABLE 2.

Ethnic distribution of the respondents.

Ethnic Group	Number	Percentage
Hausa/Fulani	954	84.0
Yoruba	79	7
Igbo	60	5.3
Others	42	3.7
Total	**1135**	**100**

Table 2 is showing ethnic distribution of the respondents 84% are Hausa/Fulani by tribe.

TABLE 3

Distribution of Educational level of the respondents.

Educational Level	Number	Percentage
Illiterate	10	0.9
Koranic Sch.	717	63.2
Primary Sch.	171	15.0
Secondary Sch.	129	11.4
Tertiary Inst.	108	9.5
TOTAL	**1135**	**100**

Educational distribution of the respondents shows that 63.2% attended Koranic school while illiterate with neither informal Koranic nor western education constituted only 0.9%.

TABLE 4.

Distribution of marital status of the respondents.

Marital status	Number	Percentage
Married	1054	92.9
Single	14	1.2
Divorced	47	4.1
Widowed	20	1.8
TOTAL	**1135**	**100**

Marital status of the respondents showed that 92.9% are married while only 1.2% of the respondents are single.

TABLE 5

Distribution of the respondents based on occupation.

Occupation	Number	Percentage
Traders	501	44.1
Farmers	192	17.0
C/Servants	217	19.1
Labourers/ Unskilled workers	169	14.9
Unemployed	56	4.9
TOTAL	**1135**	**100**

From the above table, it can be deduced that 44.1% of the respondents are traders while the unemployed constituted 4.9%.

TABLE 6.

Distribution of the respondents based on income.

Income Level	Number	Percentage
Low income (less than N5000 /month)	321	28.3
Medium Income (N5000 - N10000/month)	719	63.3
High Income (more than N10000/month)	99	8.4
TOTAL	**1135**	**100**

Medium income earners are 63.3% of the total respondents. Low and high-income earners are 28.3% and 8.4% respectively.

TABLE 7.

Distribution of the respondents by religious faith.

Religion	Number	Percentage
Muslims	1070	94.3
Christian	69	5.7
TOTAL	**1135**	**100**

Religious distribution of the respondents showed that 94.3% of them are Muslims while only 5.7% are Christians.

TABLE 8.

Age distribution of children covered in the survey (under five children).

Age (Months)	Number	Percentage
0-11	382	18.6
12-23	401	19.6
24-35	461	22.5
36-47	397	19.4
48-59	408	19.9
TOTAL	**2049**	**100**

During the study a total of 2049 under five children were covered. Those in the age group 24-35 months 22.5% while other age groups showed fairly equal distribution with little variation.

TABLE 9.

Immunization coverage in Tarauni L.G.A. during 2002 NIDS

Educational Level	Number	Percentage
Fully Immunizes	969	47.3
Partially Immunized (Immunized at least one but not all the 4 doses)	760	37.1
Not Immunized	320	15.6
TOTAL	**2049**	**100**

From the table above, it can be seen that the coverage for fully immunized children in still. low at 47.3% while patialy immunized and not immunized are 37.1% and 15.6% respectively.

LEVEL OF REJECTION OF POLIO IMMUNIZATION IN TARAUNI L.G.A

TABLE 10.

Age distribution of respondents that rejected OPV.

Age (Years)	Number in the sample	Percentage	Number that rejected OPV	Percentage
15-19	76	6.7	11	14.5
20-24	213	18.8	32	15.0
25-29	299	26.4	230	77.0
30-34	235	20.7	132	56.2
35-39	208	18.3	111	53.4
40-44	74	6.5	52	70.3
≥45	30	2.6	20	66.7
Total	**1135**	**100**	**588**	

From the table 10 above, it can seen that majority of the respondents that rejected OPV are in the age group 25-29 years with 77%. 15-19 years age group were only 14.5%.

There is statistical relationship between age distribution and OPV rejection.

$X^2 = 246.16$ $df = 6$ $P<0.05$

See Appendix I.

TABLE 11

Religious beliefs of the respondents that rejected OPV in Tarauni L.G.A.

Religion	Number in the sample	Percentage	Number of rejection	Percentage rejection
Muslims	1070	94.3	562	52.6
Christian	65	5.7	26	40.0
Total	1135	100	588	

From the above table the number of Muslim respondents that rejected OPV were 562 making 52.6% while Christian were only 26 with 40.6%

There is an association between religious affiliation and OPV rejection based in 2 x 2 contingency table and X^2 significant test.

$X^2 = 4.001$, df = 1 $P<0.05$

See Appendix II

TABLE 12

Educational status of the respondents that rejected OPV

Educational level	Number in the sample	Percentage	Number that rejected OPV	Percentage of rejection
Illiterate	11	0.9	8	72.7
Literate	1124	99.1	580	51.6
Total	**1135**	**100**	**588**	

Table 12 above shows the educational level of the respondents.

Illiterates were 11 and 8 rejected OPV while illiterates were 1124 and 580 rejected OPV.

There is no association between educational level of the respondents and OPV rejection determined by 2 x 2 contingency table and X^2 significant test.

$X^2 = 1.038$ (Before Yates correction) df = 1 P>0.05

$X^2 = 1.645$ (After Yates correction)

See Appendix III

TABLE 14

Rejection of OPV based on marital status

Marital status	Number in the sample	Percentage	Number of rejection	Percentage
Married	1054	92.9	549	52.1
Single	14	1.2	-	-
Divorced	47	4.1	31	65.9
Widowed	20	1.8	8	40.0
Total	**1135**	**100**	**588**	

549 out of 1054 rejected OPV constituting 52.1%. Divorced and widowed that rejected OPV were 6.9% and 40.0% respectively.

There is no association between marital status of respondents and OPV rejection.

$X^2 = 5.2$ df = 3, P >0.05

See Appendix IV

TABLE 15

Occupation of respondents that rejected OPV

Occupation	Number in the sample	Percentage	Number of rejection	Percentage
Traders	500	4.1	240	48.0
Farmers	193	17.0	105	54.4
Labourers/ unskilled workers	170	15.0	86	50.6
Civil Servant	55	4.8	35	51.8
Total	**1135**	**100**	**588**	

Table 15 showed that majority of the respondents were traders and 48.0% of them rejected OPV. Unemployed that rejected OPV were 51.8%

There is no association between OPV rejected and occupation of the respondents.

$X^2 = 6.86$ df = 4 P>0.05

See Appendix V

REASONS FOR OPV REJECTION

TABLE 16.

Various reasons identified responsible for OPV rejection.

S/No.	Reasons for OPV rejection	Number	Percentage
1.	Contains HIV/AIDS Virus	222	37.8
2.	Will affect Childs fertility later in life	170	28.9
3.	Too many repetition	95	16.2
4.	Can not protect the child	61	10.4
5.	Child was sick during the NIDS	20	3.4
6.	Fear of paralysis	12	2.0
7.	Service producer not friendly	4	0.7
8.	Fear of fever	2	0.3
9.	Can Kill the child	2	0.3
	TOTAL	**588**	**100**

CHAPTER FIVE

DISCUSSIONS

A major challenge was set up for many countries, Nigeria inclusive to eradicate poliomyelitis by the year 2000 later reviewed to 2005 [1]. To achieve this goal, all hands have to be on deck including Governments, health care providers, parents, religious and community leaders, international agencies and of course non-governmental organization.

Despite all efforts being made, wild polio virus is freely circulating in the country and more cases of polio paralysis are being identified [21, 22].

Other countries where the wild poliovirus freely circulates are India, Pakistan, and Afghanistan and Niger republic. [19, 26, 27].

One major problem being faced by the polio eradication campaign is widespread rejection of the oral polio vaccine (OPV) by parents of the under five children [22].

This study was designed to find out the factors responsible for the rejection of oral polio vaccine in Tarauni Local Government Area of Kano State.

The study was conducted amongst 1135 respondents (i .e fathers of under five children) in Tarauni L G A with the total of 2049 children covered. The assessment was based on the four rounds of 2002 polio immunization during the National immunization days (NIDS)

The study attempted to evaluate and assess the reason for the rejection of oral polio vaccine with the view to offering appropriate recommendation for improvement where necessary.

DEMOGRAPHIC VARIABLES

From the study, the age distributions of the respondents were from 15 years and above. They were grouped in 5 year intervals. It was found out that majority of the respondents (26.4%) fall within the age group 40-44yeasrs. This group was closely followed by 35-39 years group with 20.7% of the total respondents. 15-19 years group constituted 6.7% while those equal to on more than 45 years were only 2.6% of the total respondents.

In terms of ethnic distribution of the respondents, Hausa/Fulani, the dominant ethnic group in the Local Government constituted 84.5% of the total respondents. Other ethnic groups in the survey include Yoruba 7%, Igbo 5.3% and other tribes which include Nupe, Kanuri, Bura and the rest constituted 3.2% of the total respondents.

In terms of educational status of the respondents, majority have non-formal Koranic education they constituted 63.2% of the respondents. Only about 35.9% have formal western education with 15% having only primary education, dominant ethnic group in the Local Government constituted 84.5% of the total respondents. Other ethnic groups in the survey include Yoruba 7%, Igbo 5.3% and other tribe

which include Nupe, Kanuri, Bura and the rest constituted 3.2% of the total respondents.

In terms of educational status of respondents, majority have no formal Koranic education osituting63.2% of the respondents. Only about 35.9% have formal western education with 15% having only primary educational 9.5% with tertiary education. About 0.9% of the respondents are illiterate with neither western education nor non formal Koranic education. In contrast to a study conducted in Uganda titled – causes of low attendance at National Immunization days for polio eradication in Bushauyi District Uganda, [26] it was found out that majority of the respondents are illiterate without either formal or non-formal education.

This difference could be due to the fact that majority of the respondents in the Uganda study were Christians where non-formal Koranic education in non-existent as opposed to Tarauni LGA where majority of the respondents re Muslims. Also a similar study was conducted in Bangladesh and Pakistan and a similar report was obtained where majority of the respondents in the moral areas have neither formal western education nor non-formal Koranic education [19]. This was obtained despite the fact that majority of the people in Pakistan are Muslims as in Tarauni LGA.

Nigeria being a developing country has a lot of low and medium income earners. In this study, low income earners constituted 28.3% while medium income earners were 63.3%. Only 8.4% are high income earners. However, in a study conducted in Unganda, it was found out that majority of the respondents (53%) were low income earners while only 32.8% were medium income earners. The difference

could be due to the fact that, the study in Uganda was conducted in a rural/suburban area while this study is conducted in an urban centre.

Kano State and indeed Tarauni Local Government area is one of the states identified with predominantly on religion-Islam. In this study, Muslim respondents who are dominant in the Local Government were 94.3% while Christians were only 5.7%. No other religion belief identified in the study apart from those two major religions in the Local Government.

Marital status of the respondents revealed that, married respondents contributed 92.2% pf the total respondents. Divorced were 4.1% while Widowed and Single respondents were 1.8% and 1.2% respectively.

Distribution of the respondents based on occupation showed that basically there are four dominant occupation in the Local Government. Traders which constituted the majority were 44.1%, civil servant were 19.1%, farmers and labourers/unskilled workers were 17%and 4.9% respectively. Unemployment is one of the problems in the country and the unemployed respondents in the survey constituted 4.8% of the total respondents.

COVERAGE

During the study, a total of 2049 children under five year of age were coverage. They were grouped in one year intervals. The age distribution of the children showed that, it was fairly uniform with little rise amongst the age group 24 month-35monthsconstituteing 22.5%. 0-11 months have the lowest percentage of 18.6%

of the total children in the survey while 12month-23months, 36-47 months and 48 months-59 months showed fairly equal distribution with minimal variation.

In contrast to this study, it was found out that in Punjab province of Pakistan, a study was done on polio immunization and majority of the children (79%) were less than one year of age. [1].

From this study, it has been showed that, the immunization coverage during 2002 NIDS is still low. Children who are fully immunized constituted 47.3%, those partially immunized were 37.1% whole children not immunized at all in the Local Government were 25.6%.

However, from the records available in the Local Government, it has been show that, there was a coverage of 88.7% during in the 2002 NIDS in the Local Govt[23]. This difference could be attributed to either falsifications of results or use of unqualified personnel to carry out the immunization exercise.

Also from the records of immunization for Kano State during 2001 NIDS, high coverage of 89% was recorded. This could also be due to the same reasons as that of the Local Government [21, 22].

Records available from the Federal Ministry of Health for Polio Immunization during 2001 NIDS also showed a high coverage of 94.8 % [4]. High coverage recorded in this report could also be due to unqualified staff and falsifications of results.

In contrast to the high coverage recorded during NIDS in Nigeria low coverage are being recorded in some countries of the world.

In Sudan, during the 1997 NIDS in Darfur State, only 20% of the children were fully immunized against polio [1]. In Nyala where the first cases of polio occurred, 82% of the children under five were immunized in June 1996, but only 27% received the second dose a month later [17]. In the conflict zone of the Sudan in 1996, coverage was 88% during the first round and only 65% in the second round [17, 18]. In the 1997 immunization, converges were reported to be over 90% for both rounds in the Northern provinces but as low as 17% and 1% in the south [13].

The disparity in the level of coverage could due to accurate reporting in the Sudan as against here in Nigeria. It could also be due to the seriousness of the immunization teams. Here in Nigeria, Money is being considered a Major determinate of accurate reporting.

In Pakistan, the immunization coverage also varies from region to region. In Sheikhupura district, between January 1995 to June 1997, coverage with three doses of OPV among children less than one year dropped from 80% to 25%. In Punjab immunization coverage dropped from 81% in 1993 to 40% in 1997 [1].

LEVEL OF REJECTION OF OPV IN THE LOCAL GOVERNMENT

There were many reasons put forward for this low immunization coverage. Amongst the most important reasons is acute rejection of OPV by the parents of under five children. Among those that rejected the OPV, majority are in the age

group 25-44years with age group 25-29 years having the highest rejectors with 39.1% of the total rejectors while age group 15-19 years have the lowest number of those that rejected OPV with only 1.9%. In contrast to this study, it has been shown in records that during the 2002 NIDS in Tarauni Local Government Area, there were no cases of acute rejection [23]. The difference could be due to falsification of results or inaccurate reporting.

REASONS FOR OPV REEJCTION

From the study, various factors were put forward responsible for rejection of OPV by the parents of under five children. Some of the factors of much significance were:-

(1). Having no faith in the vaccine. This is due to the fact that some people do believe that the OPV contains HIV/AIDS virus (37.8%) while others feel the vaccine cannot protect their children (10.3%).

(2). Other respondents are of the opinion that, the vaccine in used as a family planning strategy and will affect children fertility later in life (28.9%).

(3). Too Many repetition was put forward as one of the reasons for rejection by some parents (6.2%).

Other reasons raised for reflection of OPV include:

(4). Child was side during the NIDS (3.3%). - No verification.

6). Service providers not friendly (0.6%).

6). Fear of fever (0.4%).

7). Fear of paralysis (2.1%).

8). Can kill the clued (0.4%).

From the foregoing, it can be seen that multiple factors were responsible for rejection of OPV. Some of the respondents put forward two or more factors as responsible for the rejection.

In a study conducted in Albania, (1996), Pakistan (1995), Sudan (1993) and in forms Zaire (1995). Failure to immunize, the reason put forward for low immunization coverage range from a small isolated group which refuses (rejects) vaccine on religious or cultural ground to entire birth cohorts in countries bereft of vaccine [1].

n a study in Uganda (May 2000), some of the reason responsible for rejection of PV is that, it causes malaria. This is due to the fact that, NIDS corresponded to e period of malaria epidemic, therefore they attributed the malaria epidermic to e immunization [1,13].

n this study, it has been shown that religion plays little or no role in the rejection f OPV 52.4% of the Muslim respondents rejected OPV while 41.0% of the hristian respondents rejected the OPV. This is in contrast to what is obtained in e literature review where only Muslim clerics were found to be campaigning for

rejection of OPV [8,10,13]. This is mainly due to misconception about OPV. They argue that vaccine is a poison and to give a poison mean to infect the child. They therefore concluded that vaccine of any kind including OPV should be rejected [7].

Educational states of the respondents plays a significant role in the attitude towards rejection or acceptance of OPV. From this study illiterate respondents (i.e those with neither non-formal Koranic education nor formal Western education) are few and about 833.% of them rejected the OPV during the 2002 NIDS. On the hand, literate respondents 51.5% of them rejected OPV. Those with Koranic education constituted the majority with 75.9% of the total rejectors. The respondents with tertiary education forward 2.6% of the total rejectors.

Rejection of OPV based on marital status indicated that married respondents constituted 92.9% of the total respondents and 549 of then forming 93.4% of the total rejectors rejected OPV. Divorced and Widowed respondents that rejected OPV were 5.3% and 1.3% respectively.

STATISITCAL ASSOCIATION BETWEEN REJECTION AND SOME DEMOGRAPHIC VARIABLE.

From this study, the three factors that are proven to have statistical association with rejector are religious belief, literacy level and the age distribution of the respondents.

Educational status, occupation and marital status of the respondents have no proven statistical relationship with OPV rejection as indicated by contingency table and X^2 significant test.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

CONCLUSION

From this study it can be concluded that there is wide spread rejection of polio immunization campaign in Tarauni Local Government Area of Kano State.

RECOMMENDATIONS

Despite wide publicity in both electronic and print media, polio immunization coverage is still low in Tarauni Local Government Area due to widespread rejection of OPV. This was found to be due to many factors put forward by the respondents.

This widespread rejection will definitely affect the target set out by the world health organization to eradicate polio by the year 2005 in Nigeria.

In order to find a solution to the problem of this rejection, all hands have to be in deck the Governments, health care providers, the community and religious leaders and the general population need to be involved actively.

The following recombinations are therefore made based on the findings of this study to increase the polio immunization coverage and reduced the level of rejection in Tarauni Local Govt. Area.

(1). The primary health care department should set up a health education unit in the Local Government in order to continue to educate the parents and the general population that OPV is safe and does not contain HIV/AIDS virus which was one of the major reasons for OPV rejection. Also to inform the general population that OPV has nothing to do with family planning.

(2). The primary health care of the Local Government and the state ministry of Health in conjunction with national programme on immunization (NIP) of the Federal Ministry of Health should take a more personal approach on the issue of NIDS. More advocacies will be needed by these individuals to education the respected and influential people in the community and solicit their support. Once they support, they can talk to the members of the community and convince them to accept OPV. In this way, it is hoped that the level of rejection will come down.

(3). Training workshops and seminars should be constantly organized for health care providers and all those involved in NIDS to keep them informed on the importance of accurate record keeping and being friendly during NIDS exercise in order to minimize rejection.

(4). It is also recommended that during NIDS, children of influential people, community and religious leaders with positive attitude on immunization should receive the vaccine first so that other people will see and accept it.

(5). Finally, as it is observed that rejection is increasingly becoming a serious problem, since we are in a developing county where there is a lot of poverty, provision of incentives to the parents and children in cash or kind will go along way in minimizing OPV rejection.

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STATISTICAL ASSOCIATION BETWEEN OPV REJECTION AND SOME DEMOGRAPHIC VARIABLES OF THE RESPONDENTS

APPENDIX I

To determine the statistical association between OPV rejection and age distribution of the respondents with help of contingency table and X^2 significant test

Age (Years)	Rejection	No rejection	Total
15-19	11 E=39	65 E-37	76
20-24	32 E-110	181 E=103	213
25-29	230 E=155	69 E=144	299
30-34	232 E=122	103 E=113	235
35-39	111 E=108	97 E=100	208
40-44	52 E-38	22 E=36	74
>54	20 E16	10 E=15	30
Total	**588**	**547**	**1135**

X^2 2511.8, df=6, P>0.05

Ho = Age of the respondent does not influence OPV rejection

H_1 = Age of the respondent influences OPV rejection.

& = 0.05

Observed X^2 – 246.16 with six degrees of freedom. The critical limit of X^2 at six degrees of freedom at & = 0.05 is 12.592. Therefore the probability is less than 0.05 (P<0.05).

Hence, Null Hypothesis is rejected and alternate hypothesis is accepted

APPENDIX II

To determine the statistical association between OPV rejection and religious belief of the respondent. It is done with the help of 2 x 2 contingency table and X^2 significant test.

Religion	Rejection	No rejection	Total
Muslims	562 E = 554	508 E = 516	1070
Christian	26 E = 34	39 E = 31	65
Total	**588**	**547**	**1135**

$X^2 = 4.001$. df = 1, P<0.05

Ho = there is no association between OPV rejection and religious belief the respondents.

H_1 = There is association between OPV rejection and religious belief of the respondent.

Test: X^2

& = 0.05

Observed X^2 = 4.001 with 1 degree of freedom. The critical level of X^2 at one degree of freedom at & = 0.05 is 3.841. Therefore the probability is less than 0.05 (P<0.05). Hence Null Hypothesis is rejected and alternate hypothesis is accepted.

APPENDIX III

To determine the statistical association between OPV rejection and literacy level of the respondents.

Literacy Level	Rejection	No rejection	Total
Literate	580 E + 582	544 E + 542	112
Illiterate	8 E = 6	3 E = 5	11
Total	**588**	**647**	**1135**

$X^2 = 1.028$ (Before Yates correction) df = 1, P>0.05

$X^2 = 1.645$ (After Yates correction)

Ho = There is no relationship between literacy level and OPV rejection

H_1 = There is relationship between OPV rejection and literacy level

Observed X^2 –1.6445 with one degree of freedom after Yates correction. The critical limit of X^2 at one degree of freedom at & = 0.05 is 3.841. Therefore the probability is greater then 0.05 (P>0.05).

Hence, the Null Hypothesis is accepted.

APPENDIX IV

To determine the statistical association between OPV rejection and marital status of the respondents.

Marital status	Rejection	No rejection	Total
Married	549 E = 546	505 E = 495	1054
Single	-	-	14
Divorced	34 E = 24	16 E = 22	47
Widowed	8 E = 10	12 E = 9	20
Total	**588**	**547**	**1135**

$X^2 = 5.2$ df = 3, P >0.05

Ho = marital status of the respondents does not influence OPV rejection

H_1 = marital status of the respondents influences OPV rejection

Observed $X^2 = 5.2$, with three degrees of freedom. The critical limit of X^2 at three degrees of freedom at & = 0.05 is 7.815 therefore the probability is greater than 0.05 (P>0.05).

Hence, Null Hypothesis is accepted that marital status does not influence OPV rejection.

APPENDIX V

To determine the statistical association between OPV rejection and occupation of the respondents.

Occupation	OPV rejection	No rejection	Total
Traders	240 E = 259	260 E = 241	500
Farmers	105 E = 100	88 E = 93	193
Labourers/unskilled workers	86 E = 88	84 E = 82	170
Civil servants	122 E = 112	95 E = 105	217
Unemployed	35 E = 29	20 E = 27	55
Total	**588**	**547**	**1135**

$X^2 = 685$, df = 4, P<0.05

Ho = occupation of the respondent does not influence OPV rejection

H_1 = occupation of the respondents influences OPV rejection

Observed X^2 = 6.8.6 with four degrees of freedom. The critical limit of X^2 at four degrees of freedom at & – 0.05 is 9.488. Therefore the probability is greater than 0.05 (P>0.05).

Hence, Null Hypothesis is accepted. That is occupation of the respondent does not influence OPV rejection.

APPENDIX VIII

TARAUNI LOCAL GOVERNMENT, KANO STATE POPULATION BY VILLAGES

		Population	Percentage
1.	Kundila	13082	5.9%
2.	Gyadi-Gyadi Kudu	7183	3.245
3.	Gyadi-Gyadi Arewa	8781	3.965
4.	Jaoje	7312	3.29%
5.	Marhaba	7381	3.33%
6.	Tarauni	8123	3.66%
7.	Kauyen Alu	7964	3.59%
8.	Karkasara	7618	3.445
9.	Darmanawa	8321	3.75%
10.	Sallari	7614	3.43%
11.	U/uku Kudu	7819	3.53%
12.	U/uku – Arewa	6123	2.76%
13.	Hausawa – Estate	7856	3.545
14.	Hausawa – Gida	9814	4.455
15.	Hausawa – Arewa	6573	2.96%

16.	Hotoro Danmarke	8123	3.66%
17.	Hotoro CTV	6134	2.77%
18.	Walawai Karama	6419	2.89%
19.	Walawai Babba	7121	3.21%
20.	Yar Akwa Police	6218	2.80%
21.	Yar Akwa By Pass	5184	2.345
22.	Yar Awka Motor park	8184	3.69%
23.	Babban giji	6617	2.98%
24.	Hassan Gwarzo	7819	3.53%
25.	Daurawa	8614	3.88%
26.	Saye	7180	3.24%
27.	Barkum	5104	2.30%
28.	Rimo	6084	2.74%
29.	Babale	6181	2.795
30.	G/Fulani	5183	2.34%
	TOTAL	**221,729**	**100%**

APPENDIX IX

DEPARTMENT OF COMMUNITY MEDICINE, FACULTY OF MEDICINE,

ABU ZARIA.

M P H PROJECTS

TOPIC - FACTORS RESPONSIBLE FOR REJECTION OF POLIO IMMUNIZATION CAMPAIGN: A CASE STUDY OF TARAUNI L.G.A. KANO STATE.

QUESTIONNAIRE;

TO BE ANSWERED BY FATHERS OF UNDER FIVE CHILDREN.

SERIAL NUMBER:.....

1. PERSONAL DATA

a. Age:.....

b. Tribe:.....

c. Address:.....

d. Regilion (i). Islam ☐

(ii). Christianity ☐

(iii). others (Specify):.....

EDUCATIONAL STATUS

A. Illiterate

B. Literate - (i). Koranic School ☐

(ii). Primary School ☐

(iii). Secondary School ☐

(iv). Tertiary Institution ☐

(a.) Polytechnic ☐

(b). College of Education ☐

(c). University ☐

(d). Others (Specify):.....

.....

3. MARITAL STATUS

a. Married ☐

b. Single ☐

c. Divorced ☐

d. Separated ☐

e. Widowed ☐

4. OCCUPATIONAL STATUS

a. Trader ☐

b. Farmer ☐

c. Civil Servant ☐

d. Unemployed ☐

e. Others (Specify):.....

5. FAMILY HISTROY.

a. How many children do you have?

Male ☐ Female ☐

b What are their ages in ascending order?

0-11 months ☐ 12-23months ☐

24-35 month ☐ 36-47months ☐

48-59 months ☐

c. Number of dead children (if any)

.....

d. What is the probable cause of death?.....

6. INCOME LEVEL

a. Low income earner: Less than ₦5000, per Month ☐

b. Medium income earner; Less than ₦30,000.00 per month ☐

c. High income earner; More than ₦30,000.00 per month ☐

7. IMMUNIZATION STATUS

a. How many of your children are fully immunized during NIDS this year (Four times)

.....

b. How many are partially immunized (one to three times)?.....

c. How many are not immunized at all?.....

d. For those that are partially immunized (1-3 times), state the reason for partial immunization. .....

e. For those not immunized, what could be the reason/reasons among these below:

(i). Child was sick ☐

(ii). Service providers not friendly ☐

(iii). Inconvenient day/time ☐

(iv). Fear/Rumour of side effects ☐

a. Pain ☐

b. Fever ☐

c. paralysis ☐

d. Can kill the child ☐

e. Others (Specify):.....

(v). Too many repetitions ☐

(vi). Will affect child's fertility later in life ☐

(vii). Have no faith in the vaccine

a. Cannot protect the child ☐

b. Contains HIV/AIDS Virus ☐

(viii). Others (Specify):.....