

**DETERMINANTS OF ROUTINE IMMUNIZATION UPTAKE AMONG CHILDREN
AGED 12- 23 MONTHS IN INTERNALLY DISPLACED PERSONS SETTLEMENTS
OF BAUCHI STATE NORTH EAST NIGERIA**

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DEGREE OF MASTER OF SCIENCE IN PUBLIC HEALTH**

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DECLARATION

I, Abubakar Magaji hereby declare that this work titled “Determinants of Routine Immunization Uptake among Children Aged 12-23 Months in IDPs Settlements/Camps of Bauchi State” is the product of my research efforts undertaken under the supervision of Prof. Mohammed Kabir and Dr. Muktar. A Gadanya, conducted under the approval of the department of community medicine, BUK as partial requirement for the fulfilment of the criteria for obtaining masters of Science in public health and it is an original work. No part of this work has been previously presented for another degree or diploma at any institution. All sources have been duly acknowledged.

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CERTIFICATION

This is to certify that the research work for this dissertation titled “Determinants of Routine Immunization Uptake among Children Aged 12-23 Months in IDPs Settlements/Camps of Bauchi State” conducted by Abubakar Magaji “SPS/15/MPH/00014” were carried out under our supervision.

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ABBREVIATIONS

AEFI: Adverse Event Following Immunization

AFP: Acute Flaccid Paralysis

ANC: Ante Natal Care

ARI: Acute Respiratory Infection

BCG: Bacillie Calmette Guerin

CDC: Centres for Disease Control and Prevention

CFR: Case Fatality Rate

CMR: Crude Mortality Rate

DPT: Diptheria, Partussis and Tetanus

DRC: Demographic Republic of Congo

DTM: Displacement Tracking Matrix

EPI: Expanded Program on Immunization

FGDs: Focused Group Discussions

FMOH: Federal Ministry of Health

GHO: Global Health Observatory

HEV: Hepatitis E Virus

CHEWs: Community Health Extension Workers

ICRC: International Committee of the Red Cross

IDMC: International Displacement Monitoring Centre

IDPs: Internally Displaced Persons

IPV: Inactivated Polio Vaccine

IOM: International Organization for Migrants

LGA: Local Government Area

MDG: Millennium Development Goal

NDHS: Nigeria Demographic and Health Survey

NEMA: National Emergency Management Agency

NFI: Non-Food Item

NPHCDA: National Primary Health Care Development Agency

NPI: National Program on Immunization

OPV: Oral Polio Vaccine

OVC: Oral Cholera Vaccine

PHC: Primary Health Care

R.I: Routine Immunization

SDGs: Sustainable Development Goals

SIAs: Supplemental Immunization Activities

UN: United Nation

UNHCR: United Nation High Commissioner for Refugee

UNICEF: United Nation Children Fund

VPDs: Vaccine Preventable Diseases

WHO: World Health Organization

WPV: Wild Polio Virus

ABSTRACT

Routine Immunization has been a cost-effective public health intervention that significantly reduced morbidities and mortalities associated with VPDs in children. Despite the remarkable improvement in its global coverage, Nigeria is far below the WHO recommendation of 90% which might have contributed significantly to the recent Measles, Pertussis and polio epidemics within the country especially in the North eastern region where insurgency have resulted in the internal displacement of over a million people. There is paucity of studies conducted in the region to ascertain the R.I uptake among the internally displaced persons (IDPs). This study therefore, aimed at determining the factors affecting R.I uptake among children aged 12-23 months in IDPs of Bauchi, one of the north eastern states affected by insurgency with only 14% of full R.I coverage. It was cross-sectional descriptive survey that involved mixed method of data collection conducted sequentially, the quantitative component involved administration of validated questionnaire to 391 participants and for the qualitative component, data was collected by using focus group discussions. Most of the respondents (63.7%) had good R.I knowledge however with poor vaccine preventable diseases knowledge, this finding conforms to the FGDs result. The uptake of various antigens were found to be; 78.0%, 63.7%, 53.5%, 44.2%, and 32.2% for BCG, PENTA1, PENTA2, PENTA3 and Measles, respectively. Only 29.9% of the children were fully immunized and up to 22.0% were not immunized. The statistically significant positive predictors of childhood full immunization status were; Living in urban settlement, ANC attendance more than three times, maternal income above poverty line, distance less than 5km to immunization centres, good R.I knowledge, child delivery in health facility and immunization card availability. In conclusion, the R.I uptake was low and more strategies like community outreaches, mobile vaccine posts and health education should be employed to scale up the coverage.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

The population of internally displaced persons (IDPs) has been increasing over the recent years with risen conflict and violence accounting for significant proportion of the increment.⁽¹⁾ Since 2003 an average of 5.2 million displacements occur every year globally, which equates to 14,000 people forced to flee their homes every day.⁽¹⁾ Globally, it was estimated that over 40.8 million people were internally displaced population out of which 27.8 million people were newly displaced in 127 countries during 2015 and these were the highest figures Internal Displacement Monitoring Centre (IDMC) has ever recorded.⁽¹⁾ It is important to note that, of the total 8.6 million were associated with conflict and violence in 28 countries, and 19.2 million with disasters in 113 countries.⁽¹⁾ African continent accounted for over 30% of the global IDPs and it was the second only to Middle East for conflict and violence as a cause of new displacement in 2015.⁽¹⁾

So far, in Nigeria Boko Haram attacks and atrocities as well as the military operations against it have forced more than a million people to flee their homes and fuelled an unprecedented humanitarian crisis in north eastern geopolitical zone of the country.⁽¹⁾ Inter-communal clashes fuelled by ethno-religious feuds, criminality, cattle rustling, land disputes and tensions between pastoralists and farmers also continue to flare across the Middle belt region.⁽¹⁾ The above mentioned unfortunate events resulted in upsurge in the IDPs population to over 2.09 million people within the country in 2015.⁽¹⁾ There were more than 73 thousands incidents of new displacement in the country over 2015 with insurgency, communal clashes and natural disaster accounting for 85%, 12.6% and 2.4% of the IDPs population respectively.⁽²⁾

According to United Nations multi-sectoral needs assessment conducted in 2014, there were 650,000 IDPs living within over 60,232 households in the north eastern region of Nigeria. The IDPs were composed of 54% and 46% women and men respectively. The population was predominantly young as accounted for 58% over half of which were below the age of five.^(3,4) It was evidenced that there were over 1000 IDPs camps across the 36 states of the federation most of which are in the north.⁽⁵⁾The Displacement Tracking Matrix (DTM) in 2016, reported that, most of the IDPs identified in North-eastern region of the country especially Adamawa, Bauchi, Bornu, Gombe and Yobe which together formed 89.74% (1,878,205) of IDPs, which were displaced due to conflict and in the region, communal clashes were the second highest (8.85%) with natural disaster contributing 1.4% of the displacement. Most of the IDPs (81.3%) reside in host communities while 18.7% in the camps.⁽²⁾Bauchi is among the north eastern states of the country that are affected by insurgency as the cause of new displacement with over 70 thousand internally displaced persons living in over 10,000 households within the state in 2016.⁽²⁾

The situation has significant effects on public health and well-being of the affected population. ⁽⁶⁾ These impacts may be categorized as direct due to violence and injury or indirect such as increased rates of infectious diseases and malnutrition especially among children which are vulnerable to health, social, mental and psychosocial problems with increased under-fives mortality rate to already existing high value especially in Sub-Saharan African where 1 child in 12 died before fifth birthday in 2015.^(6, 7)

According to WHO, 5.9million children under age five died in 2015 globally, which equals to 16,000 deaths every day with the risk of a child dying before the age of five still being highest in African region (81 per 1000 live birth) and about seven times higher than that in WHO European region (11 per 1000 live births).⁽⁷⁾ This risk is increased in IDP settings due to their peculiar disadvantages and vulnerability of the children to vaccine preventable

diseases that contribute significantly to the global burden of under-fives mortality; A cross-sectional study revealed that the under-fives mortality rate in IDPs was up to 14.1/1000/day.⁽⁵⁾ The crude mortality rate (CMR) and under five mortality rate in Gulu district IDP camps in Uganda were found to be high and estimated at 12.2 and 23.1 per 1000/day respectively.⁽⁸⁾ These mortality rates are both above the emergency thresholds of 10/1000/day and 2/1000/ day respectively.⁽⁸⁾

Vaccine preventable diseases (VPDs) continue to be highly prevalent and a major cause of morbidity and mortality in Sub Saharan Africa among children less than five years.⁽⁹⁾ These diseases combined with malnutrition, kill an estimated 400-450 Nigerian children per day and as many as four to five times this number of children are handicapped for life by blindness, deafness, lameness and mental retardation.⁽¹⁰⁾ Several risk factors which include; movement of mass population and resettlement in temporary locations, overcrowding, economic and environmental degradation, poverty, inadequacy of safe water, poor sanitation and waste management which are further compounded by absence of shelter, food shortages and poor access to health care all work in synergy to promote communicable diseases epidemics in the IDPs settlements.⁽⁶⁾

Routine immunization uptake is disrupted in IDPs settlement, thus, increasing the number of individuals susceptible to diseases and risk of epidemics of VPDs.⁽⁶⁾ Vaccine preventable diseases reported in the literature during humanitarian emergencies include; Measles, Polio, and depending on geographical location, Meningococcal meningitis, Yellow fever, Hepatitis A, Cholera and of recent Hepatitis E have also been reported.⁽⁶⁾ Camp settings especially informal ones, increase a populations susceptibility to VPDs due to overcrowding, suboptimal living conditions, poor nutrition, scarcity of safe water and sanitation. Risk factors for outbreaks are linked to excess risk of morbidity and mortality from VPDs, the

reduction of which is the aim of public health interventions during humanitarian crises that lead to internal displacement. ^(6, 11)

Routine immunization has been an important strategy, employed to curtail the morbidity and mortality associated with vaccine preventable diseases especially among the under-fives. Globally, immunization has saved over 20 million lives in the last two decades and more than 100 million infants are immunized each year and this saves more than 3 million lives annually.⁽¹²⁾ Global mortality attributed to measles declined by 78% from an estimated 733,000 deaths in 2000 to 161,260 deaths in 2008 mainly due to the role played by measles vaccination.⁽¹²⁾

Globally, Polio incidence has decline dramatically by more than 99% since the launch of global polio eradication efforts in 1988 and now only three countries remain polio endemic which include; Afghanistan, Pakistan and Nigeria. The number of polio cases worldwide as of 2009 was 1606, which reduced to 682 wild polio virus cases in 2010, 13% of which was from the African region. The number of polio endemic countries in the African region has been reduced from 30 in 1988 to 1 in 2008 due to successful immunization program in the continent. Nigeria presents the biggest obstacle in the eradication of polio in the region.⁽¹²⁾

Effective ways of vaccine wide coverage remain a challenge because accessibility to hard-to-reach areas continue to make wider coverage a nightmare and children less than ten years continue to die of vaccine preventable disease because of poor coverage. Factors holding back routine immunization services in the African region include civil unrest, lack of human resources within health ministries and limited funding for routine immunization services.⁽⁹⁾

1.2 Statement of the problem

The World Health Organization estimates indicate that close to a million children (868,000) children under the age of five years die in Nigeria each year and this places the country in the second position in terms of global annual childhood deaths after India and many of these mortalities are caused by vaccine-preventable diseases which accounted for up to 40% of under-fives mortality in 2012 due to poor immunization coverage within the country.^(13,14)

Despite the effectiveness of vaccines against VPDs and the proven benefit associated with their utilization, the routine immunization uptake in Nigeria is low when compared to neighbouring countries like Ghana with 88% immunization coverage rate which is significant improvement towards achieving the WHO target of 90% as the country is still lagging behind with only 25% as the overall proportion of children fully vaccinated.^(15,16) The coverage within the country was lower (16%) in rural areas than in urban areas (43%).⁽¹⁵⁾

Bauchi state is one of the north eastern states with poor routine immunization coverage as established by the NDHS 2013 that only 1.0% of children age 12-23months received all basic vaccinations at any time before the survey which is unacceptably low when compared to the national value.⁽¹⁵⁾ The state had over seventy thousands IDPs and it was reported that more than 60% of their settlements have regular access to medicines, 50% have health facilities/services on-site under 3km away with health referral system in over 50% which therefore means that averagely, they have good access to essential health services and despite this, many studies reported poorer immunization coverage among the IDPs when compared to the stable communities this therefore increase their susceptibility to vaccine preventable diseases epidemics and the sequel that may be associated with them.^(4,15)

Lack of access to health services especially routine immunization, shortage of medicines, poor living conditions among others were the reported predisposing factors of children to vaccine preventable diseases outbreak in IDPs camps/settlements with upsurge in morbidities

and mortalities as reported by many studies. Recently, in 2016 three cases of laboratory confirmed polio virus epidemic were reported in Borno state IDPs so also measles epidemics in many IDPs settlements within the country. ^(12,17) The polio outbreak which is a major setback to the international effort toward eradicating the disease has been linked to disruption in vaccinations as violence and insecurity created a lack of access to health care services and under utilization of routine immunization among the affected population.

Most of the immunization interventions programs and studies in IDPs setting are tailored toward addressing the acute phase of the emergency with the aim of limiting the number of preventable deaths however; routine immunization which aims to ensure long term protection against VPDs through progressive increase of population immunity is often neglected. This kind of life saving services need to always be considered as one of the most important issues in public health especially in such vulnerable populations like IDPs. ⁽¹¹⁾

Therefore, efforts need to be applied toward establishing the routine immunization coverage as well as factors affecting the services in such socioeconomically disadvantaged population as the findings may help significantly in policy making towards prevention of vaccine preventable diseases in not only the IDPs population but also the country as a whole, it may help in scaling up the coverage toward achieving the WHO target.

1.3 Justification

The north-eastern population of Nigeria constitutes 85.8% of the 2,152,000 IDPs which forms the largest proportion of socioeconomically disadvantaged population in country and additionally, have lowest uptake rate of immunization across all age groups as only 14.1% of the children aged 12-23 months were found to be fully immunized in 2013 which is far below the national figure of 25% and unacceptably behind the WHO target of 90%. ^(12,13,15) This puts the region at higher risk of developing VPDs especially among under-fives with increase

morbidity and mortality to already existing high value and also results in frequent hospital admissions and increased demand on available health facilities.⁽¹²⁾

Routine immunization studies to assess the coverage rates are important in public health as it informs stakeholders on whether trends in uptake are improving, declining or stable. Based on the findings, stakeholders and policy makers can develop strategies designated to accelerate or maintain immunization uptake and ensure that enough children are protected against VPDs to maintain herd immunity.^(11,15)

In Bauchi state despite the fact that majority of the health facilities (89.9%) surveyed in 2010 offered R.I services with 84.5% found to be providing full range of immunization the proportion of fully vaccinated children age 12-23 months was far below the national average of 25% as reported by the NDHS 2013.⁽¹⁵⁾ Many studies have been conducted in different parts of the country regarding vaccine coverage but literature search for the purpose of this study could not identify work that studied routine immunization knowledge and its uptake among children aged 12-23 months in IDPs settlements/camps of Bauchi state.

Therefore, determining the uptake of routine immunization and factors affecting its utilization in the Bauchi state IDPs settlements/camps may help in obtaining the fact about the situation and also provide solutions to the identified problems with the aim of bridging the gaps so as to prevent the re- occurrence of such unfortunate events as the polio cases of 2016 in Borno state IDPs camps, that prevented the country from being certified as polio-free and also the African continent as the country remains the major obstacle to the disease eradication within the continent.⁽¹²⁾

1.4 Research Questions

The study was designed to answer the following research questions;

1. What is the level of knowledge of routine immunization among mothers/care givers of children aged 12-23 months in IDPs settlements/camps of Bauchi state?
2. What is the level of routine immunization uptake among the population of children aged 12-23 months in IDPs settlements/camps of Bauchi state?
3. What is the completion rate of routine immunization among the population of children aged 12-23 months in IDPs settlements/camps of Bauchi state?
4. What are the factors affecting the utilization of immunization services among the population of children aged 12-23 months in IDPs settlements/camps of Bauchi state?

1.5.0 Aim and objectives of the study

1.5.1 Aim

The study assessed the determinants of routine immunization uptake among the population of children aged 12-23 months in IDPs settlements/camps of Bauchi state.

1.5.2. Specific Objectives

1. To assess the knowledge on routine immunization among mothers/care givers of children aged 12-23 months in IDPs settlements/camps of Bauchi state.
2. To determine the routine immunization uptake level among children aged 12-23 months in IDPs settlements/camps of Bauchi state.
3. To determine the completion rate of routine immunization among children aged 12-23 months in IDPs settlements/camps of Bauchi state.
4. To assess factors and reasons influencing the routine immunization uptake among children aged 12-23 months in IDPs settlements/camps of Bauchi state

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Literature Search Strategy

Both published and unpublished literatures were searched using search engines which included, but were not limited to the following; Google scholar, PUBMED, JAMA, African Journals on Line(AJOL), Science index, SAGE journal online, WHO, CDC and Nigerian government agencies' official websites. The search was limited to manuscripts written in English language between years 2005 to 2018.

The following search terms were used as keywords: immunization, childhood immunization, vaccination, childhood vaccination, vaccines, vaccine history and timeline, Vaccine preventable diseases, displacement, internally displaced persons etc. The keywords were also combined e.g immunization and internal displacement, barriers to immunization in IDPs etc. Book chapters on vaccines and vaccine preventable diseases and routine immunization were also searched. These produced over 4194 different publications, articles and information such as the history of vaccine, global and national universal childhood immunization efforts and progress, Vaccine preventable diseases in IDPs settings, Immunization in IDPs camps etc. However, 71 documents were more relevant to this study and therefore reviewed.

2.2 Burden of Internally Displaced Persons

The displacement of people refers to the forced movement of people from their locality or environment and occupational activities. It is a form of social change caused by a number of factors, the most common being armed conflict. Natural disasters, famine, development and economic changes may also be a cause of displacement.⁽¹⁸⁾

According to United Nation High Commissioner for Refugee (UNHCR) there are three categories of forcefully displaced persons which are; Refugee who is someone that has been forced to flee his or her home country and is unable or unwilling to return due to fear of persecution. Internally displaced person (IDP) on the other hand **is** someone who was forced to flee his/her home but who did not cross a state border.⁽¹⁹⁾ The third category of displaced person is asylum-seeker who have made a claim that he/she is a refugees and is in the process of waiting for it to be accepted or rejected often considered as 'Stateless' person who is not considered as a citizen by any state ('de jure') or don't enjoy fundamental rights in his/her homeland ('de facto').⁽¹⁹⁾

A more comprehensive definition of internally displaced persons (IDPs) most commonly used comes from the United Nation's (UN) Guiding Principles on Internal Displacement which defines IDPs as "persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human made disasters, and who have not crossed an internationally recognized State border."⁽²⁰⁾The latter element differentiates them from refugees, who are also compulsorily evacuated but across internationally recognized state borders. The scale of internal displacement and the inevitable problem and nature of the response have become far more momentous in contemporary time.⁽²¹⁾

According to the International Committee of the Red Cross (ICRC), the phases of internal displacement include; Flight phase which occur when people are forced to leave their fields, animals or jobs lose the possibility of even providing for their own food, at least temporarily. The second phase is arrival in host community or emergency shelter which acts as a temporary measure where the displaced people stay in temporary locations, possibly a camp and soon they begin to find food and other basic needs depending on their situation. For those

to whom survival strategies are unavailable or insufficient, or fail there may be no alternative to food aid and other basic needs therefore putting them at risk of diseases like malnutrition and VPDs.⁽²⁰⁾

Longer term accommodation is the third phase and usually in host community, camp or urban structure. As the situation stabilizes, displaced persons try to re-establish some community with their old life; educational opportunities become important as does expanded health care provision, including psychosocial care, sanitation, immunization services and access to clean water etc. This phase can last on average for seven years in Latin America (against 6 years in Africa, Asia and Middle East) and globally one in five IDP is displaced for over 10 years. The fourth phase is Return to and reintegration in place of origin; at this stage they try to re-establish their lives permanently. A coherent reintegration strategy is always rooted in voluntary return based on accurate information about the situation in the home area, participation in decision-making, ensured existence of basic infrastructure, including access to water, food, health care and education before return and planning returns according to the agricultural season. Final phase is relocation in place other than original home which occur when return and reintegration in place of origin becomes impossible.⁽²⁰⁾

Globally, over the past eight years, 203.4 million displacements have been recorded with an average of 25.4 million each year and currently over 65.3 million people are in dire need of protection and assistance as a consequence of forced displacement.⁽⁶⁾ They include internally displaced persons (IDPs) which accounts for over 40.8 million people compared to 21.3 million refugees and 3.2 asylum seekers worldwide in 2015.^(1,6,19) There were 27.8 million new displacements in 127 countries during 2015 which equates to more than the total populations of New York City, London, Paris and Cairo combined. Conflict and violence accounted for over 8.6 million new displacements in 28 countries in 2015.^(1,2)

Yemen, Syria and Iraq accounted for the bulk of new displacement which equates to more than half of the global total.⁽¹⁾ They were also the top three countries worldwide in terms of the number of new displacements in 2015.⁽¹⁾ Outside the Middle East, the countries with the highest numbers of people fleeing the effects of conflict and violence were Ukraine, Nigeria, Democratic Republic of the Congo (DRC), Afghanistan, Colombia, Central African Republic (CAR) and South Sudan.⁽¹⁾ Most IDPs currently live in Syria (6.6 million) and Columbia (6.3 million), Iraq and Sudan follow with 3.3 million and 3.2 million respectively, Yemen (2.5), Nigeria (2.1) South Sudan (1.7), Ukraine (1.7), DRC (1.5) and Pakistan (1.5) complete the list of the first 10 countries, which together accounted for over 70% of the world's all IDPs.⁽¹⁾

In Nigeria *Boko Haram* continued to launch attacks and commit atrocities throughout 2015 within the country. In the six years since the onset of its insurgency, the group and military operations against it have forced more than a million people to flee their homes and fuelled an unprecedented humanitarian crisis in the north-east of the country.⁽¹⁾ Displacement trends show that as the military pushed *Boko Haram* back during the year, people previously trapped by the militants moved to urban centres in search of humanitarian assistance.⁽¹⁾ Inter-communal clashes fuelled by ethno-religious feuds, criminality, cattle rustling, land disputes and tensions between pastoralists and farmers also continued to flare across the Middle Belt region, but were largely overlooked. There were 737,000 incidents of new displacement in the country during the year 2015.⁽¹⁾ The country had the largest populations of persons displaced by conflict in Africa in 2015.^(19,22) The number of internally displaced persons in Nigeria is approximately a third of IDPs in Africa and 10 percent of IDPs in the world.⁽²²⁾

According to a report by DTM, as of October, 2016, the estimated number of IDPs in north eastern geopolitical zone of Nigeria was 1,822,541 which were distributed within 314,574

households with 5.64 average household sizes. Borno state had the highest number with 1,392,927 IDPs followed by Adamawa (170,070), Yobe (124,706), Bauchi (58,955), Taraba (47,587) and Gombe (28,296).⁽²⁾Bauchi state therefore ranked the fourth contributor to the high population of IDPs in both the north eastern region and the country as whole in 2016.⁽²⁾

2.3. Causes, Composition and Effect of Internal Displacement

Conflicts, violence, human rights violations but also natural disasters are forcing millions of people to leave their homes and to flee from destruction and persecution.⁽²¹⁾The majority of IDPs live in the developing world, which means that they find refuge in countries and among people who already struggle with poverty and hardship. Their survival usually depends on the availability of assistance which is provided by local communities and international organizations.⁽²¹⁾The cause of IDPs in Nigeria can be traced to many events and situations all across the nation. While some of the conflicts appear to be caused by religious or ethnic differences, gains from politics, social and economic nature are generally behind the violence in the country with increasing level of poverty, low levels of education and a host of youth population with feeling of alienation.⁽²³⁾

The Crisis Group noted in their report that, that bad governance, sustained economic hardship, raising inequality and social frustration are fostering the growth of radical extremist groups, which resulted into massive destruction of lives, properties and displacement of people in Nigeria.⁽²²⁾Others scholars have also argued that bad governance, poverty and corruption are fostering the growth of violence which resulted into mass displacement of people in Nigeria, especially in the Northern part of the country.⁽²²⁾The vast majority of IDPs (97%) within the country were displaced because of the insurgency, 3% were displaced due to communal clashes and natural disasters.⁽¹⁾In Bauchi state 69.48% of the displacement was due to insurgency and 30.56% due to communal clashes and natural disasters.⁽¹⁾Majority

(75.66%) of the identified IDPs live in host communities, with friends and relatives or in rented/donated houses while 24.34% stay in camps and camp-like settings.⁽¹⁾ Children which are vulnerable to epidemics of vaccine preventable diseases, formed 55% of the IDPs population and 54% of the children are male while 46% are female, 8.2% of the population are infants below the age of one year.⁽¹⁾

The consequence of internal displacement on IDPs themselves, as well as on the local authorities and communities that host them, can be shocking. While the act of displacement itself often may violate the human rights of those affected, the subsequent loss of access to homes, lands, livelihoods, personal documentation, family members, and social networks can deleteriously affect the ability of IDPs to assert and relish an entire range of fundamental rights.⁽²¹⁾ The longer displacement continues, the greater is the risk that traditional family and social structures break down, leaving IDPs dependent on outside aid and vulnerable to economic, health and other social problems. Such dependency, in turn, reduces the chances of durable solutions and sustainable reintegration into society once political and security conditions have changed to enable such solutions to take place.⁽²¹⁾

The effect of displacement on public health and well-being of the affected population may be categorized as direct due to violence and injury or indirect such as increased risk of infectious diseases and malnutrition among under-fives population.⁽⁶⁾ The disruption in public health care services also hinders prevention and control programs like routine immunization services consequently resulting in the rise of vaccine preventable diseases and vector borne diseases such as malaria and yellow fever among others.⁽⁶⁾

Furthermore, global polio eradication activities have been hampered in three countries in three conflict torn countries which have large numbers of refugees and IDPs in Afghanistan, Pakistan and Nigeria. Epidemics of infectious diseases are quite common in IDP camp settings due to inadequate water and sanitation facilities combined with

overcrowding.⁽⁶⁾Children are the most vulnerable groups within populations affected by conflict, violence and other natural disasters and most children do not die from weapons directly, but from the vaccine preventable diseases and their complications which become more prevalent among the displaced populations due to destroyed and inadequate health systems and infrastructure and limited access to health services.⁽²⁴⁾

In the absence of durable solutions, those who remain internally displaced (IDPs) camps face major challenges in terms of protection, access to shelter, food and other basic services such as health, nutrition, water, sanitation, hygiene and education. A survey of unfulfilled needs of IDPs in Nigeria, reported that, food continues to be the biggest unfulfilled need of more than half of the displaced people in the camps and the host communities.⁽²⁵⁾ A high proportion 66% people cited food as their biggest unmet need, non- food items (NFI) Came in second with 15% citing them as their most unmet need, medical services were the primary unmet need for 7% people and shelter was cited as the top need for 6%, while 3% felt water was needed most. The other key unmet needs included sanitation and hygiene (2.2%) and security (0.8%) which contribute to the fertile ground for VPDs epidemics. ⁽²⁵⁾ It is important to note that unmet needs are a significant driving force behind population movement. Therefore, the need for food could be the biggest reason for the high mobility of the affected people.⁽²⁵⁾

Several risk factors, which promote communicable diseases, work in synergy during displacement. These factors include movement of mass populations and resettlement in temporary locations, overcrowding, shortage of medicines, economic and environmental degradation, poverty, inadequacy of safe water, poor sanitation and waste management.⁽⁶⁾ These conditions are further compounded by the absence of shelter, food shortages and poor access to healthcare.⁽⁶⁾ Depending on the location in Sub Saharan Africa, the combined

effects of these factors result in increased risk of diseases such as acute respiratory infections (ARI) (4%), diarrheal diseases (18%–22%) and scabies (77%–86%).⁽⁶⁾

Furthermore, malnutrition which can be a complication of some VPDs like Measles, T.B and Pertussis has been reported among under five children in IDPs settlements.⁽⁶⁾ In the region, the spectrum includes stunting (38.6%), underweight (28.4%) and wasting (7.2%). Diarrhoeal diseases which can complicate some VPD like measles are major causes of morbidity and mortality among IDPs and it is usually compounded by substandard or inadequate sanitation facilities, poor hygiene and scarcity of soap and low vaccine coverage ⁽⁶⁾

2.4 Childhood Vaccine-Preventable Diseases and Vulnerability in Internally Displaced Persons Settlements

The reviewed routine immunization schedule in Nigeria covers the following vaccine preventable diseases;

Diphtheria is a disease affecting the mucous membrane of the respiratory tract with air passage blockage and myocarditis as complications. *Corynebacteriumdiphtheria* is the causative agent which is transmitted through contact with a case or carrier of the disease. Children before the age of 15 years are the most vulnerable group.⁽²⁶⁾

Hepatitis B is a blood-borne infection caused by a hapadna virus and transmitted commonly through parenteral, sexual, and peri-natal exposures. The prevalence rate can be up to 8% in a highly endemic area with 50% of the disease occurring before the age of 5 years .It was also indicated that 90% of childhood infection leads to chronic infection, which is responsible for the development of primary hepatocellular carcinoma and liver cirrhosis among other complications. Administration of hepatitis B vaccine can prevent hepatitis B infection for 10 years.⁽²⁶⁾

Haemophilus Infuenza type b which is a gram negative bacteria that causes many infections ranging from mild otitis to sepsis. Before the discovery of its vaccine, it was the number one cause of bacterial meningitis in children younger than 5 years with significant mortality CFR of up to 3 to 6% even with antibiotic treatment. ⁽²⁷⁾

Measles is an acute viral infection, transmitted via airborne droplet and contact with infected persons' respiratory discharges. Children are more susceptible than the larger population. Pneumonia, blindness, laryngotracheobronchitis, and encephalitis are among its common complications, with case fatality rate of about 30 %. ⁽²⁶⁾

Pertussis (Whooping cough); *Bordetella pertussis* that is transmitted through droplet or contact with discharges of an infected person is the aetiological agent. It is an acute respiratory disease, marked with violent and irritating cough that ends with a characteristic whooping sound and sometimes post-tussive vomiting. Pneumonia, encephalitis, and hypoxia are its common complications with severity higher among younger children. ⁽²⁶⁾

Pneumococcal Disease; The aetiological agent is *Streptococcus pneumoniae* which causes mild infections like otitis media, sinusitis and bronchitis or severe as in pneumonia, meningitis and bacteraemia. Children under five years of age (especially those below the age of two) are most at risk of developing and dying from pneumococcal disease. In Nigeria, pneumonia alone claims the lives of approximately 177,000 under-fives annually. CFR may be up to 20% for pneumonia, and as high as 50% for meningitis. ⁽²⁶⁾

Poliomyelitis; is an acute infection caused by Polio virus which spreads through faecal-oral route. The disease causes fever, headache with acute flaccid paralysis (AFP) as its complication. Since the elimination of poliovirus serotype 2, bivalent oral polio vaccine is now applied for the prevention of poliomyelitis. ⁽²⁶⁾

Tetanus; is an acute disease of the exotoxin of *Clostridium tetani*, which manifests in generalized spasm, and painful contraction of the muscles. Case fatality rate is more than

80%. Soil and faeces contaminated wounds aid tetanus transmission. Non-hygienic cutting and dressing of the umbilical cord and umbilical stump of the newborn transmits neonatal tetanus.⁽²⁶⁾

Tuberculosis; is a chronic respiratory disease caused by mycobacterium complex. It clinically presents cough, fever, loss of weight and appetite, with milliary tuberculosis, and the meningitis tuberculosis as more dangerous consequences. WHO recommends the administration of Bacillie Calmette Guerin (BCG) immunization to the newborn for the prevention of its dangerous consequences.⁽²⁶⁾

Yellow fever; a viral infection transmitted via the bites of Aedes mosquitoes. Its symptoms are fever and jaundice leading to the liver and kidney injuries with case fatality rate between 20% and 60%.⁽²⁶⁾

The epidemiology and burden of VPDs vary by country and region partly because of differences in vaccine uptake. Numerous factors that contribute to the disease burden include; geography, seasonal patterns, overcrowding, nutritional status, travelling to and from other countries and possibly genetic differences in populations that affect disease severity.⁽²⁶⁾ IDP settings therefore, provides a fertile ground for epidemics of VPDs as such necessary measures should be put in place to establish the vaccine coverage and utilization which are part of the reasons for conducting this study.

A number of vaccine preventable diseases are not reportable by many countries. The estimates of the burden of diseases by WHO are based on a combination of often incomplete vital registration data, mortality survey data and mathematical models using numerous assumptions.⁽²⁸⁾ Nevertheless, there are still 2-3million childhood deaths each year, worldwide, from VPDs and even in countries with consistently high immunization rates, cases of some VPDs, which have been virtually eliminated, still occur occasionally.⁽²⁸⁾

Vaccine preventable diseases continue to be highly prevalent and a major cause of morbidity and mortality in Sub Saharan Africa among children less than five years .⁽¹³⁾ Recent WHO estimates indicate that close to a million children (868,000 children) under the age of five years die in Nigeria each year.⁽¹⁴⁾ This places Nigeria in the second position in terms of global annual childhood deaths after India.^(13,14) Many of these deaths are caused by vaccine-preventable diseases.⁽¹⁴⁾ Diseases such as pneumonia, meningitis, and measles which have been almost eliminated in several countries, including African countries, still have high incidences and mortality rates in Nigeria.⁽¹³⁾ These diseases combined with malnutrition, kill an estimated 400-450 Nigerian children per day.⁽¹³⁾ As many as four to five times this number of children are handicapped for life by blindness, deafness, lameness and mental retardation and the continued low uptake of immunization was one of the major factors that affected Nigeria's efforts at meeting the Millennium Development Goal (MDG) 4, which aimed at reducing under five mortality significantly. Developing more strategies to improve the R.I uptake will therefore contribute significantly towards achieving the SDG 3, target 2 that aimed at reducing under five mortality to at least 25 per 1000 live births by the year 2030 because vaccine preventable deaths comprise about twenty percent of childhood deaths in Nigeria.⁽¹³⁾

Humanitarian emergencies that results in internal displacement of people may result in disruption of regular public health services like routine immunization and also hinders prevention and control programs consequently leading to rise of vector borne diseases such as Malaria and Yellow fever.^(6,11) The disruption of immunization services increases the number of susceptible individuals and the likelihood of epidemics of vaccine preventable diseases (VPDs). Depending on the geographical location, outbreaks of VPDs which have been reported among IDPs include measles (20%–30%) and meningococcal meningitis (0.3%).

Similarly, epidemics of cholera, yellow fever and recently discovered hepatitis E have been reported in IDP and refugee camps across Africa.^(6,11)

Camp settings especially informal ones, increase a populations susceptibility to VPDs due to overcrowding, suboptimal living conditions, poor nutrition, scarcity of safe water and sanitation. Risk factors for outbreaks are linked to excess risk of morbidity and mortality from VPDs, the reduction of which is the aim of public health interventions during humanitarian crises that lead to internal displacement.⁽¹¹⁾The details of some specific VPDs that caused epidemics in IDPs and similar settings are discussed below;

Measles; is a well documented epidemic-prone VPD in emergency context like IDPs camp. Although, camp conditions are common risk factors for measles transmission, movement between camp and host population also contributes to the outbreak.⁽¹¹⁾ An assessment of risk factors for measles mortality in a 2011 outbreak among Somali displaced people found that gastrointestinal and respiratory complications of measles were common and increased mortality was associated with malnutrition and neurologic complications.⁽¹¹⁾ Case fatality rates (CFR) of measles cases among displaced populations are often higher than those observed in stable populations.⁽²⁹⁾ In 2016, the outbreak of measles reported in IDP camp of Bama LGA of Borno, resulted in the death of seven out of twenty reported cases in children.⁽²⁵⁾It is important to note that diagnosis and management of severe measles complication in IDPs settlement and other resource-limited settings can be extremely difficult; therefore, every effort should be made to achieve greater than 95% measles vaccination coverage to prevent outbreak as an effective alternative.^(11,29)

Polio; despite significant progress in the global polio eradication efforts, outbreaks of poliomyelitis can take place in displaced populations until poliovirus transmission is stopped globally. Due to political instability, inadequate sanitation, and displacement of unvaccinated

individuals in highly dense urban centres, polio outbreak took place in Luanga province of Angola.⁽¹²⁾ In addition collapsed infrastructure resulted in reduced access to RI and vaccination campaigns for all children during periods of conflict and displacement. Currently, only 3 countries continue to have endemic circulation of wild polio virus; Afghanistan, Pakistan and Nigeria and the last reported WPV case in Nigeria was in 2016 in Borno state IDPs camps.^(12,29)

Yellow fever; the mosquito vector *Aedes aegypti* for yellow fever thrives in densely-populated areas such as urban areas and camps. In 2000 yellow fever outbreak with 688 cases and 225 deaths (33% CFR) was reported in Liberian and Sierra Leonean refugees and IDPs and in 2004 four laboratory confirmed cases of yellow fever were reported in IDPs camps in Liberia which resulted in two mass vaccination campaigns to prevent further spread and sequel in the IDPs and surrounding communities.⁽²⁹⁾ Movement through the forested areas where yellow fever is endemic into densely-populated camps and urban areas may have led to increased transmission.⁽²⁹⁾

Several outbreaks of viral hepatitis were noted among displaced populations. In 1999, a hepatitis A outbreak among displaced populations in Croatia was primarily a result of poor sanitation and housing and outbreak response included; sanitation, health education and screening of children 1-15 years of age and vaccination for seronegative children.⁽¹¹⁾ In 2004, HEV outbreak was reported in Mornay IDPs camp, Darfur, with a CFR of 33%, a lower CFR (10%) was reported among refugees in a camp south Sudan between 2012 to 2013.⁽¹¹⁾

Meningitis; Meningitis outbreak can have significant economic and psychological impacts on households and communities especially among the displaced populations. In endemic situations, meningococcal meningitis mostly affects young children; however, persons aged 15-29 years old were the most affected in outbreaks reported among displaced populations in

Angola. The international coordinating group on vaccine provision for epidemic meningitis control is tasked with maintaining an emergency vaccine stockpile to respond to meningitis outbreaks globally.⁽¹¹⁾ Diarrheal diseases are one of the leading causes of death among children under five years of age in emergency settings.⁽¹¹⁾ Rotavirus and cholera have been found to be common causes of diarrheal disease epidemics among displaced populations.⁽¹¹⁾

2.5 Routine Immunization

Immunization is one of the key elements of primary health which has been proven to be a cost-effective public health intervention in reducing morbidity and mortality associated with vaccine preventable diseases.⁽³⁰⁾ Over the past 10-20 years the rates of many childhood infections and deaths from VPDs have significantly reduced worldwide with very rare cases in developed countries and reduced incidence in many developing countries due to successful immunization programs.⁽³⁰⁾

Globally, immunization averts an estimated 2-3 million deaths annually from diphtheria, tetanus, pertussis (whooping cough), and measles; however, an additional 1.5 million deaths could be avoided if global vaccination coverage (The proportion of the world's children who receives recommended vaccines) improves.⁽³¹⁾ Also over 20 million lives have been saved by immunization in the last two decades globally.⁽³¹⁾ More than 100 million infants are immunized each year. Global mortality attributed to measles declined by 78% from an estimated 733,000 deaths in 2000 to 161,260 deaths in 2008 mainly due to the role played by measles vaccination. Polio incidence has declined dramatically by more than 99% since the launch of global polio eradication efforts in 1988 and now four of the six regions of the WHO have been certified polio-free; the Americas (1994), Western Pacific (2000), Europe (2002) and South East Asia (2014). 80% of the world's people now live in polio-free area.⁽¹²⁾

Globally, only three countries remain polio endemic namely; Afghanistan, Pakistan and Nigeria. The number of polio cases worldwide as of 2009 was 1606 and as of May 2010 it reduced to 115 and according to global polio surveillance data from March 9, 2016, 5 wild poliovirus case were reported in Pakistan and 1 wild poliovirus case was reported in Afghanistan in 2016. In 2015, 74 cases of wild poliovirus were reported with 54 from Pakistan and 20 from Afghanistan.⁽¹²⁾ According to WHO, After more than two years of wild polio in Nigeria, three laboratory confirmed wild poliovirus type one (WPV1) cases with onset between July and August 2016 with all the cases detected in Bornu state, among children between 2 and 5 years of age in IDPs, two of which developed acute flaccid paralysis (AFP) while one was asymptomatic, identified as a close contact of a child with AFP therefore, it is important to study routine immunization uptake in IDPs settings in Nigeria as the findings may help in improving the vaccination coverage and attainment of polio free certification in the country.⁽⁷⁾

Immunization services are usually delivered via two main strategies namely routine immunization (RI) and supplemental immunization activities (SIAs). R.I is the regular provision of immunization services to successive cohorts of infants through the administration of vaccines in a scheduled regimen. SIAs are mass campaigns targeting all children in a defined age group with the objective of reaching a high proportion of susceptible individuals. RI are usually provided at fixed post at the health facility and through outreach to remote and hard to reach communities.⁽³²⁾ Achieving high levels of population immunity depends on effective R.I coverage, and the availability of additional vaccines doses during supplementary immunization activities.⁽³²⁾

The immunization schedule recommended by WHO in African countries starts with the BCG and oral polio vaccine (OPV) at birth, followed by DPT, OPV, Haemophilus influenza type b and hepatitis B (HepB) at 6 weeks, 10 weeks and 14 weeks and finally, immunization for

measles and yellow fever is done at 9 months.⁽³³⁾ African countries have made great progress in increasing R.I coverage rates, but the ambitious global immunization vision and strategy coverage goals have not yet been reached. R.I coverage for DPT3 which was used as surrogate for R.I coverage increased dramatically in the WHO African Region from 2000, when DPT3 coverage was 54% to 85% in 2009 and twenty countries reported at least 90% coverage at national level in 2009 as compared to 17 in 2008.⁽³³⁾

Detailed analysis revealed disparities between and within countries. It was estimated that a total of 4.3 million children throughout the region did not receive DPT3 vaccine in 2013 compared with 5.4 million in 2008, and that an estimated 80% of the under-immunized children reside in only 10 countries with Nigeria inclusive.⁽³³⁾ Out of the target population of 32.2million surviving infants in the region in 2013, an estimated 8.2million infants did not receive their DPT3 dose compared with 10.0 million in 2012 and almost 78% of those infants are located in 10 countries including Nigeria.⁽³³⁾

The Nigerian Expanded Program on Immunization (EPI) was initiated in 1979. In an effort to enhance the effectiveness of the program and to meet the global challenges of immunization, the EPI was restructured and was renamed National Program on Immunization (NPI) in 1997. Following the Federal Government Health sector reform, NPI was merged with the National Primary Health Care Development Agency (NPHCDA) in 2007. The mandate of the NPHCDA is to protect children from VPDs through the provision of vaccines, devices and technical supports to the sub national level.⁽³⁴⁾

The NPI is one of the components of Child Survival Programs to address the adverse effects of VPDs globally. NPI was designed to ensure that vaccination facilities are distributed to wider community coverage, using various means such as health education, provision of vehicles, and the cold chain technique etc. Since immunization programs were launched in

low- and middle-income countries worldwide in the mid-1970s, most countries have been using the same standard package of six vaccines which prevent against; Tuberculosis, Poliomyelitis, Diphtheria, Pertussis, Tetanus and Measles. Later, hepatitis B vaccine was added to the list.⁽³⁴⁾

With a view to improving child health, the Nigerian government has introduced pentavalent vaccine into her routine immunization schedule. Pentavalent vaccine is a combination of five vaccines-in-one that prevents Diphtheria, Tetanus, Whooping cough, Hepatitis b and Haemophilus influenza type b, all through a single dose.⁽³⁵⁾ The Pentavalent vaccine replaced the DPT vaccine in Nigeria's routine immunization schedule. In 2014 Pneumococcal conjugate vaccine was introduced into Nigerian EPI program in order to reduce substantially child mortality from pneumococcal diseases that claimed over 170,000 lives of under fives in the country.⁽³⁸⁾ Inactivated polio vaccine (IPV) was introduced nationwide in 2015 in two phases, as part of the Polio End Game Strategic Plan.⁽³⁶⁾ The accelerated introduction of IPV to promote per contact immunogenicity in the security compromised states and IDP camps, through mass vaccination campaigns in June – December 2014 in all LGAs in Borno and Yobe States and 12 vulnerable LGAs in Kano State, provided a good experience for the national scale up.⁽³⁶⁾

The optimum level was recorded by the early 1990s with the country achieving a universal childhood immunization coverage of 81.5% but since then the country has witnessed gradual decline in the R.I coverage mainly due to the collapse of PHC system, poor funding by government and lack of political commitments and ownership.⁽³⁷⁾ The country has since then been putting efforts to improve the coverage with significant achievements although, the coverage is still below the WHO recommendation.⁽³⁷⁾ With the introduction of the new vaccines, the revised routine immunization schedule in Nigeria is therefore as follows; At birth; BCG, OPV0, HepB0, at 6 weeks ;OPV1, Pentavalent 1 and PCV1 at 10 weeks OPV2 ,

Pentavalent 2 and PCV2 at 14 weeks OPV3, Pentavalent 3, PCV3 and IPV and at 9 months Measles, Yellow Fever and Vitamin A (First Dose)⁽³⁸⁾

2.6 Maternal Knowledge of Routine Immunization in Internally Displaced Persons Settlement.

Maternal knowledge of routine immunization as well as its importance has been strongly associated with improved uptake and utilization of immunization services as established by many literatures.^(39,40,41) Available literatures assessed the level of maternal knowledge on immunization mostly at urban and rural communities. Despite the excess risk of epidemics of VPDs among vulnerable populations like IDPs settings, literature search could not find similar studies conducted among such populations in Nigeria;

A cross-sectional study at Kinshasa, Democratic Republic of Congo, revealed that majority of mothers had been informed about immunization but were not clear on the diseases targeted by the EPI.⁽⁴²⁾ In Ethiopia, a mixed community based survey conducted in Sinana district from December 2012 to January 2013 concerning knowledge of mothers on vaccination and VPDs revealed that almost all, 573(97.0%) have ever heard about vaccination with majority of them, 548(95.6%) heard about vaccination from health extension workers (HEWs). Almost all, 579(98.0%) have replied that immunization prevents communicable diseases and 494(83.6%) of them knew VPDs. As far as age at which children will receive BCG vaccine is concerned, 193(43.8%) said at birth, 226(51.2%) at 2 weeks after birth and 21(4.8%) at six weeks for BCG vaccine. Whereas for measles, 362(77.7%) reported at six months, 102(21.9%) at nine months and 2(0.4%) at twelve months. Out of the 518 who knew about when the child should complete the immunization, 509(98.3%) reported the completion of immunization (i.e. before a year).⁽⁴³⁾

Study subjects were also asked for symptoms of VPDs and majority of them, 460(98.1%) reported rash of measles, 452(96.4%) cough and 446(95.1%) paralysis in case of polio.

Overall more than two-third, 421(71.2%) of the study subjects were knowledgeable (have good knowledge) and scored above the mean i.e. 4.95(\pm 1.5 SD); whereas 170(28.8%) were completely non-knowledgeable (poor knowledge) regarding immunization.⁽⁴³⁾

Varying reactions have been reported in rural and urban communities of Nigeria; A cross-sectional study in Owerri, Imo state within south eastern part of Nigeria revealed that, among the participants of the study 62.7% had real knowledge of the importance of immunization and its documentation and 87.5% persons of this group of participants showed their children immunization card at survey data collection period.⁽⁴⁴⁾ Maternal knowledge of the importance of immunization and its documentation was significantly associated with the maternal retention of immunization documentation and the outcome was found to be consistent with the result of other studies that showed association between maternal knowledge of the importance of childhood immunization and full child immunization status.⁽⁴⁴⁾

In Lagos south western geopolitical zone of Nigeria, Awareness of immunization was found to be high but Knowledge of VPDs was poor, it was also found that 10% of the respondents were of belief that only healthy children should be immunized, 2.4% of the respondents reported that immunization were meant for only sick children, 60.6% believed that sick children ought not to be immunized, respondents knew the following VPDs; Measles (75.4%), Whooping cough (15.7%), Diphtheria (13.9%) and 93.2% knew that immunization makes children healthier.⁽⁴⁵⁾

In another cross-sectional house to house survey conducted among 305 mothers of children between 12-59 months in south-south region of the country, 98.0% reported that their children received at least one of BCG, OPV, DPT and measles vaccines and 80.7% of the

children were fully immunized and mothers knowledge of the benefit of immunization among other factors have been found to be significantly associated with full immunization status.⁽⁴⁸⁾

A hospital based cross sectional descriptive study involving 351 mothers/caregivers and their children pair aged 11-23 months attending four major public children's outpatient clinic in Enugu metropolis revealed that 335(95.4%) were aware of routine immunization and 315(89.7%) correctly knew that the main objective of R.I was to prevent specific diseases and knowledge about various VPDs obtainable in the NPI schedule was highest for polio 284(80.9%), followed by measles 272(77.5%) while knowledge for pentavalent and hepatitis B trailed behind with 110 (49.0%) and 150 (42.7%) respectively.⁽⁴⁷⁾

In Awe Local Government Area, Nassarawa state, within the North central geopolitical zone of Nigeria, a cross-sectional survey to investigate factors responsible for missing an immunization opportunity and partial immunization among children less than one year old and found full childhood immunization coverage to be 37.2% (245 of 658), and Maternal knowledge of immunization importance, education, and occupation were found to be significant predictors of full childhood immunization.⁽³⁹⁾

The awareness and knowledge of immunization also varies between urban and rural areas in Nigeria as discovered by some studies; In Danbare Village of Kumbotso LGA in Kano, level of R.I awareness was up to 75% but poor knowledge of VPD and child immunization schedule was established.⁽⁴⁸⁾ Another cross-sectional study conducted in some selected rural and urban communities in the north central part of the country revealed statistically significant differences between rural and urban communities with 65.7% and 80.3% of the rural and urban respondents found to be aware of routine immunization respectively, however no statistically significant difference in good practice of immunization between the communities. There was significant association between respondent age, employment status, mothers educational status and child's immunization status.⁽⁴⁹⁾

2.7 Routine Immunization Uptake Rate in Internally Displaced Persons Settlements

Though, the global routine immunization uptake has remained steady for the past few years and uptake of new and underused vaccines is increasing, during the 2015, about 86% (116 million) of infants worldwide received 3 doses of DPT3 vaccine, protecting against infectious diseases that can cause serious illness and disability or be fatal.⁽³¹⁾ By 2015, 126 countries had reached at least 90% coverage of DPT vaccine though, an estimated 19.4 million infants worldwide were not reached with routine immunization services such as DPT3 vaccine and Around 60% of these children live in ten countries which include; Angola, Democratic Republic of Congo, Ethiopia, India, Indonesia, Iraq, Nigeria, Pakistan, the Philippines and Ukraine.⁽³¹⁾

Factors holding back routine immunization services in the African region include civil unrest, lack of human resources within health ministries and limited funding for routine immunization services.⁽⁹⁾ Despite many challenges a study in Nakuku, the largest low income settlement in Kenya, the various antigens uptake was above the WHO target with up to 76.6% proportion of fully immunized children and only 8.9% PENTA1/PENTA2 dropout rate.⁽⁵⁰⁾

In Nigeria, Effective ways of vaccine wide coverage remain a challenge because accessibility to hard-to-reach areas and emergency situations that leads to internal displacement of people continues to make wider coverage a nightmare and children less than ten years continue to die of vaccine preventable disease because of poor coverage.^(9,56) The coverage values for all the major vaccines for children in Nigeria are still below the 80% level. Furthermore, Nigeria accounted for 14% of incompletely vaccinated children globally in 2011 second only to India that accounted for 32%.^(34, 56) Within the country wide variation was observed among the geopolitical zones and states in full vaccination coverage with 52% of children in the South

East and South-South zones found to be fully immunized, compared with 10% in the North West. Among the states, full vaccination was highest in Imo 62% and lowest in Sokoto (1%).⁽¹⁵⁾

Despite the low routine immunization coverage in Nigeria there has been significant reduction in infant mortality rate over the last decade. Data from the 2013 Nigeria Demographic Health Survey indicated that infant mortality rate was 69 deaths per 1,000 live births which showed decline from 2003 NDHS report of 100 deaths per 1,000 live births and similar trend was observed in under-fives mortality rate which dropped from 199 per 1000 live births to 128 per 1000 live births.^(15,38) However, child mortality rate is lower in urban areas than in rural areas. There is also variation in the mortality rate across the geopolitical zones of the country.⁽¹⁵⁾ The infant mortality and under-five mortality rates are highest in the North East and lowest in the South West.⁽⁵⁶⁾ Inadequate health facilities, lack of transportation to institutional care, inability to pay for services and resistance among some populations to modern health care (such as immunization) are key factors behind the country's high rates of newborn and child mortality and morbidity.⁽⁵⁶⁾

The significant reduction of the infant mortality rate could be attributed to the improvement of vaccination uptake within the country; A comparison of the 2013 NDHS results with those of the earlier surveys shows there has been almost 100% increase in the overall vaccination coverage in Nigeria from 13% in 2003 to current rate of 25%.⁽¹⁵⁾ Despite the significant improvement in the coverage, the current figure is still far from the WHO target. According to WHO/UNICEF estimates, three-dose diphtheria, tetanus, and pertussis vaccine (DTP3) coverage more than doubled, increasing from 29% to 69% during this period.⁽¹⁴⁾

While the 2008 Nigeria Demographic and Health Survey reported that 23% of children 12-23 months have received all vaccinations at the time of the survey. The coverage for polio was

38% for the third dose. Though, there was improvement in the coverage after five years as reported by Nigeria Demographic and Health Survey in 2013 which observed that 25% of the children were fully vaccinated and also vaccination status of children varied with residence (urban or rural) and geopolitical zones and showed that 42.5% of children 12-23 months old were fully vaccinated in urban areas compared to 15.8% in rural areas the coverage was still far below the WHO target.⁽¹⁵⁾

As for uptake of specific vaccines among children age 12-23 months, 51% had received the BCG vaccine, and 42% had received the measles vaccine. While 51% received the first dose of the DPT vaccine, only 38% went on to receive the third dose, reflecting a dropout rate of 25 percent. Although only 47% of children received the recommended polio 0 dose at birth, 77% received the first dose, 70% received the second dose, and 54% received the third dose. The wide difference in DPT and OPV coverage was accounted for by the national and sub-national immunization day campaigns during which the polio vaccine is administered. Overall, only 21% of children age 12- 23 months had received all of the recommended vaccinations before their first birthday.⁽¹⁵⁾

Coverage variability was observed between zones, with South-West and South-East having consistently higher R.I performance while the North-West and North-East have been persistently least performing.^(15,34) A cross sectional descriptive study at Enugu metropolis revealed that the OPV0, OPV3, Pentavalent-1, pentavalent-3 and measles coverage at the time of the survey were 100.0%, 97.2%, 98.0%, 98.6%, 96.9% and 95.4% respectively the dropout rates were as follows; Pentavalent1- pentavalent3 (DPT containing) vaccine was 0.017% while BCG-measles dropout rate was 0.046%.⁽⁴⁷⁾

Most of the available studies in southern parts of the country revealed above national coverage for the routine immunization; in a descriptive cross-sectional survey conducted at Igbora, Oyo State among 503 mothers of under-fives full immunization coverage was 76.9%,

partial 22.4% and not immunized 0.7%. Socio demographic condition was not significant reasons for not immunized: waiting period was reported by 46.1% of respondents to be factors affecting full immunization other factors include payment to private clinics (20.2%) and distance (17%).⁽⁵¹⁾

Another cross-sectional survey that enrolled mothers of 339 children between the ages of 12 and 23 months in Sabongidda community of Edo state using WHO/EPI survey instruments and design revealed 60% full vaccination coverage with 55.5% vaccination document retention rate Mothers knowledge of immunization and use of privately funded clinic were significantly associated with full immunization coverage.⁽⁴⁰⁾

The coverage was found to be poorer in the northern parts of the country; In Awe Local Government Area, Nassarawa state, a cross-sectional survey to investigate factors responsible for missing an immunization opportunity and partial immunization among children less than one year old and found full childhood immunization coverage to be 37.2% (245 of 658).⁽³⁹⁾

While another survey conducted among 12-23 month old children of nomadic population in Akwanga L.G.A of Nassarawa state, only 6% of the surveyed population had been fully immunized with 23.2%, 24% , 24.2%, 12.0%, 29.7% and 27.3% found to had been immunized with BCG,DPT3,OPV3,HBV3, Measles and Yellow fever vaccines respectively.⁽⁵²⁾ It was also observed that only 10% of the respondents had good knowledge while 89.8% had poor knowledge of R.I with other factors affecting utilization of R.I services been child sex, age of respondents, educational level and card retention as only 20.8% had immunization cards.⁽⁵²⁾

A study in 2014 at Awerial IDPs of South Sudan, the uptake of various antigens were found to be 76.2%, 80.8%, 5.8% and 67.3% for BCG, DPT1, DPT3 and Measles respectively. There was high DPT1/DPT3 dropout rate with only 6.4% found to be fully immunized.⁽⁵³⁾

The uptake of the various vaccines has been persistently low in the north eastern region of the country; a recent study revealed that 53%, 47%, 37%, 28% and 36% of the children aged 12-23 months were found to be immunized for BCG, PENTA1, PENTA2, PENTA3 and Measles respectively.

The uptake was poorer in Bauchi state with only 41%, 35%, 25%, 19% and 22% found to be immunized for BCG, PENTA1, PENTA2, PENTA3 and Measles respectively.⁽⁵⁴⁾ Limited information is available on the level of the uptake in the IDP setting within the states. It was reported that immunization activities were generally poor in IDP camps of Jos with 30% proportion of those that were never immunized and 69% had been immunized at least once since arrival in the camp. The commonest vaccines reported to be administered were hepatitis B and polio vaccines even with that only 19.7% of the children had polio vaccine. The study therefore suggested that a lot has to be done about other major VPD such as measles, T.B, Meningitis and Pneumonia this can easily be achieved by strengthening the R.I services among them.⁽⁵⁵⁾

2.8. Routine Immunization Completion Rate among Internally Displaced Persons Settlements

Despite global progress in the use of immunization as a child survival strategy, it was reported that; worldwide, there are still 27 million children who do not receive routine immunization and as a result, vaccine –preventable diseases cause more than 2million deaths and disability every year.⁽⁵⁶⁾ A World Fit for Children goal is to ensure full immunization of children under one year of age at 90 percent nationally, with at least 80 percent coverage in every district or equivalent administrative unit.⁽³¹⁾

Children are considered fully vaccinated when they receive the full doses of the antigens recommended by the revised Nigerian EPI schedule by card plus mother history while Partially/incompletely immunized child is the one that missed one of the vaccines and not

immunized children are those who didn't receive any of the vaccines recommended by the national schedule.⁽³⁸⁾

Nigeria like many countries in the African region is making efforts to strengthen its health system in general and routine immunization services in particular to reduce the burden from VPDs, yet the country still have below optimal coverage as targeted by WHO. Despite systemic weaknesses, the country has made extraordinary progress in improving access to vaccination in recent years.⁽¹⁴⁾ Coverage for all vaccines rose substantially over the 2000-2010 decade though a recent report in 2017, revealed that R.I completion rate among children aged 12-23 months as at the time of the survey was only 23% which is even lower than the NDHS 2013 report, the north eastern region had only 20% completion rate which was slightly more than the 14.1% completion rate that was reported in NDHS 2013 the little improvement could be due to more effort applied towards scaling up the services in the region in order to overcome the negative impact of Boko Haram insurgency which disrupted the services in many areas.

The vaccination completion rate in urban areas in Nigeria which was far greater than that in rural areas was not much different from those observed in socioeconomically disadvantaged populations like IDPs of some countries that experience conflict and insurgency; A cross-sectional study on childhood immunization among IDPs from north Waziristan agency of Pakistan revealed BCG, Pentavalent1, Pentavalent2, Pentavalent3 and Measles vaccines coverage of 30.6%, 27.7%, 26.0%, 26.0% and 27.7% respectively with only 26.3% of the 480 studied children found to be fully immunized and only 2.4% presented R.I card.⁽⁵⁷⁾ The completion rate was found to be higher among IDPs in Iraqi where 37.5%, 52.25% and 10.25% were fully, partially and not immunized respectively.⁽⁵⁸⁾

Another descriptive cross-sectional study conducted to assess routine immunization coverage and the factors behind incomplete immunization in Nyala locality of southern Dafur in 2010 revealed that out of the children that reside in urban areas 72%, 22.3% and 5.7% were found to be fully immunized, partially immunized and non-immunized respectively while in the IDPs camps 47.6%, 47.6% and 4.8% of children assessed were found to be fully immunized, partially immunized and non-immunized respectively.⁽⁵⁹⁾ Though, the coverage was far below their national target but showed significant improvement over the report by the state EPI in 2009 which stated only 7% of the children IDPs camps were found to be fully immunized with inadequate human resources, financial constrain, inadequate information on immunization and insecurity being the major factors identified to be the reasons for the low coverage.⁽⁵⁹⁾ The significant improvement might be attributed to the majors put in place to improve the coverage by the state which included; Acceleration campaigns, increased awareness and improved routine sessions among others. The 2010 study still identified the following as part of the reasons for lower coverage in the IDPs camps; obstacles (e.g. Place of immunization too far and absent of vaccinators), Lack of information about the benefit of the vaccination followed by lack of motivation. The drop-out rates observed was 8.4%, between Penta1 and penta3.⁽⁵⁹⁾

Another descriptive cross-sectional study conducted among 210 mothers and care takers of children aged between 12 months-23 months in resettlement area in 2 IDP camps in southern Uganda namely Nyakivare and Rukinga camps revealed poorer coverage with 37.6%, 56.7% and 5.7% found to be fully immunized, partially immunized and never immunized respectively.⁽⁹⁾ The study further reported more details of vaccine specific coverage as follows; 52.5%, 60.6% and 88.9% received full doses of polio, DPT and measles vaccines respectively. Lack of information was reported among 74% of those who partially immunized

and those who did not immunize their children to be reason for immunization failure other factors identified were lack of motivation and obstacles.⁽⁹⁾

An earlier survey conducted among EI Geneina IDPs camps of Southern Dafur revealed measles vaccination coverage by card evidence of 114/856(13.8%), while 577/856 (67.4%) were vaccinated according to parental history, the difference was found to be significantly high and therefore a cautious interpretation of the findings should be made.⁽⁶⁷⁾ The uptake of measles was found to be up to 75.2% in a study in Khartoum of Sudan. The higher figure could be due to the supplementary immunization activities that were intensified among them.⁽⁶¹⁾

There is paucity of information regarding immunization coverage/uptake rate in IDPs camps within Nigeria, hence the need for this study at this critical moment when efforts are being tailored toward eradication of polio that is still present within the country. The findings may also be helpful in planning programs to improve the situation and facilitate the achievement of wider immunization coverage in the entire country with subsequent prevention of the vulnerable populations from VPDs and their consequences.

In Bauchi state, R.I services were provided in only 40% of the functional health facilities and not on daily basis, in most cases once a week. The immunization coverage in the state was noticed to drop over the years; from less than 9% in 2006 to the 1% in 2008 and 27% of children were found to have never receive any immunization as reported in NDHS 2008.⁽⁶²⁾

Though a recent study revealed 14% completion rate in the state rural and urban communities which is still far below the national average and no study has been conducted to assess the completion rate within the state IDPs hence the need for this study in such disadvantaged populations, the findings of which may provide valuable information for necessary measures to be taken.⁽⁵⁴⁾

2.9 Factors Affecting Utilization of Routine Immunization Services

Factors interacting with poor childhood immunization status are not well known and determinants of childhood vaccination uptake still remain complex. It was observed that trust in government health services, availability, and accessibility of immunization services and social-demographic factors relate to childhood immunization status.⁽³⁹⁾ Supply-related factors are important however, the adequate supply of vaccines does not necessarily translate into children being vaccinated. Existing literatures suggest that factors associated with vaccination uptake and acceptance are even more complex and maternal characteristics, sex of child and birth order of the child, place of delivery and antenatal care (ANC) follow up, wealth index, knowledge about vaccination and place of residence could influence immunization coverage among children.^(39,40)

While poor service delivery, parents who have low levels of education and lack of information about immunization are major reasons for low coverage among children in Nigeria and in northern Nigeria, insurgency, cultural, religious, and socio-political and other contextual factors severely constrain immunization services many other factors may exist in the IDPs settings.⁽⁵⁶⁾ Therefore, for the purpose of this study, the factors can be considered in the following broad classification;

2.9.1 General Factors

Accessibility is an important factor to be considered and a sizeable proportion of Bauchi state population still live below the poverty line while access to qualitative health care services including immunization in rural areas still being far from ideal and it is expected to be worse in IDPs settings.⁽⁶²⁾ A recent vaccine summit in Nigeria highlighted long distance to vaccination posts as a barrier to immunization in rural areas.⁽¹⁴⁾ A study in Edo State, South-South Nigeria, found that a higher percentage of children had full vaccination in a community

where vaccination posts were located (68.4%) than children brought to those posts from other communities for vaccination (53.1%).⁽⁴⁶⁾

An urban area has more people in the high socio-economic class than the rural area, and this has a positive effect on utilization of health facilities including immunization in developing countries; A study on the impact of Shell Petroleum Development Corporation's (SPDC) assistance in the performance of EPI, full immunization coverage and factors responsible for full childhood immunization status in six of the Nigerian Niger Delta states were determined. The researchers applied multi-stage sampling method to select 2,432 children between the ages of 12 and 23 months. WHO/EPI-30 cluster survey form was adapted for data collection. Full immunization coverage among the participants was 68.5% (1,668/2,432), and the main predictor of full childhood immunization was the proximity of the immunization facility to the household.⁽⁶³⁾

The implication here is that spatial constraint is a major issue in the utilization of immunization facilities and decentralization of the facilities may give a helping hand as proximity to the immunization centre has been seen to be associated with full immunization in other studies.⁽³⁹⁾ Proximity to immunization centres can reduce the effort, time and money that will be expended in reaching the facility by patients and also increase knowledge of the immunization program since household near the facility will have greater chances of witnessing activities surrounding the program and probably ask questions and get informed.⁽⁴⁴⁾ Another possible explanation for this could be that visibility of a clinic may attract a parent's attention and/or act as a reminder to the parent of the immunization status of the child.

Rural–urban inequities in immunization coverage are certainly linked to supply-related factors, e.g. accessibility to vaccination facilities, provision of childhood immunization services, and demand-related factors, such as the knowledge and attitude of mothers .⁽⁶⁴⁾The

population of Nigeria is largely rural, and the geographical distance of most rural areas tends to influence the availability and effectiveness of immunization campaigns across the country.⁽⁶⁴⁾ From the NDHS, there have been urban-rural differentials in immunization uptake in Nigeria with fewer children in rural areas being vaccinated compared to those in urban areas. In 2008 NDHS, 38% of children in urban received full immunization compared to their counterparts in the rural areas with 16.2%. Similar trend have also been observed by the 2013 NDHS where the Urban children were found to be almost three times more likely than rural children to receive all basic vaccinations (42.5% versus 15.8%).⁽¹⁵⁾ The major reason for this could be as a result of limited number of facilities in rural areas.

Supply-related factors play significant role in R.I utilization especially in IDPs settings. In a qualitative study, general lack of routine child vaccinations was observed to be one of the factors affecting the utilization of immunization services among respondents in IDP settings of Ukraine. The common practice was that women taking their children for postnatal checkups and immunization found out that there were no vaccines in stock.⁽²⁴⁾ The reasons seemed to be mostly associated with inadequate supply/rupture of stocks due to the poor economic state of the country following the conflict. The process of waiting for vaccines could take from one month to more than a year, and was consistently reported by participants in the FGD conducted in the study. Though, IDPs were not restricted from using health care services within the hosting communities, but equity should always be considered in providing qualitative health care services.⁽²⁴⁾

Poverty is another factor that significantly affects routine immunization system utilization as reported by many literatures. Bauchi state is among the states where over 80% of its population lives below poverty line of less than \$1 a day, 85% of the population are rural with low literacy level and more than 65% classified as very poor. Many economic factors

such as underdevelopment, decline in the standards of living, poverty and the general rate of inflation impact upon the health sector.⁽⁶²⁾

Poverty has been named as a major culprit of low immunization rates. The poorer parents are, the more likely they are to fail to immunize their children, increasing morbidity and mortality and further impoverishing the families and creating a vicious circle.⁽⁶²⁾ In 2008 NDHS, the data revealed that about 53 % of children in the wealthiest households and 5 % in the poorest household were immunized similarly, in 2013 NDHS 58% of children in the highest wealth quantile were fully immunized, as compared with 7% of children in the lowest wealth quantile .⁽¹⁵⁾ This may be due to the fact that children who are from poor homes find it difficult to be reached by the health services and parents may encounter barriers to reach health facility compared to those of better socio-economic status. Even though immunization is free, in some areas people still pay for items such as transportation for health workers attending to patients in hard to reach areas. Such receipt is required to be shown before vaccination takes place. Many are unable to pay these monies and therefore do not present their children for immunization. The failure of governments to address issues relating to poverty and to undertake effective poverty alleviation exercises therefore affects adversely the rates of routine immunization in Nigeria.⁽¹³⁾

Cultural practices play a key role in uptake of routine immunization because the services directly affect the issue of childrearing and child care and these are issues that have a cultural foundation. Certain cultural practices though acceptable for many years, have however, been found to be detrimental to immunization uptake, child survival and development. One such cultural practice which occurs in Yobe State is that a woman should remain indoors for 40 days after giving birth. This prevents her from accessing postnatal cares for herself and immunization services for her newborn.

Hospital delivery has been found to be a significant predictor of child full immunization status in many studies.^(46, 50) In some communities, having babies at home is still the norm. In such situations, the opportunities for immunization, especially the early ones such as BCG and OPV1, given right after birth and six weeks after respectively, may be missed. In some communities, a husband's permission is required in order for a woman, typically the primary caregiver, to leave the house as well as to give any form of medical treatment or obtain any health services for the child.⁽¹³⁾ Bauchi state is not an exception where cultural barriers have been found to be the main bane of many of poor health indices.⁽⁶²⁾ It is very important to understand the cultural beliefs and practices and develop and implement the right kind of engagement, education and other strategies towards improving R.I uptake in IDPs settings.⁽¹³⁾

Nigeria is a very religious country with religion and spirituality permeating all aspects of life. Matters around health, including immunization, are not excluded from this infiltration. Conspiracy theories linking vaccination and fertility control and/or sterilization have been propounded and promoted by religious leaders, particularly in the North including in States with the least immunization coverage rates like Bauchi.

One such theory is that polio vaccination and other vaccines are a part of a western plot to sterilize young girls and eliminate the Muslim population.⁽¹³⁾ Given their influence in Islamic communities, it is not difficult to imagine the significant numbers of parents who have refused to have their children vaccinated as a result of these theories. Even so, many Muslims contend that the Quran is clear that immunization should be undertaken as something beneficial for preserving the life of a child.⁽¹³⁾ The aggressive door to door campaign conducted for polio vaccinations would have also raised suspicions and consternation because "free" things are generally viewed with suspicion especially, while ignoring other life-threatening primary health and sanitary needs and this is not restricted to the North.⁽¹³⁾

The Pfizer trial for Trovan and the deaths reported from that experiment was also a significant factor. Further, the government in its polio drive did not take these factors into consideration; else they would have been more sensitive in seeking informed consent. Nor did they consider the power that religious and traditional rulers wield in certain parts of the country.⁽¹³⁾

The impact of religion can therefore not be understated in discussions about the uptake of routine immunization. However, it can be said that religion often works in concert with other factors rather than alone. This is particularly true when we consider the linkage between Boko Haram, the terrorist group and immunization efforts in the North. The killings of the health care workers who were engaged in immunization drives emphasizes the fact that alienated elements can and will use religion as a basis for taking actions which directly affects and harms lives and properties and hamper public health efforts including routine immunization.⁽³⁹⁾ It emphasizes that religion, however defined should continue to receive attention in the efforts to improve routine immunization rates in certain parts of the country.

In some Christian communities, there are a few sects that hold to the doctrine of non-use of drugs, relying only on one's faith in all circumstances and this extends to immunization of children.⁽³⁹⁾ However, these sects do not have a wide following in the South of the country where Christianity is mainly practiced. Information.⁽³⁹⁾ In some non-Muslim communities with low uptake, religious affiliation has been found not to be statistically significant in whether or not immunization is undertaken or is completed. In such communities, concerns about the safety of immunization, accessibility, long waiting time at clinics and health worker attitudes, proved to be more significant in determining the rates of immunization.⁽³⁹⁾

In sum, it is arguable that most religions in Nigeria do not preclude immunization. However, when rumours concerning vaccine safety and ill effects such as sterilization occur, this can destabilize routine immunization efforts. Religious leaders are a potential force that must be

used for instead of against routine immunization and co-opting them into efforts to improve Nigeria's routine immunization uptake rates is the best way to go. Consistent evaluation of the impact of religious and traditional institutions in immunization and primary health care deliveries should be built into the processes to assure that they still retain the trust of the communities and that their supports are altruistic and for the people and not for their pockets.⁽¹³⁾

2.9.2 Maternal/ Care Givers Related Factors

Characteristics of the Mothers/ care givers are the most known determinant factors of child immunization.

Maternal age has been found to significantly affect routine immunization utilization. It was indicated that children whose mothers were aged less than 30 years were 2.26 times more likely to be fully immunized.⁽⁴⁰⁾ This is contrary to the findings of another study conducted in Nigeria using data obtained from NDHS, where mothers within the age range 35-45 years were found to be more likely to take up vaccination as compared with those in the 15- 18 and 19-34 years age brackets.⁽⁶⁵⁾

Empirical evidence has shown that women's education has a significant relationship with greater health awareness and utilization of health services for themselves and their children with consequent improvement in the general well-being of their children.^(15, 45,61) It improves gender equality and children's access to health services (e.g immunization), education, and is highly connected to the alleviation of poverty among women. For example, scholars over the years have observed that female education improves their earning potential and the standard of living for their own children, as women invest more of their income in their families than men do.⁽⁴⁴⁾ One way in which women's education reduces child mortality is that better-educated women tend to seek better prenatal, post natal care and immunization services for their children thus improving the survival rate of their children.⁽⁴⁴⁾

Maternal education and knowledge of immunization importance, obtaining services from the facility, community stakeholders' support and maternal retention of immunization documentation (immunization card) are significantly associated with full childhood immunization at community level.^(39,40,45,47) A multistage cluster community based survey in IDPs settlements of Khartoum state of Sudan in 2009 found maternal education level to be the only significant positive predictor of childhood full routine immunization.⁽⁶¹⁾

According to NDHS 2013, children whose mothers have more than a secondary education are more likely to be fully immunized than those born to mothers with no education (64% and 7%, respectively).⁽¹⁵⁾ A cross-sectional survey of 265 respondents at Ojo local government area of Lagos which were randomly sampled using multistage random sampling technique revealed significant relationship between women's level of education and full immunization of their children. Specifically, 38.9% of women without any formal education had fully immunized their children compared with 86.9% of women with secondary education. In addition, 90.9% of women who assessed themselves to be average on wealth assessment compared with 45.3% of the poor had fully immunized their children.⁽⁶⁶⁾

Socio-economic status (particularly education and wealth status) of individuals strongly controls the behaviour of individuals and thereby controls health-seeking behaviour and ultimately child survival.⁽⁶³⁾ A study of immunization uptake in Nigeria has found that there is a significant relationship between mothers' income level and the likelihood of full immunization status for their children.⁽⁵⁶⁾ It was noted, for instance, that children of mothers' from the Igbo ethnic group had more than twice the likelihood of receiving full immunization compared to children of Hausa/Fulani/Kanuri mothers because the Igbos have high economic power, which is a characteristic that increases their propensity to migrate from areas with poor economic opportunities into areas with higher economic opportunities, more than most

other ethnic groups in Nigeria. It was concludes that: “Increased socio-economic position increases the likelihood of children being fully immunized.”⁽⁶⁴⁾

Access to health facilities like antenatal care and place of delivery are other factors that are associated with the immunization status of children.⁽⁶⁴⁾ This could be due to the fact that mothers receive information concerning childhood immunization during antenatal clinic sessions, so those in attendance would have opportunities to acquire useful immunization information that will ensure full childhood and maternal immunization status, the same finding was obtained in a study conducted in Enugu were 335(89.7%) of the respondents reported that they knew about vaccination mainly from hospital health education usually when they visited the hospital either for antenatal or other child health clinics and the community had 298(84.9%) fully vaccinated children.⁽⁴⁷⁾

Other Studies also indicate that mothers who attend ANC and give birth at health facility are more likely to fully vaccinate their children as antenatal clinic is a means for women to be aware of immunization program. In across-sectional house-to-house survey conducted among 305 mothers of under fives to explore factors associated with full vaccination in a rural community with two readily accessible vaccination posts in Edo State revealed that 80.7% of the children were fully vaccinated with factors found to be significantly associated with full vaccination status being; A child's birth in a health facility, mother's knowledge of the benefits of immunization, a mother being employed, and a high birth order .⁽⁴⁶⁾

A mixed study on assessment of child immunization coverage and its determinants in Sinana District, Southeast Ethiopia revealed that factors association with completion of child immunization in bivariate analysis were; antenatal care (ANC) follow up, post-natal care (PNC) follow up, mothers/ care givers visit to health institutions for any reason and visit to health facility specifically for immunization but after adjusting for the other variables, only ANC utilization remained statistically significant. Mothers who have utilized ANC during the

pregnancy of the index child were found to be 3.7 times more likely to fully immunize their children than mothers who have not utilized it.⁽⁴³⁾ The finding was supported by the FGDs conducted with the mothers because all discussants believed that visiting health facility during pregnancy and after delivery are very crucial for mothers and their children. The reasons forwarded were: if mother went to the health facility during pregnancy and post-delivery; health professionals would give advice and information on the progression of pregnancy, well-being of baby, alternative place of delivery and what to do after giving birth. Mothers could also be counselled on child immunization and how to feed the new born baby.⁽⁴³⁾

2.9.3 Child Related Factors

Sex of the child can predict the immunization status of the child in societies where gender inequality is prevalent males are more likely to receive full immunization compared to girls, emphasizing cultural attitudes to gender, where male children are often more highly regarded and desired than females. However, it has been stated that the disparity is generally not significant. These gender disparities also affect education. Males in some areas are more likely to have had the opportunity of education than females. Studies have shown that the more educated a mother is the higher the chances that her children would be immunized.⁽¹³⁾ But in a study done in Nigeria in 2009, there was no significant relationship between sex and full immunization status.⁽⁶⁴⁾

Childs birth order could have a close relationship with vaccination coverage. According to NDHS 2013, vaccination coverage decreases as birth order increases, 34 % of first-born children have been fully immunized, compared with 14% of birth order six and above. This contradicts the findings of a study conducted in a rural community in Southern part of the country where it was found that the higher the birth order the higher the likelihood of a child to be fully immunized and the possible explanation given was, successive birth provide

mothers with more knowledge and experience regarding child health and there for become more motivated to complete their children vaccination.⁽⁴⁸⁾ It is therefore important to assess this relationship in the IDP setting.

Studies have demonstrated significant association between the place of delivery and immunization status of a child with those born in health care facilities being more likely to be fully immunized than those born elsewhere.^(46,63,65) Immunization documentation retention has also been established by many studies to be among the factors associated with routine immunization uptake.^(43,44) The card retention rate in Nigeria has been found to be 29% with a higher figure (47%) in South East. In North East only 24% card retention rate was reported and 20% in Bauchi state. Card retention can serve as a reminder to the mother on the scheduling of her child R.I

This study aimed to identify the factors militating against utilization of routine immunization services in IDP camps of Bauchi state. In line with previous studies, it assessed the role of some general factors, maternal characteristics, child characteristics in immunization uptake in the IDP population. In this way, I expect to make a significant contribution to the existing knowledge on child immunization in Nigeria and highlighting these factors can provide a wider range of opportunities for improvement in vaccination coverage in the IDPs settlements and the country as a whole.

2.9.4 Conceptual Frame Work

The famous health belief model which explains why individuals may accept or reject preventive health services like routine immunization was applied in developing the conceptual framework for this study. The model proposes that people will respond best to messages about health promotion or disease prevention when the following four conditions for change exist: The persons believes that he or she is at risk of developing a specific condition, the person believes that the risk is serious and the consequences of developing the

condition are undesirable, the person believes that the risk will be reduced by a specific behaviour change and also believes that barriers to the behaviour change can be overcome or managed.^(67,68)

As highlighted above conflict, violence, communal/ ethno- religious crisis etc are the main causes of internal displacement which render the affected people vulnerable to socioeconomic and health problems that predispose under-fives to epidemics of vaccine preventable diseases and also affect the uptake and utilization of R.I that confound the situation with consequent increase in under-fives mortality.

It is therefore, assumed that for mothers in IDPs camps to take their children for vaccination, they must not only have good knowledge of routine immunization but also should be able to perceive their children susceptibility to vaccine preventable diseases. They therefore, must overcome factors militating against utilization of the R.I services to take actions of allowing their children to benefit from R.I immunization services. However, the vaccine uptake is more likely to be influenced by the general, maternal/care giver and child related factors as established by many literatures, other factors may still exist within the camps which might not be captured by quantitative study alone hence the need to augment the findings with qualitative facts.

The conceptual framework in Fig1 below summarised the interplay of factors that affect immunization uptake for e.g an educated mother is expected to have high perception of threat and susceptibility of her child to vaccine preventable diseases she will therefore apply necessary effort to overcome barriers to accessing the services like distance and cost and eventually complete the schedule for the child.

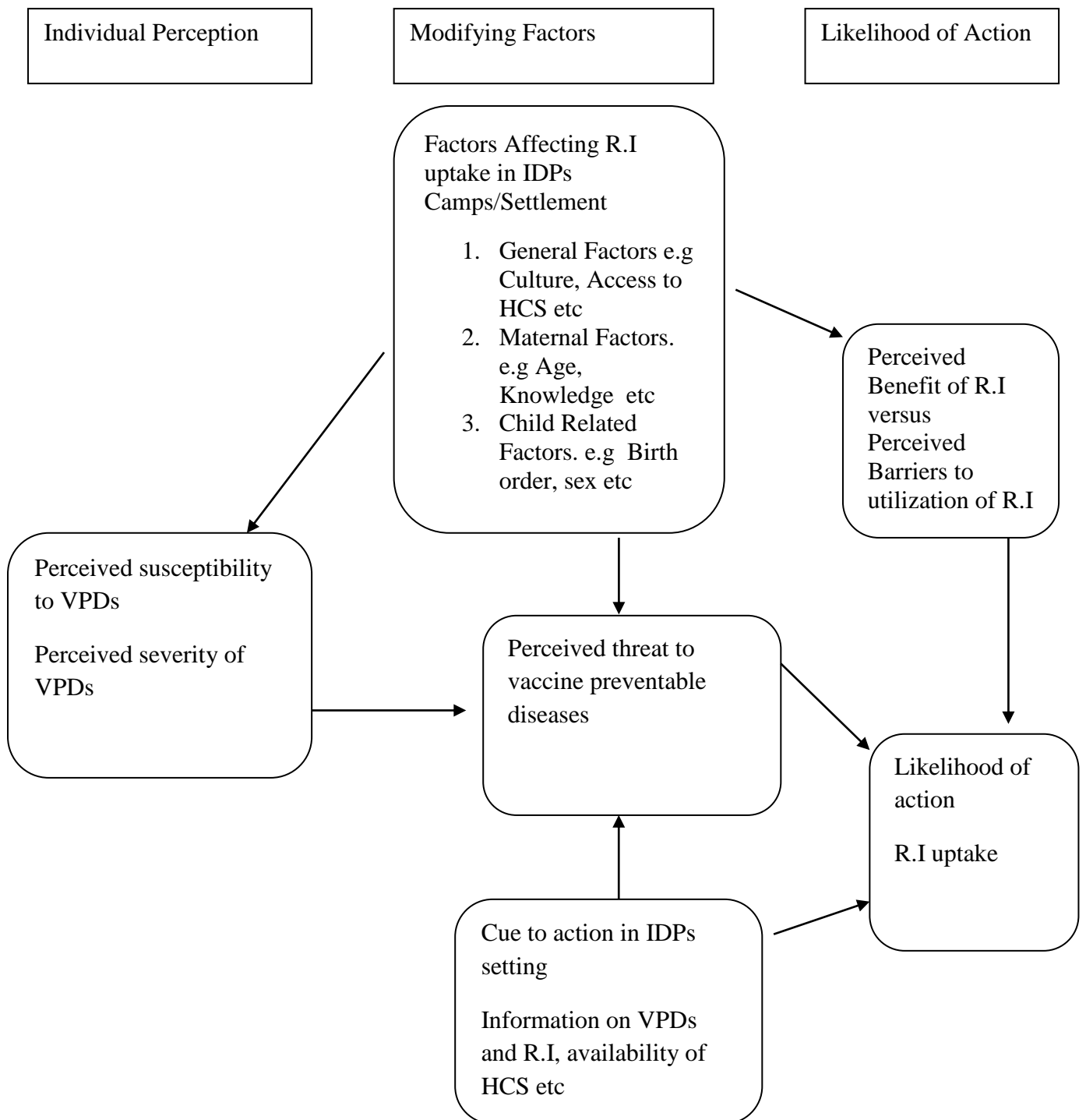


Fig.1 Conceptual Framework of Factors Affecting R.I Utilization in IDP Settings Using Health Belief Model as the Theoretical Background.^(66,67)

CHAPTER THREE

3.0. METHODOLOGY

3.1 Study Area.

Bauchi state had the population of 4,653,066 based on 2006 population census and at population growth rate of 3.4% per annum, it was estimated that by the year 2018, the total population of the state was approximately 6,950,015 people. An important feature of the population distribution is the almost equal distribution of males and females, at 51% and 49% respectively. The population is predominantly young (0-15years) making up to 46%.⁽⁶²⁾

The health system in Bauchi State is based on the National Health Policy. It has 1,002 primary health care facilities at the Local Governments, 22 secondary health-care facilities and three tertiary health facilities then 74 registered private health facilities and several mission hospitals/clinics in the state.⁽⁶²⁾ The State Ministry of Health which provides overall direction for the organization of health services in the state while, aims to reduce morbidity and mortality rates due to communicable diseases to the barest minimum level and meet global targets on the elimination and eradication of diseases and significantly increase the life expectancy and quality of life of its citizens of the state.⁽⁶²⁾

In 2016, it was reported that 75% of health facilities provide minimum health care package according to quality of care standard, 68% of the population having access to essential care package and 40% of births are attended by skilled birth attendants in the state.⁽⁶²⁾ Despite the efforts put in place by both the government and developing partners and important programs like MDGs and SDGs, the most recent analysis revealed worsening of important children health indicators from 109/1000 and 222/1000 infants and under-fives mortality rates respectively in 2010 to 132/1000 and 223/1000 in 2015. Part of the reason for this is low uptake of routine immunization in the state.⁽⁶²⁾

As at 2016, over 70 thousand people within the state are internally displaced population and this puts the state among the significant contributors to the high population of IDPs in North-eastern geopolitical zone and the country as a whole. They stayed in over 120 IDPs settlements which are widely distributed in different communities within the state. There are basically three types of IDPs settlements in the state which include; officially recognized IDP camps, informal camps and host communities, most of them stay in either the informal camps or the community. ⁽²⁾

The type of housing occupied by them put them at risk of contacting many communicable diseases, as most of them occupy incomplete buildings, schools, temporary houses and few of them stayed in donated houses within the communities they also form households within the settlements. The IDPs have a good leadership structure with chairman, woman leader and secretary in every local government and they often conduct monthly meeting to discuss their challenges for possible solution.

Most them stayed for average period ranging from 2 to 5 years in the settlements and this provided some of them the opportunity to engage in economic activities with some earnings. It has been reported that the challenge of the government and other humanitarian agencies in IDPs remains how to provide quality health care both curative and preventive to many under-fives closest to where they live, be it IDPs camps or host communities. However, in Bauchi state most of IDPs utilize the available health care facilities that are closer to their communities where immunization services are also rendered according to the national guideline they are therefore expected to have their children fully immunized.

3.2 Study design

The study design was a cross-sectional descriptive study where a mixed method of data collection was employed (Quantitative and qualitative sequentially)

3.3 Study Population

The study population was mothers/Care givers of under-fives in the internally displaced population camps/settlement of Bauchi state.

3.3.1 Inclusion Criteria for Participants

1. Mothers/care givers of children aged 12-23 months who had lived in the IDP settlements for at least 12 months.
2. Mothers/care givers of children aged 12-23 months that consented for the study and do not have obvious mental illness.

The age range of 12-23 months was chosen to reflect the births in a one-year period corresponding to an annual birth cohort. In addition, the 12months as the lowest age to minimize recall bias by respondent and it is expected that at this age, the child should have completed his/her routine immunization according to the national guideline.

3.3.2 Exclusion Criteria for Participants

1. Mothers/care givers of children that made the inclusion criteria but are seriously sick.
2. Mothers/ Care givers of children that made the inclusion criteria but physically absent during the study.

3.4 Sample size determination

3.4.1 Quantitative Component; Using the formula for calculating minimum sample size for descriptive studies as follows;

$$n = (Z\alpha^2 \times pq/d^2).^{(69)}$$

Where; n= the minimum sample size

Z= Standard normal deviate corresponding to 95% confidence interval, the value obtained from normal distribution table is 1.96

P= proportion or prevalence of variable being measured for referenced previous study

q = Complementary probability (1-p)

d = level of precision or acceptable margin of error for mean being estimated 5% would be used for the study

The most recently reported Proportion of full immunization coverage among children between 12-23 months in Bauchi state is 14%⁽⁵⁴⁾With Z = 1.96, q = 0.86 and d = 0.05, the sample size (n) was calculated as follows;

$$n = (1.96)^2(0.14)(0.86)/(0.05)^2$$

$$n = 185.01$$

DEFF= Multiplying the sample size by 2 (Cluster design effect in conformity with WHO standard)⁽⁷⁰⁾

$$\text{Minimum sample size} = 185.01 \times 2 = 370.02$$

Inflation factor to account for 10% non response rate was calculated as follows;

$$In = \left(\frac{1}{1 - NRR} \right)^{(70)}$$

In= Inflation factor for non response rate

NRR= non- response rate (0.1)

$$In = \left(\frac{1}{1 - 0.1} \right) = 1.11$$

Therefore, the corrected minimum sample size

$$n (\text{corrected}) = 370.02 \times 1.11 = 410.2 \approx 411.$$

3.4.2 Qualitative Component; The sample size per FGD was between the ranges of 7 to 9 participants.

3.5.0 Sampling Technique

Two stage 30 cluster sampling with probability proportionate to size method was applied for the study as follows.^(70,71)

3.5.1. First stage; Clusters selection

The thirty clusters were selected from over 120 IDP settlements within the state as follows;

Step1; The IDPs camps/settlements clusters were listed in a column, each with its population size in the next column, cumulative population was worked out in the next column to obtain the total cumulative size of the population which was divided by 30 (no. of desired clusters) to obtain the sample interval (S.I)

Step2; A random number (R) which has the same digits with S.I was chosen between 1 and the sample interval using random number table.

Step3; First cluster which equals to or exceed R was selected in the cumulative population.

Step4; the subsequent clusters were obtained by adding S.I successively to the first cluster.

3.5.2. Second stage; Households selection

The list of every household in the selected cluster was used and random number table to select the individual households. Eligible children between 12-23 months were selected by moving in one direction till the desired no of children was completed. Selection of the children was carried out according to the 2015 WHO immunization survey guideline that recommends the range of 5-15 respondents per cluster and since the corrected sample size for this study is 411 when divided by 30 it gave 14 respondents approximately per cluster.^(62,70)

The qualitative component was by conducting FGDs among 3 out of the 11 IDPs that were selected by balloting among those that had both low R.I knowledge and completion rate from intra cluster analysis of the quantitative component and 7-9 mothers that were within the reproductive age group were purposively selected as the participants per session.

3.6.0 Instruments of Data Collection

Data on quantitative part was collected using structured interviewer administered questionnaire which was translated into Hausa language (Mostly spoken language by the participants). In the first step, two different translators who speak both English and Hausa, translated the questionnaire from English to Hausa. The second step involved the reverse translation of the questionnaire to English by two other translators that were both fluent in English and Hausa and the result of this was compared with the original English version, repeated discussions between all of the translators and the researcher were carried out in order to ensure accuracy of the questionnaire.

The tool was adopted to include status of vaccination by asking for immunization cards, recall by care givers and checking for BCG scar of children immunized.⁽⁷⁰⁾ Socio-demographic characteristics, care giver's knowledge of immunization and reasons for non-vaccination were also assessed. The survey eventually included two types of vaccination information for each child which include; vaccination history according to the card, vaccination history according to the caretakers recall for any vaccination not recorded on the card.⁽⁷⁰⁾

The qualitative component involved the use of FGD guide with eight discussion guides related to knowledge and factors affecting R.I services domains with each session comprising 7-9 participants that belong mainly to reproductive age group and selected purposively irrespective of whether they took part in the quantitative aspect of the study or not. The

discussion was open ended and it therefore enabled the researcher to probe for further clarification on the two main domains.

3.6.1 Data Collection and Storage

Data collection for the quantitative component was preceded by two days training of four research assistants that are already experienced in administration of vaccines at facilities, two of which are community health extension workers (CHEW) and one community health officer (CHO) then an environmental health officer (EHO), the training also included two supervisors one of which is a medical doctor and the other one a nurse, the researcher also acted as a supervisor and coordinator of the entire process of the data collection .

The data collection tool was pre-tested among 40 participants which approximately equates to 10% of the calculated sample size they have similar characteristics with the main study participants for validation in two of the IDPs settlements that were not selected among the 30 clusters studied, one of them is a rural community and the other one an urban community. Observations from the pretested questionnaire warranted only little significant revision of the tool but none to the data collection protocol or analysis technique.

Focus group discussions were conducted for the qualitative component using FGD guide among some of the participants in the IDPs camps to obtain further details on the following domains; Knowledge of routine immunization and factors affecting utilization of routine immunization services. Each session was conducted among 7-9 participants and lasted between 45-90minutes until both theoretical and data saturations were attained. The discussion was accompanied by note taking and voice recording using a pass word protected recorder and data saturation was attained after conducting three FGDs.

Multiple sources of data were used in obtaining information from the respondents and included; note taking by the moderator and his assistant as well as the audio recorded discussions of the participants during the FGDs that was analysed by tape based analysis approach where by the researcher listened to the tape of the FGDs and created an abridged transcript. The FGD was conducted in their common spoken language (Hausa), two independent translators that are fluent in both Hausa and English translated the transcript from Hausa to English and a harmonized translated transcript was developed by the researcher and the translators.

3.7 Data Analysis

To control errors, in the field completed questionnaires were screened manually for coding errors, completeness and legibility of writing and any error detected were corrected immediately. Data analysis was carried out using statistical package for social sciences (SPSS) software version 21 for windows (IBM Corporation, Armonk, NY, USA). Data was entered and thoroughly cleaned and frequency tables were used to present simple proportions. Relationships between the independent variables and the immunization status were analysed at bivariate level by using chi-square test of association and to control for confounders and address multiplicity effect multivariate analysis was further carried out. Comparison of prevalence/rates within and between IDP camps was performed assuming children are normally distributed across the IDP camps.

Knowledge scoring; Scoring of the routine immunization knowledge questions was determined by giving one point for each correct answer and zero for incorrect answer or for no response. The maximum possible score was 15 for all the knowledge questions and the mean (mean=8) was used as the cut-off for those with good knowledge (value > or = mean) and those with poor knowledge (< mean).^(43,44) Completed questionnaire as well as other information obtained from FGDs was kept under my custody to ensure adequate

confidentiality during and after the completion of data entry and analysis. Data was stored in my password-protected laptop, preventing any unauthorized access.

All hypotheses were tested, with significance judged by 95% confidence interval and $p < 0.05$. The audio-recorded script in the FGDs was transcribed and translated from Hausa to English language then analysed thematically using the three stages of constant comparison method of data analysis.

The R.I system utilization (Dropout rates) was calculated using the following formulae;

1. BCG /Measles dropout rate; the percentage difference in coverage between BCG and Measles (Card + History)
2. Penta1/Measles dropout rate; the percentage difference in coverage between Penta1 and Measles (Card + History)
3. Penta1/Penta3 dropout rate= the percentage difference in coverage between Penta1 and Penta3 (Card + History)

3.8 Ethical Consideration

The protocol for studies on human was strictly adhered to, as stated in Helsinki declaration of 2013, the principles of beneficence, non malfeasance, respect for autonomy and justice were also observed during the study. Ethical clearance was obtained from Bauchi state health research ethical committee in the ministry of health. Permission was obtained from leaders of the IDPs settlements for the study and informed written consent was obtained from each participant after adequate explanation of the reasons for the study as well as the benefits that may be associated with the findings before data collection.

3.9 Limitation of the Study

1. Recall Bias; This might be a limitation of this study because the data on immunization was collected from vaccination cards and in cases where these were not available or a vaccination was not recorded on the card, the mother's recall of vaccination was accepted and this may have affected the results obtained

CHAPTER FOUR

4.0 RESULTS

The questionnaire was administered to 391 participants out of the calculated 420 which is the calculated sample size with response rate of 6.9% the results are presented below;

4.1 Socio-demographic Characteristics of the Respondents.

Table 1: Maternal/ Care-givers Socio-demographic Characteristics in IDPs of Bauchi

| Socio-demographic Variable | Frequency (n) | Percentage (%) |
|---|---------------|----------------|
| Place of Residence (n=391) | | |
| Urban | 171 | 43.7 |
| Rural | 220 | 56.3 |
| Age (Years)(n=391) | | |
| Less than 20 | 16 | 4.1 |
| 20-24 | 91 | 23.3 |
| 25-29 | 115 | 29.4 |
| 30-34 | 108 | 27.6 |
| 35-39 | 42 | 10.7 |
| 40 and above | 19 | 4.9 |
| Highest Level of Education (n=391) | | |
| None | 120 | 30.7 |
| Primary | 119 | 30.4 |
| Secondary | 77 | 19.7 |
| Tertiary | 12 | 3.1 |
| Quranic | 63 | 16.1 |
| Religion (n=391) | | |
| Christianity | 38 | 9.7 |

| | | |
|--|-----|------|
| Islam | 353 | 90.3 |
| Marital Status (n=391) | | |
| Married | 357 | 91.3 |
| Divorced | 23 | 5.9 |
| Widowed | 11 | 2.8 |
| Ethnicity (n=391) | | |
| Hausa | 136 | 34.8 |
| Fulani | 87 | 22.3 |
| Kanuri | 96 | 24.6 |
| Others (Bole,Sayawa,Margi, Jarawa) | 72 | 18.4 |
| ANC attendance with index child pregnancy (n=391) | | |
| None | 96 | 24.6 |
| Once | 49 | 12.5 |
| Twice | 58 | 14.8 |
| Thrice | 59 | 15.1 |
| More than Thrice | 129 | 33.0 |
| Family size (n=391) | | |
| Less than 3 | 17 | 4.3 |
| 3-4 | 99 | 25.3 |
| 5-6 | 107 | 27.4 |
| More than 6 | 168 | 43.0 |
| Estimated Monthly Income (n=391) | | |
| Less than \$57 (N17,413.5)/Month* | 274 | 70.1 |
| Greater than\$57(N17,413.5)/Month | 117 | 29.9 |
| Distance to immunization facility (n=391) | | |
| Less than 5km | 209 | 53.5 |
| More than 5km | 182 | 46.5 |

*World bank international poverty line in 2015 (\$1.9/day) at \$/N exchange rate of \$=N305.5

The proportion of those living in rural settlements which formed 56.3% (n= 220) was found to be more than those in urban areas that accounted for the remaining 43.7% (n= 171) of the respondents, majority of the respondents were between 20-34 years which formed 80.3% (n= 314) with 20-24 years, 25-29 years and 30- 34 years age groups accounting for 23.3%(n= 91), 29.4% (n=115) and 27.6% (n= 108) proportions respectively and the mean age of the respondents was found to be 27.9 years (SD= +/- 5.7), the proportion of those who did not attained any formal education 30.7% (n= 120) was found to be almost the same with those that attained primary school level of education 30.4% (119) and together constituted 61.1% of the respondents with only 3.1% (n=12) found to have attained tertiary level of education.

Majority of the respondents 90.3% (n=351) belong to Islamic religion with 9.7% (n=38) accounted by Christianity and also most of the respondents 91.3% (357) are married, majority of the respondents belong to either Hausa or Kanuri ethnicity which accounted for 34.8% (n=136) and 24.6% (n=96) respectively. Almost 1/3rd of the respondents 33.0% (n= 129) shared that they visited antenatal clinics more than three times during the index child pregnancy however up to 24.6% (n=96) of them had no ANC visit with the child pregnancy.

The family size among the respondents was more than 6 for the majority 43.0% (n =108) and less than 3 for the minority 4.3 % (n = 17). It was observed that the proportion of respondents than earn greater than \$57/ Month (\$1.9/day) income 29.9% (n=117) was lower than those that earn less than \$57/Month (70.1%; n= 274) monthly, the highest monthly income was N25,000/ Month. The distance from household to childhood immunization centre was < 5km for the majority of the surveyed respondents 53.5% (n=238).

Table2; Children Socio-demographic Characteristics in IDP of Bauchi

| Socio-demographic Variable | Frequency (n) | Percentage (%) |
|---|---------------|----------------|
| Sex (n=391) | | |
| Male | 187 | 47.8 |
| Female | 204 | 52.2 |
| Age in Months (n=391) | | |
| 12-15 | 170 | 43.5 |
| 16-19 | 72 | 18.4 |
| 20-23 | 149 | 38.1 |
| Place of delivery (n=391) | | |
| Home | 203 | 51.9 |
| Hospital | 180 | 46.0 |
| Others (TBA home) | 8 | 2.0 |
| Birth order (n=391) | | |
| First | 26 | 6.6 |
| Second | 62 | 15.9 |
| Third | 105 | 26.9 |
| Forth and above | 198 | 50.6 |
| Immunization Facility (n=305) | | |
| Health Care Centres | 185 | 60.7 |
| Hospitals | 120 | 39.3 |
| Immunization Card Availability (n=305) | | |
| No | 202 | 66.2 |
| Yes | 103 | 33.8 |

The proportion of female children 52.2% (n=204) was found to be slightly more than male children 47.8% (n=187), the mean age of the surveyed children was 16.9 months with standard deviation (SD +/- 3.9) and the surveyed respondents who delivered their index babies at an orthodox health facility were 46.0% (n=180) while 51.9% (n=204) were

delivered at home. Most of the surveyed children 50.6% (n=198) belong to fourth and above birth order, most of the surveyed children that were either fully or partially immunized 60.7% (n=185) received their immunization at health care centres and only 33.8% (n=103) of the respondents that had their children either fully or partially immunized presented childhood immunization documentation (immunization cards) for their children while 66.2% (n=277) presented no any evidence of immunization documentation as shown in table 1 above.

4.2: Maternal/Care Givers Knowledge of Routine Immunization.

Table 3: Distribution of the Respondents by Routine Immunization Knowledge

| Question | Response | Frequency (n) | Percent (%) |
|--|------------------------------|----------------|-------------|
| Awareness of Routine Immunization | Yes | 388 | 99.2 |
| | No | 3 | 0.8 |
| Routine Immunization Importance | Agree | 371 | 94.9 |
| | Do not agree | 20 | 5.1 |
| Purpose of Routine Immunization | Correct answer | 281 | 71.9 |
| | Wrong answer(s) | 110 | 28.1 |
| Diseases prevented by Routine Immunization | | | |
| (Mentioned by respondents) | T.B | 165 | 42.2 |
| | Poliomyelitis | 146 | 37.3 |
| | Hepatitis B | 79 | 20.2 |
| | Pertussis | 89 | 22.8 |
| | Tetanus | 60 | 15.3 |
| | Measles | 195 | 49.9 |
| | Yellow Fever | 19 | 4.9 |
| | Age at which child start R.I | Correct answer | 200 |
| | Wrong answer(s) | 191 | 48.8 |
| No of visits required for completion of | | | |
| R.I schedule | Correct answer | 207 | 52.9 |
| | Wrong answer(s) | 184 | 47.1 |
| Ideal age at completion of routine immunization schedule | Correct answer | 233 | 59.6 |
| | Wrong answer(s) | 158 | 40.0 |
| R.I mentioned as a cause of infertility | Yes | 60 | 15.3 |
| | No | 331 | 84.7 |
| Routine Immunization safety | Agree | 341 | 87.2 |
| | Do not agree | 50 | 12.8 |

Table 3 above shows that; With regard to the knowledge of the basic VPDs covered by the national immunization schedule, Measles was the most mentioned disease by the respondents 49.9% (n= 195) followed by T.B, Poliomyelitis, Pertussis, Hepatitis B, Tetanus and Yellow fever that were mentioned by 42.2% (n=165), 37.3% (n= 146),22.8 % (n= 89), 20.2% (n= 79), 15.3% (n= 60) and 4.9% (n= 19) of the respondents in descending order respectively. It is important to also note that Malaria was mentioned among the VPDs targeted by R.I by 29.2% (n=114) of the respondents.

Table 4: Distribution of the Respondents by Routine Immunization Knowledge Score

| Knowledge | Frequency (n) | Percentage (%) |
|-----------|---------------|----------------|
| Good | 249 | 63.7 |
| Poor | 142 | 36.3 |
| Total | 391 | 100.0 |

Table 4 above shows that; Majority of the respondents 63.7% (n=249) had good knowledge of routine immunization with up to 36.3% having poor R.I knowledge.

The R.I knowledge in the IDPs settlements was found to be good for about 2/3rd of the respondents in this study and this could be due to the fact that governmental and non-governmental organizations and necessary stakeholders often inform the IDPs about R.I immunization and their benefit in protecting their children from contacting the VPDs during some sessions of their monthly meetings. Additionally, they often listen to radio programs to obtain information regarding the level of peace in their places of origin in the course of which they get additional information through radio jingles and programs on maternal and child health especially on importance of ANC and routine immunization. However, the knowledge of basic VPDs in the NPI schedules was low which could be due to inadequate information about diseases targeted by the R.I

4.3: Routine Immunization Uptake Rate among the Surveyed Children

Table 5: Distribution of the Respondents by Immunization Uptake

| R.I Antigens | Coverage by Card | Coverage by History | Coverage by Card and History |
|--------------|------------------|---------------------|------------------------------|
| BCG | 114(29.2%) | 191(48.8%) | 305(78.0%) |
| PENTA1 | 149(38.1%) | 100(25.6%) | 249(63.7%) |
| PENTA2 | 129(33.0%) | 80(20.5%) | 209(53.5%) |
| PENTA3 | 103(26.3%) | 70(17.9%) | 173(44.2%) |
| MEASLES | 71(18.2%) | 55(14.1%) | 126(32.2%) |

Table 5 above shows that the coverage by card for BCG, PENTA1, PENTA2, PENTA3 and Measles, among the respondents was found to be 29.2%, 38.1%, 33.0%, 26.3%, 18.2% respectively among the children aged 12-23 months old. However, when combined with the coverage by history the values increased to 78.0%, 63.7%, 53.5%, 44.2%, and 32.2 % respectively.

4.4: Routine Immunization Completion Rates and System Utilization

Table 6; Immunization Coverage among the Children Surveyed

| Immunization Status | Frequencies | Percentages | 95% C.I (%) |
|---------------------|-------------|-------------|-------------|
| Not Immunized | 86 | 22.0 | 16.2-23.8 |
| Partially Immunized | 188 | 48.1 | 41.1-55.1 |
| Fully Immunized | 117 | 29.9 | 23.5-36.3 |
| Total | 391 | 100.0 | |

Table 6 above shows that the proportion of fully immunized children aged 12-23 months (that completed their R.I) among the participants was found to be 29.9% (C.I; 23.5% to 36.3%) while 22.0% (C.I; 16.2 to 27.8) were found to be not immunized. In line with the WHO guideline the immunization access which is assessed using two indicators as (Percentage of children receiving BCG and Penta1) was found to be 78.0% and 63.7% respectively for the BCG and Penta1. The R.I system utilization (Dropout rates) was found to be; BCG /Measles dropout rate of 58.7%, Penta1/Measles of 49.5% and Penta1/Penta3 of 30.6%.

4.5: Factors Affecting the Utilization of Routine Immunization Services among the IDPs

4.5.1: Barriers to Childhood Full Immunization Status

Table 7; Barriers to Full Immunization of the Surveyed Children

| Reasons for not fully immunized | Frequency (n=268) | Percentages (%) |
|---|-------------------|-----------------|
| Lack of Information | 113 | 42.2 |
| a. Unaware of need for immunization | 39 | 14.6 |
| b. Unaware of need to return for 2 nd or 3 rd doses | 15 | 5.6 |
| c. Place of immunization unknown | 7 | 2.6 |
| d. Fear of side reaction | 37 | 13.8 |
| e. Wrong ideas about contraindications | 15 | 5.6 |
| Lack of Motivation | 35 | 13.1 |
| a. Postponed until another time | 21 | 7.8 |
| b. No faith in immunization | 5 | 1.9 |
| c. Others | 9 | 3.4 |
| Obstacle | 120 | 44.8 |
| a. Place of immunization too far | 5 | 1.9 |
| b. Time of immunization inconvenient | 7 | 2.6 |
| c. Vaccinator absent | 15 | 5.6 |
| d. Vaccine not available | 9 | 3.4 |
| e. Mother too busy | 23 | 8.6 |
| f. Family problem including illness of mother | 29 | 10.8 |
| g. Child ill not brought | 7 | 2.6 |
| h. Others (Mainly lack of peace) | 25 | 9.3 |
| Total | 268 | 100% |

The barriers to childhood full routine immunization status are presented in table 7 above. Best answer was considered when multiple responses were mentioned by the participant. Obstacle related factors were the most mentioned by 44.8% (n= 120), followed by lack of information and motivation which were reported by 42.2% (n= 113) and 13.1% (n=35) respectively.

4.5.2: Determinants of Routine Immunization Status among Children in Bauchi State IDP Settlements

Table 8: Factors Associated with Immunization Status at Bivariate Level

| Variable | NFIC (Freq.) | FIC (Freq.) | d.f | X ² -Value | P-value |
|--|--------------|-------------|-----|-----------------------|---------|
| Maternal/Care Givers Residence (n=391) | | | 1 | 12.42 | 0.01** |
| Urban | 104 | 67 | | | |
| Rural | 170 | 50 | | | |
| Maternal Age (years) (n= 391) | | | 5 | 25.08 | 0.000** |
| Below 20 | 12 | 4 | | | |
| 20-24 | 53 | 38 | | | |
| 25-29 | 77 | 38 | | | |
| 30-34 | 94 | 14 | | | |
| 35-39 | 24 | 18 | | | |
| 40 and above | 14 | 5 | | | |
| Maternal Highest Level of Education (n=391) | | | 4 | 27.63 | 0.000** |
| None | 100 | 20 | | | |
| Primary | 79 | 40 | | | |
| Secondary | 41 | 36 | | | |
| Tertiary | 5 | 7 | | | |
| Quranic | 49 | 14 | | | |
| Maternal Religion (n=391) | | | 1 | 6.11 | 0.013** |
| Christianity | 20 | 18 | | | |
| Islam | 254 | 99 | | | |
| Maternal Marital Status (n=391) | | | 2 | 2.57 | 0.281 |
| Married | 247 | 110 | | | |
| Divorced | 17 | 6 | | | |

| | | | | | |
|--|-----|----|---|-------|----------|
| Widowed | 10 | 1 | | | |
| Maternal Ethnicity (n=391) | | | 3 | 11.71 | 0.008** |
| Hausa | 105 | 31 | | | |
| Fulani | 58 | 29 | | | |
| Kanuri | 71 | 25 | | | |
| Others | 40 | 32 | | | |
| ANC Attendance with index child Pregnancy (n=391) | | | 4 | 59.53 | 0.000** |
| None | 83 | 13 | | | |
| Once | 45 | 4 | | | |
| Twice | 47 | 11 | | | |
| Thrice | 38 | 21 | | | |
| More than thrice | 61 | 68 | | | |
| No. of People in the Household (n=391) | | | 3 | 3.49 | 0.323 |
| Less than 3 | 15 | 2 | | | |
| 3-4 | 67 | 32 | | | |
| 5-6 | 72 | 35 | | | |
| More than 6 | 120 | 48 | | | |
| Estimated Maternal Monthly Income (n=391) | | | 1 | 5.770 | 0.0016** |
| Less than \$57 (N17,413.5)/Month | 263 | 11 | | | |
| Greater than \$57 (N17,413)/Month | 105 | 12 | | | |
| Distance to immunization centre (n=391) | | | 1 | 13.38 | 0.000 ** |
| Less than 5km | 130 | 79 | | | |
| More than 5km | 144 | 38 | | | |
| Child Sex (n=391) | | | 1 | 15.91 | 0.000** |
| Male | 113 | 74 | | | |
| Female | 161 | 43 | | | |
| Childs Place of Delivery (n=391) | | | 2 | 36.24 | 0.000** |
| Home | 168 | 35 | | | |

| | | | | | |
|--|-----|-----|---|-------|---------|
| Hospital | 99 | 81 | | | |
| Others | 7 | 1 | | | |
| Childs Birth Order (n=391) | | | 3 | 5.37 | 0.147 |
| First | 14 | 12 | | | |
| Second | 42 | 20 | | | |
| Third | 71 | 34 | | | |
| Fourth and above | 147 | 51 | | | |
| Source of Immunization (n=391) | | | 1 | 4.74 | 0.031** |
| Health Care Centre | 105 | 80 | | | |
| Hospital | 83 | 37 | | | |
| Card Availability (n=305) | | | 1 | 11.28 | 0.001** |
| No | 138 | 64 | | | |
| Yes | 50 | 53 | | | |
| Maternal Knowledge of R.I (n=305) | | | 1 | 62.10 | 0.000** |
| Poor | 145 | 12 | | | |
| Good | 129 | 105 | | | |

N.B; **=Statistically Significant, NFIC = Not fully Immunized Children, FIC= Fully Immunized Children, d.f= Degree of Freedom, χ^2 - Value= Persons Chi-Square Value.

The table 8 above shows that at bivariate level; the statistically significant factors with $p < 0.05$, were found to be; Maternal/ Care givers place of residence, maternal age, maternal highest level of education, maternal religion, maternal ethnicity, maternal ANC attendance with index child pregnancy, maternal income, distance to immunization centre, child sex, child place of delivery, child source of immunization, immunization card availability, and maternal knowledge of R.I. While there was no statistically significant association between children immunization status and Maternal/ care givers marital status, Number of people in the house hold and child birth order.

Table 9: Predictors of Children Immunization Status at Mutivariate Level

| Variable | AOR | 95% C.I (LCL- UCL) | P-value |
|--|------------|---------------------------|----------------|
| Maternal/Care Givers Residence (n=391) | | | |
| Urban | 1* | | |
| Rural | 0.462 | (0.235- 0.905) | 0.024** |
| Maternal Age (years) (n= 391) | | | |
| Below 20 | 1* | | |
| 20-24 | 0.631 | (0.097-4.640) | 0.685 |
| 25-29 | 0.537 | (0.070- 3.806) | 0.516 |
| 30-34 | 0.156 | (0.160-1.136) | 0.065 |
| 35-39 | 1.578 | (0.217-18.874) | 0.537 |
| 40 and above | 0.811 | (0.066-9.582) | 0.856 |
| Maternal Highest Level of Education (n=391) | | | |
| None | 1* | | |
| Primary | 0.928 | (0.356-2.460) | 0.789 |
| Secondary | 1.006 | (0.350-2.895) | 0.887 |
| Tertiary | 1.268 | (0.197-8.179) | 0.577 |
| Quranic | 0.529 | (0.174-1.614) | 0.405 |
| Maternal Religion (n=391) | | | |
| Christianity | 1* | | |
| Islam | 0.699 | (0.214- 2.278) | 0.552 |
| Maternal Marital Status (n=391) | | | |
| Married | 1* | | |
| Divorced | 1.553 | (0.317-7.613) | 0.587 |
| Widowed | 0.271 | (0.023-3.181) | 0.299 |

Maternal Ethnicity (n=391)

| | | | |
|--------|-------|---------------|-------|
| Hausa | 1* | | |
| Fulani | 0.076 | (0.918-5.335) | 0.076 |
| Kanuri | 0.175 | (0.754-4.721) | 0.175 |
| Others | 0.266 | (0.662-4.449) | 0.266 |

ANC Attendance with index child Pregnancy (n=391)

| | | | |
|------------------|-------|----------------|---------|
| None | 1* | | |
| Once | 0.301 | (0.067-1.384) | 0.124 |
| Twice | 1.559 | (0.425-5.712) | 0.503 |
| Thrice | 2.209 | (0.672-7.265) | 0.192 |
| More than thrice | 4.967 | (1.779-13.872) | 0.002** |

No. of People in the Household (n=391)

| | | | |
|-------------|-------|----------------|-------|
| Less than 3 | 1* | | |
| 3-4 | 1.248 | (0.137-11.344) | 0.844 |
| 5-6 | 2.715 | (0.284-25.992) | 0.386 |
| More than 6 | 2.233 | (0.236-21.104) | 0.483 |

Estimated Maternal Income (n=391)

| | | | |
|------------------------------|--------|----------------|----------|
| Less Than \$57(N17,413.5) | 1* | | |
| Greater Than \$57(N17,413.5) | 13.323 | (3.611-49.159) | 0.000 ** |

Distance to immunization centre (n=391)

| | | | |
|---------------|-------|---------------|----------|
| Less than 5km | 1* | | |
| More than 5km | 0.459 | (0.232-0.909) | 0.025 ** |

Child Sex (n=391)

| | | | |
|--------|-------|---------------|-------|
| Male | 1* | | |
| Female | 0.610 | (0.309-1.203) | 0.154 |

Childs Place of Delivery (n=391)

| | | | |
|----------|-------|---------------|---------|
| Home | 1* | | |
| Hospital | 2.463 | (1.188-5.104) | 0.031** |

| | | | |
|--|-------|----------------|---------|
| Others | 1.143 | (0.082-15856) | 0.910 |
| Childs Birth Order (n=391) | | | |
| First | 1* | | |
| Second | 0.676 | (0.165-2.765) | 0.586 |
| Third | 0.430 | (0.106-1.749) | 0.238 |
| Fourth and above | 0.551 | (0.131-2.323) | 0.417 |
| Source of Immunization (n=391) | | | |
| Health Care Centre | 1* | | |
| Hospital | 0.784 | (0.374-1.1647) | 0.521 |
| Card Availability (n=305) | | | |
| No | 1* | | |
| Yes | 2.303 | (1.170-4.536) | 0.016** |
| Maternal Knowledge of R.I (n=305) | | | |
| Poor | 1* | | |
| Good | 2.560 | (1.049-6.246) | 0.039** |

AOR= Adjusted Odd Ratio, **= statistically significant, C.I= Confidence interval, *= Referent

Table 9 above shows that; At multivariate level, it was observed that children from urban settlement had a higher likelihood of being fully immunized than those in rural settlement with AOR: 0.462 (95% C.I: 0.235-0.905). A child with mothers that attended ANC more than three times with his/her pregnancy is 4.967 (95% C.I: 1.779-13.872) times more likely to be fully immunized when compared to those that had no ANC attendance. Maternal monthly income was also found to be a significant predictor as mothers that earn averagely more than 1.9 dollars per day are 13.323(95% C.I:3.611-49.159) more likely to have their children fully immunized when compared to those that earn approximately less than 1.9 dollars per day. Children that are less than 5km away from immunization centre had a higher likelihood of being fully immunized than those that are more than 5km away from the centres with AOR:

0.459 (95% C.I: 0.232-0.909). Hospital delivery was found to be among the statistically significant factors as children delivered in orthodox facilities are 2.463 (95% C.I:1.188-5.104) times more likely to be immunized than those delivered at home. Immunization card availability was also significantly associated with childhood full immunization O.R: 2.310 (95% C.I: 1.196-4.461). Children whose mothers have good knowledge of R.I were 2.560 (95% C.I 1.049-6.246) times more likely to be fully immunized than those whose mothers had poor R.I knowledge. Whereas maternal/care giver's age, highest level of education, religion, marital status, ethnicity and number of people in the house hold then child's sex, birth order and source of routine immunization were found to have no statistically significant effect on childhood immunization status.

4.6: Findings of Qualitative Component

4.6.1; Summary

This report summarises the key findings of the FGDs sessions that were conducted in 3 IDPs settlements selected from nine settlements that had immunization coverage of less than 30% and good R.I knowledge of less than 60% from the quantitative component of the study. Two of the communities were rural (i.e Beli and Jama/Zaranda from Shira and Toro LGAs respectively) and the third is an urban community (Makama S Baki from Bauchi LGA).

Considering the fact that no standard frame work has been preferred for data analysis, in this research constant comparison analysis method was employed in the following stages.

Stage1 (Open coding); the data obtained were chunked into small units by attaching code which acted as describer to each unit.

Stage2 (Axial coding); the codes obtained above were grouped into two categories; those that are related to knowledge domain and those that explained factors affecting R.I uptake in the IDPS settlements.

Stage3 (Selective coding); Themes were which expressed the content of each group were developed. A total of 12 themes were found to give information about the participant's knowledge of R.I and 11 factors were found to affect R.I uptake in the IDPs Settlements.

The analysed data in the various thematic areas were presented below;

4.6.2; Knowledge Domain

Routine Immunization Concept: Majority of the responses from the participants demonstrated good knowledge of routine immunization concept this could be exemplified by some of the verbatim quotes from some respondents below;

A 31 year old urban woman said that; "Routine immunization is a medicine given to protect children from contacting diseases like Tuberculosis, the BCG given and other vaccines reduce the severity of cough when a child contacted such disease".

A 29 year old urban woman said "Routine immunization is a type of medicine provided by doctors and western people to protect children from diseases, because doctors always provide us with health support"

However, some of the respondents had poor understanding of the R.I concept as they mentioned that it is given for prevention and treatment of other diseases than VPDs the following quotes will further give a highlight;

A 32 year old urban woman said that: "R.I is a medicine that prevents children from malaria which tend to be severer in children and pregnant women, it is therefore a good protective measure"

Few among the participants testified that they do not understand the real concept of R.I as quoted from a participant comment that;

A 26year old rural woman said that: "I only took one of my children for immunization therefore I cannot tell what R.I truly means, but there was a time when we had outbreak of measles in our area some health care workers said we should bring our children for the immunization I took my child only then and since then I never take anyone again"

Scheduling of R.I and Dosage: Regarding the R.I schedule and dosage different responses were obtained which revealed that most of them had an idea of the correct time of initiation, completion and how many times a child should be taken to complete the schedule as presented below;

A 40year old rural woman said that: *“What I understand about R.I is it is usually initiated within the first week of child delivery then at one month then after six month and completed at nine month”*

Another 27year old woman said that: *“It is usually started from birth and completed at nine months”*

Some participants shared a wrong initiation time and also shared that a single dose is sufficient to prevent all the VPDs while others mentioned that it is completed at 5 years as quoted below;

A 30year old urban woman said that: *“R.I is effective in protecting children because once a child received a single dose it makes childhood diseases less severe, but if a child is not immunized diseases become serious and sometimes even kills the child or cause a serious complication”*

A 25year old rural woman said that: *“It is usually started after a child rich forty days of life and completed at two years”*

Route of Administration: So many participants had idea of the different routes of vaccines administration this can be seen in the quotations below;

A 27year old rural woman said: *“It is usually given at thigh, and completed at nine months”*

Another 27year old rural woman said: *“.....and it is given through injection or orally”*

Sources of Information on R.I: Many respondents shared that they get enlightened about R.I through radio programs, information sharing between themselves and health care workers especially during ANC sessions below are some statements by respondents to support this observation

A 28year old urban woman said that: *“Mothers often inform others on importance of R.I when they have good experience from utilizing it for their children”*.

A 23year old urban woman said that: *“Before now, when we here about immunization even the common polio we use to hide our children but now that many new diseases are spreading with regular information from radio programs we are more enlighten about R.I benefit in fact we even beg the workers to get our children immunized because sometimes they will say we should go and come back another time, they are tired or give many excuses”*

A 28year old woman said that: *“some people are more enlightened through ANC attendance and therefore immunize their children”*

Importance and Benefits of R.I: While most of the respondents knew the importance of R.I correctly other had poor understanding of their importance as mentioned by some respondents below;

A 30year old urban woman said that: *“Once you are able to complete the immunization schedule the child will be protected against childhood illnesses or prevent the child from severe form of the diseases. It brings quick relief from diseases, but a child suffer more from diseases when not immunized”*

A 30year old rural woman said that: *“It is important because children that are immunized don’t usually contact diseases that are prevented which include measles, T.B and Pertussis”*

Many of the respondents shared that R.I has other benefits apart from diseases prevention, below are some quotations from some participants to back up this statement;

A 28year old urban woman mentioned that: *“It improves child growth and strength;it prevents ear diseases, common childhood diseases, eye diseases. Therefore, it is always advisable to complete the R.I schedule so as to benefit from its importance”*

A 30year old urban woman said that: *“It helps in reducing the cost of buying medications for childhood illnesses”*

Another 31year old rural woman said that: *“We understand that the benefit of R.I is for prevention of children against diseases, so once you immunize your child, God will protect him/her. We also saw its benefit on our children as all those immunized never experience serious complication of any of the diseases because one had pertussis and the other three had measles at a point but all were not seriously affected.....”*

Diseases prevented by R.I: With regard to the VPDs prevented by R.I many responses were obtained with Polio, Measles, Pertussis and T.B being the most mentioned as demonstrated in some quotations below;

A 32year old urban woman said that: *“the diseases prevented by R.I include; Malaria, measles, T.B, Polio”*

A 31year old rural woman also mentioned that: *“It protect children against measles, polio, T.B, Blindness, Malaria, Pertusis”*

Other diseases were also mentioned among the diseases prevented by R.I which are not among the basic VPDs like Malaria and Diarrhoeal diseases etc;

A 24year old urban woman said that: *“It prevents a child from malaria and diarrhoeal diseases”*

Another 40year old rural woman said that: *“Routine immunization protects diseases that comes during hot season like; Pharyngitis, measles, childhood fever and diarrhoea”*

Knowledge of VPDs and their Symptoms: Good knowledge of VPDs symptoms and complications was demonstrated by some participants however other had poor understanding of their symptoms as presented below;

A 30year old urban woman said that: *“Polio (Shan-inna); is the disease that makes children become lame and crippled”*

Another 30year old rural woman said that: *“Polio; causes fever, when it reaches a week or two then it causes either hands of legs paralysis and prevents the child from walking”*

A 25year old rural woman shared that: *“My children experienced the polio so also my relatives’ children but none of them had fever. I can vividly remember that one of them started crying over the night and in the morning he became unable to walk for period up to a week, when we took him to hospital they said he had polio and we were referred to Damaturu specialist hospital, where he was given many medications and he recovered but with some complications because he is still limping”*.

A 29year old urban woman said: *“T.B (Tarin fuka) is contacted by sitting with those that have the disease and causes cough and difficulty in breathing”*

A 30year old urban woman mentioned the classical symptoms of measles she shared:

“Measles (Kyanda); usually cause high fever, cough, red eyes (conjunctivitis) and skin rashes”

With regard to pertussis, a 40year old rural woman shared that: *“Pertussis; causes cough, then vomiting then possibly fainting some even convulse and pass stools and urinate unconsciously and some have bloody discolouration of their eyes”*

Respondents Perception on Routine Immunization Necessity and Safety: Many of the respondents shared that the benefits associated with R.I utilization make it to be necessary for children however some even exaggerated the benefits to the mother as presented below;

A 24year old urban woman said that “.....*because lack of R.I causes make diseases in children to be more serious*”

Another 30year old rural woman said that: “*Routine immunization is necessary because any child immunized will be healthy and develop better than the one that is not immunized*”

However, a 28year old woman shared that: “*I cannot say it is necessary because I truly do not immunize my children because our father in law hates it*”

Various responses were obtained regarding the participants knowledge of the R.I safety as presented below;

A 30year old urban woman said that: “*Sometimes back, people had bad perception on R.I safety and usually say why would the government be providing free medications for some diseases like polio which are hardly seen and abandoning common diseases like malaria, but now people are more enlighten on its benefits hence everyone is rushing for it except in remote villages*”.

According to a 25year old rural woman: “*It only depend on individual view, some think it is safe and useful while others don’t and therefore they don’t care to allow their children benefit from it*”

Another 30year old rural woman said: “*some people believe that R.I has many negative effects on children and therefore will not allow them to be immunized*”

Effectiveness of R.I in Preventing VPDs: Most of the respondents had the believe that R.I is effective in terms of preventing the VPDs this was demonstrated by different kind of experiences they had as presented below;

A 28year old urban woman said that: *“the R.I is truly effective because we have seen its benefit on our children; they hardly come down with measles now”*

A 32year old rural woman said that: *“In our village they don’t allow their children to be immunized but I truly don’t know why but they even hide them, but I think it is effective because even if my child is crying I don’t regret taking him to benefit from the R.I”*

A 30year old urban participant said that: *“Many children also suffered from the recent pertusiss outbreak, which comes with severe cough, vomiting and even the mother suffers from taking care of the affected child. However, most of those affected were not immunized but it was less severe in those that were immunized because hardly do they faint after coughing when compared to the unimmunized children. Therefore, it is even now that we witness it is effectiveness in preventing our children and i feel more confident on R.I and also regrated why i refused to immunized some of my children and many others regrated too”*.

Another 40year old rural woman said: *“R.I is very effective and we witness a lot of its benefits on our immunized children who were not affected by measles but those that were not immunized they were infected and they really suffered”*

Others had the believe that R.I is not effective based on the fact that their children developed the VPDs even when immunized;

A 28year old rural woman said that: *“I only immunize my children when I get chance without knowing whether it is effective or not because I hate embracement in hospital if you do not immunize your child”*.

Previous Experiences/ Adverse Events Following Immunization (AEFI): Different experiences were shared by the respondents on the AEFI, some of which served as motivation factors for them to continue with the schedule while other discouraged them as quoted below;

A 30year old urban woman said: *“I never encounter any side effect on all my children that I immunized except the mild fever sometimes”*

Another 23year old urban woman said: *“I once witness a child that had a serious side effect after receiving the thigh injection I don’t know whether it is from the vaccinator or not but the thigh swollen and started discharging pus eventually he had to be hospitalized and had incision and drainage, a lot of pus was expressed and from then the mother refused to have any of her child immunized and myself I became too afraid”.*

A 28year old urban woman said: *“I also witness similar event of the pus but I think sometimes the health care workers don’t know how to inject properly hence the complications that why some times we are afraid of taking our children for the vaccination especially the injection type”.*

A 33year old rural woman said: *“There was a time my child developed pus over where he was injected but eventually healed”*

Misconception of R.I: So many misconceptions were expressed by some participants some were among the factors that affect R.I utilization especially the free nature of the services;

A 31year old urban woman said that: *“What confuses people is the fact that the medications are free, people thing there is hidden reasons behind it because there are many other diseases affecting them including poverty but why will government keep disturbing them*

about R.I and even make it free especially that polio because it brings alot of misunderstanding between the workers and people”.

Also according to a 31year old rural respondent: *“.....especially in villages they have wrong perception about R.I that it has some negative attribute and therefore so many of them reject it”.*

A 30year old rural woman said: *“I only immunized single child out of my children because the entire family don’t believe in R.I and if do it they often stigmatise you especially the grandfather we even quarrel with him after i took the child for immunization”*

A 30year old rural woman said: *“Like Fulani they don’t like immunization because they hate anything related to westernization because they believe that they will be cheated”*

Significance of BCG Scar: The BCG scar is used by some participants as an indicator to verify whether the vaccination worked or not;

A 32year old urban woman said that: *“I once take my child for BCG but no scar was seen and I thought there was error in giving the injection”.*

Another 32year old urban woman said that: *“when we take our children for BCG and no scar was seen we normally take them back for repeated dose before it appears because the scar gives up a sign that it was done correctly”*

4.6.3; Barriers to Childhood Full Routine Immunization Status.

Fear of Infertility: In this study some of the participants shared that fear of infertility was one of the major misconceptions that stop many people from patronizing R.I services among the IDPs, the following were some quotations from some respondents;

A 30year old urban woman said: *“in our village they don’t allow the children get immunized because we had the believe that it causes infertility and therefore use to hide them”*

A 24year old urban woman said: *“some people believe that when a child receives Polio he will become infertile while some believe that it is main purpose is to reduce children population”*

R.I Perceived as Means of Reducing Population/Contraception and Census: It has been well established that so many Nigerians especially in Northern part of the country are proud to have many children as they significantly contribute to their labour especially in agricultural activities, therefore any attempt to affect this believe will not be accepted by most of them that could be proven by the persistently low contraceptive uptake in the region. R.I was also misconceived to be a means of contraception among some IDPs and mentioned by some participants as quoted below;

A 25year old rural woman said: *“.....in our place they think it helps in family planning therefore they don’t like it”*

A 21 year old rural woman said that: *“some people believe it is a contraceptive means and as such they don’t immunize their children”*

Others had the wrong perception that it was tactically provided by the developed countries to reduce the population of people in Nigeria as shared by one participant below;

A 30year old urban woman said: *“Some people use to say the population of people is very high and the white men want to reduce our population by all means and therefore introduced the R.I and I was so afraid too that is why I refuse to take my twins for the vaccination because I want them to grow and deliver my grandchildren”*

Some people had the believe that R.I is a means of census which was rejected by so many people within the country and also affected the uptake of R.I by some IDPs was said by a participant;

A 27year old rural woman said: *“some people view R.I as a means of census to children and they don’t like it therefore reject the services”*.

Diseases Causation and R.I Rejection by Some Health Care Workers: Some people believe that R.I introduces new pathogens that causes diseases to children and as such they don’t accept the services as shared by some participant that;

A 24year old urban woman said: *“People in our area believe that polio vaccine contributes to the paralysis seen in affected children as such they don’t utilize it.....”*.

A 40year old woman said that: *“Some children develop fever after the injection that make most people to believe that the fever is a sign of another diseases caused by the vaccine therefore some will not go for it again”*

Some health workers do not allow their children to be immunized which also make others to have wrong perception about the R.I services and therefore affect its utilization; an experience of a scenario was shared by a participant below;

A 31 year old urban woman said that: *“Since when I was in Goza (a village in Borno state) there was a woman who said she will fight with the vaccinators if they vaccinate any of her children and she was a health care worker and other women too refused to get their children to be vaccinated including myself because we all said it was harmful that was why she refused it then why should we allow our children to be vaccinated”*

Inability to Remember the Schedule: Some participants forget about the doses schedule and therefore do not complete the R.I as mentioned by a participant below;

A 30 year old urban woman said: *“some mothers do not complete the five doses of the R.I because they often forget the scheduling and get tired*”

Affordability Related Challenges: Financial affordability is a significant factor in determining health care services utilization including R.I, it was shared that lack of economic power which make women vulnerable to financial challenges was among the significant factors affecting their ability to pay for transport to the immunization centres;

A 32 year old woman from a rural settlement shared that *“What discourages most of our people from completing the schedule sometimes is the transport fee to the facility and also the payment for consumables because the immunization centre is too far from our area and we cannot walk to the place additionally we face daily challenges of sustaining life that is why we sometimes neglect the completion. Often time when you ask the father to give you transport fee he refuses and give many excuses that he rather pay for the family feeding”*

Another 29 year old rural woman said that; *“Some people cannot afford payment for their transport to the hospital which is far from our village and as you know we IDPs have alot of financial challenges and we don’t get sufficient support”*

Geographical Accessibility: Some people stay in remote areas which are far from the R.I centres, this affect their ability to access and utilize the services as shared by some respondents;

A 40 year old rural woman said: *“Some people are settled in remote area and don’t have good road network as such they don’t even know what R.I means not to even talk of using it”*

Another 30 year old rural woman said: *“Some immunization centres are far as such some mothers cannot afford taking their children to complete the course”*

Power of Decision Making: Women, especially in northern part of the country are limited when it comes to decision power due to so many factors like gender inequality, poor education and poor financial power as such they often wait for the male to decide for them on most issue including health care some of the respondents reasons for not immunizing their children are supporting are in support of this statement as quoted below;

A 30 year old urban woman mentioned that: *“.....some husbands don't allow their children to be immunized because I know of someone that said he will divorce his wife if she ever takes his child for vaccination”*

Another 32 year old urban woman said that: *“sometimes we even fight with the husbands on immunization of the children because during ANC we are informed about the benefits but when we tell our husbands they refuse”*

A 29 year old rural woman said that: *“some male don't like their children to be immunized, and if you take them to hospital for immunization they always insult you in fact I know of a woman that was divorced because of R.I”*

In some families elders are the decision makers, some of which do not allow children to benefit from the R.I services, this was shared by some participants below;

A 24 year old urban woman said: *“My mother in law does not believe in the R.I therefore she stops us from taking them and some people just don't like to immunize their children but they know about the benefits”*

A 26 year old rural woman said: *“Our grandfather stops us from immunizing our children we therefore only utilize herbal medications for any health related issue”*

Fear of Adverse Event Following Immunization (AEFI)/ Side Effects: Generally, the administration of vaccines may be associated with common local reactions like pain, swellings and redness at the injection site and/or systemic reactions including fever, irritability, drowsiness and rashes which are considered as AEFI. The fear of some AEFI like fever and others that may be attributed to wrong technique especially abscess formation were among the significant factors that affect R.I utilization as shared by some participants below;

A 31 year old urban woman said that: *“Some children get fever after the injections which stops some mothers from completing the schedule”*

Another 27 year old rural woman shared that; *“I once saw its effect that scared me; after my child received the thigh injection, the place swell and kept on increasing in size on account of which I took him to a hospital where it was drained and then he got relief and eventually healed but since then I am afraid of immunization”*

A 35 year old woman from rural settlement said that; *“.....the fever that follows some of the injections in the thigh discourages some parents from taking their children for the services”*

Ante Natal Care Attendance and Life Challenges: Some mothers do not attend ANC services which also affect their ability to utilize R.I services because ANC serve as a means of informing women about the benefits of R.I to their children, the quotation below will further support this statement;

A 29 year old urban woman said that: *“Some mothers don’t go for ANC they are therefore not enlighten as we use to be enlighten during ANC sessions hence they don’t know the benefits and do not take their children for the vaccination”*

Others said that life challenges faced by IDPs significantly affect their ability to patronize the R.I services;

A 23 year old urban woman said that: *“We IDPs are faced with alot of life challenges that make us forget the issue of R.I for the children, with the displacement challenge how someone can be able to complete the R.I schedule? It is not possible”*.

Inadequate Awareness/Information of R.I Benefits: Lack of awareness and inadequate information about the benefits associated with R.I was mentioned by some participants among the factors that affect its utilization;

A 30 year old rural woman said that: *“I never take my child for immunization because I don’t really know what it means”*

Another 28 year old rural woman said that: *“Lack of awareness about the benefits of R.I make some people feel as if the immunization is harmful therefore they don’t take their children for the services but in my own opinion I think it has no negative attribute”*

A 30 year old rural woman said that: *“I never witness side effect that will stop me from taking my child for immunization and I think lack of information and knowledge about the benefit and scheduling of the R.I is what make them avoid the services that is why some children will not be immunized”*

Belief in Supernatural power as causes of VPDs and use of Traditional Medications:

Some respondents still believe in super natural powers as causes of VPDs especially polio that causes paralysis they therefore they often seek for tradition medications before the orthodox and this affect R.I utilization;

A 40 year old rural woman said that: *“Regarding polio; there was a child who had fever with no cause established and he was kept at home and was given traditional medications*

eventually he became unable to use his upper and lower limbs we earlier thought it was due to supernatural power but when we took him to hospital they said it was polio he is currently unable to walk”

A 25 year old urban woman said: *“.....many people prefer to use traditional medication and they do not patronize the R.I services”*

Obstacles and Motivation Related Factors: Obstacles related factors like lack of peace and children illness were mentioned as some factors that affect the R.I services as quoted below;

A 29 year old rural woman said that: *“Lack of peace is one of the serious factors that stop us from completing the R.I to our children”*

A 30 year old rural woman said that: *“Daily activities of IDPs is enough to make us forget the schedule therefore we often forget about completing it and we IDPs have serious challenges as you can testify”*

Absence of vaccinator or lack of the vaccines significantly affects the R.I utilization as mentioned by some participants;

A 35 year old rural woman shared that: *“Sometimes you will take your child to the hospital and the vaccinators are absent and we become discouraged and think that every time you go again you will not see them”*

Another 21 year old rural woman said that: *“Sometimes they say there is no medicine in the hospital and we should go back until they bring it”*

CHAPTER FIVE

5.0 DISCUSSION

5.1 Maternal Knowledge of Routine Immunization among IDPs of Bauchi State.

Maternal knowledge of routine immunization as well as its importance has been strongly associated with improved uptake and utilization of immunization services as established by many literatures.^(39,40,41) In this study it was found that majority of the respondents 63.7% (n=249) had good knowledge of routine immunization which also conform to the findings of the FGDs.

Knowledge of the basic VPDs covered by the national immunization schedule was poor in the quantitative component, because Measles was the most mentioned disease by 49.9% of the respondents (n= 195) followed by T.B, Poliomyelitis, Pertussis, Hepatitis B, Tetanus and Yellow fever that were mentioned by 42.2% (n=165), 37.3% (n= 146),22.8 % (n= 89), 20.2% (n= 79), 15.3% (n= 60) and 4.9% (n= 19) of the respondents in descending order respectively. While the findings from the FGDs revealed that some participants did not only know about the VPDs but also know some of the classical symptoms of some of the diseases however T.B, Measles, Polio, Pertussis and Pneumonia were the only correctly mentioned VPDs in the national schedule. It is also important to note that Malaria was mentioned among the VPDs targeted by R.I by 29.2% (n=114) of the respondents in the quantitative component. This also conforms to the findings of the FGDs and has significant effect in Malaria control program as it can affect the utilization of preventive measures against it.

The findings of this survey conform to those of other studies within the country; A study in Lagos, south western geopolitical zone of Nigeria, awareness of immunization was found to be high but knowledge of VPDs was poor as respondents knew the following VPDs; Measles (75.4%), Whooping cough (15.7%), Diphtheria (13.9%) and 93.2% knew that immunization

makes children healthier.⁽⁴⁵⁾ Almost same result was obtained in Owerri, Imo state within south eastern part of the country where 62.7% of the respondents had good R.I knowledge.⁽⁴⁴⁾ A higher proportion of respondents with good R.I and VPDs knowledge was established in a study at Enugu metropolis which revealed that 335(95.4%) were aware of routine immunization and 315(89.7%) correctly knew that the main objective of R.I was to prevent specific diseases and knowledge about various VPDs was good as polio was mentioned by 284(80.9%), followed by measles 272(77.5%) while knowledge for pentavalent and hepatitis B trailed behind with 110 (49.0%) and 150 (42.7%) respectively.⁽⁴⁴⁾This could be due to the fact that the study was a hospital base survey that provided the respondents with the better opportunity of knowing VPDs more than those in a community based study like this research that was conducted in even more disadvantage populations.

The awareness and knowledge of immunization also varies between urban and rural areas in Nigeria as discovered by some studies; A cross-sectional study conducted in some selected rural and urban communities in the north central part of the country revealed statistically significant differences between rural and urban communities with 65.7% and 80.3% of the rural and urban respondents found to be aware of routine immunization respectively, however no statistically significant difference in good practice of immunization between the communities.⁽⁴⁹⁾

An earlier study in Danbare village of Kumbotso LGA in Kano, revealed up to 78% level of R.I awareness among the participants however with up to 68% found to have poor knowledge of VPDs. ⁽⁴⁸⁾ The finding of the study was also not much different from those conducted in some neighbouring countries in Africa. A cross-sectional study at Kinshasa, Demographic Republic of Congo revealed that majority of mothers had been informed about routine immunization but were not clear on the diseases targeted by the EPI.⁽⁴²⁾

In Ethiopia, a mixed community based survey conducted in Sinana district concerning knowledge of mothers on vaccination and VPDs revealed that almost all, 573(97.0%) have ever heard about vaccination, 579(98.0%) have replied that immunization prevents communicable diseases and 494(83.6%) of them knew basic the VPDs targeted by the EPI schedules.⁽⁴³⁾ Study subjects were also asked for symptoms of VPDs and majority of them, 460(98.1%) reported rash of measles, 452(96.4%) cough and 446(95.1%) paralysis in case of polio. Overall more than two-third, 421(71.2%) of the study subjects were knowledgeable (had good R.I knowledge).⁽⁴³⁾ The high level of R.I knowledge among the participants could be due to the multiple sources of providing people with information on R.I in the countries.

5.2; Routine Immunization Uptake Rate in IDPs Settlements of Bauchi State

In this study the uptake rate of the immunization against basic VPDs targeted by the NPI schedule was found to be declining starting from the first towards the last with coverage by card for BCG, PENTA1, PENTA2, PENTA3 and Measles, among the respondents found to be 29.2%, 38.1%, 33.0%, 26.3%, 18.2% respectively. However, when combined with the coverage by history the values were found to be 78.0%, 63.7%, 53.5%, 44.2%, and 32.2% respectively. Similar observation was made in NDHS 2013 for coverage of specific vaccines among children aged 12-23 months where 51% had received the BCG vaccine, and 42% had received the measles vaccine.⁽¹⁵⁾

A study among Awerial IDPs of lake state in Sudan, the BCG, DPT1, DPT3, AND Measles uptake were found to be 76.2%, 80.8%, 5.8% 67.3%.⁽⁵³⁾ Similarly in another survey conducted among 12-23 month old children of nomadic population in Akwanga L.G.A of Nassarawa state which revealed that 23.2%, 24% , 24.2%, 12.0%, 29.7% and 27.3% were found to had been immunized with BCG,DPT3,OPV3,HBV3, Measles and Yellow fever vaccines respectively.⁽⁵²⁾ This could be due to the migratory nature of the nomadic which at a

point give them opportunity to vaccinate their children and sometimes lack access to such services.

The uptake of routine immunization among IDPs from north Waziristan agency of Pakistan were found to be; 30.6%, 27.7%, 26.0%, 26.0% and 27.7% for BCG, Pentavalent1, Pentavalent2, Pentavalent3 and Measles respectively.⁽⁵⁷⁾ Another study conducted in 2 IDP settlements of Uganda the proportion of those that received Polio, DPT1 and Measles vaccines were found to be 52.5%, 60.6% and 88.9% respectively.⁽⁹⁾ In a study that compared uptake of the various antigens among IDPs in Iraqi before and after displacement, significant increase in uptake was observed after displacement with BCG,PENTA1, PENTA2,PENTA3 and Measles uptake found to be 46.2%,21.5%,16.5%,7% and 24.25% respectively before displacement and 58.5% ,77.5%,73%, 71.3% and 51.1% respectively after displacement. The upsurge in the uptake was due to the fact that the IDPs had intervention by many organizations after the displacement some of which included R.I as part of their mandate and the camps there were of official type which has been found to always comply with directives of supporting organizations as compared to informal types. ⁽⁵⁸⁾

The progressive decline in coverage towards the measles vaccine in this study could be partially explained by barriers established in the study to hinder the completion of the R.I schedules as highlighted further in the barriers discussion session below where lack of information about the need to complete the schedule, obstacles and lack motivation were mentioned by some respondents that did not have their children fully immunized among the population. The high proportion of those with poor R.I knowledge especially on VPDs which is a significant predictor of childhood R.I uptake could also be another reason.

5.3 Routine Immunization Completion Rate in IDP Settlements of Bauchi.

The proportion of fully immunized children (that completed their R.I) among the participants was found to be 29.9% (C.I; 23.5% to 36.3%) while 22.0% (C.I; 16.2 to 27.8) were found to be not immunized. These figures are better than the coverage for all the vaccines in Bauchi state that was recently reported to be 14% in 2017 and that of the north eastern region and the country as a whole where the proportion of fully immunized was reported by NDHS 2013 to be 14.1% and 25% respectively. The coverage was still far below the WHO target of 90% in every district and 80 in the whole country.⁽¹⁵⁾Coverage variability was observed between zones, with South-West and South-East having consistently higher R.I performance while the North-West and North-East have been persistently least performing within Nigeria.^(15,34,39,40,47,51)

The vaccination completion rate in this study was not much different from those observed in IDPs settlements of some countries that also experience conflict and insurgency; A cross-sectional study from north Waziristan agency of Pakistan revealed that 26.3% of the 480 studied children found to be fully immunized⁽⁵⁷⁾ Another descriptive cross-sectional study conducted to assess routine immunization coverage and the factors behind incomplete immunization in IDP settlements of Nyala locality of southern Dafur, 47.6%, 47.6% and 4.8% of children assessed were found to be fully immunized, partially immunized and non-immunized respectively.⁽⁵⁹⁾

Another descriptive cross-sectional study conducted among 210 mothers and care takers of children aged between 12-23 months in resettlement area in 2 IDP camps of southern Uganda namely Nyakivare and Rukinga camps revealed that 37.6%, 56.7% and 5.7% found to be fully immunized, partially immunized and never immunized respectively.⁽⁹⁾ Another study conducted among EI Geneina IDPs camps of Southern Dafur revealed complete vaccination

coverage by card evidence of 114/856(13.8%).⁽⁶⁰⁾ An earlier study in Khartoum state IDPs of Sudan in 2009, up to 75.2% were found to be fully immunized. This was due to the high level of R.I card retention among the participants as up to 86% of them presented the card. ⁽⁶¹⁾

The low completion rate of the R.I schedule in this study could be partially explained by some socio-demographic characteristics and barriers especially the high proportion of those with poor R.I immunization knowledge which significantly determine the uptake as established by many studies including this and many other factors as discussed below. The coverage was higher than the state figure as reported by NICS 2017 which could be due to the constant reminder by different organizations like IOM to the IDPs population about the higher risk of VPDs among them considering their peculiar disadvantages as compared to other populations and therefore improving their knowledge as well as the utilization of the routine immunization services.

5.4 Factors Affecting the Utilization of Routine Immunization Services

5.4.1. Barriers to Childhood Complete Immunization in IDPs of Bauchi State

Among the main barriers to full immunization of children in the IDP settlements as mentioned by the respondents that did not have their children fully immunized according to the national schedule in this study, Obstacle related factors were the most reported reasons as mentioned by 44.8% (n= 120), followed by lack of information and motivation which were reported by 42.2% (n= 113) and 13.1% (n=35) respectively. The findings also conformed to that of the FGD as some participants mentioned a lot of obstacle related factors as barriers to childhood full immunization status among the children in the IDPs settlement. In Igbora, Oyo state, long waiting period (obstacle) was reported by 46.1% of respondents to be factors affecting full immunization other factors include payment to private clinics (20.2%) and distance (17%) both of which are also obstacle related.⁽⁵¹⁾

In a Uganda IDPs study lack of information was reported among 74% of those who partially immunized and those who did not immunize their children to be reason for immunization failure other factors identified were lack of motivation and obstacles.⁽⁹⁾ In IDPs within Nyala locality of southern Dafur, the following were identified as part of the reasons for lower coverage in the IDPs camps; obstacles (e.g Place of immunization too far and absent of vaccinators), Lack of information about the benefit of the vaccination followed by lack of motivation.⁽⁵⁹⁾

5.4.2 Predictors of Routine Immunization System Utilization in Bauchi State IDPs Settlements

In this study it was observed that children in rural with AOR: 0.462 (95% C.I: 0.235-0.905), are less likely to be fully immunized than those in the urban settlements. This is in conformity with most other researches findings. ^(15,39,40) This could partly be explained by the fact that an urban area has more people in the high socio-economic class than the rural area, and this has a positive effect on utilization of health facilities including immunization especially in developing countries. It could also be as a result of limited number of facilities in rural areas as compared to the urban areas.

Rural–urban inequities in immunization coverage have also been linked to supply-related factors, e.g. accessibility to vaccination facilities, provision of childhood immunization services, and demand-related factors, such as the knowledge and attitude of mothers.⁽⁶⁴⁾ The population of Nigeria is largely rural, and the geographical distance of most rural areas tends to influence the availability and effectiveness of immunization campaigns across the country hence the lower coverage in the rural than urban settlements.⁽⁶⁴⁾

Antenatal care attendance was found as one of the main factors associated with R.I uptake in this study as those that had more than three ANC visits with index child pregnancy were

4.967 (95% C.I: 1.779-13.872) times more likely to have them fully immunized than those that had no ANC visit similar observation was also made in the qualitative component where some participants said ANC serve as the a means they get informed about the benefit children immunization. Previous studies also discovered that access to health facilities like antenatal care and place of delivery are among the factors that are associated with the immunization status of children.^(47,64)

A mixed study on assessment of child immunization coverage and its determinants in Sinana District, Southeast Ethiopia revealed that factors association with completion of child immunization in bivariate analysis to be ; antenatal care (ANC) follow up, post-natal care (PNC) follow up, mothers/ care givers visit to health institutions for any reason and visit to health facility specifically for immunization but after adjusting for the other variables, only ANC utilization remained statistically significant in multivariate analysis. Mothers who have utilized ANC during the pregnancy of the index child were found to be 3.7 times more likely to fully immunize their children than mothers who have not utilized it.⁽⁴³⁾

The finding was supported by the FGDs conducted with the mothers because most of the discussants believed that visiting health facility during pregnancy and after delivery is very crucial for mothers and their children. The reasons forwarded were: if mother went to the health facility during pregnancy and post-delivery; health professionals would give advice and information on the progression of pregnancy, well-being of baby, alternative place of delivery and what to do after giving birth. Mothers could also be counselled on child immunization and how to feed the new born baby.

This finding could be due to the fact that mothers receive information concerning childhood immunization during antenatal clinic sessions especially the forth visit, so those in attendance would have opportunities to acquire useful immunization information that will ensure full

childhood and maternal immunization status. Antenatal clinics also create a platform where mothers and health care workers interact at personal level. The interaction provides mothers with more confidence and trust in health care workers due to established rapport, leading to a strengthened provider- women relationship. Therefore, such mothers are more likely to take their children for immunization as compared to those who never attended ANC sessions.

Maternal income was also found to be a significant factor as mothers that earns more than 1.9 Dollars per day (\$57/Month) which is considered above poverty line according to world bank, are 13.323 (95% C.I:3.611-8.159) more likely to have their children fully immunized when compared to those with less than 1.9 Dollars per day. This could be explained by findings from other studies that revealed Socio-economic status (particularly education and wealth status) of individuals strongly controls the behaviour of individuals and thereby controls health-seeking behaviour and ultimately child survival. A study of immunization uptake in Nigeria has found that there is a significant relationship between mothers' income level and the likelihood of full immunization status for their children. ⁽⁶³⁾ It was noted, for instance, that children of mothers' from the Igbo ethnic group had more than twice the likelihood of receiving full immunization compared to children of Hausa/Fulani/Kanuri mothers because the Igbos have high economic power, which is a characteristic that increases their propensity to migrate from areas with poor economic opportunities into areas with higher economic opportunities, more than most other ethnic groups in Nigeria. ⁽⁶⁴⁾ Insufficient monthly income can affect the IDPs affordability to pay for transport and other necessary consumables as mentioned by some participants in the qualitative aspect of this study.

It could also be explained that women that have some form of income may be willing to spend more for their children health and also pay for transport to the facilities to access R.I services for their children unlike those that do not have income as they often rely on what the husband provides and often wait for their decisions regarding the child's health.

Distance to health facility was another determinant of childhood full routine immunization status as established in both components of this study where children that are less than 5km away from immunization centre had a higher likelihood of being fully immunized than those that are more than 5km away from the centres with AOR: 0.459 (95% C.I: 0.232-0.909) in the quantitative aspect. The findings conform to those of other previous studies in Nigeria.^(46,63) The possible explanation behind this finding is, proximity to immunization centres can reduce the effort, time and money that will be spent in reaching the facility by patients and also increase knowledge of the immunization program since household near the facility will have greater chances of witnessing activities surrounding the program and probably ask questions and get informed.⁽⁴⁴⁾ It is important to also note that, visibility of a clinic may attract parent's attention and/or act as a reminder to the parent of the immunization status of the child.

Hospital delivery was also found to be among the statistically significant factors as children delivered in orthodox facilities are 2.463 (95% C.I: 1.188-5.104) times more likely to be immunized than those delivered at home. Similar findings were obtained in other studies.^(46,64) The reason behind this is of course obvious as hospital delivery provide avenue for mothers to be well informed about R.I and also they are encouraged to bring their children for the services it also give the health care workers opportunity to provide BCG and the first doses of other vaccines given at birth.

Immunization card availability was also significantly associated with childhood full immunization AOR: 2.303 (95% C.I: 1.170-4.536). The finding is similar to that of another research which also observed that mother that retained their children immunization documentation were 2.3 times more likely to have their children fully immunized when compared to the one with no documentation.⁽⁴⁴⁾ In Edo state, a study revealed 55.5% vaccine documentation retention rate together with R.I knowledge were found to be significant

predictors of childhood full immunization and use of private clinics was found to help in increased retention. ⁽⁴⁰⁾ This could be due to the fact that immunization document retention serves as a reminder to the parents on next appointments therefore reducing the possibility of missing doses and also can serve as a motivation factor for mothers to improve their utilization of the R.I services as established in many studies.

Good routine immunization knowledge was a positive predictor of children full immunization status in this study as children whose mothers have good routine immunization knowledge were 2.560 (95% C.I 1.049-6.246) times more likely to be fully immunized than those whose mothers had poor R.I knowledge. The finding here conforms to those of other studies that also reported maternal knowledge of routine immunization as well as its importance has been strongly associated with improved uptake and utilization of immunization services.^(39,40,41) Similar information was obtained in qualitative aspect where some participants mentioned that lack of knowledge of R.I importance is also behind low utilization of the services.

One could explain that knowledge is a significant motivation factor in promoting the uptake of any health services as it guides an individual to make informed choice and decision however it is not always that good knowledge translates to good practices but most of available researches showed that having good knowledge of routine immunization and VPDs increases perceive threat and susceptibility to VPDs and therefore, parents will strive to overcome any barrier for their children to benefit from such a preventive measure.

Whereas maternal/care giver's age was not found to be significant in contrary to the findings of NDHS 2013 where mothers of 35-45 age group were found to higher likelihood of immunizing their children than other age groups.⁽¹⁵⁾ Other factors that have been mentioned by participants during the FGDs in this study which have not been explored in the

quantitative aspect were fear of AEFI. This finding is similar to those of another study in Sinna District of Ethiopia where fear of AEFI was found to be major factor affecting R.I completion in the FGD.⁽⁴³⁾ Misconception was also among the factors identified during the FGDs sessions as some of the participants had the believe that R.I cause new diseases and infertility. Others still consider R.I as a means of reducing human population by white people

Maternal highest level of education in this study is also not a significant determinant of childhood full immunization status unlike the findings of other studies and also the report by NDHS 2013 which observed that women of post-secondary school level of education had higher likely hood of having their children fully immunized.^(15,44) So also in a multistage cluster community based survey in IDPs settlements of Khartoum state of Sudan where the only predictor of childhood full immunization status was maternal education level. ⁽⁶¹⁾ In Kosafe of Lagos higher maternal level of education was also found to be significantly associated with childhood full routine immunization status.⁽⁴⁵⁾

Maternal religion was also not a significant factor and the finding is contrary to those of another study in a given society where religion was found to statistically affect routine immunization uptake. ⁽³⁹⁾ Christian religion was found to be a significant predictor of children R.I status in a descriptive cross-sectional study in Kosafe of Lagos. ⁽⁴⁵⁾

Lack of maternal power of decision making was among the identified factors in the FGDs to affect R.I utilization and in some families, elders are the decision makers, some of which do not allow children to benefit from the R.I services as shared by some participants. This therefore means women empowerment to take decision about their children health may significantly help in improving R.I uptake among such communities and also elders and male partners should be targeted in R.I campaigns.

Maternal marital status, ethnicity and number of people in the house hold were also found to have no statistically significant effect on R.I uptake in this study. Among the child related factors, child's sex, birth order and source of routine immunization were found to have no statistically significant effect on childhood immunization status. These findings are contrary to those of other studies; A study done in Nigeria in 2009 reported similar findings with regard to the child's sex as it was observed that there was no significant relationship between sex and full immunization status. ⁽⁶⁴⁾

According to NDHS 2013, vaccination coverage decreases as birth order increases, 34 % of first-born children have been fully immunized, compared with 14% of birth order six and above this finding is contrary to the findings in this study. ⁽¹⁵⁾ Child birth order was found to be a significant predictor of routine immunization status in a rural community of south-south region of Nigeria, it was established in the study that with successive births, mothers become more motivated to complete vaccination of their children. ⁽⁴⁶⁾

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

In conclusion, majority of the respondents have good routine immunization knowledge (63.7%) however with poor vaccine preventable diseases knowledge and the result agreed with the FGD findings. The uptake of various antigens covered by the national RI schedule was found to be fair but below the set targets of 90% for each antigen with an observed progressive decline from BCG towards Measles uptake. The proportion of fully immunized children was found to be low (less than one third) and a big chunk (22%) was not immunized at all. Being from urban settlement, ANC more than three times, care givers' monthly income, living less than 5km away from R.I centre, R.I card availability and good R.I knowledge were the only positive predictors of full immunization among the children after conducting multivariate analysis. Other factors affecting R.I utilization explored in the FGD included; misconception on R.I, fear of AEFI, fear of infertility, lack of accessibility and affordability etc.

6.2 Recommendations

1. There is need for Bauchi state government to employ more strategies of improving the R.I uptake among the IDPs which are already socioeconomically disadvantaged with a lot of risk factors that favor the VPDs epidemics. Some of the strategies may include; provision of sufficient vaccines via establishment of mobile R.I services post which could also help in addressing some of the barriers to accessing the services both financially and distance wise as established in this study, every organization providing relief and other necessary support to the IDPs should be negotiated with to consider including R.I immunization as part of its mandates etc

2. Sustainable and frequent community awareness campaigns should be organized by the Bauchi state ministry of health in collaboration with the primary health care development agency on importance of R.I, retention of its card and therefore need for completion of the schedule for every child which can be achieved by organizing outreaches that involve active engagement of the IDPs leaders, health education and promotion to the mothers in the various communities and also the use of radio programs to enlighten people as it serves as one of the major means of obtaining information by the respondents. This avenue can also be used to clear some people misconceptions on R.I which in turn may help significantly in scaling up both the routine immunization knowledge and also its uptake
3. There is need for Bauchi state government and other organizations through the state ministry of labor to develop strategies of poverty alleviation among women in the IDPs settlements which can be achieved through establishment of skills acquisition centers specifically for them so as to acquire necessary skills and engage in economic productivity with the aim of improving their financial capability which may help them to overcome barriers to accessing the R.I services financially. This may also help in empowering them to take more positive decisions regarding children health including immunization.
4. Antenatal attendance and hospital delivery which have been strongly associated with R.I uptake should be encouraged among mothers in IDPs by health care workers and other nongovernmental organizations that render services to IDPs which can be achieved during their monthly meeting and outreaches. This provides women with opportunity to be well informed about the benefits of R.I, improve their knowledge of VPDs as well as utilization of the services.

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APPENDIX A

Interviewer Guide on How to Obtain the Details of Child R.I Status

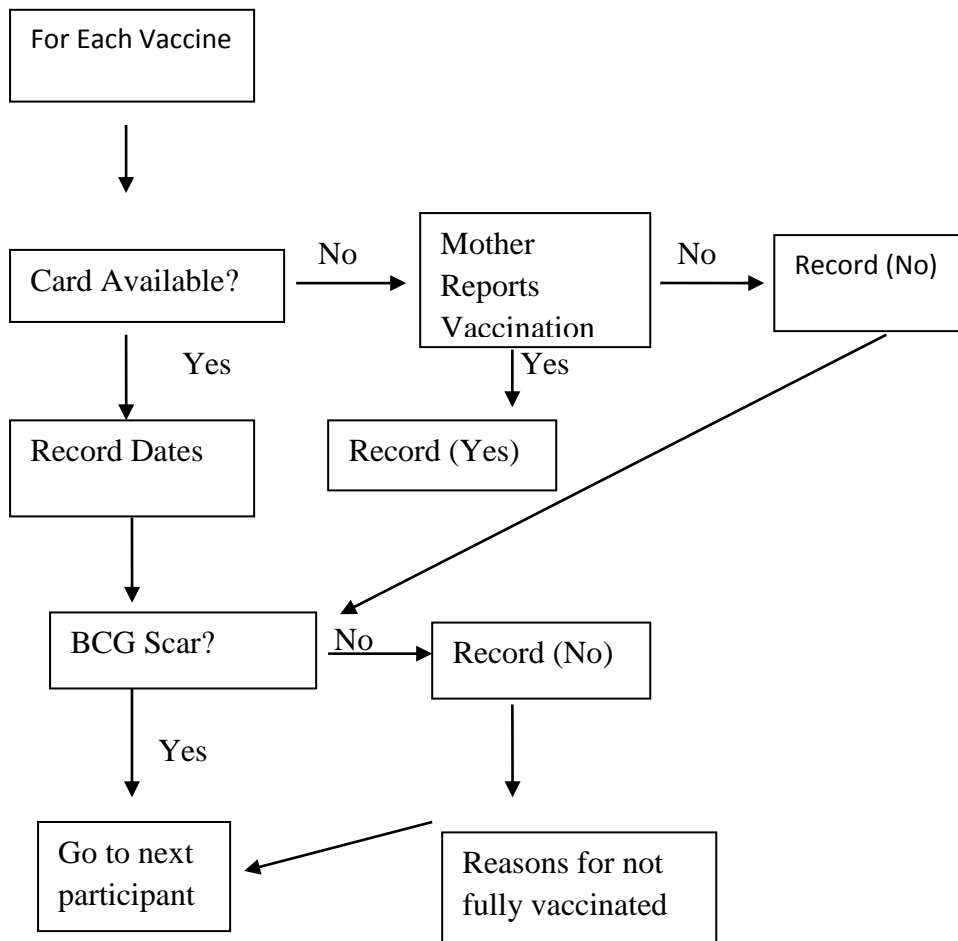


Figure2. Logical Flow Chart for Administration of Questionnaire to the Respondents.⁽⁷⁰⁾

APPENDIX B

Informed Consent Form

Dear Respondent,

My name is Abubakar Magaji, a student of Bayero University, Kano, studying masters in public health. I am conducting a study on determinants of routine immunization uptake among children aged 12-23 months in IDPs settlements of Bauchi state.

Your household was selected for the study and I would like to ask you some questions related to routine immunization of your child. The questions usually take about 15 to 20 minutes. All of the answers you give will be confidential and will not be shared with anyone other than members of the research team, so please feel free to answer correctly and honestly as much as you can. There is no way any answer you give will be traced back to you and no information that can identify your person will be asked. Filled form will be stored in a locked cabinet for five years and there after the forms will be destroyed and disposed off. You don't have to be in the study, but I hope you will agree to answer the questions since your views are important. If I ask you any question you don't want to answer, just let me know and I will go on to the next question or you can stop the interview at any time and your withdrawal from the study will not prevent you from any benefit that may follow the findings.

The information we collect will help me to obtain my masters in public health and may help in improving the immunization services in Nigeria.

In case you need more information about the study, you may contact me through;

Phone Number; 08038625657

Email Address; abubakarimani1@gmail.com

Do you have a living child that is 12-23 months old? Yes [] No [] (if no, STOP interview)

Do you consent to participate in the study? Yes [] No [] If consented, interviewers proceed with the interview after appending or thumb print; if not, do not proceed with interview

Respondents signature/Thumb print/Date (dd/mm/yyyy).....

Witness signature/Thumb print/Date

APPENDIX C

Questionnaire on Determinants of Routine Immunization Uptake among Children Aged 12-23 months in IDPs Settlements of Bauchi State

Section A: General Information

Please researcher will fill in the spaces provided appropriately

1. Form number.....
2. Cluster name
3. Cluster number.....
4. House hold number.....
5. Date of Interview.....

Section B: Maternal/Care Giver Socio-demographic Information

Please tick the most appropriate response

6. Place of residence: Urban Rural
7. Mother's Age (In years).....
8. Mother's highest education level: None Primary Secondary Tertiary
9. Marital status: Single Married Divorced Widowed
10. Number of antenatal visits made during the pregnancy of the index child: None
Once Twice Thrice More than thrice
11. Number of people in the household: Less than 3 3-4 5-6 More than 6
12. Average monthly income.....
13. Number of dependants.....
14. Distance to immunization facility from home: Less than 5km (30 minutes walk)
More than 5km (More than 30 minutes walk)

Section C: Maternal/Care Givers Knowledge of Routine Immunization

Please tick the appropriate answer(s) to the following questions

15. Have you ever heard about childhood routine immunization? Yes No
16. If yes to question 15, what was your source of information? Doctor Nurse/Midwife
 Health Extension Workers (HEWs) Media (Radio, Television, Newspapers etc)
Others (Specify).....
17. Childhood routine immunization is very important? Yes No
18. What is the purpose of childhood routine immunization?: To protect childhood disease: To cure diseases in children To Prevent disease in children Others (specify)
19. Childhood routine immunization prevents the following diseases (**interviewer indicates all that is mentioned**) Tuberculosis Poliomyelitis Hepatitis B Pertussis (whooping cough) Tetanus measles Yellow fever Meningitis Malaria Cholera others (specify)..... Don't Know
20. Ideal age at initiation of Childhood routine immunization is: First week of life 1- 2 weeks after birth after 2 weeks of life Others (specify).....
21. How many times should a child be taken to a health facility to complete his/her routine immunization? Once Twice Three times Four times Five times more than or equal to six times
22. When is a child expected to complete his full doses of the routine immunization? By the end of first year second year Third year More than or equal to fourth year
23. Immunization can cause infertility later in the life of the child? Yes No
24. Childhood vaccines are safe for children? Yes No

Section D: Childhood Immunization Information/ Coverage

Please fill in the most appropriate choice in the space provided

- 25. Child's age as at last birthday
- 26. Child's Sex: Male Female
- 27. Child's Place of Delivery:Home Hospital Others (specify).....
- 28. Child's Birth order: First Second Third Forth and above
- 29. Child immunized Yes/No.....
- 30. Immunization card available? Yes/No
- 31. Source of immunization services Outreach Hospital Health centre Private
NGO Supplementary (SIA)
- 32. BCG** Date (From the card)
- Mother reported immunization: Yes/No.....
- BCG Scar? (Interviewer should check) Yes/No
- 33. OPV0** Date (From the card)
- Mother reported immunization: Yes/No.....
- 34. OPV1** Date (From the card)
- Mother reported immunization: Yes/No.....
- 35. OPV2** Date (From the card)
- Mother reported immunization: Yes/No.....
- 36. OPV3** Date (From the card)
- Mother reported immunization: Yes/No.....
- 37. HEB0** Date (From the card)
- Mother reported immunization: Yes/No.....
- 38. Penta1** Date (From the card)
- Mother reported immunization: Yes/No.....

39. **Penta2** Date (From the card)

Mother reported immunization: Yes/No.....

40. **Penta3** Date (From the card)

Mother reported immunization: Yes/No.....

41. **Measles** Date (From the card)

Mother reported immunization: Yes/No.....

42. **Yellow Fever** Date (From the card)

Mother reported immunization: Yes/No.....

43. Child's immunization status (Interviewer ascertain from answers obtain from Q29-42)

Not immunized partially immunized fully immunized

44. **Factors Militating against utilization of routine immunization**

Note; this section should be administered to the mothers/care givers whose children are either partially immunized or not immunized.

Ask only one question “**Why the child was not fully immunized?**” and tick the single most important reason given.

Lack of Information

- a. Unaware of need for immunization
- b. Unaware of need to return for 2nd or 3rd dose
- c. Place and/or time of immunization unknown
- d. Fear of side reactions
- e. Wrong ideas about contraindications
- f. Others (specify).....

Lack of Motivation

- a. Postponed until another time
- b. No faith in immunization

- c. Rumors (Specify).....
- d. Others (specify).....

Obstacles

- a. Place of immunization too far
- b. Time of immunization inconvenient
- c. Vaccinator absent
- d. Vaccine not available
- e. Mother too busy
- f. Family problem, including illness of mother/Care giver
- g. Child ill- not brought
- h. Child ill- brought but not given immunization
- i. Long waiting time
- j. Others (Specify).....

(Source; Form R.I; Reason for immunization failure cluster form, WHO immunization coverage cluster survey reference manual, 2015)

Interviewer Name.....Sign.....

Thank you for taking time to answer these questions. I appreciate your help.

APPENDIX D

The Hausa Version of the Questionnaire

Some questions that will be administered directly to the participants ne translation to the commonest language spoken in Bauchi as highlighted in the methodology so as to simplify the interview using common statements and minimize misinterpretation of the answers and information obtained from the respondents. These Translated segments are as follows;

Ilimin Uwa Game da Rigakafin Yara

Q.15. Kina da masa niya akan riga kafin kananan yara? Eh Aa

Q 16. Idan Eh ne, a ina kika samu labarin riga kafin? Gurin Likita A gurin malaman asibiti

Malaman asibiti na kar kara Kafar yada labarai (Radiyo, tibi, jaridu da sauransu) Sauransu(Fadesu).....

Q17. Rigakafin Yara yanada matukar amfani; Eh Aa

Q18. Meyasa ake riga kafi wa yara? Don karesu daga cututtukan kananan yara

Don nema wa yara waraka daga cututtuka, Don kare yara daga cututtuka, Sauran dalilai (Fadesu).....

Q19. Cututtukan da riga kafin yara ke karewa sun kunshi; Tarin fuka, Shan inna, Shawara, Tarin lala/Kwatai , Ciwon sarkafewan hakori, Kyanda, Zazzabin cizon sauro, Sankarau, Amai da Gudawa, Sauransu (Fadesu).....

Q20. Yaushe yakamata a fara ba wa yaro rigafin?

Cikin satin farko da haihuwa, Sati daya zuwa biyu da haihuwa, Bayan sati biyu, sauransu (fada).....

Q21. Saunawa zaa kai yaro asibiti kafin kammala rigakafi a tsarin Nigeria?

Daya, Biyu, Uku, Hudu, Biyar, Shida ko fiye da haka

Q22. Yaushe yakamata yaro ya kammala rigakafinsa? Karshen shekaran farko da haihuwa, Shekara nabiyu bayan haihuwa, Shekara na uku bayan haihuwa, Shekara hudu zuwa sama da haka

Q23. Riga kafi na hana haihuwa? Eh A a

Q24. Riga kafi bayada wani illa ga yaro?

Eh , Aa

Q44. Dalilan da suka hana yiwa yara rigakafi

Tam baya daya zaayi wa duk wanda zasu amsata, sai kuma azabi amsa daya cikin jerin amsoshi masu zuwa da ta dace da wanda aka bayar.

Tambayar itace “Meyasa baa yiwa ko baa kammala wa yaro/yarinyarnan rigakafiba”

Lack of Information

- a. Rashin sanin bukatan rigakafi wa yara
- b. Rashin sanin cewa yakamata akai shi/ta karo na biyu ko uku
- c. Bamusan inda akeyiba
- d. Tsoron illolinta
- e. Rashin fahimtar dalilan da suke hana yin rigakafin
- f. Sauran dalilai (a fadesu)

Lack of motivation

- a. An daga zuwa wani lokaci
- b. Bamu aminta da shiba
- c. Jita- jita (fadesu)
- d. Sauran dalilai (fadesu)

Obstacles

- a. *Gurin da ake riga kafi yayi nisa*
- b. *Lokan da ake rigakafin bai manaba*
- c. *Ma aikacin rigakafin bayanana*
- d. *Babu rigakafin a gurin da akeyi*
- e. *Ayyuka sun min yawa*
- f. *Matsalolin gida*
- g. *Yaro/yarinya ba lafiya shiyasa bamu jeba*
- h. *Yaro lafiyansa ankaishi amma baa bashiba*
- i. *Lokacin jiran yayi yawa*
- j. *Sauransu (fadesu).....*

Mun gode sosai da hakurin amsa tambayoyinmu.

APPENDIX E

Focus Group Discussions Guide

Consent Form for FGD

I, _____(write name of participant) consent to take part in a focus group discussion for a study titled “Determinants of Routine Immunization Uptake among Mothers/Care Givers of Children Aged 12-23 Months in IDP Settlements of Bauchi State.

The purpose of the group discussion and the nature of the questions have been explained to me and I understand that, my participation is voluntary, I have the right to obtain a copy of this form and I am free to leave the group or decide not to participate at any time during the discussion with no penalty.

By signing this consent form, I am aware that this discussion will include: 5 to 7 participants besides myself who are parents/care givers, the session will last about 45 to 90 minutes and open discussions on knowledge of routine immunization and factors affecting utilization of Routine Immunization services in IDPs settlements of Bauchi state to help in overcoming barriers and improve immunization status of children in Bauchi state

This agreement also states that I know the discussions will be audio taped and that the recordings will be used to prepare a report on the discussion. I understand that my comments will be shared in front of other focus group participants and that although all participants will be asked not to discuss participant’s responses outside of the focus group, the facilitators cannot guarantee the confidentiality or privacy of responses. Additionally, no one other than those participating in the focus group will be able to connect my name to any comments made during the focus group session.

I also understand that the tapes and written summaries will be kept confidential

Participant Signature _____

For questions about your rights as a volunteer, you may call Abubakar Magaji 08038625657

Steps in Conducting the FGDs

NOTE: All information collected in the group discussion is CONFIDENTIAL and will only be used for the purpose of research on “Determinants of Routine Immunization Uptake among Mothers/Care Givers of Children Aged 12-23 Months in IDP Settlements of Bauchi State”

Section A; Identification

| | | |
|----|-------------------------------------|--|
| 1 | Name of Region | |
| 2 | District/s | |
| 3 | Village | |
| 4 | Number of FG Participants | |
| 5 | Date of FGD | |
| 6 | Name of Interviewer | |
| 7 | Name of Moderator | |
| 8 | Name of Recorder | |
| 9 | Name of Supervisor/Institution | |
| 10 | Date of Data Transcription | |
| 11 | Name of Transcriber | |
| 12 | Signature of Supervisor/Institution | |

Section B; Name of Participants

| S/no | Name | Sex | Age |
|------|------|-----|-----|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |

Section C; Instruction to Moderator

This FGD is to be administered to parents and caregivers of children within the selected region. The FGD has a purpose on gathering information about knowledge of routine immunization and factors affecting its utilization in IDPs settlements of Bauchi state.

Time Frame; Approximately 45-90 min.

Group size; 7- 9 Respondents

Selection of participants to be facilitated by the local link person.

Session Introduction

1) Introduce yourself as Facilitator and introduce your team members (there needs to be a minimum of two persons present when conducting FGD) One is the Moderator, another one is record keepers and the third person will be time keeper (if possible).

2) Ask the participants to introduce themselves

3) provide a brief outline of the purpose of the FGD, the kind of information needed from the participants, and how the information will be used (to improve routine immunization of children).

4) Let the participants know that you will be using a recording device in order to record information provided by them and not to miss any important information. Seek permission from the participants for its use. A demonstration of the use of recorder should be conducted.

Let the respondents hear their own voices before the session starts.

(You may offer some snacks/ water, tea and allow some informal discussion before the actual session starts)

Ethical Considerations

Confidentiality: Inform the participants that everything that they say here will be kept strictly confidential. Nothing said in this group will ever be associated with any individual by name. The facilitator and recorder also have to maintain the confidentiality of what is said in the group.

Voluntary participation: Participation in the FGD is entirely voluntary and participants may stop participating at any time. One can withdraw from the group's discussion without any consequences. Consent forms should be provided with more information regarding confidentiality and voluntary nature of participation.

Section D; Ground Rules (Rules to Guide the Discussion) To be explained to each participant

1. Talk one at a time in a voice as loud as mine and let us not interrupt.
2. Respect each other's opinions.
3. Avoid side conversations with those sitting next to you.
4. The group needs to hear from everyone in the course of the discussion, but you don't have to answer every question.
5. Only answer what you feel comfortable to answer.
6. Feel free to respond directly to someone who has made a point. You do not have to address your comments to the facilitator in-order for them to be recorded.
7. Say what is true for you and have the courage of your conviction. Don't let the group sway you and you do not have to agree with the group opinion.
8. Ask questions/clarification as they come up.

Record the time started Hrs;----- Mins;-----

Section E; Discussion Guide

Thank you very much for agreeing to take part. Let's begin! [SWITCH ON RECORDER AND BEGIN NOTE TAKING]

LETS US KNOW YOUR VIEWS ON IMMUNIZATION

1. What do you know about routine immunization?
2. What are the main diseases targeted by routine immunization?
3. What do you know about the diseases mentioned in guide 2 above?
4. Why do you think routine immunization is necessary?
5. What do you think about R.I safety?
6. How effective do you think R.I are in terms of protecting you and your children from VPDs?
7. What are your previous experiences on R.I?
8. What are the reasons or barriers to getting children immunized and why do you say---
----- so? Get to the main reasons – religious, fear, distance, lack of information, etc.

CLOSING

Talk to the group: “Our discussion will come to the end, is there any critique, suggestion or expectation that you feel is important to address before we close the discussion? Please, feel free to talk about it”. At the end of the interview, the Interviewer will summarize the essence of the interview, and closes it afterward.

Thank you very much for your time, and we almost took Hour(s) minutes of interviews. Thank you for your open mind and all answers, opinion, critiques, and suggestions to our questions.

Your opinion is very valuable to us. We do hope that the results of the interview will give inputs to help improve your R.I services. Thank you and good luck

(Adopted and modified from;1. Rhizome Polio.it platform; Global Polio Eradication; Introduction of IPV, Focus Group Discussion with Parents and Caregivers of Children, Jan, 2017. 2.Determann.D, Korfage I.J and Debekker E.W. Guideline on How to Prepare and Conduct FGDs on Future Pandemics and Vaccinations. Effective Communication in Outbreak Management for Europe, Rotterdam, Netherlands, 2016.)

APPENDIX F:

ETHICAL CLEARANCE

SECRET



GOVERNMENT OF BAUCHI STATE
MINISTRY OF HEALTH

Bello Kirfi Road, Off Murtala Mohammed Way,
P.M.B 065, Bauchi

E-mail: bauchismoh@gmail.com

Reference: MOH/GEN/S/1409/I

Date: 12th December 2017

PROTOCOL REG. NO: BSMOH/NREC/60/2017
PROTOCOL APPROVAL NO: NREC/12/05/2013/2017/63

Dr Abubakar Magaji,
Department of Community Medicine,
Bayero University Kano,

ETHICAL CLEARANCE FOR SUBMITTED PROTOCOL:

**“Determinants of Routine Immunization Uptake Among Children Aged 12 -23 Months
Old in Internally Displaced People’s Settlements of Bauchi State”**

The Bauchi State Health Research Ethics Committee (HREC) under the State Ministry of Health has received the above named protocol for ethical clearance and approval in line with the guidelines set by the Committee. The protocol was reviewed and the committee noted that that the research falls under the low risk Category which does not entails clinical trials or any invasive procedures.

2. Consequently, the Committee hereby granted expedited approval for the research to be conducted. However, you should share with us your workplan clearly indicating the start date, where and when to visit the research site(s) and also the final results of your findings.

3. The Committee requires you to comply with all Institutional Guidelines, Rules and Regulations and with the tenets of the National Health Research Ethics Committee Code including that all adverse events are reported promptly to the Committee. No changes are permitted in the research without prior approval by the Committee except in circumstances outlined in the Code. The Committee reserves the right to conduct compliance visit to your research site without prior notice.

4. Thank you.

A handwritten signature in black ink, appearing to read 'Usman U. Muhammad'.

(Usman U. Muhammad)
For: Hon. Commissioner.

SECRET