

**SOCIO-ECONOMIC AND GENDER DETERMINANTS OF IMMUNISATION  
COVERAGE IN THE FEDERAL CAPITAL TERRITORY, NIGERIA**

by

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## DEDICATION

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In loving memory of my beloved mother – Abebaye (Wro. Woubetie Demlew Dessie). Beneath God, what I have become is because of your incredible serenity, selfless sacrifices and incessant prayers. I know you are in a better place. Still, I can't help being selfish wanting to have you here with me and say something I didn't say enough – THANK YOU!

I also wish to dedicate this project to women – all women in the world – in tribute to those who played a defining role in my whole life. My mother who shouldered the brunt of raising me and my eight siblings, my elder sisters who sacrificed a lot to take care of me and the younger ones, my wonderful wife who just complete me, my two lovely daughters who gave me more purpose in life, my female supervisors who instilled trust and confidence in my professional career, the list goes on. I am sorry that we, men, are taking too long to appreciate that gender equality is also about men's empowerment and securing a better world for all.

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I am also indebted to several authors and publishers whose materials have been used and duly recognised in this research.

## DECLARATION

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Title of the thesis: Socio-Economic and Gender Determinants of Immunisation Coverage in the Federal Capital Territory, Nigeria

I declare that the above thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the thesis to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.



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SIGNATURE

4 May 2021

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## ABSTRACT

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Immunisation is a cost-effective public health intervention that contributes to the attainment of the Sustainable Development Goals (SDGs). About 40% of children under the age of five years die from vaccine-preventable diseases in Nigeria. Routine immunisation has been quite low in Nigeria, where national coverage is estimated to be 33%, according to a 2016–2017 survey. This empirical research was aimed at determining the key socio-economic and gender determinants of immunisation in the Federal Capital Territory (FCT), identifying gaps and proffering solutions. Mixed methods of data collection and analysis were used. Data were gathered from several secondary sources and from 11 key informants using semi-structured interviews and 501 household and 26 health-facility surveys using questionnaires mounted on Open Data Kit. Lot quality assurance sampling and probability to population size methodology were used to size the samples and identify survey locations. Odds ratio analysis and logistic regression analysis were conducted to gauge the statistical association between the determinants and the coverage of immunisation. The main finding that was reached on the basis of the documents reviewed and the feedback received from the key informants was that they were gender blind at worst and gender neutral at best. Most of the current strategies give little attention to socio-economic and gender barriers. Over 40 immunisation variables were identified. The analysis, particularly using the 2x2 odds ratio, yielded mixed results. The majority of the variables exhibited a close statistical association as far as immunisation indices were concerned. These variables included urban residency, married couples, literacy, birth at a health facility, antenatal care experience, vaccination card possession, immunisation knowledge, child health information, non-farming earnings, socio-economic status and tolerance of spouse beating. On the other hand, variables that were found to have no statistical significance included sex, marital status, marriage type, age, religion, tetanus toxoid (TT) vaccination and adequacy of income. Immunisation and gender are intertwined, particularly because of mothers' biological and social attachment to their children. At the same time, conducting vaccination avails the opportunity to access almost all households. Moreover, it is important to recognise that socio-economic and gender determinants are not totally in control of one ministry. Single agenda interventions will not produce the desired result. A paradigm shift and the concerted effort of various

sectors and partners are required. Therefore, the Nigerian government should galvanise the relevant stakeholders to bring gender and socio-economic variables into the mainstream throughout the immunisation ecosystem and to implement integrated development initiatives by prioritising vulnerable communities.

**Key terms:** Social and economic determinants; Immunisation; Gender; Women empowerment; Barriers to immunisation; Immunisation coverage; Mixed study methods; Health-seeking behaviour; Nigeria; Federal Capital Territory

## ISIFINYEZO ESIQUKETHE UMONGO WOCWANINGO

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Ugonyo yindlela engcono yokungenela kwezempilo yabantu engathela esivivaneni ekufinyeleleni izinhloso zentuthuko eqhubekela phambili ezaziwa ngelokuthi yi-Sustainable Development Goals (SDGs). Cishe izingane ezifinyelela ku 40% ezingaphansi kweminyaka emihlanu zibulawa yizifo ezivimbelekayo ngomgcabo emitholampilo eNigeria. Ukugonya njalo kusezingeni eliphansi eNigeria, laphokhona ukwengamela kuzwelonke kulinganiselwa ku 33%, ngokuya kocwaningo olwenziwe phakathi kuka 2016-2017. Ucwano lokuthola ubufakazi lwalunenhloso yokubona imithelela yezesimo sabantu nomnotho (socio-economic) kanye nobulili ngokugonya kwi-Federal Capital Territory (FCT) ukubona amagebe kanye nokutholakala kwezixazululo. Amamethodi axubene okuqokelela ulwazi kanye nohlaziyo kwasetshenziswa. Ulwazi lwaqokelelwa ngokufunda imithombo yemibhalo (secondary sources) kanye nakubantu ababalulekile abanolwazi (key informants) abangu 11 ngokusebenzisa ama-semi-structured interview kanye nemizi engu 501 kanye nama-survey amafasilithi ezempilo angu 26 ngokusebenzisa uhla lwemibuzo yama-questionnaire ebifakelwe kwi-Open Data Kit. Kwasetshenziswa nemethodi ye-Lot quality assurance sampling ne-probability, ngemethodoloji yobuningi babantu, ukwenza usayizi wamasampuli kanye nokubona izindawo okumele kwenziwe kuzo ama-survey. Kwenziwa nohlaziyo lwe-Odds ratio analysis kanye ne-logistic regression analysis ukubona ukuhambelana kwamastatistiki phakathi kwezinto eziwumthelela kanye nokunaba kongamelo lokwenziwa kogonyo. Okukhulu okutholakele ngokulandela amadokhumende okufundwe kuwo, kanye nezimpendulo ezivela kulabo abanolwazi ababalulekile (key informants) kube wukuthi bekungaboneleli ubulili (gender blind) kanti futhi bekungachemile ngokulandela ubulili (gender neutral) ngezinga elibi nangokungcono kakhulu. Amasu amaningi amanje awanakekeli kakhulu izihibe ezimayelana nabantu nezomnotho kanye nezobulili. Kwaphawulwa cishe izinto ezehlukene zama-variable ezingu 40 mayelana nogonyo. Uhlaziyo, ikakhulukazi ngokusebenzisa i 2x2 odds ratio, lwaveza imiphumela exubene. Ezinto zama-variable ehlukene eziningi zikhombise ukuhlobana phakathi kwamastatistiki mayelana nama-indices ogonyo. Lama variable, abandakanye ukuhlala emadolobheni, abantu abashadile, ikhono lokubhala nokufunda, ukuzalwa kwezingane kumafasilithi ezempilo, izipiliyoni zonakekelo lwengane ngaphambi kokuzalwa, ukuba nekhadi lomgcabo



wasemitholampilo, ulwazi ngogonyo, ulwazi ngempilo yengane, ukuthola imali ngemisebenzi engeyona eyokulima, isimo sabantu mayelana nezomnotho, kanye nokuqiniseka ukuhlukunyezwa ngokushaywa kwabesimame. Kanti ngakolunye uhlangothi, ama-variable atholakale engenakho ukubaluleka ngokwamastatistiki, abandakanya ubulili, isimo ngokomendo, inhlobo yomendo, iminyaka yobudala, inkolo, umgcabo we-tetanus toxoid (TT), kanye nokwenela kwengeniso lemali. Ugonyo kanye nobulili kuyangenelana nokuhambelana, ikakhulukazi ngenxa yokusondelana komama kanye nezingane zabo. Ngaso lesi sikhathi, ukwenziwa kugonyo kuhlinzeka ngethuba lokufinyelela cishe kuwo yonke imizi eminingi. Nangaphezu kwalokho, kubalulekile ukwamukela ukuthi isimo sabantu mayelana nezomnotho kanye nobulili kuyizinto ezinomthelela, azinalo ulawulo oluphelele kumnyango kangqongqoshe owodwa. Ungenelo ngento eyodwa ngeke kwaveza imiphumela efiswayo. Ukugudluka ngokomqondo (paradigm shift), kanye nemizamo eqhubekela phambili yemikhakha ehlukeneyo kanye nabasebenzisani kuyadingeka. Ngakho-ke uhulumeni waseNigeria, kumele agqogquzele ababambiqhaza abafanele ukuhlanganisa nokufaka emkhakheni ofanele izinto ezimayelana nabantu nomnotho kanye nobulili, kuyo yonke inqubo yokusebenzisana kwemikhakha okumele isebenzisane nehlanguke ukusebenza ngokulandela inqubo yentuthuko ehlangane ngokubonelela imiphakathi ekwizimo ezibucayi.

**Amathemu abalulekile:** Izinto eziwumthelela ezibhekene nabantu kanye nezomnotho; Ugonyo; Ubulili, Ukuhlinzeka abesimame ngamandla; Izihibe ngogonyo; Ukunaba kokwengamela ngogonyo; Amamethodi ehlukeneyo ocwaningo; ukuziphatha kokufuna ezempilo; iNigeria; i-Federal Capital Territory

## SETSOPOLWA

---

Moento ke tsenogare ya maphelo a setšhaba ya go seketša tšhelete yeo e tsenago letsogo go fihleleleng ga Dinepo tša Tlhabollo tša Go ya go ile (di-SDG). Bana ba mengwaga ya ka fase ga ye mehlano bao ba ka bago 40% ba hlokošana ka lebaka la malwetši ao a ka thibelwago ka moeno ka Nigeria. Go entela bana ka sewelo go bile fase kudu ka Nigeria, fao kakaretšo ya bosetšhaba e akanywago go ba go 33%, go ya ka dinyakišišo tša 2016–2017. Dinyakišišo tše tša tekodišišo di be di ikemišeditše go tseba dilo tše bohlokwa tša ekonomi ya setšhaba le tša bong tše di laolago moento ka *Federal Capital Territory* (FCT), go tseba dikgoba le go akanya ditharollo. Mekgwa ya go kgobokanya tshedimošo yeo e kopantšwego le tshekatsheko di šomišitšwe. Tshedimošo e kgobokeditšwe go tšwa go methopo ye mmalwa ya tlaleletšo le go tšwa go basedimoši ba 11 ba bohlokwa ka go šomiša dipoledišano tše di nyakago baarabi ba efa mabaka le dinyakišišo tše 501 tša ka malapeng le tše 26 tša ka mafelong a maphelo ka go šomiša dipotšišo tša dinyakišišo tše di theilwego go Setlabele sa Tshedimošo ya Phatlalatša. Go šomišitšwe sampole ya tiišetšo ya boleng le mokgwa wa kgonagaalo ya bogolo bja setšhaba di šomišitšwe go dira bogolo bja disampole le go tseba fao dinyakišišo di ka dirwago gona. Tshekatsheko ya poelo ka seemo le tshekatsheko ya poelomorago ya kamano di dirilwe go ela kamano ya dipalopalo magareng ga dilo tše di laolago le kakaretšo ya moento. Kutollo ye kgolo ye e fihleletšwego mabapi le dingwalwa tše di lekodišišitšwego le poelo yeo e hweditšwego go tšwa go basedimoši ba bohlokwa e bile gore ba be ba sa hlocomele bong e bile selo seo se sego sa loka gomme ba sa kgethologanye go ya ka bong e bilego selo se sekaone. Bontši bja mekgwa ya bjale e fa šedi ye nnyane go ekonomi ya setšhaba le go mapheko a tša bong. Diphapano tša meeno tša go feta tše 40 di utollotšwe. Tshekatsheko, kudukudu ka go šomiša mokgwa wa kelo ya 2x2, e tšweleleditše dipelo tše di kopantšwego. Bontši bja diphapano di laeditše kamano ya kgauswi ya dipalopalo mabapi le dipalopalo tša meento. Diphapano tše di akareditše badudi ba ditropong, balekane bao ba nyalanego, go kgoba go bala le go ngwala, go belega masea ka lefelong la tša maphelo, maitemogelo a tlhokomelo ya boimana, go ba le karata ya moento, tsebo ya meento, tshedimošo ka ga maphelo a bana, go hwetša letseno leo e sego la bolemi, maemo a ekonomi ya setšhaba le go kgotlelelwa go bethwa ke balekane. Ka go le lengwe, diphapano tše go hweditšwego gore ga di

na le bohlokwa go dipalopalo di akareditše thobalano, maemo a tša lenyalo, mohuta wa lenyalo, mengwaga, tumelo, moento wa *tetanus toxoid* (TT) le go ba maleba ga letseno. Moento le bong di a nyalelana, kudukudu ka lebaka la bo tswalo ya bomma le go amana le bana ba bona ka tša leago. Ka sona seemo seo, go enta batho go ba fa sebaka sa gore ba fihlelele malapa ka moka. Godimo ga fao, go bohlokwa go lemoga gore dilo tšeo di laolago ekonomi ya setšhaba le bong ga di laolwe ke kgoro e tee. Tsenogare e tee ya lenaneo e ka se tšweletše dipoelo tše di nyakegago. Phetogo ya seemo le matsapa ao a tiišitšwego ka makala a mehutahuta le badirišani a a nyakega. Ka fao, mmušo wa Nigeria o swanetše go hlohleletša bakgathatema ba maleba go tsena bong le dilo tša ekonomi ya setšhaba ka lenaneong ka go diriša lenaneokakaretšo la meento le go tsenya tirišong matsapa a tlhabollo ao a kopantšwego ka go bea pele ditšhaba tšeo di lego kotsing.

**Mareo a bohlokwa:** Dilo tše bohlokwa tša ekonomi ya setšhaba; Moento; Bong; Maatlafatšo ya basadi; Mapheko go moento; Kakaretšo ya moento; Mekgwa ya dinyakišišo ye e kopantšwego; Maitshwaro a go nyaka maphelo; Nigeria; Federal Capital Territory

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## ABBREVIATIONS AND ACRONYMS

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AC	Area Council
AEFI	Adverse Effects Following Immunisation
AFRO	African Regional Office of World Health Organisation
AMAC	Abuja Municipal Area Council
ARDA	Association of Religion Data Archives
AU	African Union
BBC	British Broadcasting Corporation
BCG	Bacilli Calmette Guerin
BCN	British Council Nigeria
BR	Birth Rate
CDC	Centre for Disease Prevention and Control (USA)
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CHIPS	Community Health Influencers, Promoters and Services
CHPRBN	Community Health Practitioners Registration Board of Nigeria
CI	Confidence Interval
CVDPV	Circulating Vaccine Derived Poliovirus
DEFF	Design Effect
DHS	Demographic and Health Study
DOS	Department of State (of the United States of America)
DPT	Diphtheria, Pertussis/Whooping Cough and Tetanus
DPT3	Three doses of Diphtheria, Pertussis, Tetanus vaccines
ECOSOC	United Nations Economic and Social Council
ECOWAS	Economic Community of West African States
EPI	Expanded Programme on Immunisation
ESS	Effective Sample Size
FCDA	Federal Capital Development Authority
FCT	Federal Capital Territory
FCTA	Federal Capital Territory Administration

FGM	Female Genital Mutilation
FGON	Federal Government of Nigeria
FMC	Facility Management Committee
FMOE	Federal Ministry of Education
FMOH	Federal Ministry of Health
FWASD	Federal Ministry of Women Affairs & Social Development
GAVI	Global Alliance for Vaccine Initiative (renamed as The Vaccine Alliance)
GDP	Gross Domestic Product
GHO	Global Health Observatory Of WHO
GRISP	Global Routine Immunisation Strategy and Plan
GVAP	Global Vaccine Action Plan
HDI	Human Development Index
HepB	Hepatitis B
HFR	Nigeria Health Facility Registry
HH	Household
HIA	Health Impact Assessment
Hib	Haemophilus Influenzae Type B
HS	Household Family Size
ICC	Intra-Cluster Correlation Coefficient
ICPD	Programme of Action of the International Conference on Population and Development
IgG	Immunoglobulin G
IM	Infant Mortality
JSI	John Snow Inc.
LGA	Local government areas
LQAS	Lot Quality Assurance Sampling
MDGs	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
NBS	National Bureau of Statistics
NDHS	Nigerian Demographic and Health Survey

NERICC	National Emergency for Routine Immunisation Coordination Centre
NGO	Non-Governmental Organisation
NHH	Number of Households with eligible children
NICS	National Immunisation Coverage Survey
NNHS	National Nutrition and Health Survey
NPC	National Population Commission
NPHCDA	National Primary Health Care Development Agency
NPI	National Programme on Immunisation
ODK	Open Data Kit
OECD	Organisation for Economic Cooperation and Development
OIRIS	Optimized Integrated Routine Immunisation Sessions
OPEC	Organization of Petroleum Exporting Countries
OPV	Oral Polio Vaccine
OR	Odds Ratio
Penta	Pentavalent Vaccine
PHC	Primary Health Care
PHCB	Primary Health Care Board
PHCUOR	Primary Health Care Under One Roof
PPS	Probability to Proportional Size
RED	Reaching Every District
RFD	Results for Development
RI	Routine Immunisation
RS	Random Start
SAGE	Strategic Advisory Group of Experts
SCT	Social Cognitive Theory
SDGs	Sustainable Development Goals
SEM	Social Ecological Model
SGBV	Sexual and Gender Based Violence
SGD	Sustainable Development Goals
SI	Sampling Interval

SIA	Supplementary Immunisation Activities
SPSS	Statistical Package for Social Science
TT	Tetanus Toxoid
TTM	Trans-theoretical Model
UHC	Universal Health Coverage
UN	United Nations
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNGASS	United Nations General Assembly Special Session
UNICEF	United Nations Children's Fund
UNW	United Nations Women
USAID	United States Agency for International Development
VDC	Village Development Committee
VPDs	Vaccine Preventable Diseases
WDC	Ward Development Committee
WHO	World Health Organisation
WPV	Wild Poliovirus

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## CHAPTER ONE: INTRODUCTION

---

### 1.1. INTRODUCTION

---

Nigeria, with more than 200 million people, is the most populous country in Africa (UNFPA 2019c, NBS 2018b:11-12). According to the 2015 report from the National Bureau of Statistics (NBS), women constitute 49.5% of the population (NBS 2016:2). The country has a federal system of government with 36 states and the Federal Capital Territory (FCT), 774 local government areas (LGAs) and 9556 Wards. Despite its vast natural resources and untapped young generation, the country still struggles from economic and social hardships.

FCT-Abuja is located in the North Central geo-political zone with a projected population size of 3.6 million people by 2016 (NBS 2016b:1). Established in 1976, it is the capital city of the Federal Republic of Nigeria with six area councils and 62 political wards. Abuja is one of the fastest growing cities in Africa, characterised by an influx of people from rural areas especially to satellite cities adjacent to Abuja (Abubakar 2014:82-83). FCT has seven administrative secretariats including the Health and Human Services, which is responsible for immunisation affairs (FCTA 2018). As at May 2018, there were about 320 health facilities serving more than 2,400 settlements in FCT (WHO 2018a).

A number of studies demonstrated that immunisation gives the best return on investment (Antai 2011a:136, Uzochukwu et al 2011:106, WHO 2016c:39, RFD 2017:17-19, Duintjer Tebbens et al 2010: 339, GPEI 2016:5). Beyond saving millions of lives, the benefit of the proper administration and utilisation of vaccines includes positive economic consequences. Vaccines help caregivers especially mothers to avoid costly treatment expenses and spare them the time that would have been devoted to look after their sick children. One study estimates that for every US dollar spent on vaccines in developing countries, there would be a return of 16 US dollars in economic benefits between 2011-2020 (RFD 2017:17). Recognising this and with the assistance of development partners, the Nigerian government has made a substantial investment in immunisation for several years now. However, immunisation coverage in Nigeria in general and FCT in particular has been low by both international and national standards. This abysmal situation

is attributed to a number of factors: Lack of political commitment, resource constraints, poor health systems, and sub-optimal immunisation infrastructure, to mention just a few (Falade 2014:190, NPHCDA & NBS 2017:59).

Even if the immunisation services are made available, the beneficiary has to want to use the services. Therefore, apart from addressing the supply side of immunisation, it is important to look into the demand side of it too. The demand for immunisation is influenced by a number of socio-economic and gender variables. Demographic background, social exposure, education, knowledge, income, and the attitude of the society towards men and women are few of the variables to mention. Understanding socio-economic and gender issues in relation to immunisation is crucial to unravel their correlation with one another. As stated in section 6.2.3 of chapter six, there is a close association between socio-economic and gender issues. Gender, being socially constructed traits of women and men, affects and is affected by social and economic variables. As noted during literature and document reviews as well as situation analysis (chapters two and three), there is a tendency to ignore gender issues in certain publications and practices. In order to contribute towards narrowing such gaps, the researcher opted to give more prominence to specific gender variables along with the rest of the socio-economic determinants of immunisation. Solving the problem of low immunisation coverage will ultimately help in reducing vaccine preventable morbidities and mortalities, thereby contributing to the sustainable development of the country.

Having introduced the research topic briefly, the next section delves into describing the research problem that this study aspired to address.

## **1.2. STATEMENT OF THE PROBLEM**

---

Partly owed to its underutilised human capital and mismanaged natural resources, Nigeria is marred by poor health systems (WHO 2017a:14,52-84). One such manifestation is very low immunisation coverage. Vaccine preventable diseases (VPDs) like pneumonia, diarrhoea, and measles account for about 40% of all deaths among children of under-five years of age (Deloitte 2017:4) in Nigeria. Cognizant of such facts, Nigeria has joined 194 countries that endorsed the Global Vaccine Action Plan (GVAP) in May 2012 (WHO 2013:121). GVAP is a strategic framework that laid out ambitious global immunisation goals for 2011–2020. The key indicator,

among those monitored under GVAP, is ensuring effective administration of three doses of diphtheria-tetanus-pertussis (DPT3). GVAP's target is to reach 90% national coverage and 80% in every district or equivalent administrative unit with DPT3 by 2015, and same coverage but for all vaccines by 2020 (WHO 2013:90). Despite huge investments over the years, Nigeria's national coverage was languishing at 52% by end of 2012 (NPHCDA 2013:18). According to the latest official data, the 2016/17 National Immunisation Coverage Survey (NICS) report revealed even a more disappointing national DPT3 coverage of 33% (NPHCDA & NBS 2017: ix).

A number of socio-economic factors can deter health systems delivery in general and immunisation in particular. For example, driven by religious beliefs, there was a strong resistance against polio vaccine in 2003-2004, which resulted in a number of children being crippled especially in Kano state (Falade 2014:50-51). While these constraints affect the general populace, women are often worse off in an already challenging socio-economic environment. In terms of access to and utilisation of health facilities and suffering from maternal mortality rates, there is systemic vulnerability women have to endure (BCN 2012:44-46, NPC & ICF 2014: 14-15). By its own admission, according to the Nigerian government "women are more likely to be poor, uneducated and without political power than men, due to discrimination right from childhood and that neglect of women's health as a major constraint to their participation in the developmental process" (WHO 2005:5). The 2013 Nigerian Demographic and Health Survey (NDHS) also concluded that although the general health indicators are low, women are even more disadvantaged (NBS & ICF 2014:4).

Being a patriarchal society, there is a widespread attitude of looking down on women in Nigeria (Makama 2013:115,125). The rampant prejudice and misconception about the role of women have a disempowering effect and could deprive half of the population of the right to have their fair share of agency in the social, political and economic spaces. Addressing such gender induced socio-economic drawbacks benefits the community and ultimately contribute towards the achievement of the health indicators under United Nations' Sustainable Development Goals (SDGs) (WHO 2017a:13, Kabeer 2012:5). The 2016/17 NICS conducted in Nigeria also concluded that higher immunisation coverage indicator signals better maternal and child health situation and vice versa (NPHCDA & NBS 2017: xi). Recognising that



women are key stakeholders in immunisation, the 2012-2015 National Routine Immunisation Strategic Plan mentions gender inequality as one of the reasons for low immunisation coverage (FMOH 2013:13). However, the document fails to elaborate on the gender determinants of immunisation. As will be discussed in section 3.6.2 of chapter three, most of the policy and strategic documents the country used to drive the immunisation programme were found to be largely gender blind at worst and gender neutral at best.

There are two avenues that must converge to ensure fair access to and utilisation of immunisation. These are the demand and supply sides of immunisation. A study by Eboreime et al. (2015:9), concluded that socio-cultural explanations of the demand side are more plausible than supply side of immunisation for the regional disparity between northern and southern part of Nigeria. A recent health facility survey data quoted in the NICS report suggest "...strong support for supply side interventions but not so for demand side issues and this may account for the obvious poor performance of the immunisation system nationally and across most of the states" (NPHCDA & NBS 2017:xi). However, it is also argued that, in practice, the demand and supply side of health systems are difficult to separate (O'Donnell 2007:2821).

It was therefore the intention of the research project to undertake a holistic review of the immunisation system in FCT from socio-economic and gender perspectives. Such an approach is crucial to tackle the multi-faceted barriers to improving immunisation coverage by analysing the intermingled socio-economic and gender determinants (Kabeer 2012:7, Mama 2001:69).

### **1.3. THE RESEARCH QUESTIONS**

---

The researcher identified the following initial research questions that were drawn with the objective of addressing the research problem. As Hansen (2006:21, 25) advises, when compared to the original research proposal, the questions were refined slightly as more and more sources of literature were reviewed.

### **1.3.1. Primary research question**

---

The major research question this research aspired to answer was: What are the socio-economic and gender determinants of immunisation and how are they associated with immunisation coverage in FCT?

### **1.3.2. Secondary research question**

---

The researcher further formulated the following secondary questions to address the core research question:

- What is the historical and present immunisation coverage pattern in FCT in relation to the national coverage and global target?
- What is the relationship between social, economic and gender variables with immunisation systems in FCT?
- What are the strategic gender needs that must be analysed in relation to immunisation in FCT?
- Do parents perceive that they are empowered enough to withstand the socio-economic barriers in order to influence the demand and supply side of immunisation in terms of equity, access, adequacy, affordability, and sustainability?
- What specific role do socio-economic and gender factors have in vaccination-seeking behaviour of a household?
- Is gender mainstreamed in the policies and practices of immunisation system at Federal and FCT levels?

## **1.4. RESEARCH OBJECTIVES**

---

The research had primary and secondary objectives which are inter-related with each other.

### **1.4.1. Primary research objective**

---

The primary objective of the study was to identify and analyse the socio-economic and gender determinants that affect immunisation coverage in FCT and make recommendations to address gaps based on the research findings.

### **1.4.2. Secondary research objectives**

---

In order to attain the primary research objective, the study strived to:

- Analyse the past and current immunisation coverage pattern in FCT.
- Conduct desk review of key immunisation policy and strategy documents to assess gender gaps and efforts to address them.
- Conduct statistical and qualitative analysis to determine the association between immunisation coverage and socio-economic variables including gender.
- Synthesize the key findings and make focused recommendation to immunisation stakeholders to address the identified gaps.

## **1.5. IMPORTANCE OF THE STUDY**

---

Nigeria rightfully prides itself as giant of Africa in terms of economic and population size. The country also aspires to be a hub for healthier people by addressing barriers to immunisation (Ogunnubi & Isike 2015:116, NPHCDA, 2018). If the investment of resources on immunisation is managed properly, it can bring about far-reaching socio-economic advantages for the country that suffers from multi-faceted hardships including health crisis. The researcher also strongly believes that mainstreaming gender in the immunisation system has multidimensional development dividends. As asserted by Vlassoff and Moreno (2002:1713), placing gender at the centre is fundamental to improved health planning and programming.

The outcome of this study is expected to accord significance to various immunisation stakeholders. These parties are expected to play a role in executing the recommendations spelled out in section 6.4.1 of chapter six. In addressing the

socio-economic and gender determinants of immunisation coverage, the following key actors in immunisation sector are expected to draw the corresponding benefits:

### **Government**

Authorities at various levels could use the research outcomes to make informed decisions, policy reviews, and necessary strategic, technical and operational adjustments. Since the money should be put where higher impact is expected, it is hoped that the national, FCT and area council authorities will undertake re-prioritisation of the limited resources in order to address the socio-economic and gender gaps that inhibit immunisation coverage.

### **Health professionals**

The findings and recommendations of the research can support the primary health care service providers and higher level professionals in guiding their approach in immunisation planning, service delivery, monitoring and evaluation. The outcome of the study may also be customised for other health interventions such as maternal and neo-natal care.

### **Individuals, caregivers and communities**

The ultimate decision to benefit their eligible children from immunisation rests with individual caregivers – most notably mothers. The study hopes to have unravelled the key socio-economic and gender related challenges that parents face in making decision whether to access and utilise immunisation services or not.

Communities are collections of individuals. As such, they will also benefit from the outcome of the research since health related decisions by a household affects the protection of the community from infectious diseases that are preventable through optimal utilisation of vaccination services (Hu, et al 2015:761).

### **Development partners**

There are many development partners in immunisation systems in Nigeria. The outcome of this study could be an input in their advocacy and funding decisions geared towards improving immunisation coverage in the country. They could also use the key findings and recommendations to critically review their internal policy

and strategy documents towards being gender transformative and amenable to addressing the socio-economic barriers to immunisation.

## **Academia**

The research is expected to expand the knowledge base on the analysis of socio-economic and gender determinants that affect immunisation. The study is therefore expected to contribute to the academic discourse that focus on the improvement of immunisation service delivery by addressing such barriers. The findings and recommendations could trigger more studies in other parts of the country and the world at large.

### **1.6. SCOPE AND LIMITATIONS OF THE STUDY**

---

As stated in section 1.2 above, a multitude of internal and external factors affect immunisation positively or negatively. However, in order to conduct a focused and feasible research, the following study units were targeted:

- Geographical unit – The actual research dwelled on FCT focusing on broad introduction of Nigeria and FCT from political, economic, social perspectives and delving deep into immunisation issues. FCT is chosen for the case study because it is a melting pot of Nigeria’s cultural, religious, ethnical, economic and political dynamics (section 3.4 of chapter three). Despite FCT’s leverage being the political powerhouse of the federal government and beneficiary of relatively better infrastructural investments, its immunisation coverage remains low when compare with international standards (section 3.5.4.1 of chapter three). Therefore, it is insightful to study the socio-economic and gender factors that determine immunisation coverage in the territory which represents the rest of the country in terms of demographic and cultural heterogeneity.
- Stakeholder mapping – Data collection and analysis focused on key players in the immunisation system in the country with emphasis on immunisation policy makers, strategists, technical advisors, service providers, caregivers and development partners. As stated in section 4.5.1.4 of chapter four, the sample population of the caregivers was limited to those above 18 years of age. On the other hand, the exclusion criteria set for the health professional survey stated

that the survey participants needed to have at least two years' experience (section 4.5.2.2 of chapter four) in order to have a fair amount of knowledge about the health facility they were stationed in. These exclusions, although set for good reasons, may detract from representing the voices of the household survey respondents who were below 18 years and health professionals who had less than two years' work experience.

- Immunisation system analysis – While the study highlighted the supply aspect of immunisation, the study pivoted more towards the demand side in general and the socio-economic and gender aspects of the immunisation in particular.

The research faced some limitations. The sample had to be limited to a reasonable size in order to manage it within the provisions of available resources. The researcher was expected to complete the project within a limited timeframe. However, as described in detail in chapter four, the researcher adopted a suitable sampling technique to ensure fair representation of the targeted population.

The researcher recognises that the provision of qualitative data is susceptible to some degree of subjectivity depending on integrity and level of expertise of respondents (Snape & Spencer 2003:13). In a culturally conservative society like in Nigeria and, as Ntoimo and Isiugo-Abanihe (2013:2) noted, the researcher expected and indeed faced some resistance or unwillingness to disclose culturally sensitive data such as household income, family size, gender relations in a household and the like. The researcher attempted to mitigate the adverse effects of such challenges by taking due ethical considerations described in section 4.9 of chapter four.

Further details are provided in section 4.10 of chapter four regarding the limitations and mitigation associated with research design and methodology.

## **1.7. OVERVIEW OF RESEARCH DESIGN AND METHODOLOGY**

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Most social researches begin by exploring the existing knowledge and identification of gaps (Goertz & Mahoney 2012:48). To this end, an in-depth review of literature was conducted and the socio-economic, gender and immunisation situation of the country in general and FCT in particular analysed, as reported in chapters two and three. Therefore, this research is essentially an empirical case study which aimed to address the research questions by collecting data from real-life experience and

triangulate the findings from existing research literature and situation analyses (Specht 2019:134).

Mixed data collection and analysis methods were used. Data collection involved the design and administration of semi-structured interview questions to gather data from 11 key informants, and two sets of survey questionnaires used on 501 households and 26 health facilities (sections 5.3.1.1 and 5.3.1.2 of chapter five). A web based open data kit (ODK) platform was designed to facilitate the collection and entry of the surveys' data. The use of ODK, coupled with the provision of adequate training and supervision for data assistants, was instrumental in enhancing the validity and reliability of the process by mitigating data entry errors and fostering consistency. The rationale for the use of these tools along with the key contents of the interview questions and survey questionnaires are described in sections 4.6.1 and 4.6.5 of chapter four. Necessary ethical clearance processes were executed successfully from Unisa as well as the Nigerian government authorities before embarking on the data collection exercise (section 4.9 of chapter four and appendices).

As stated in section 4.4 of chapter four, demographic, epidemiological and statistical parameters were applied to profile the targeted population so as to frame the sample. Consequently, the households eligible for collection of survey data were chosen based on availability of children under two years of age that would have completed three doses of DPT/Pentavalent vaccines. The rigorous sampling techniques and procedures to determine sample sizes are described in section 4.5 of chapter four. For the household survey, the sample selection was mainly guided by WHO's Lot Quality Assurance Sampling (LQAS) methodology. As stated in section 4.5.1.1 of chapter four, LQAS is predominantly a random sampling technique commonly used in vaccination coverage related surveys (WHO 2016a:1). On the other hand, Probability to Population Size (PPS) methodology was applied for the identification of the specific household and health facility for the two surveys (WHO 2019g:1-4). The steps followed are indicated in sections 4.5.1.2 and 4.5.2.1 of chapter four. Purposeful sampling was used for the key informant interviews representing various stakeholders in the management of immunisation systems in FCT (section 4.5.4 of chapter four). The interviews were conducted online in order to comply with the COVID-19 pandemic safety measures. For secondary data collection, convenience sampling was used by focusing on documents that were published by authoritative bodies to the extent possible (section 4.6.7 of chapter 4).

Statistical Package for Social Science (SPSS) was utilised to analyse the data from the household and health professional surveys by defining the dependent and independent variables. The outcomes of the independent variables were dichotomised in order to conduct odds ratio (OR) and logistic regression analyses statistically analyse the association of socio-economic and gender variables with immunisation access and utilisation (sections 4.7, 4.7.2, 4.7.2.1, and 4.7.2.2 of chapter four).

The outcome from both quantitative and qualitative data was analysed and presented thematically by triangulating findings from both primary and secondary data sources. Pie charts, graphs, tables and flow charts have been used to present the final analysis.

## **1.8. CHAPTER ORGANISATION OF THE THESIS**

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This thesis contains six chapters. Chapter one introduces the overall research topic, the problem statement, the research questions and objectives as well as the significance of the study to different stakeholders. Chapter two provides a literature review of immunisation policies, practices and the socio-economic and gender variables that have bearings on immunisation. Chapter three describes the research setting by introducing Nigeria as a country and FCT as the focus of the case study. The chapter focuses on presenting the current situation of the country from immunisation, socio-economic and gender perspectives. Chapter four is dedicated to document the detailed account of the research design, methodology and procedures employed in conducting the research. Chapter five presents the findings from the data gathered from various sources and the analyses conducted to determine the association of key socio-economic and gender variables with immunisation. Chapter six covers the overall summary, the conclusions drawn from the findings and the recommendations made to different stakeholders. The chapter also highlights the research contributions and aspects for further study.



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## CHAPTER TWO: IMMUNISATION POLICIES, PRACTICES AND THEIR SOCIO-ECONOMIC AND GENDER DETERMINANTS

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### 2.1. INTRODUCTION

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Goertz and Mahoney (2012:48) asserted that empirical researchers begin with prevailing knowledge to trigger more inquisitiveness to investigate and identify gaps by reviewing various school of thoughts in a particular discipline. Utilising literature reviews with the objective of furthering research is becoming more prominent in multifarious domains of studies (Andrews et al. 2012:1, Schutt 2011:1, Smith et al. 2008:1, Smith et al. 2011:1, Torraco 2016:404). There is a vast body of literature on the core concepts of this study, mostly quite technical in nature and published in the form of guidelines, peer reviewed research papers or policy documents.

The main purpose of the literature review was to form the theoretical background as well as compare the findings from the primary data sources with the existing knowledge base and implementation practices at global and local levels. The researcher also attempted to review complementary or contradicting concepts to arrive at a pragmatic and balanced view and tackle the research questions (Hansen 2006:19, Creswell 2003:131). To this end, research papers, reports and scholarly articles by researchers or leading organisations involved in the process of immunisation service delivery or those who are responsible for designing and framing policies were reviewed. The researcher searched through library sources online or visited libraries in person. Some of the sources included ScienceDirect, Google Scholar, Elsevier, Emerald Insight, Taylor and Francis, Sage Journals, JStore and PubMed. The researcher also looked into books and official reports relevant to the topic published by prominent organisations such as the World Health Organisation (WHO), United Nations Development Programme (UNDP), United Nations Children's Fund (UNICEF) and other development institutions. As much as possible, literature sources that claim authority over the subject matter were used. For example, publications on health and immunisation from WHO, on development and gender issues from a United Nations agency responsible for such issues, and official publications on demographics and socio-economic data from government were the primary choices of reference.

The search for relevant materials was aided by the use of key words and phrases such as “immunisation,” “vaccination,” “gender,” “gender determinants of immunisation,” “immunisation in Nigeria,” “gender determinants of health,” “gender analysis,” “gender mainstreaming,” “gender equality,” “women empowerment,” “socio-economic determinants of health,” “socio-economic determinants of immunisation,” “barriers to vaccination,” “health and socio-economic issues Nigeria,” “health, immunisation and socio-economic issues in the Federal Capital Territory,” and “sustainable development goals.” A mix of both old and relatively recent publications were examined.

This chapter attempted to review literature and theoretical perspectives that focused on health, socio-economic and gender issues in general and immunisation in particular. As noted in section 2.5.6 of this chapter, immunisation is the most cost-effective health intervention that contributes towards the attainment of the sustainable development goals (WHO 2017a:9-11, Leadership Council of the Sustainable Development Solutions Network 2014:2). Immunisation, socio-economic and gender determinants are relatively mature topics in the literature world, with varying degrees of depth and breadth as well as evolving perspectives. However, in most of the literature reviewed, these concepts were discussed either in silos or inadequately. Therefore, in addition to describing the relevant concepts, the main focus of this chapter was to conduct an integrative literature review by critiquing, synthesising or complementing key observations where necessary (Torraco 2005:357-358). Another advantage of an integrative literature review applied in this research was the identification of deficiencies or contradictions among various sources (Torraco 2016:412). To facilitate this, the researcher prepared thematic outlines and developed matrices to summarise the key concepts from the reviewed literature on each thematic area. The matrices captured the essence of the materials reviewed on one axis and the names of the authors along the titles of the publications on the other side that are complementary to or in contradiction with other materials.

Application of the integrative literature review coupled with the findings from the data analysis of the empirical study helped to develop a more comprehensive framework to address the socio-economic and gender barriers to immunisation as presented in section 6.4.2 of chapter six. Moreover, gaps that the researcher felt were not fully

addressed given the scope and limitation of the study, were identified for further research as itemised in section 6.5 of chapter six.

As stated above, this chapter followed a structured approach in discussing several themes related to the research topic. Before delving into details, the next section provides operational definitions of key terms that are frequently used in the research.

## **2.2. OPERATIONAL DEFINITIONS/CLARIFICATION OF KEY TERMS**

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This study features several concepts and terms. Most of them are explained within the context in which they are used in their respective sections. For instance, technical definitions of the variables required to measure immunisation access and utilisation are provided in chapter four, section 4.7.1. In this section, the operational definitions of the key terms are provided below in order to build consensus on their intended interpretation from the outset.

### **Development partners**

These are mainly the donors and partners that provide technical, financial or material support for immunisation and other health services to the government.

### **Dropout rate**

Dropout rate is the “percentage difference in coverage between two different doses in sequence” (Baguune, Ndago & Adokiya 2017:3).

### **Full immunisation**

Full immunisation is achieved when an eligible child completes taking all the recommended vaccines appropriate for the given age — without defaulting on any of them. The complete list of vaccines applicable for Nigeria is discussed in section 3.5.3 of chapter three.

### **Gender**

While sex is used to make biological distinctions between females and males, gender describes the social manifestations of masculinity and femininity along with perceptions, relationships and discourses (Ramazanoglu & Holland 2005:5).

**Gender equality**

Gender equality is achieved in a situation where there is no preferential treatment based on sex in availing opportunities and resources in any form (Jhpiego 2016:11-12).

**Gender equity**

Equity implies fairness. Fairness implicates justice. Justice is a relative term that is influenced by the norms and customs of the society. What is fair for one society may not be so for another and vice versa. Still, gender equity involves recognising that men and women are treated fairly in accessing resources and opportunities (Jones, Walsh & Buse 2008:v).

**Gender neutrality**

Gender neutrality is an approach in policy formulation or implementation that assumes both sexes will be impacted by the intervention equally for better or worse (EIGE 2021).

**Government officials**

For the purposes of this study, the term 'government officials' refers specifically to those authorities and officers who make decisions on immunisation policies and practices at national, state, local government area (LGA) or ward levels.

**Health practitioners**

Health practitioners are immunisation caregivers posted at health facilities to conduct house-to-house campaigns and outreaches.

**Immunisation coverage**

Immunisation coverage is the proportion of people who receive the requested set of vaccines in relation to the total population in a given period (WHO 2018c:3).

**Research participant**

Research participants are people or institutions who were purposefully approached and volunteered to provide the required data for the research.

## **Socio-economic determinants**

Socio-economic determinants refer to factors such as level of income, ownership of assets, degree of freedom to decide on household expenditures, culture, religion, social relations, influence/power, and education that affect the particular intervention in question – in this case, immunisation.

## **Stakeholders in immunisation**

These include different entities that own, implement, support, affect or are affected by immunisation programmes. Accordingly, government, health service providers, communities, traditional/community leaders, caregivers, vaccination beneficiaries, donors and partners are among the key stakeholders to mention.

Having provided the key definitions of the commonly used terms in this research, the following section discusses theories of health-seeking behaviour that have varying degrees of applicability in the context of immunisation.

## **2.3. THEORETICAL FRAMEWORK FOR HEALTH-SEEKING BEHAVIOUR**

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Hansen (2006:14) defines theories as “sets of assumptions or related propositions that attempt to explain some domain of inquiry or phenomena.” As Denzin and Lincoln, quoted in Hansen (2006:14) emphasised, the use of theories in qualitative research is quite common to explain a phenomenon and challenge concepts in relation to practical experiences. In fact, Glanz and Bishop (2010:400) cite a number of sources to conclude that interventions developed with well-thought-out and proven theoretical foundations are more inclined to be effective. However, sifting through the literature to decide which are more accurate or relevant to build the theoretical framework is not an easy task. Besides, policy developers and practitioners often complain that some theories are too aloof to reflect the reality on the ground.

One of the approaches in promoting primary healthcare is appreciating health as an integral part of development as a whole, and human development in particular (WHO 2010:11). There are a number of theoretical frameworks relevant for health (Glanz, Rimer & Viswanath 2008:31-33, Murray et al 2010:1, Damschroder et al

2009:2). Immunisation, as a branch of public health, is affected by demand and supply dynamics. As such, the most relevant approach to comprehensively address the health behaviour of stakeholders towards immunisation would be what Glanz and Bishop (2010:400) termed as “Ecological Perspective.” The ecological perspective asserts that public health interventions should not only target individuals but also their inter-relationships, and organisational and environmental aspects as well (Glanz & Bishop 2010:400-403). Even if we single out one side of the immunisation equation, i.e. the demand for immunisation, it is still important to note that vaccination is heavily affected by the behaviour of its key stakeholders – the beneficiaries. According to a case study conducted in Peru, addressing the demand side of healthcare provision can improve its utilisation rate although there are not substantial resources that can be invested to improve the supply side simultaneously (Altobelli & Acosta-Saal 2011:144). In other words, without disputing the challenges in providing adequate supply, the demand for the available immunisation services is not optimised in most cases.

According to Smedley and Syme (2000) as quoted in Glanz and Bishop (2010:400), there are multiple determinants and levels of health behaviour attributable to social, cultural, and economic factors. All of these factors are necessary but not sufficient on their own to define why people behave in a certain way in response to a health intervention. Therefore, a holistic theoretical perspective is paramount. Although no single theory stands out as the most dominant in public health discourse, some of the widely used theories on health-seeking behaviour of the public and their associated brief definitions are discussed below.

### **2.3.1. Health Belief Model (HBM)**

---

HBM theorises about people’s perceptions and beliefs about the degree of their exposure and reaction to health risk (Champion & Skinner 2008:47). This theory has some relevance for this study because its key constructs, which are based on perceptions of the stakeholders in terms of benefits and barriers of the health intervention, are partially applicable in understanding the attitude of immunisation stakeholders. Moreover, HBM is applied mostly in preventable health concerns, including immunisation against vaccine preventable disease (Glanz & Bishop 2010:402). However, this model is criticised for being reductionist or simplistic in the

sense that it does not factor in emotions and cultural issues as much as it focuses on perceived threats and severity of consequences (Champion & Skinner 2008:61). Therefore, it is important to employ socio-economic factors such as age, gender, ethnicity, personality, culture and attitude in shaping individual beliefs to propel them into seeking health services.

### **2.3.2. Social Cognitive Theory (SCT)**

---

SCT assumes that people learn not only based on their experiences but also by observing the actions of others (McAlister, Perry, & Parcel, 2008:172-173). SCT constructs include 'observational learning, reinforcement, self-control and self-efficacy which involves goals-setting and self-monitoring' (McAlister, Perry & Parcel 2008:171, Glanz & Bishop 2010:403). SCT is relevant for this research in the sense of what is called 'reciprocal determinism', which means that a person can be an agent (role model) for and responder to change (Glanz & Bishop 2010:403). However, one of the main limitations of this theory is that such social cognitive studies have short duration in terms of applicability and often no follow-up is made on the changes in motivation (Schunk & DiBenedetto 2020:7). In the context of this study, the leadership of traditional and religious figures as well as competent and motivated health workers have a role in setting a good example to address non-compliance issues among some vaccination beneficiaries. The action of a community or religious leader by getting his or her eligible child vaccinated speaks volumes to their constituency to follow suit. Nevertheless, given the shortcomings in applying this theory as mentioned above, it is important for the role models to be consistent and active in participating in the immunisation sessions. It is often criticised that few vaccination kick-off ceremonies are attended by high-level dignitaries, celebrities and traditional leaders, which will not bring about a lasting impact in improving the demand for immunisation.

### **2.3.3. Social Ecological Model (SEM)**

---

SEM emphasises multiple levels of influence including individual, interpersonal, organisational, community and public policy (Feletto & Sharkey 2019:2, Kolff, Scott & Stockwell 2018:1641). The theory has garnered more prominence in recent decades because the interconnections of human beings with their environment have

become increasingly apparent (Rayner & Lang 2015:615). Of particular resonance of the SEM model with this research is the intertwined nature of behaviour and the social environment, and how the two affect each another (Glanz & Bishop 2010:403). Thus, creating a conducive environment is one of the key ingredients for improving immunisation coverage by influencing the behaviour of stakeholders positively through demand creation mechanisms and safe waste disposal practices. However, the applicability of these theories may be confined to communities with higher levels of awareness of environmental issues. For the majority of the rural based poor communities, such a concept can be considered as a luxury from a physical environmental impact point of view. However, from a social eco-system perspective, this theory is applicable at much wider scope.

#### **2.3.4. Trans-Theoretical Model (TTM)**

---

The TTM premise is that people do not react to changes in the same pattern. The key ingredient of this model is the 'stages of change' which highlights that people could progress through or stagnate at different phases in adapting to change (Prochaska, Redding & Evers, 2008:98-101). This theory is relevant to understand the behaviour of people toward health risks such as diabetics or to improve the success of health counselling (Glanz & Bishop 2010:402). However, it can also to some extent be applied to immunisation in the sense that health authorities, influential figures and immunisation partners need to be persistent in dealing with caregivers' non-compliance. This is because the caregivers may need to go through different phases of change to get out of deep-rooted stereotypes induced by religious or cultural beliefs, contrary to what the science of immunisation shows.

#### **2.3.5. Parsons' sick role theory**

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Parsons' sick role theory is considered amongst the first theories pertaining to healthcare utilisation. The theory is named after its creator, Talcott Parsons (1927-1973). Parsons (1991:16) proposed that when an individual falls sick, they shift into and take on the role of being ill. The key elements of the sick role theory include the individual cannot be held accountable for their sickness and they are not likely to be in a position to heal themselves without support from others; when an individual is in a state of sickness, they are exempted from executing their regular roles and



responsibilities; it has been generally recognised that the state of sickness is not something that is desired; and in order for the individual to recover from their sickness, they are supposed to obtain medical help and adhere to the treatment norms and procedures prescribed (Heidarnia & Heidarnia 2016:129-131). This theory tries to identify typically observed behaviour amongst people who are sick. Nonetheless, though this sick role theory appears to be quite ground-breaking, it does not take into consideration the variations that might occur in sickness behaviour. As an outcome, several scholars have recommended theories and models that are rather multifaceted and recognise factors that influence behaviours where individuals seek healthcare (Arluke 1988:170, Heidarnia & Heidarnia 2016:131-133).

Parsons was in agreement with how medical health models played an intrinsic role in determining illness. However, his contention was that falling sick is not simply a situation which is biological, but it also has a social role where a range of values and norms are attributed to the role. As per Parsons' theory, sickness is perceived as a kind of deviant behaviour within the society (Young 2004:9). The key reason being that individuals who are sick are not in a position to accomplish their regular societal roles, and are therefore found to be digressing from norms, which are consensual. He also argued that if a large number of individuals were proclaimed to be sick, then it would render the society rather dysfunctional. Therefore, getting into the 'sick role' warrants some regulation (Milton 2004:1).

With this objective, Parsons came up with the 'sick role mechanism', which presented an ideal scenario of interrelation between a patient and a caretaker. Under the tenets of this mechanism, individuals who were sick as well as doctors, were expected to adhere to several norms, obligations and rights. These were intricately associated with their individual roles, with a view to strictly monitor the entry into the sick role (Neal 2000:90). This mechanism's primary function was to restrict a 'subculture of the sick', as Parsons termed it, from emerging. One of the main criticisms of this theory is that Parsons had assumed that the perceptions and values that societies attach to health and sickness are somehow the same. However, whilst most societies appreciate the virtues of health, some communities may not take sickness as a negative deed but rather a correctional measure imposed on them because of sin they committed, as per the teachings of their religion (Heidarnia & Heidarnia 2016:132).

The applicability of this theory to the context of immunisation is limited, as the concept appears to appeal more with regard to curative illnesses rather than vaccine preventable diseases. However, some of its norms and assumptions can be applied to regulate the relationship between caregivers and service providers at health facility level. It should also be noted that the behaviour of parents who have brought their children for preventive vaccination is different from those that have come with a sick child. The sense of urgency and importance surrounding the latter is more passionate. If they are mistreated whilst seeking curative care, they may be reluctant to bring their vaccination eligible children for immunisation.

### **2.3.6. Mechanic's general theory of help seeking**

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The general theory of help seeking as presented by Mechanic (1978:131) reflects an approach to healthcare utilisation that is rather psychological. According to Mechanic, there are decision points in a build up to this theory's definition of illness behaviour. These include deviant symptoms with their signs and salience; an individual's viewpoint in terms of severity of symptoms; illness causing a disruption in the daily life of an individual; how often the symptoms appear and their continuity; an individual's tolerance of symptoms; an individual's cultural assumptions about the illness and their own knowledge with regards to it; illness being denied as an outcome of basic needs; whether or not the needs are disrupted as a response to the illness; expressing symptoms through alternative interpretations; and availability of treatment through economic cost, treatment resources, location and psychological costs such as humility and stigma.

Furthermore, the theory presented by Mechanic permitted the response to illness to be influenced either by the individual themselves or another individual who was responsible for making decisions on behalf of the ill individual (Wolinsky 1988:118). Therefore, it is clearly projected through the illness behaviour theory that healthcare utilisation is influenced by heteronomy and autonomy.

The applicability and the shortcomings of this theory in the context of immunisation are largely similar to the ones described under Parsons' sick role theory (section 2.3.5). However, this theory being more focused on psychologically predictable health-seeking behaviours, it is important to keep in mind that such behaviours are bound to differ from one culture to another. The differences could emanate from the

economic, religious or cultural background of the society, which in turn will affect their perception, experience and reaction to the cause and solution of the illness.

### **2.3.7. Suchman's stages of illness and medical care**

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The theory presented by Suchman (1965:14) with regards to the stages of illness and medical care, provides five diverse stages an individual can go through in responding to the need for healthcare. These five stages include:

- i. The experience of the individual with regards to symptoms, which include emotion and pain.
- ii. A sick role being assumed by the individual. In this second stage, the individual may explore a system of referral to validate the sickness and investigate options for treatment (Cockerham 2016:217).
- iii. Contact with medical care. In this stage, professional healthcare is sought by the individual. Nonetheless, the speed with which an individual will enter this stage is defined on the basis of their membership within cosmopolitan or parochial social networks (Cockerham, 2016:138). In case an individual's social network system is parochial, they are more likely to delay contact with medical care by persisting with the first two stages for a longer time, as compared to a person within a cosmopolitan network.
- iv. Assuming the role of a dependent patient by accepting professional healthcare treatment. There is a chance for disruption in this stage in case there is a difference of opinion with regards to the illness between the professional healthcare provider and the individual.
- v. Recovery of the individual from the illness when he or she is cured and relinquishes the role of a patient.

Like Parsons' and Mechanic's models, Suchman's theory is also more relevant to the curable rather than preventable sicknesses. The model appears to ignore important determinants such as affordability and accessibility of the healthcare facilities and other socio-cultural barriers. This is a major shortcoming in a world where universal health coverage has not yet been achieved. Suchman's model is depicted in Figure 2.1 below.



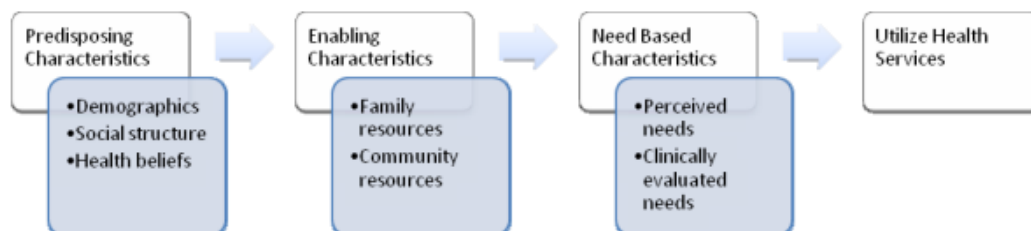
**Figure 2.1: Suchman’s stages of illness and medical care**

*Source: Adopted from Suchman (1965:14)*

### 2.3.8. Andersen’s healthcare utilisation

This model was developed by Andersen (1968:15) who considered the determinants of healthcare utilisation in three categories. These categories comprise:

- i. Characteristics that are predisposing – this category signifies the tendency of an individual to use healthcare services. Andersen (1968:15) believed that the likelihood of an individual using healthcare services is dependent on their beliefs about the advantages the health services would provide, their individual position in their community, social structure and demographics.
- ii. Allowing traits — this category refers to enabling factors such as resources that exist in the community and household. Resources pertaining to the household could include residence location and economic status. On the other hand, community resources would integrate access to facilities of healthcare and the availability of service providers who extend assistance.
- iii. Characteristics that are dependent on need. This last category would comprise the viewpoint with regards to the necessity of healthcare services, irrespective of social and individual background or viewpoints of needs that have been evaluated clinically (Wolinsky 1988:97).



**Figure 2.2: Andersen’s healthcare utilisation model**

*Source: Adopted from Andersen (1968:2)*

Andersen's model appears to apply to both curative and preventable diseases. The model is criticised for paying inadequate attention to cultural barriers and overemphasising needs for healthcare (Chowdhuri & Kundu 2020:8). Andersen however contends that culture is inherent in the predisposing characteristics. The model is suitable to the context of immunisation because it factors in some of the socio-economic determinants that may hamper or enable the service seekers as well as the service providers from provision and utilisation of the vaccination services.

### **2.3.9. Synthesising the theoretical framework**

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As Torraco (2005:360) mentioned, one advantage of an integrative literature review is to allow an overview of "a set of competing models" so as to identify which ones are more relevant to the subject under study. From the brief description of the various health models provided in sections 2.3.1 to 2.3.8, Parsons', Mechanic's, Suchman's, and Andersen's theories of healthcare seeking behaviour are more relevant for curative rather than preventable diseases. Nevertheless, the experience of parents at health facilities, including how they are treated by the health workers when they take ill, influences their decision to present their children for vaccination. Moreover, these theories indirectly relate to immunisation, which requires individual as well as community wide participation in order to succeed in protecting the society from being dysfunctional as a result of infectious diseases for which vaccines are available.

Because immunisation is a disease prevention mechanism, it requires more effort to be put into convincing parents to utilise it lest they face severe disease consequences. Most of the time they may learn from others who have fallen victim to vaccine preventable diseases (VPDs) before they develop help-seeking behaviour. Therefore, Suchman's theory (section 2.3.7 of chapter two) is relevant to the psychology of immunisation to a certain degree. Most notably, Anderson's healthcare utilisation theory is of interest to immunisation for articulating the socio-economic variables as enabling characteristics for healthcare demand and supply.

Glasgow and Linnan (2008: 505) caution that the application of theory in health interventions does not guarantee an absolute impact on results. Cohen et al 2000 quoted in Babalola and Lawan (2009:47) further suggest that socio-demographic or

psychological factors are not adequate to describe the health behaviour of human beings, and thus are not sufficient to inform the decision on devising the right intervention. Therefore, as Glanz et al (2008) advise, quoted in Glanz and Bishop (2010:412), the strongest public health interventions stand to benefit more if multiple theories are applied. Such theory was put to test by Babalola and Lawan (2009:46-59) through application of a combined behavioural—ecological model to gather and analyse data on immunisation coverage in northern Nigeria. Although there are some overlaps in terms of concepts and definitions among the various theories, each of them tends miss some important constructs that render its application incomplete or ineffective unless they are used in a complementary fashion (Hofmann, Friese & Wiers 2007:128-129, Damschroder et al 2009:2).

The behavioural–ecological model recognises that its foundation is influenced by five inter-related levels (Bronfenbrenner 1977 and McLeroy et al 1988, quoted in Babalola & Lawan 2009:47-48). These are: intrapersonal, interpersonal, institutional, community and public policy levels. The current researcher has developed multiple proxy variables to assess such relevant levels vis-à-vis the socio-economic and gender factors that affect immunisation coverage using several data collection and analysis tools.

Studies also point out that while there is no shortage of theories to analyse the causes and effects of barriers to the successful implementation of the intended interventions, it is equally important to design practical frameworks embedded with the local context to guide implementers (De Silva et al 2014:9, Damschroder et al 2009:2). As various authors lamented, there is a large gap between research and practice in healthcare fields (Glasgow & Emmons 2006:414, Murray et al 2010:8, Damschroder et al 2009:2-12). There is therefore a need to properly contextualise research findings and develop integrated tools that will help in implementing the theories in a pragmatic manner (Glasgow & Emmons 2006: 426). Proper application of such theories would help policy makers and implementers in strategising demand creation and supply provision for immunisation systems in the context of a given country.

In the previous paragraph, we have discussed various theories that are common in the health sector. Some of them are quite relevant for immunisation being a disease preventive intervention, while others are presented for comprehensiveness and

comparison purposes. The next sections (2.4 to 2.7) present the key findings from several literature sources reviewed, focusing on health in general and immunisation in particular, followed by the socio-economic and gender determinants.

## **2.4. DETERMINANTS OF HEALTH: AN OVERVIEW**

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Immunisation, as a stream of public health, is affected by determinants of health. Before going into a specific discussion on immunisation, it is useful to describe the general factors that affect health. Health is the most essential asset, a fundamental human right and a pivotal ingredient in the economic, political and social development of a country (Napier et al 2014:47, WHO 2012:2). The World Health Organisation (WHO) defines health not just as the absence of disease but a “state of complete physical, mental and social wellbeing” (WHO 2006:1). Rhetoric aside, the right to equitable and affordable health services is not always a reality. Hargreaves et al (2011:148) witnessed that the evaluation and implementation of interventions by targeting social determinants of health is quite complex. A number of factors play a role here – socio-economic and gender determinants of health being amongst them. In 2009 the World Health Assembly adopted a resolution to reduce health inequities through action on social determinants of health (WHO 2012:3). The resolution was based on the fact that “the global burden of disease, and the health inequities that are found in all countries, arise in large part from the conditions in which people are born, grow, live, work, and age” (WHO 2012:3). Such phenomena in humans’ life cycle are referred to as the “social determinants of health” (Blas, Kurup & Sommerfeld 2011:2). Although emphasis is given to social aspects, the term also entails economic, political, cultural and environmental determinants (WHO 2012:3).

Achieving equity in health is not only a means to an end but also a goal by itself (Blas et al 2011:2, UNDP & UNWOMEN 2018:9). A health intervention may have helped to reduce mortality and morbidity of the population at macro level. However, the achievement could be skewed to favour selected segments of the society. As sociologist Émile Durkheim, quoted in Napier et al (2014:5-6) argued, empirical facts could be different from social facts. For Durkheim, empirical facts are based on evidence but social facts are what we assume if our ‘belief is not challenged’ (Napier et al. 2014:5). Governments and partners should therefore pay attention to socio-

economic and gender issues by corroborating empirical facts with theories to make informed decisions about equitable participation in health policy formulation and implementation processes (WHO 2012:7).

Culture, one of the socio-economic variables, is often understood in its simplest form as a basis for categorisation of society's belief or norm or identity. However, many literature sources argue that culture is a very dynamic and complex concept. Kreuter and McClure (2004:440) state that "culture is learned, shared, transmitted inter-generationally, and reflected in a group's values, beliefs, norms, practices, patterns of communication, familial roles, and other social regularities." Robert Redfield, quoted in Napier et al (2014:4-5) defined culture as "conventional understandings, manifest in act and artefact". This definition is appreciated for focusing not only on 'shared understandings' but also the objects used by the society as shaped by common understanding. However, sharing common understanding, heritage or ethnicity does not necessarily mean sharing of the same values by all members of a given community. Appreciating cultural factors is important in designing and applying health policies and practices. While concurring that culture matters in shaping health behaviour, Kreuter and McClure (2004:440) lamented that its role in public health has been more rhetorical than applied. Similarly, Eckersley (2005:252) stated that cultural determinants of health in a society are underestimated. Accepting this reality, there is a global effort spearheaded by the World Health Organisation to translate these social concepts into practical solutions by organising various international fora themed on social determinants of health (Blas 2011:188).

To a large extent, social determinants are shaped by circumstances and the environment, and therefore are often beyond the direct control of individuals. Still, communities and individuals may indirectly influence the determinants for the betterment of their health. As shown in Table 2.1, WHO (2019a) further provides the following matrix to summarise the key determinants of health:



**Table 2.1: Summary of determinants of health defined by WHO**

<b>Factor</b>	<b>How it affects health</b>
Income and social status	Higher income and social status are linked to better health. The greater the gap between the richest and poorest people, the greater the differences in health.
Education	Low education levels are linked with poor health, more stress and lower self-confidence.
Physical environment	Safe water and clean air; healthy workplaces; safe houses, communities and roads all contribute to good health. Employment and working conditions – people in employment are healthier, particularly those who have more control over their working conditions
Social support networks	Greater support from families, friends and communities is linked to better health. Culture — customs and traditions, and the beliefs of the family and community all affect health.
Genetics	Inheritance plays a part in determining lifespan, healthiness and the likelihood of developing certain illnesses. Personal behaviour and coping skills – balanced eating, keeping active, smoking, drinking, and how we deal with life’s stresses and challenges all affect health.
Health services	Access and use of services that prevent and treat disease influence health
Gender	Men and women suffer from different types of diseases at different ages. However, it should be noted that vulnerability to health risks also differs because of gender induced power relations and roles.

Specific health determinants and the degree of their impact may vary from country to country (National Research Council and Institute of Medicine 2013:96). However, the WHO (2019a) generally groups the key determinants of health into three broad categories. These are the social and economic environment, the physical environment, and the person’s individual characteristics and behaviours. The following sections discuss these categories.

#### **2.4.1 The social and economic environment**

Eckersley (2005:252) asserted that contemporary scientific and political studies regarding the effects of the social environment on health have been focusing on socio-economic inequalities. In this context, socio-economic barriers are those

social, economic and cultural hindrances that affect people's utilisation of the healthcare services provided mostly at the local levels (Altobelli & Acosta-Saal 2011:130). According to a study conducted in many countries, those with lower socio-economic indicators exhibit high morbidity and mortality rates (Mackenbach, Veerman, Barendregt & Kunst 2004:26, National Research Council and Institute of Medicine 2013:97). For instance, Mackenbach et al (2004:26), citing a comparative study conducted in Western Europe in the 1980s, indicated that there was an excessive mortality rate ranging between 33% and 71% among middle-aged men engaged in manual occupations. Analysing socio-economic contexts within a society is an entry point in addressing equity among targeted groups in terms of creating a conducive social and physical environment, mitigating differential vulnerabilities, health outcomes and consequences (Blas et al 2011:2-4).

Like other development sectors, the social and economic environment of health is heavily affected by the political commitment and priorities that shape the policy and power balance (Altobelli & Acosta-Saal 2011:144). However, it is also critical to ensure that the local governments in charge of allocating resources and mobilising the targeted communities assume responsibility for treating beneficiaries equitably and fairly. This is due to the fact that policy implementation processes are affected by the bargaining power of the various actors involved (Uzochukwu et al 2011:107-110). Such bargaining power is partly strengthened if a segment of the society is identified and engaged as a key stakeholder, involved in consultations from planning to monitoring of the intended interventions, and economically empowered through provisions of the adequate resources (Khan & Ajmal 2011:128). In such an environment where the social and economic conditions are conducive, not just at the national level but also at local level, health services can be distributed more equitably.

The power struggle for control of resources often affects the quality of health services in a negative way. Technically sound policies and programmes can be easily influenced by bodies that control the political and economic environment through inequitable distribution of budgets and resources (Uzochukwu et al 2011:110-111). When constrained with financial resources, governments rush into cutting allocations from programmes that are associated with social sectors such as culture. There is a tendency to undermine the importance of culture in determining the success or failure of a health intervention (Napier et al 2014:4-6). Politicians also

display double standards by using cultural sensitivities as a culprit to dismiss the importance of certain programmes being designed and implemented, while the real reason could be something else. For instance, Phillips (2009:2) criticised the fact that there are some who complain that, even in a 21<sup>st</sup> century Europe, gender equality is being propagated to limit cultural diversity. Conversely, there are some who contend that it is in fact rather culture that inhibits efforts to mainstream gender equality into a society's fabric. This is why there is a need to engage stakeholders systematically and undertake perpetual advocacy at various levels (WHO 2012:7-9).

#### **2.4.2 The physical environment**

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The physical environment in relation to health refers amongst other things to infrastructure, accessibility of the health facility, condition of the workplace for health workers and health service seekers (WHO 2019e). Experts largely agree that health determinants cannot be understood holistically without factoring in physical environmental variables (National Research Council and Institute of Medicine 2013: 192).

The conduciveness of the physical environment could be a defining factor in health service provision. In fact, it can be a pre-condition in many instances before considering other social and individual health determinants. The service providers and users should feel secured and safe to render and utilise the health services. The perception and practice in waste management of health disposables and, in the context of immunisation, safe vaccine administration affect the demand for such health services.

#### **2.4.3 The person's individual characteristics and behaviours**

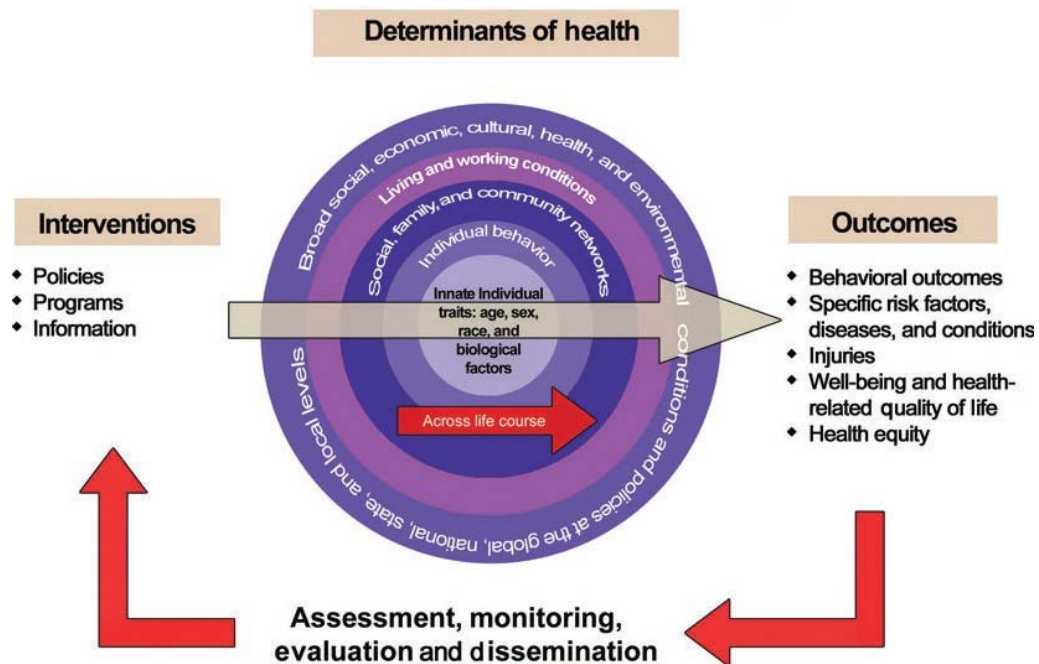
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Scientific justifications and observation of the health infrastructure being constant, perceptions of individuals about safety, adequacy, fairness and affordability might not always align with one another. Such variances in perceptions of the social and physical health determinants are influenced by the individual's personal behaviour, demographic characteristics and experience in utilising the health services (Napier et al 2014:41). At the same time, values and behaviours are communally conditioned and closely linked to the culture, norms and traditions of a given society

(Napier et al 2014:15). Napier et al (2014:16-17) therefore contend that unlike anthropologists, medical educators induce conclusions from individual behaviours unto categories of people. While the risk of generalisation should be cautiously handled, such application of individual perception to a segment of the community that share common traits is made possible by the strong role culture plays in a society (Kreuter & McClure 2004:439).

Eckersley (2005:252-253) places individualism at “the centre of a framework of values, norms and beliefs with profound significance for well-being.” On the other hand, individualism is a struggle within oneself to be free from the shackles of customs and values that the society imposes through culture, religion and other norms. It is, therefore, important for health actors not to ignore individualistic behaviours while public health interventions are dominantly guided by communal traits. This is even more pertinent to immunisation, where not being able to reach every targeted individual may expose the community to the risk of certain infectious diseases. While a community’s collective perception may have a profound influence, the decision of non-compliance with public health programmes is essentially made by an individual based on her/his perception of well-being or due to a negative attitude towards the efficacy of the medicine or any other reason. After reviewing results of psychological tests over 60 years in America, Twenge (2000, 2004), quoted in Eckersley (2005:254-255) suggested that social perspectives on public health must consider personality since personalities are getting stronger to impact “the psychological pathways between social conditions and health.” Twenge’s quote of an Arab proverb sums it up well in expressing the influence of individualism – “Men resemble their times more than they resemble their fathers” (Eckersley 2005:255).

In summary, as shown in Figure 2.3, the socio-economic factors, the physical environment and the individuals’ characteristics and behaviours in relation to health are intertwined. In other words, these variables of health affect one another either positively or negatively in the determination of interventions and the impact of the outcomes. In the words of scholars that compiled scientific literature on United States disease prevention policies and practices, the physical and socio-economic “environment influences one’s ability to engage in healthy behaviours, receive healthcare, and protect oneself from direct environmental threats” (National Research Council and Institute of Medicine 2013:97).



**Figure 2.3: Key determinants of health and their inter-relationship in affecting interventions and outcomes**

*Source: National Research Council and Institute of Medicine 2013:98*

Section 2.4 highlighted the key concepts of health and its major determinants. Although health is not merely a lack of disease, the main goal of health interventions is to prevent, cure, or mitigate the prevalence of a disease. Broadly speaking, disease is divided into communicable and non-communicable. Immunisation is a programme that aims to tackle vaccine preventable diseases which fall under communicable diseases. Section 2.5 below discusses immunisation focusing on global policy, strategies and practices.

## **2.5. IMMUNISATION: OVERVIEW OF GLOBAL POLICY, STRATEGY AND PRACTICES**

Vaccination exercises, particularly through supplementary immunisation campaigns and targeted outreach services, are conducted to boost population immunity. Many countries have adopted an integrated approach to coordinate vaccination activities by putting in place an expanded programme on immunisation (EPI). Vaccinations are administered to control, eliminate or eradicate vaccine preventable diseases (AFRO 2017:6).

At this junction, before delving deep into discussing immunisation, it may be relevant to explain two key terms: population and immunisation.

### **2.5.1 Defining population**

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From the tenets of public health, an assessment of data pertaining to population forms the grounds not only for explaining aetiology but also helps in identifying and tackling issues related to healthcare, health inequities in terms of health policies and outcomes brought about because of social injustice (Krieger 2011:854). A proper understanding of population is so fundamental for a wide range of sciences such as demography, ecology, epidemiology, sociology, population genetics, population biology, biostatistics and statistics (Gaziano 2010:2288).

The meaning of the term population has gradually widened in the course of time to encompass diverse concepts (Krieger 2011:636, Weiss & Long 2009: 703–710). If the Latin roots of the word ‘population’ are taken into consideration, according to the 2019 Oxford English Dictionary (2019) the basic definition of ‘population’ is people living in or populating a specific location. While the definition of ‘population’ provided by the Oxford English Dictionary is literal and simplistic, the term has evolved to acquire a meaning that is largely technical. For example, in the domain of statistics, ‘population’ would refer to the totality of objects, either hypothetical or real, or individuals who are being considered, of which statistical attributes might be estimated on the basis of studies of samples or a sample that has been drawn from it (Hanlon & Larget 2011:8). In genetics (or biology), again, the term ‘population’ pertains to a collection of plants, humans or animals amongst whom breeding occurs (Kreager 2009: 481). From the perspective of epidemiology, under which immunisation falls, Bhopal (2016:xxvi) stated that population is “a complex concept with multitude meanings, but crucially, the group of people in whom the problem under study occurs, and in whom the results of the research are to be applied”. The target population for immunisation is described in sections 2.5.3 and 2.5.5. of this chapter.

## 2.5.2 Defining immunisation

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Immunisation can be defined as a procedure through which the immune system of an individual tends to be fortified against agents that are widely known as immunogens (Furman & Davis: 2015:5271). At a time when the immune system of an individual is exposed to foreign molecules, in such instances it would tend to generate an immune response. However, it also has the capability to promptly respond to a consequent encounter (Otubor et al 2015:34). According to a definition that has been provided by the WHO, immunisation is a procedure through which an individual is rendered immune or rather resistant to a disease that is infectious (WHO 2019c). Most usually, the process of immunisation is facilitated by vaccine administration (WHO 2019c). In simple words, immunisation can be construed as the ability of an individual to develop immunity. Since immunity is essentially considered as a state of development of substantial biological defences that work towards preventing disease, infection or any other invasion of the biological kind is unwarranted (Kapoor & Vyas 2010:14–20). In the same vein, Baxter (2007:552–556) defined immunisation as a process through which the body is rendered able to prevent detrimental microorganisms from acquiring access to it.

There are diverse techniques through which immunisation can be facilitated, vaccination being the most common one. Administering vaccines against bacteria, viruses or other microorganisms that are known to cause disease will help in fortifying the immune system of an individual's body, which further enables it to fight or restrict the scope for an infection from occurring (Vidyapeeth 2019:183). It is possible to administer immunisation in a manner that can be either active or passive.

### 2.5.2.1 Active immunisation

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Active immunisation refers to a situation where the immune systems of humans are challenged by the introduction of a vaccine that is made up of altered pathogens (Tavares et al 2011:92). Considering the fact that the immune system has a long-lasting memory in terms of an extensive array of particular agents of infection, vaccination is instrumental in extending cover for an individual on a long-term basis against a specific disease (Carr et al. 2000:20, Furman & Davis: 2015:5274). Immunisations that are active in nature offer an individual not only immune

protection, but it also helps to lower the spread of an agent of infection within the population. Thus, it helps in safeguarding individuals who have not received any vaccination (Mallory et al. 2018:66). This phenomenon in medical parlance is referred to as herd immunity. Herd immunity operates within a target population once the appropriate immunisation rates have been realised, thus leading to a reduction in the occurrence of the disease (Bhopal 2016:2, Rose & Andraud 2017:3). Nevertheless, following the reduction in the occurrence scope of a specific disease, there also exists the threat that individuals might no longer believe that they require immunisation, and subsequently there would be a drop in the rates of vaccination (Victor & Omer 2013:2). Without proper education and orientation, the concept of herd immunity can mislead the general public from taking the necessary precaution against infectious diseases such as the COVID-19 pandemic. There were such instances in USA and some parts of Europe.

Most of the reasons in developing countries for not allowing children to receive vaccination stem from cultural, religious or economic convictions. However, there has also been an anti-vaccination movement in the developed world due to their own version of scientific arguments. Despite reassurances from the scientific community and public health authorities regarding the safety of vaccines, some caregivers are still sceptical about the safety of certain vaccines such as the measles-mumps-rubella (MMR) vaccine (Patel et al 2019:403). For example, the sceptics in the United States fear that MMR vaccines may cause autism (Smith 2019). Others are concerned that children are receiving too many vaccines to handle at the early stage of their childhood and demand alternative schedules (Smith 2019). Such caregivers can be too stubborn to be convinced, even if they are presented with evidence proving that there is no cause and effect relationship between MMR vaccine and autism or that the current immunisation schedule is fit for the specified age group. This is not to mean that vaccines do not have adverse effects at all. It is rather that the benefits of vaccination outweigh the risks of not vaccinating by a much greater margin. Adverse effects of vaccination should be communicated transparently to key immunisation actors for the necessary precautions. As Politi, Jones and Philpott (2017:237) advised, the solution is for the healthcare professionals and authorities to establish close relationships with and persistently engage the hesitant parents in a conversation to dispel their fears and concerns.



### **2.5.2.2 Passive immunisation**

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Passive immunisation pertains to the exchange of antibodies that have been created by one individual to another individual with the objective of restricting or reducing the scope of an anticipated infection (Tavares et al 2011:90). Compared to active immunisation, this technique is not known to be very effective and also has a shorter life span, although it does have the distinct benefit of offering immediate effects (Carr et al 2000:20). Such a strategy is significant while utilising antibody preparations against prophylaxis or for treating tetanus, hepatitis A and B, varicella and rabies (Hemming 2001:862). An extensive variety of immunoglobulin G (IgG) is contained within pooled human serum immune globulins which can be utilised against diverse agents (Barahona & João 2016: 3). The growth in the availability of immunoglobulin preparations, which are injectable and can be safely administered in high dosages, has extended the utility of this treatment. Individuals who are known to have immune-deficiencies that are congenital in nature and are administered with a systematic infusion of immune globulin have been observed to experience a drop in the quantum of infections (Kobrynski 2012: 279). Nonetheless, passive immunisation is not without its own shortcomings. Passive immunisation has the propensity to interfere with immune responses to certain antigens such as measles vaccines. However, it can be utilised in an effective manner in tandem with active immunisation to avoid diseases like hepatitis B and rabies (Young & Cripps 2013:1888).

### **2.5.3 Global immunisation target**

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The 65<sup>th</sup> resolution of the World Health Assembly hosted by WHO (2013:85), in ratifying the current global vaccine action plan (GVAP) 2011-2020, had set the following vaccination coverage targets in every region, country and community by end of:

- “2015, reach 90% national coverage and 80% in every district or equivalent administrative unit with three doses of diphtheria-tetanus-pertussis containing vaccines, and

- “2020, reach 90% national coverage and 80% in every district or equivalent administrative unit with all vaccines in national programmes, unless otherwise recommended” (WHO 2016c:10).

However, more than half of the African countries including Nigeria did not achieve this result. Through adoption of the Reaching Every District (RED) strategy almost half of them could improve their DPT3 coverage from 57-80% (AFRO 2017:6). DPT3 stands for three doses of diphtheria-tetanus-pertussis containing vaccine. RED is a strategy that aims to support countries to strengthen their immunisation systems and increase coverage by making vaccination services sustainable, equitable and accessible at district, health facility and community levels (AFRO 2017:7).

Coverage rate is the factor of the number of vaccinated people over the total target population also known as eligible population. Determining the right number of people in the target population is a key ingredient in immunisation planning, implementation and monitoring. Target population is one of the most important cost drivers for immunisation service delivery from both a demand creation and supply provision perspective. A manipulation of the target population to unfairly skew the allocation of resources is one of the challenges in immunisation management. Not only the manipulation of population data but also the falsification and misreporting of processed data remain major challenges to the proper tracking of whether a country is on course to achieve the global immunisation target or not. To mitigate such challenges, some countries try to use triangulated data obtained from a census, locally generated population data including head counts, administrative coverage of population reached with vaccination campaigns and/or from a microplanning exercise conducted at the lower administrative levels (AFRO 2017:29).

#### **2.5.4 Immunisation strategy**

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Immunisation partners led by the World Health Organisation (WHO) have devised several strategies and tools to successfully implement vaccination programmes. The strategies provide overall guidance but need customisation to fit into local contexts and harmonise with national policies. The ultimate goal of an immunisation strategy is to ensure that the vaccination services are made available and are delivered to all eligible beneficiaries as cost-effectively as possible.

The global immunisation partners comprising the Bill & Melinda Gates Foundation, Centre for Disease Prevention and Control of United States of America (CDC-USA), World Health Organisation (WHO), United Nations Children’s Fund (UNICEF), John Snow Inc. (JSI) and Gavi Alliance – the Global Alliance for Vaccines and Immunisations – put together a comprehensive framework of strategies and practices for routine immunisation. Routine immunisation is the foundation of health systems and is aimed at improving immunisation coverage in a sustainable and long-term manner (WHO 2016c:2). Within routine immunisation, there are three vaccination strategies depending on the average distance between the location of the beneficiaries’ residences and health facilities. For example, in Nigeria the fixed posts are appropriate within a distance of 2 kilometres, outreaches are warranted for a distance of between 2 and 5 kilometres, and mobile vaccination teams can be deployed to reach communities in the remote areas for more than 5 kilometres. The alternative or complementary strategy to a routine immunisation strategy is supplementary immunisation activities (SIAs). SIAs are often conducted to rapidly expand immunisation coverage and increase the level of population immunity to diseases targeted for control, elimination and eradication. However, there is no guarantee that such strategy will result in the long-term immunisation system strengthening (WHO 2016c:23).

The strategic document sanctioned by the global partners mentioned above itemised the key strategies and activities under four main areas of action (Table 2.2).

**Table 2.2: Summary of strategies framework for routine immunisation**

Main areas of action	Strategy and practices
Maximise reach	<ul style="list-style-type: none"> <li>• Detect and reach the unreached</li> <li>• Design services to reach all equitably</li> <li>• Build capacity of vaccinators and managers</li> <li>• Ensure vaccine quality and availability</li> <li>• Create synergy with special vaccination efforts</li> <li>• Integrate immunisation services</li> </ul>
Manage the programme	<ul style="list-style-type: none"> <li>• Secure political commitment and partnerships</li> <li>• Plan, budget and mobilise resources</li> <li>• Ensure excellence in national leadership</li> <li>• Set programme policy and guidance</li> </ul>
Mobilise people	<ul style="list-style-type: none"> <li>• Engage communities and create demand</li> </ul>

Main areas of action	Strategy and practices
	<ul style="list-style-type: none"> <li>• Mobilise and communicate for vaccination</li> <li>• Address vaccine hesitancy and false perceptions</li> </ul>
Monitor progress	<ul style="list-style-type: none"> <li>• Monitor programme performance and disease occurrence</li> <li>• Evaluate the programme through surveys and reviews</li> </ul>

*Source: Global Routine Immunisation Strategies and Practices: a companion document to the Global Vaccine Action Plan (WHO 2016c:4)*

Customising these strategies to the local context is important. For example, unlike Nigeria, in several developing countries including 22 of those mostly in Southern and Northern part of the continent, schools are mandated to check the status of vaccination in some level of the education system (WHO 2021). Such an approach may serve as a good incentive for parents to ensure that their children receive the basic vaccination types as part of school admission criteria. While the requirement compels reluctant parents to fulfil the requirement, it also gives confidence for the school community that the environment is protected from vaccine preventable infectious diseases. However, in some developing countries imposing such a requirement may backfire on the school enrolment rate, which is already quite low. Some parents may find it a disincentive to send their children to school if the vaccination criterion is perceived as a deterrent factor.

### **2.5.5 Global immunisation schedule**

Immunisation schedules are designed to facilitate effective implementation of a particular vaccination programme. The schedules are generally developed by health authorities at central or national level. The national immunisation schedules are often adapted from international standards issued by WHO to fit into the countries specific situation. WHO (2019d) publishes the immunisation schedule, which summarises the recommended routine vaccines for specified age groups — children, adolescents and adults (Table 2.3). As elaborated upon in the RED strategic document, WHO’s latest immunisation schedule provides an overview of vaccine recommendations across the lifespan, including both primary series and booster doses (AFRO 2017:39, WHO 2019d). WHO and other global partners recommend to vaccinate children before they are exposed to infectious diseases, not only after birth but also before the infant is born (AFRO 2017:39). For example,

the tetanus toxoid (TT) vaccine is given to pregnant mothers or any woman of childbearing age to-protect the mother and the new-born infant during birth and during the first weeks after birth. However, such vaccines should not conflict with the antibodies the infant receives from its mother. Therefore, most vaccines are administered during infancy in the first few months after birth, and the immunisation schedule is prepared considering this. It is important that the schedule for immunisation be communicated to the public widely through appropriate media and at healthcare centres.

**Table 2.3: WHO recommendations for routine immunisation schedule (updated on 26 April 2019)**

Antigen	Children	Adolescents	Adults	Considerations
<b>Recommendations for all immunisation programmes</b>				
<b>BCG</b>	1 dose			Birth dose and HIV; Universal vs selective vaccination; Co-administration; Vaccination of older age groups; Pregnancy
<b>Hepatitis B</b>	3-4 doses	3 doses (for high-risk groups if not previously immunised)		Birth dose; Premature and low birth weight Co-administration and combination vaccine Definition high risk
<b>Polio</b>	3-4 doses			bOPV birth dose; Type of vaccine Transmission and importation risk criteria
<b>DTP-containing vaccine (DTPCV)</b>	3 doses (2 boosters 12-23 months (DTPCV) and 4-7 years (Td/DT-containing vaccine))	1 booster 9-15 yrs (Td)		Delayed/interrupted schedule; Combination vaccine; Maternal immunisation
<b>Haemophilus influenzae type b</b>	Option 1	3 doses, with DTPCV		Single dose if > 12 months of age Not recommended for children > 5 yrs old Delayed/interrupted schedule Option 2 Co-administration and combination vaccine
	Option 2	2 or 3 doses, with booster at least 6 months after last dose		
<b>Pneumococcal (Conjugate)</b>	Option 1	3 doses (3p+0) with DTPCV		Schedule options (3p+0 vs 2p+1) Vaccine options HIV+ and preterm neonate booster
	Option 2	2 doses before 6 months of age, plus booster dose at 9-15 mos of age (2p+1) with DTPCV		
<b>Rotavirus</b>		2-3 doses depending on product with DTPCV		Vaccine options Not recommended if > 24 months old

Antigen	Children		Adolescents	Adults	Considerations
<b>Measles</b>		2 doses			Combination vaccine; HIV early vaccination; Pregnancy
<b>Rubella</b>		1 dose	dose (adolescent girls and women of childbearing age if not previously vaccinated)		Achieve and sustain 80% coverage Combination vaccine and Co-administration Pregnancy
<b>HPV</b>			2 doses (females)		Target 9-14 year old girls; Multi-age cohort vaccination; Pregnancy; Older age groups ≥ 15 years 3 doses HIV and immunocompromised
<b>Recommendations for certain regions</b>					
<b>Japanese Encephalitis</b>	Inactivated Vero cell-derived vaccine: generally 2 doses Live attenuated vaccine: 1 dose Live recombinant vaccine: 1 dose				Vaccine options and manufacturer's recommendations; Pregnancy; Immunocompromised
<b>Yellow Fever</b>	1 dose, with measles containing vaccine				
<b>Tick-Borne Encephalitis</b>	3 doses (> 1 yr FSME-Immun and Encepur; > 3 yrs TBE-Moscow and EnceVir) with at least 1 booster dose (every 3 years for TBE-Moscow and EnceVir)				Definition of high risk Vaccine options; Timing of booster
<b>Recommendations for some high-risk populations</b>					
<b>Typhoid</b>	Typhoid conjugate vaccine (Typbar-TCV®): 1 dose; Vi polysaccharide (ViPS): 1 dose; Ty21a live oral vaccine: 3-4 doses; Revaccination for ViPS & Ty21a; every 3-7 years				Definition of high risk Vaccine options
<b>Cholera</b>	Dukoral (WC-rBS): 3 doses ≥ 2-5 yrs, booster every 6 months; 2 doses adults/children ≥ 6 yrs, booster every 2nd year; Sanchol, Euvchol & mORCVAX: 2 doses ≥ 1 yrs, booster dose after 2 yrs				Minimum age Definition of high risk
<b>Meningococcal</b>	<b>MenA conjugate</b>	1 dose 9-18 months (5µg)			2 doses if < 9 months with 8-week interval

Antigen	Children	Adolescents	Adults	Considerations
	<b>MenC conjugate</b>	2 doses (2-11 months) with booster 1 year after 1 dose ( $\geq 12$ months)		Definition of high risk; Vaccine options
	Quadrivalent conjugate	2 doses (9-23 months) 1 dose ( $\geq 2$ years)		
<b>Hepatitis A</b>	At least 1 dose $\geq 1$ year of age			Level of endemicity; Vaccine options; Definition of high-risk groups
<b>Rabies</b>	2 doses			PrEP vs PEP; definition of high risk; booster
<b>Dengue (CYD-TDV)</b>	3 doses 9-45 years of age			Minimie risk of vaccine among seronegative individuals by pre-vaccination screening; Pregnancy & lactation
<b>Recommendations for immunisation programmes with certain characteristics</b>				
<b>Mumps</b>	2 doses, with measles containing vaccine			Coverage criteria > 80% Combination vaccine
<b>Seasonal influenza (inactivated tri- and quadri-valent)</b>	First vaccine use: 2 doses Revaccinate annually: 1 dose only		Priority for pregnant women 1 dose $\geq 9$ years of age Revaccinate annually	Priority risk groups Lower dosage for children 6-35 months
<b>Varicella</b>	1 - 2 doses		2 doses	Achieve & sustain $\geq 80\%$ coverage Pregnancy Co-administration with other live vaccines



## 2.5.6 Benefits and impact of immunisation

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There is a broad consensus in most of the reviewed literature that immunisation is one of the most cost-effective public health interventions (Kolff, Scott & Stockwell 2018:1636, WHO 2016c:4, Antai 2011b:136, Ophori, Tula, Azih, Okojie & Ikpo 2014:67). With the introduction of vaccination, there has been a sustainable enhancement in the number of children who survive their first birthday. For instance, as we progressed into the 20<sup>th</sup> century, 100 in 1000 children born within the United States did not survive until their first birthday (Anderson 2015:1). In the 2010s, that rate has been substantially lowered to 7 in 1000 births (Anderson 2015:1). Globally, immunisation helps to avoid around an average of two million deaths each year (Ventola 2016:426, WHO 2013:15-16). As such, immunisation has a rather direct impact on mortality and morbidity that stem from vaccine preventable diseases (Plotkin & Orenstein 1999:950). For example, studies show that measles vaccines enhance the rate of childhood survival to a much larger degree, ranging from 30% to 86% (Aaby et al. 1995:481). Aaby et al (1995:481) further concluded that the vaccine is more impactful when administered on children at the infancy with a higher efficacy rate of between 44% and 100%. One of the most prominent examples of the immunisation success story is the eradication of smallpox. While smallpox was quite a virulent disease which was responsible for the death of more than one-third of individuals who were infected, in 1980 it was declared completely eradicated with the help of effective vaccinations (Fenner 1988:132). As shown in section 2.5.5, vaccines are administered to provide people with adequate protection from influenza, polio, measles, yellow fever and many other diseases. In addition, the healthcare personnel are also vaccinated to safeguard them from contagious diseases that are not only airborne but can also be contracted through shared tools (Elmiyeh et al 2004:326).

Vaccines offer not only individual protection of the people who have been vaccinated, but the cover of immunity is also extended across the community when the disease is prevented from spreading. Infection that spreads from person to person occurs when an infected person comes in contact with a person who is susceptible (Orenstein & Ahmed 2017:4031). If the infected person only comes in contact with individuals who have already been immunised, the infection may not spread from the index case. Thus, the infection is successfully controlled within the

population. This kind of person-to-person spread of infection can be interrupted, even in a situation where 100% immunity does not exist. This is mainly due to the fact that individuals who have been infected and are known to be transmitting mediums do not have an infinite number of contacts. As stated in section 2.5.2.1 above, this is a herd immunity advantage aided through vaccination (Li et al 2009:257).

The 2011-2020 GVAP discussed in section 2.5.3, duly acknowledged that immunisation is not only one of the most cost-effective interventions but should also be recognised as a core component of human development rights (WHO 2013:85). However, such a fundamental right has not been duly observed in a number of developing countries for various reasons. A large majority of fatalities from vaccine preventable diseases are observed in the Sub-Saharan African region where Nigeria is also located. In order to tackle this inequity, GVAP 2011-2020 ambitiously envisioned “a world in which all individuals and communities enjoy lives free from vaccine-preventable diseases” (WHO 2013:13). Unfortunately, as stated in section 3.5.4 of chapter three, this goal is not on course to be achieved in 2020 in Nigeria.

As discussed in the social ecological model (section 2.3.3), the impact of immunisation is determined by a diverse array of factors which could occur at a family, community and individual level. It is also determined on the basis of issues that might arise at the time of service delivery or because of the health system situation (Hilber et al 2010:4). The bottlenecks for immunisation, for instance, have the propensity to impact the demand for its service. At the same time, it also depends on how services are supplied, i.e. the conditions and the manner in which vaccination is provided. Despite the challenges and issues associated with vaccination, there is a positive correlation between immunisation and development. A strong immunisation system which results in high vaccination coverage, contributes towards the achievement of multiple development goals in health, equity and other economic benefits (WHO 2013:6, AFRO 2017:6, WHO 2017a:19). These development goals are well documented in several international proceedings including the Millennium Development Goals (MDGs), 2030 Sustainable Development Goals (SDGs), the 2011-2020 Decade of Vaccines, the 2030 Universal Health Coverage (UHC) agenda, the 2011-2020 Global Vaccine Action Plan (GVAP), the Global Routine Immunisation Strategy and Plan (GRISP), and the Regional Strategic Plan for Immunisation 2014-2020 (AFRO 2017:6, WHO

2013:29). Inversely speaking, poor immunisation coverage will result in proliferation of vaccine preventable diseases that have direct and indirect social and economic costs which can be exemplified by sick children missing school, parents losing time from work on other social commitments, illness of some health workers that may disrupt health services, and the like (CDC 2015:33).

In devising a new decade of vaccine action plan for 2011-2020, immunisation partners recounted the major achievements derived from investments in immunisation over several decades (WHO 2018c:2-9). These remarkable dividends include “the eradication of smallpox, saving of countless lives lowered the global incidence of polio by more than 99 percent and neonatal tetanus by 94 percent, reduced illness, disability and death from diphtheria, tetanus, whooping cough, measles, Haemophilus influenzae type b disease, and epidemic meningococcal A meningitis, and progress in the introduction of vaccines against pneumococcal disease and rotavirus diarrhoea as well as vaccines which prevent chronic diseases such as liver and cervical cancer” (WHO 2013:6-7, WHO 2016c:6).

However, sustaining these gains and introducing new vaccines require hefty domestic investments, political commitment from national authorities, technical and financial support from partners, community engagements, capacity building and motivation of the health personnel. Such investments, if monitored systematically, can have measurable health and economic returns. According to the projection made for the 2011-2020 vaccine action plan, if all stakeholders commit to the funding requirement of 60 billion dollars to extend coverage for existing vaccines, introduce new vaccines and pursue elimination and eradication for specific diseases in about 94 low immunisation performing countries, up to 26 million deaths can be averted and hundreds and billions of dollars will be generated in terms of economic impact over the decade (WHO 2013: 77-79). According to the 2018 assessment report of the GVAP by the strategic advisory group of experts on immunisation, “every \$1 spent on childhood immunisation returns \$44 in economic and social benefits” (WHO 2018c:23). This is a huge rate of return on investment by any measure. However, because of the intangibility and complexities of calculating the economic returns of immunisation, such figures do not often entice national authorities to give priority to the programme in terms of resource allocation and political support.

Despite its proven cost-effectiveness, the immunisation programme suffers from lack of resources at global and national levels. Determining the key socio-economic and gender variables of immunisation is critical to maximise the opportunities, tackle the barriers for improving vaccination coverage and make informed decisions to optimally allocate limited resources. Sections 2.6 and 2.7 below are dedicated to discussing these barriers.

## **2.6. SOCIO-ECONOMIC VARIABLES OF IMMUNISATION**

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The objective of regular immunisation is to make sure that vaccination can be accessed, utilised, and made affordable to all in a rather efficient and effective manner (Shen et al 2014:382). In view of the fact that weaknesses within health systems are partly revealed by any resurgence of vaccine preventable diseases such as measles in many countries including USA and the outbreak of Ebola in West and Central Africa, there is a need to understand factors that impede or facilitate immunisation efforts (Barbiero 2014:374). The impeding or enabling factors for immunisation could be several. The most frequently mentioned barriers as they pertain to socio-economic determinants are described briefly below.

### **2.6.1 Maternal education**

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According to studies conducted in India and Pakistan there is a positive relationship between healthcare use and the level of a mother's education (Mehta, Parmar, Gamit & Mansuri 2014:80, Khan & Ajmal 2011:119). The uptake of complete immunisation was found to be higher amongst children whose mothers were adequately educated (Vonasek et al 2016:14, Khan & Ajmal 2011:119, Balogun et al 2017:4). The 2018 Nigerian demographic and health survey report also asserted that "children whose mothers have more than a secondary education are more likely to receive all basic vaccinations than those whose mothers have no education (62% and 15%, respectively)" (NPC & ICF 2019a:226).

In instances where the level of education possessed by mothers is less or in cases where mothers are illiterate, they may not have the capacity to process the information about the health benefits offered by immunisation, and they may not be aware of how immunisation affects mortality and morbidity rates either. However, even though many literature sources agree on the significance of the mother's

education in affecting immunisation uptake, there is a degree of diversity among countries and communities in terms of assessing its real impact and other socio-economic factors that affect maternal education itself. Therefore, there is a need to make supplemental local studies rather than blindly apply the findings from a different country and context. The relevance of such studies also applies to the other variables discussed below.

### **2.6.2 Income level**

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Household income is an important variable that can affect immunisation coverage. Although immunisation is provided free of charge in government run health facilities in developing countries, there are a number of indirect costs that are expected to be borne by caregivers. These include transportation and feeding costs, particularly for those caregivers that live in rural areas and need to travel long distances and for long hours.

As shown in the 2018 NDHS report, children born to households that belong to the highest wealth quantile were found to be 59% more likely to receive all basic vaccinations (NPC & ICF 2019a:226). Ilusanya and Oladosun (2017:485) indicated that the income level of individuals, particularly women, can impact the immunisation coverage rate. Income related status of women substantially influence their health related attitudes and survival of their children. Women who have a high level of income have more scope to attend immunisation sessions as compared to women who are poor (Antai 2011a:143). However, it is not always the case that higher household income would guarantee the acceptance of immunisation. Income can play a positive role if it is not hampered by other socio-economic factors such as culture, religion and literacy levels of the caregivers.

### **2.6.3 Structure of family support system**

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Families that live in rural areas and have more number of children in their homes generally tend to avoid immunisation. Though the structure of the family in term of number of children has an impact but it was more importantly associated with other factors such as affordability and accessibility (Mathew et al 2016:1526). For such families, it is a challenge to periodically take their children for immunisation especially when they are living in remote locations; also for those make a living from

subsistence income (Antai 2011b:137). Furthermore, in a family where there is no male adult and the woman is the only one earning a livelihood, it became a major challenge for her to spare time to get the children vaccinated (Bernstein & Bocchini 2017:10).

In Africa and Asia, elders command high influence and respect from the community in general and in their own household in particular. Lack of support from or being misled by an influential extended family member is also another impediment to immunisation. There are several families where the elders within the family are not in favour of immunisation due to their own pre-set beliefs and attitudes. In such situations, even if the parents are desirous of getting their children immunised, they are restricted from doing so. A study conducted by Ahmad et al (2010:65) revealed that limited mobility of women in rural India and the absence of support from family acted as a key barrier to immunisation. In some instances, the male members in the family were not supportive, and in other instances the male members believed that since polio vaccine was already administered, there was no need for any other vaccination.

#### **2.6.4 Family occupation**

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The findings from a study by Bbaale (2013:123) highlighted the association of family occupation with immunisation. It was found that women who were engaged in blue-collar occupations and agriculture had an 8% less likelihood of receiving the recommended three dosages of DPT than compared to women who were engaged in white-collar occupations. Likewise, children whose fathers were engaged in blue-collar occupations and agriculture had an 8-10% smaller chance of receiving full immunisation coverage for measles as opposed those who were engaged in white-collar occupations.

Another study conducted by Obiajunwa (2013:94) and Kitamura, Komada, Xeuatvongsa & Hachiya (2013:179) also revealed that maternal factors including the occupation of the mother made an impact on childhood immunisation coverage. A study conducted by Oleribe et al (2017:2) indicated that the occupation of the mother played a role in the initiation, continuation and successful completion of childhood immunisation. The findings here were in tandem with the findings of the study by Kitamura et al (2013:183), which also concluded that vaccination coverage

amongst children mostly hinged on the employment status and several other social factors of the mother.

White-collar occupations often pay higher income than blue-collar occupations. The former also require higher education than the latter in most cases. Therefore, it can be established that education level, type of occupation and income level are closely related and have an impact on immunisation. However, it is difficult to generalise. It could also be the case that caregivers who make a living on agriculture could earn higher income than the average white-collar worker depending on the size and utilisation of their asset. Moreover, those households that are earning higher income or are highly educated can still be sceptical about immunisation for other reasons such as culture, religion or politics.

### **2.6.5 Demographic factors**

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Demographic factors include age, religion, and other social issues. Some studies show that children's age affect vaccination coverage. According to Gram et al (2014:804) low immunisation rates were observed amongst children who fell under the range of 10–13 weeks old. Such findings could be influenced by the challenges of bringing young children from remote rural communities to the health facilities (Kawakatsu et al 2015:1531). Another reason for any hesitation to bring children to vaccination posts is the inconvenience parents are subjected to because of lengthy delays in vaccination sessions at health facilities while caregivers have to nurse their young children for long hours (MacDonald 2015:3).

These hesitations could also be associated with religious reasons. A study conducted by Pierik (2017:234) revealed that religious factors made an impact on the rate of immunisation. Variations within religious affiliations were directly linked to variations in rate of immunisation as was found in a study conducted in Nigeria. The findings of this study revealed that the rate of immunisation for Christians was 66%, but for Muslims it was 32% (Anyene 2014:6). Furthermore, according to El Kogali and Krafft (2015:17) an increment in poor health and childhood mortality rates amongst Muslim communities as compared to Christians was observed in Africa and the Middle East regions. Low rates of immunisation within particular religious groups were also attributed to many factors like alienation and marginalisation from the neighbouring society, restricted access to social programmes, and high level of

respect for the opinions presented by religious leaders (Kitta 2012:233). From this perspective, there have been religious leaders who have stated that vaccination is an act of sin that is committed against God (Pelčić et al 2016:18).

Some studies showed that there are factors that created racial variations in vaccinations. These comprise variation in attitudes to preventive care and vaccination, tendency to seek out and accept vaccination, differences in the scope of providers recommending vaccination, variations in the care quality that is provided to racial populations, and variations in concerns pertaining to vaccine safety and vaccination on the whole (Lu et al 2015:422). There is a smear campaign in the Middle East and northern Nigeria that vaccination is a disguise to undermine the reproduction of certain races. These variations may by and large have to do with perceptions, attitudes and customs of the caregivers or health service providers in favour of or against a particular race. It is still very important to pay attention to such perceptions and address misunderstandings in order to help increase vaccination coverage.

Of course, the magnitude of the impact associated with these demographic variables in vaccination compliance varies from person to person and community to community. However, regardless of the reasons, missing the first or successive doses would expose children to diseases that could be prevented through complete vaccine administration (Zaidi et al 2014:1716).

#### **2.6.6 Access to immunisation information and healthcare**

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Easy access to information pertaining to immunisation can be instrumental in enhancing vaccination acceptance. A study conducted by Kawakatsu et al (2015:1532) revealed that mothers who were privy to information related to immunisation – either from healthcare providers or media or other persons – were more likely to acquire full immunisation coverage as compared to those who did not receive any information. These findings are backed by other studies such as those of Douba et al (2015:724) and Russo et al (2015:2), who asserted that lack of information from healthcare providers regarding immunisation and no or poor access to mass media information sources negatively impacted the rates of immunisation. Connection to healthcare facilities partially acts as a proxy for



association with healthcare professionals that extends an opportunity for people to acquire immunisation related information (Antai 2011a:137).

Another key factor that acts as a major barrier to immunisation is lack of access to healthcare facilities. The health facilities could be there but accessing them may be hindered owing to factors that are socio-economic in nature or many other factors. Several parents face hardships when they are unemployed, financially indebted, or divorced (Temoka 2013:68–72). There also are parents who are overworked or single or not in a position to manage the vaccination of children. In the instance that they lose their jobs and subsequently also their health insurance coverage, parents are hesitant as they believe it would be a burden on their finances, time and energy. Families might also not be able to adequately access healthcare facilities owing to the long distance from their homes to the healthcare facilities. This is further impeded by the absence of appropriate modes of transportation or clinic working hours that do not match their convenience (Anderson 2014:345). The inability to access health facilities for any reason would deprive the caregivers of the opportunity to obtain health-related information including on vaccinations.

### **2.6.7 Past immunisation experience, parental attitudes and behaviour**

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Immunisation rates are also impacted by how parents perceive the delivery of vaccination and the behaviour of healthcare workers entrusted with the task of providing immunisation services. In some instances, healthcare workers could be very rude with parents. Such attitude detracts from the sense of security amongst parents and triggers a feeling of alienation and mistrust. According to a study by Hussen et al (2016:412), the negative perception that parents had of immunisation made them think twice before going for future immunisation sessions. Parental attitudes and behaviour towards immunisation are largely influenced by the advantages that they perceive to draw from it, the risks that they perceive their children would be exposed to through immunisation or if they had an unpleasant experience with the healthcare service providers.

Such perceptions can be counter-balanced if the caregivers hold the view that vaccines can be good for children and remove the aspect of vulnerability to certain diseases for their children (Alagsam & Alshehri 2019:458). In reality, however, parents' vaccination experience varies from context to context. Those residing in

non-endemic countries that have eliminated or eradicated indigenous infectious diseases tend to exhibit reluctance to vaccinate their children because they are likely to have forgotten the dire consequences of the diseases (Saint-Victor & Omer 2013:4-5). On the other hand, parents living in epidemic prone areas would feel obliged to have their children vaccinated even though they may have reservations, because they are observing the consequences in present time within their household or neighbourhood. What is clear is that when there is resistance by parents to immunisation, it is mainly because they are worried about the safety of their children and are eager to safeguard them from any harm. In any circumstances, frequent sensitisation and community engagement are crucial to trigger and maintain positive attitudes towards vaccination.

### **2.6.8 Side effects of vaccination and media influence**

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Credibility and trust with respect to the information source also play a key role in influencing the behaviour of people after negative reports from the media on the adverse effects of vaccination. People can be reluctant to accept vaccinations because they trust some media reports regarding side effects that could arise from vaccination (Roalkvam et al 2013:5). In a study by Tran et al (2018:1722) it was found that around 30% of parents in Vietnam were hesitant to present their children to immunisation programmes because of negative media reports. Parents tend to watch out closely for any discomfort their child may experience during and after the administering of the vaccination in terms of potential side-effects (Damnjanović et al 2018:2).

In a situation where people have doubts arising from misinformation, inadequate information or misperceptions due to negative media coverage, they tend to demand additional assurance and clarification about the advantages that vaccines can have for their health (Yaqub et al. 2014:9). In some countries, people are not very trustful of vaccines that are distributed by governments with a poor socio-economic and political performance record owing to issues of poor quality or resultant side effects. On the contrary, they usually trust vaccines manufactured by pharmaceutical organisations that operate for profit or vaccines administered by high-class medical facilities. In reality though, the majority of the population that is vulnerable to vaccine preventable diseases can only afford the immunisation services that are provided

free of charge by their governments. Therefore, winning the trust of the people, allaying their fears and engaging the media effectively are some of the practical steps that can influence vaccination uptake (WHO 2013:53, 68).

Having covered some of the socio-economic factors that influence immunisation, it is appropriate now to focus on one of the foremost factors that impact immunisation, which is gender. Section 2.7 below is devoted to describing gender determinants. It starts by briefly discussing global gender policy platforms and zooms in to focus on gender implications for health and immunisation.

## **2.7. GENDER DETERMINANTS**

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In day-to-day language, there is a tendency to use gender and sex interchangeably. Though there is close relationship between the two terms, they have distinct meanings. Sex refers to physiological and biological traits that intrinsically define male and female (WHO 2019f), while gender identity is more related to social and psychological manifestations and perceptions (WHO 1996:9, Brett 1991:2). In other words, gender pertains to roles that have been socially constructed, attributes, activities and behaviours that a specific society deems appropriate for either women or men. There is also a misunderstanding that gender is just about women. Gender is about both men and women, boys and girls. Gender should not be restricted to men or women separately. Rather, gender manifests the interdependence between men and women in the context of social, economic and political facets of life at household, community, national and international levels. After conducting a survey on gender inequality, Kelechukwu and Ifesinachi (2018:160) came to an understanding that gender acts as a powerful tool for social institution and cultural construction. Gender, therefore, should not be considered as a biological repercussion solely, which would otherwise imply perpetuating the biological advantages or disadvantages in the social and economic aspects of life. The social construct on the whole has taken over as the cause of life, and in doing so, the conventional and social perspective of people have wrapped women within a certain social perspective (Abdulqadir 2018:64). This is to such a degree that, for instance, the active involvement of women in healthcare and many other sectors is considered as a violation of cultural values in some societies.

The long-lasting campaign for gender equality has garnered global attention, at least in terms of policy and legal provisions as well as public awareness. Some of the high profile bodies or documents that have supported the cause for equality between women and men include the Charter of the United Nations; gender policies of a number of United Nation's specialised agencies such as WHO, UNICEF, UNFPA, UN Women; the 1979 Convention on the Elimination of All Forms of Discrimination against Women (CEDAW); the 1994 Programme of Action of the International Conference on Population and Development (ICPD); the 1995 Beijing Platform for Action; the 1993 World Conference on Human Rights in Vienna; the 1995 World Summit for Social Development in Copenhagen; the 1997 resolution adopted by the United Nations Economic and Social Council (ECOSOC) which called on all specialised agencies of the United Nations to mainstream a gender perspective into all their policies and programmes (WHO 2010:9), and national gender laws, policies and strategies adopted by governments. The United Nations' Millennium Development Goals (MDGs) that ran from 2000-2015, and thereafter the Sustainable Development Goals (SDGs) that aim to spearhead the global development agenda until 2030, held gender equality at their heart (Leadership Council of the Sustainable Development Solutions Network 2014:2-4). Both the MDGs and SDGs documents emphasised that gender equality is not only a goal on its own but also a human right issue that is key to make meaningful progress in all other goals and targets (UNDP & UNWOMEN 2018:9). Despite such strong policy statements, various stakeholders responsible for implementing these goals are often observed to focus on their respective goals rather than operate holistically with gender equality in their mind and heart.

Many societies are still intensely gendered – more often than not, against women. This is why women's rights advocates march in peaceful demonstrations to demand equality and equity across the globe. Biased expectations of gender roles make an impact almost on all aspects of life – right from the time of infancy. Because of misconstrued societal perceptions, women around the world face discrimination in various forms such as with employment opportunities and access to resources. Such unfair practices prevent the advancement of women and contribute to their disproportional share of illiteracy, abject poverty and access to healthcare services, particularly in developing countries (Merten et al 2015:1).

### 2.7.1 Gender analysis and mainstreaming

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Following the global trend and guiding principles, the concept of gender has become quite prominent in recent academic discourses and professional arenas. Numerous training sessions and meetings take place every day that touch upon an aspect of gender. However, there are not many institutions that conduct proper gender analysis, mainstream gender in their policies and operationalise it, and monitor its impact. Jhpiego (2016:16) defines gender analysis as “a systematic methodology for examining the differences in roles and norms for women, men, girls and boys; the different levels of power they hold; their differing needs, constraints, and opportunities; and the impact of these differences in their lives.”

Like in other political and socio-economic areas, gender roles and behaviours also influence how women and men access healthcare services and how the service providers respond to them (Men et al 2012:22). WHO (2010:14-18) agrees with Men et al (2012:22) that gender inequality leads to health risks for women and girls disproportionately, and addressing gender norms and roles leads to a better understanding of how the social construction of identity and unbalanced power relations affect the risks, health seeking behaviour and health outcomes of men and women of different ages and social strata. Gender thus emerges as a crucial influence that has both an overt and subtle long-term as well as immediate influence on people in terms of their availing themselves of opportunities and resources in health and other developmental issues (Espino 2017:141). The researcher, therefore, opted to discuss gender separately from the other socio-economic determinants in order to give the subject the prominence it deserves in immunisation discourse and practice.

According to the gender analysis tool developed by WHO (2011:120-136) to guide gender mainstreaming for health managers, their health policies and programmes should be assessed and ranked according to their responsiveness to gender issues. A summary of the assessment levels together with their interpretation is presented in Table 2.4 below.

**Table 2.4: WHO gender responsive assessment scale**

<b>Level and Description</b>	<b>Interpretation</b>
I. Gender-unequal	<ul style="list-style-type: none"><li>• Perpetuates gender inequality by reinforcing unbalanced norms, roles and relations</li><li>• Privileges men over women (or vice versa)</li><li>• Often leads to one sex enjoying more rights or opportunities than the other</li></ul>
II. Gender-blind	<ul style="list-style-type: none"><li>• Ignores gender norms, roles and relations</li><li>• Very often reinforces gender-based discrimination</li><li>• Ignores differences in opportunities and resource allocation for women and men</li><li>• Often constructed based on the principle of being “fair” by treating everyone the same</li></ul>
III. Gender-sensitive	<ul style="list-style-type: none"><li>• Considers gender norms, roles and relations</li><li>• Does not address inequality generated by unequal norms, roles or relations</li><li>• Indicates gender awareness, although often no remedial action is developed</li></ul>
IV. Gender-specific	<ul style="list-style-type: none"><li>• Considers gender norms, roles and relations for women and men and how they affect access to and control over resources</li><li>• Considers women’s and men’s specific needs</li><li>• Intentionally targets and benefits a specific group of women or men to achieve certain policy or programme goals or meet certain needs</li><li>• Makes it easier for women and men to fulfil duties that are ascribed to them based on their gender roles</li></ul>
V. Gender-transformative	<ul style="list-style-type: none"><li>• Considers gender norms, roles and relations for women and men and that these affect access to and control over resources</li><li>• Considers women’s and men’s specific needs</li><li>• Addresses the causes of gender-based health inequities</li><li>• Includes ways to transform harmful gender norms, roles and relations</li><li>• The objective is often to promote gender equality</li><li>• Includes strategies to foster progressive changes in power relationships between women and men</li></ul>

*Source: Gender mainstreaming for health managers: a practical approach/WHO*

*Gender Analysis Tools*

As we note from the interpretation of the gender analysis scale stated above, to uproot the deep-seated prejudice against equitable provision of health services it is not sufficient for health policies and programmatic interventions to be gender sensitive or gender specific. They should rather aim to be transformative and target a deliberate and systematic mainstreaming of gender and equity issues in every aspect of their interventions.

Mainstreaming gender has been extensively accepted as a more effective strategy for institutionalising the solutions associated with gender inequality. The United Nations Economic and Social Council (UNESC 1997) defined gender mainstreaming as “the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in all areas and at all levels. It is a strategy for making women’s as well as men’s concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated”. Most efforts initiated during the 1980s to incorporate women in development had failed to result in any substantial outcomes. This was mainly owing to the gendered nature of societies, which had a spill-over effect into the 1990s and 2000s. Gender mainstreaming is therefore found to be a sustainable and meaningful way of achieving holistic development in a given society (Guzura 2017:1).

In order for gender analysis and gender mainstreaming initiatives to be successful, identifying the gender variables that affect a particular intervention is decisive. The next section discusses some of the key gender variables that enable or hamper immunisation.

### **2.7.2 Gender-related variables as barriers to immunisation**

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Gender is gradually gaining prominence as a powerful determinant of immunisation. As much as addressing gender issues can improve vaccination coverage in a particular country, inversely, not addressing them is a barrier to immunisation. Several studies clearly showed a close association between immunisation and gender-related variables such as mother’s education, household decision making and general attitudes towards wife beating (Singh, Haney & Olorunsaiye 2013:837-841, Oyefara 2014:8-9, Antai 2011a:140-144, NPC & ICF 2019a:226). Moreover,

women's autonomy, which is the ability to decide on the affairs of the household, and positive gender norms have great importance in the immunisation schedule of a child (Singh et al 2013:837-840). Better wealth and education levels contribute a great deal to a conducive environment for women's empowerment in the household, which in turn positively affects immunisation coverage. On the other hand, a study by Jayachandran (2015:64) made the stark statement that in some patriarchal and economically poor societies, the men, if they think immunisation is beneficial, may choose to get their male children immunised while not according the same consideration to the girl child.

One of the leading global immunisation partners, Gavi Alliance, had commissioned a study on the relationship between gender and immunisation. The findings were resounding in a sense that a direct and significant relationship between gender and immunisation was identified. While the general perception had been that immunisation is gender neutral, the study discovered, however, that there are sex differentials in immunisation coverage, particularly in hard-to-reach areas (Jones et al 2008:6). Such differentials are exacerbated by unfavourable power relations in society and the household against women in terms of resource allocation and use, decision making and other socio-economic parameters. The study further advises that a mere collection of sex-disaggregated data is not sufficient to address gender barriers to immunisation. Rather, concerned stakeholders should undertake a holistic approach to mainstream gender in all aspects of immunisation systems (Jones et al 2008:20-28).

The World Health Organisation under the auspices of the Strategic Advisory Group of Experts (SAGE) also sponsored a study on gender and immunisation. The quantitative findings of the study corresponded well with the findings of a similar study conducted by Gavi in 2008, mentioned above. The study by WHO further elaborated upon the qualitative findings based on a review of 23 studies conducted between 1982 and 2010 in 15 developing countries in Africa, South America, and Asia (Hilber et al 2010a:12-13). The summary findings are presented thematically below.



**Table 2.5: Gender-related barriers to immunisation**

Theme	Gender-related dimension
Health systems	<ul style="list-style-type: none"> <li>• Women have limited access to household financial resources, cannot access care</li> <li>• Provider attitudes and skills: Disrespect of mother’s time, effort, specific circumstances, social status; poor skills</li> <li>• Dependency on clinic for anti-natal care, pregnancy and child healthcare; fear of reprisal for not following the recommendation/law”</li> <li>• Service organisation: Unpredictability and hours of service; lack of privacy exposes women to shame/humiliation at facility</li> <li>• Time and distance affect women with multiple roles more acutely</li> <li>• Social and cultural accommodation for women limited and constraining</li> </ul>
Power and politics	<ul style="list-style-type: none"> <li>• Politicisation of immunisation by local leaders manipulates women through rumours and fear; resistance to immunisation demanded by men but carried out by women</li> <li>• Government priorities, policies and methods pressure women through authoritarian family planning and immunisation strategies rather than through constructive engagement</li> <li>• Colonial administration of immunisation treats women as passive agents</li> <li>• Western and traditional medical system and social norms make woman responsible for child’s health status, not the husband or family</li> <li>• Health programmes perpetuate this gender norm</li> </ul>
Knowledge / Health Beliefs	<ul style="list-style-type: none"> <li>• Health decision making is based on experience and knowledge; women are responsible for the consequences of their decisions as measured by child’s health</li> <li>• Mother’s behaviour (or misbehaviour) blamed for child health (Sharma &amp; Sanchita 2016:19)</li> <li>• Mothers accept blame/shame related to child health as sign of their “neglect”</li> <li>• Mothers lack knowledge yet are aware of the importance of vaccines</li> <li>• Information not provided in a way that can be understood by women with alternative world view</li> </ul>
Education, Information, Communication	<ul style="list-style-type: none"> <li>• Women’s lower educational level (versus men’s) cited as reason for non- or under-vaccination</li> <li>• ‘Lack of knowledge’ or alternative knowledge claims dismissed and equated with illiteracy and lack of education</li> <li>• Knowledge is built on experience by women of immunisation service</li> <li>• Low literacy is linked to “types of belief” held about vaccines</li> <li>• Father’s education also an issue</li> <li>• Health education targets women only; men do not get information</li> <li>• Health messages are transmitted but are inaccessible</li> </ul>

Theme	Gender-related dimension
Agency / Decision - making	<ul style="list-style-type: none"> <li>• Mother's choices depend on other family members</li> <li>• Limited degree of access to and control over household resources limits a woman's capacity to act on her own and her child's behalf</li> </ul>
Gender /social norms	<ul style="list-style-type: none"> <li>• Disempowering gender roles limit mothers' access to services</li> <li>• Women divide their time between maternal tasks (childbearing/rearing responsibilities), domestic tasks, livelihoods activities (productive tasks) and social tasks (attending sick family members, unexpected guests, etc)</li> <li>• Putting blame on mothers for "negligence" or "insufficiency" in case of a sick child may limit their motivation to attend public health services</li> <li>• Marital discord and domestic violence contribute to psychic overload</li> </ul>
Poverty and Livelihoods	<ul style="list-style-type: none"> <li>• In contexts where poverty leads to social exclusion, social networks may be too weak to assist mothers to take children to immunisation, both financially and by allowing them to take some time off work</li> <li>• Women from less well-integrated families often lack social connections that encourage clinic attendance</li> <li>• Specific groups like migrant women are even more marginalised</li> <li>• Mothers do not attend health services to avoid poverty induced shame</li> </ul>

*Source: WHO gender and immunisation study by Hilber et al (2010a:12-13).*

Such use of gender lens, as succinctly summarised in Table 2.5 above, to analyse the barriers, clearly highlights that every facet of immunisation has gender implications. Quoting Unicef's annual report on the state of the world's children 2008, Hilber et al (2010a:13) unequivocally asserted that the health of a child is inseparable from the mother's perception, willingness and ability to care for her child. Of course, the analysis did not ignore the role of men altogether. For example, under the education, information and communication theme, fathers' educational level is also described as important, thus targeting not only women but also men for health education is vital. Both the demand and supply side of immunisation at various levels are affected by gender barriers (Merten et al 2015:6-10, Oyefara 2014:8-9, Antai 2011a:140-144). In summary, a gender focused immunisation analysis would enable policy makers and service providers to properly diagnose the root causes of poor vaccination coverage arising from gender imbalances and to prescribe the appropriate solution (Jhpiego 2016:65).

In previous sections, we reviewed immunisation (section 2.5), socio-economic variables (section 2.6) and gender variables (section 2.7) separately. The next section synthesises the relationship between these variables.

## **2.8. RELATIONSHIP BETWEEN GENDER, SOCIO-ECONOMIC DETERMINANTS AND IMMUNISATION**

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Socio-economic determinants are often the basis for an individual's identity, stature and power in a household, community and beyond. And, according to Mama (2001:69), who is one of the prominent African feminist advocates, all identities are gendered. This is to say that all identities derived from political, social or economic relations inherently have gender implications arising from the biological make-up or social perception of women and men. A number of studies have established quantitative and qualitative relationships among socio-economic and gender determinants of health in general and immunisation in particular (Propper, Rigg & Burgess 2007:1245-1269, Ojikutu 2012:227-228, NPC & ICF 2004:138-141). Ilusanya and Oladosun (2017:485) are of the opinion that the socio-economic status of women has a direct bearing on their decision to participate in immunisation activities or not. The findings from an extensive study conducted in Nigeria's demographic and health survey also indicated a direct correlation between women's socio-economic status and the vaccination situation of a child (NPC & ICF 2004:137). As per Ilusanya and Oladosun's (2017:486) view, age plays a role in vaccination, for example in that women below thirty years are more likely to be immunised. However, this can only be made possible by providing appropriate education and resources to them. After conducting a research survey, these two authors came to an understanding that women who have finished their primary education have a higher immunisation success rate for their children when compared with the women who are not educated at all.

Payne et al (2014:194) explained that gender as well as other socio-economic determinants can impact immunisation in different ways in different countries. For illustration, immunisation accessibility can be more limited in low-income countries than in those whose populations generally enjoy high income. Moreover, people living in rural areas have less access to and knowledge on immunisation than the urban dwellers due to infrastructural challenges. However, interconnectivity across gender and socioeconomic determinants is applicable for both low-income and high-income nations across the world. Identifying appropriate magnitudes of impact of gender and social factors on immunisation schemes is vital for overcoming various barriers and for efficient interventions. Such interventions can help to reduce various

inequalities, not only in immunisation but also other social, economic and political programmes (Payne et al. 2014:201).

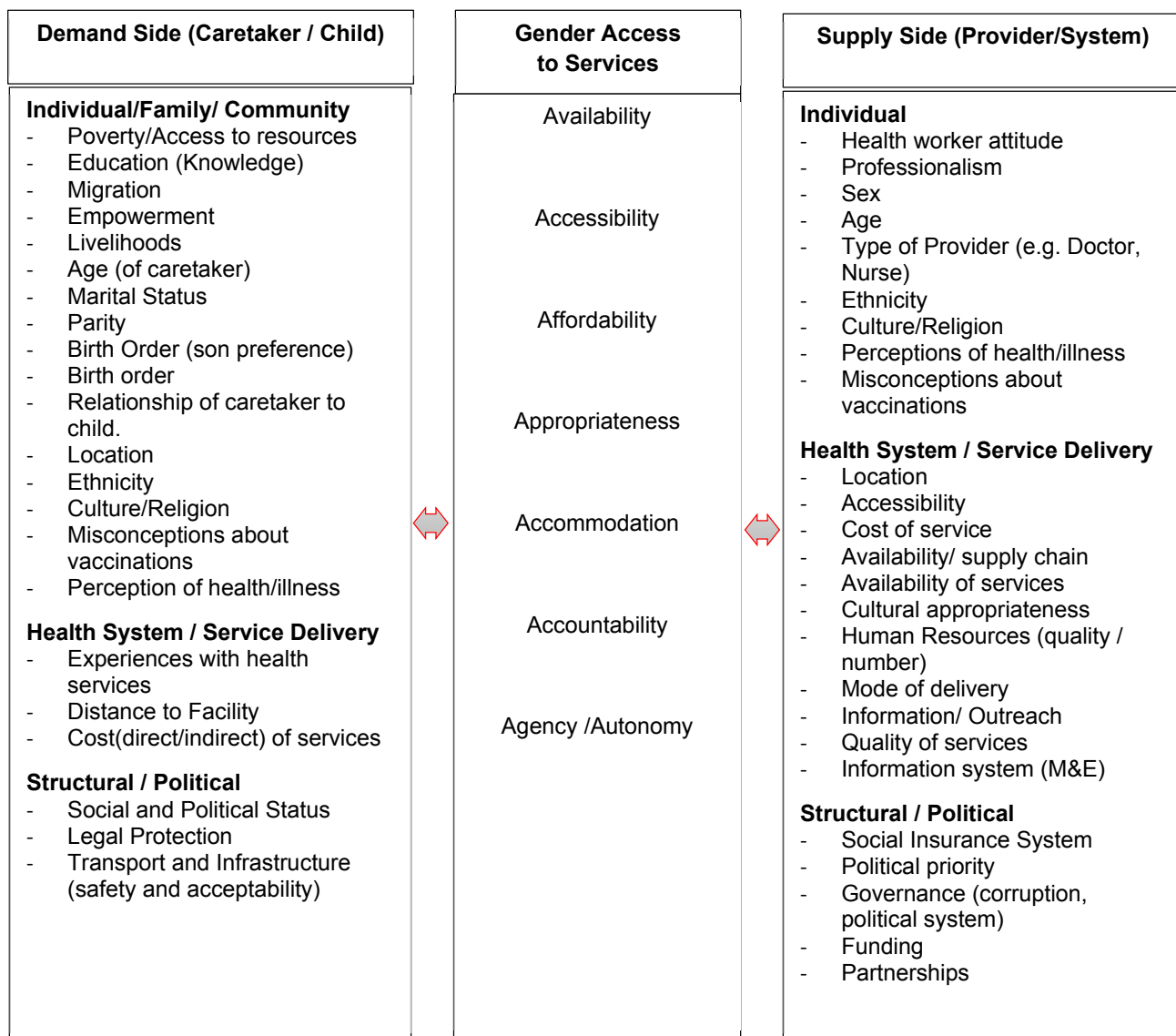
Some scholars criticise the use of cultural differences as an excuse to undermine gender equality issues (Phillips 2009:2). According to Phillips (2009:2), “the invocation of cultural diversity has often served as a pretext for ignoring or undermining claims of gender equality as they are enshrined in international human rights treaties....and that it is inappropriate to insist that everyone conforms to ideals of gender equality developed in other cultures”.. While respecting cultural differences is appropriate, it should not be at the expense of ignoring gender inequalities experienced across nations in both hemispheres albeit to varying degrees. According to one research study on gender equality, cultural variables such as ethnicity are significant factors in household decision making, including life-saving steps to provide for children’s health such as immunisation (Singh et al 2013:839). Affirming the relationship between culture, gender and immunisation, a study conducted in a number of developing countries revealed that in a culture that tolerates women beating, the children received low levels of or no immunisation (Hilber et al 2010b:13).

A conceptual framework to illustrate the relationship between gender issues as an integral part of socio-economic variables and immunisation is well summarised by Hilber et al (2010a:3, annexes). It is a brief account from a more elaborate description of the gender induced barriers to immunisation stated under the key thematic areas shown in Table 2.5 earlier in this chapter. Hilber (2010a) and her colleagues critically analysed key immunisation barriers through a gender lens and established that such gender barriers have a bearing on both demand and supply aspects of immunisation (Figure 2.4). Perceived or real, the immunisation

experiences of men and women are not the same as long as there is injustice in terms of addressing the gender barriers holistically and by all stakeholders.

**Figure 2.4: A gender analysis framework to investigate factors influencing immunisation coverage**

Source: Hilber et al 2010a:3



The current researcher has adapted and employed the various aspects of the variables depicted in Figure 2.4 in the development of the data collection tools used in this study. This framework facilitated the gathering of comprehensive socio-economic data, integrated with gender determinants of immunisation based on authoritative international practices used by WHO.

## **2.9. CHAPTER SUMMARY**

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This chapter laid out the theoretical framework that guided the review of several literature studies relevant to the subject matter. The chapter broadly introduced health and its determinants before narrowing down to immunisation. The global policies, strategies and practices of immunisation that countries are expected to adapt to their local contexts were outlined. The common socio-economic and gender determinants of immunisation were also reviewed from the perspective of various literature sources. From the review, it was gathered that despite a wide range of approaches and schools of thought, there is a broad consensus that gender and other socio-economic variables are among the most crucial determinants of improved health coverage in general and immunisation in particular.

The major gap observed in the literature that attempted to analyse the socio-economic and gender-related variables of immunisation was that the studies were not mainly based on first-hand data meant directly for analysing the gender determinants of immunisation. The data in the reviewed literature was mostly extrapolated from demographic and health surveys originally aimed at studying broader health and other development issues. The data also lacks comprehensiveness as it deals with a limited number of gender-related variables as part of the general determinants of health or immunisation. As mentioned in section 6.5 of chapter six, this study therefore strived to contribute to the knowledge base by gathering mainly primary data and analysing several socio-economic and gender determinants of immunisation in the specified geographic setting.

Having covered the global perspective in this chapter, the next one will introduce Nigeria as a country and FCT as the focus of the case study. It will also review the applicability, coverage and challenges of immunisation, as well as actions being taken to address gaps in the research literature focusing on socio-economic and gender issues.

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## **CHAPTER THREE: SITUATION ANALYSIS OF SOCIO-ECONOMIC, GENDER AND IMMUNISATION VARIABLES IN NIGERIA**

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### **3.1. INTRODUCTION**

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In chapter two, several literature sources were discussed that were reviewed in order to become acclimatised with the various theoretical perspectives on immunisation and its relationship with socio-economic and gender variables. The emphasis was to highlight and examine global policies and practices pertaining to immunisation and their key socio-economic and gender determinants. Zooming in on national and local levels, chapter three presents the facts and a situation analysis from additional secondary data sources on the Nigerian situation in general and the FCT in particular.

Nigeria is one of the largest contributors to global statistics on childhood deaths arising from vaccine preventable diseases (Oleribe et al 2017:1, Abdulqadir 2018:63). The country adopted the Expanded Programme on Immunisation (EPI) in 1978/79 (Ophori et al 2014:67, Sorungbe 1989:509–511). Even though the programme has been in effect for about forty years, during which period substantial resources have been expended, the rate of national immunisation coverage for children of 12-23 months old is only 31% (NPC 2019a:225). Exacerbated by the resurgence of the circulating vaccine-derived poliovirus (cVDPV) in Nigeria which manifested itself because of the low population immunity, it is imperative to review why the immunisation system is not working optimally and what the key determinants are that impede the efforts to improve immunisation coverage.

This chapter starts by introducing the research setting, namely Nigeria and FCT. It reviews the socio-economic, gender and immunisation issues in the country spanning from policy environment to practice. Moreover, key strategic and policy documents that government and partners use to manage the primary health care system including immunisation were reviewed and assessed for their gender responsiveness using global guidelines.

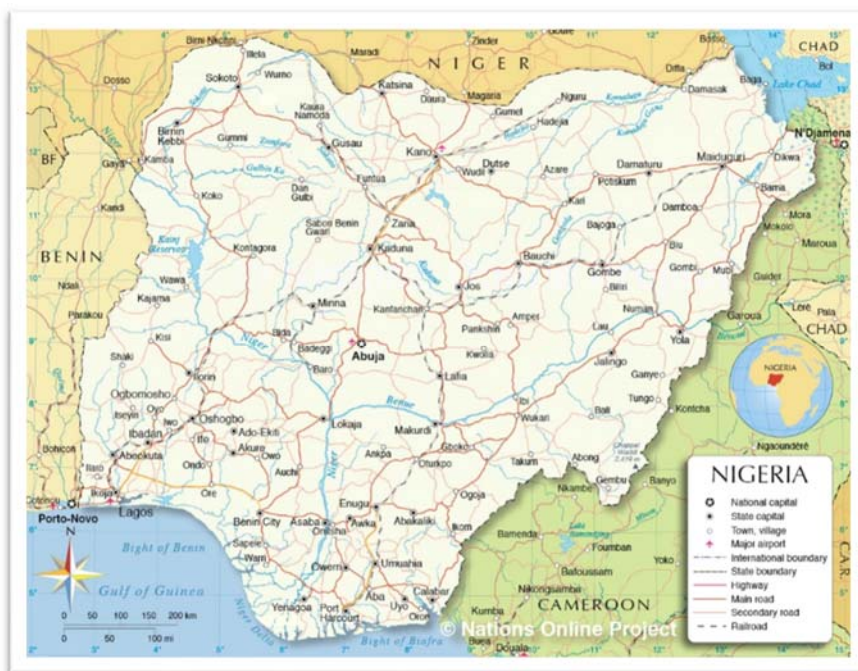
### **3.2. NIGERIA: AN OVERVIEW**

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Nigeria was a land of numerous native monarchies for millennia before it was consolidated through British colonial rule at the beginning of the 19<sup>th</sup> century with its current name and form. Since the country gained its independence in October 1960, it has gone through a number of events that can be classified as political and economic turmoil before returning to civilian democratic rule in 1999. Nigeria has a total surface area of 923 768 km<sup>2</sup> (356 669 sq mi), which makes it the 31<sup>st</sup> largest country in the world (World Atlas 2017). Nigeria is geographically situated on the Gulf of Guinea in Western Africa (Figure 3.1). It falls between Cameroon in the east, Benin in the west, Chad in north east, Niger in north west and the Atlantic ocean in the south (FGON 2018:4, Phillips 2004:104). Lowlands in the south are characterised by mangroves and swamp, with forests on the southern coast. These lowlands have plains in the north and are relatively mountainous in the south. The inland geographical terrain is dominated by hardwood forests (Achebe 2000:45).

The country has a federal republic system of government with 36 states and the Federal Capital Territory (FCT), 774 local government areas (LGAs) and 9 556 wards (FGON 2018:4). Each State is headed by elected governors that can serve a maximum of two terms of four years each. Geopolitically, Nigeria is divided into six zones, namely the North West, North East, North Central, South East, South South, and South West.





**Figure 3.1: Political map of Nigeria**

*Source: Geospatial Information Section of the United Nations*

### 3.3. SOCIO-ECONOMIC VARIABLES IN NIGERIA

The social and economic make-up of Nigeria is quite diverse. Some of the major socio-economic variables of the country are discussed in the following sections.

#### 3.3.1. Demography

Nigeria is the most populous country in Africa with a 2017 projected population of more than 182 million people, according to the national authority on demographic issues, Nigeria's National Population Commission (NPC & ICF 2017). However, the United Nations and other government sources believe that the country has already surpassed 200 million since 2015 (UNFPA 2019b, NBS 2018b:11-12). Nigeria experienced fast-paced population growth seeing that the country had only 33 million people in 1950 (Kent & Haub 2005). The United Nations (UN) projected that the population of the world will increase by 2.6 billion over the next 45 years, almost entirely contributed by economically less developed regions (UN 2005). Nigeria was put in the third place out of eight countries that would contribute half of the world's projected population (UN 2005). Like many developing countries, demographic data

in Nigeria is controversial in terms of process and outcome (Nwogu & Okoro 2017:149). Census data is often disputed by different ethnic, political or religious groups alleging that it is rigged to present a more favourable outcome for one group over the other (Lewis 2007:152). The last census in Nigeria was taken in 2006.

The 2015 report from the National Bureau of Statistics (NBS) showed that women constituted 49.5% of the population (NBS 2016:2). There is a broad consensus that Nigeria is a country of the young (Oxford Business Group 2019:4). About 45 % of people in Nigeria are estimated to fall in the age group of under 15 years old. (Reed & Mberu 2014:5, FGON 2018:4, UNFPA 2019b). The next dominant age group falls within the range of 15 to 64 years, which makes up 53% of the population, while 3% of the population are senior citizens beyond 64 years of age. The 2016/17 Nigeria's Multiple Indicator Cluster Survey (MICS) revealed that the country had a 73.3% dependency ratio coupled with high rates of youth unemployment, and a total fertility rate of 5.8% (FGON 2018:4). For reference, according to the World Bank (2019b) estimates based on data from United Nations Population Fund, the global dependency ratio for the same period (2017) was 54% and the fertility rate was 2.4.

There are over 500 indigenous languages spoken in the country (Chepkemioi 2019). However, English has been adopted as the official working language to facilitate unity among the diverse cultures, although ethnic identification and sentiment remain strong. The most dominant ethnic groups are the Hausa in the North, Yoruba in the South West, Igbo in the South East, and Ijaw in the South (FGON 2018:4, Ntoimo & Isiugo-Abanihe 2013:8-13, Akinyemi & Abanihe, 2014: 239–248). According to the latest update by the World Atlas, the Hausa/Fulani, Yoruba, Igbo and Ijaw ethnic groups constitute 25%, 21%, 18%, and 10% of the total population respectively (Findlay 2019). For Akinyemi and Abanihe (2014: 239) though, the Fulani and Hausa ethnic groups make up 29% of the overall population.

Religion wise, the country is broadly divided into the Christian dominated south and Muslim-dominated north, although significant minorities dwell in each of the States practising their religions (Babalola & Aina 2004:19). The religious composition of the country is often disputed like other demographic issues. According to some literature, around 50% of the population in Nigeria are believed to be Muslims, while Christians make up 40% of the population and the remaining 10% of the population follow other indigenous beliefs (World Atlas 2017, Reed & Mberu, 2014:5). However,

as per the 2015 records of the Association of Religion Data Archives (ARDA) anchored by the Department of Sociology of the Pennsylvania State University in USA, Nigeria had religious adherents comprising 48.8% Christians, 43.4% Muslims and 7.4% ethno-religious groups, which include Animists and Shamanists (ARDA 2019). A recent report for the World Economic Forum divides Nigeria's religious demography into half Christian and half Muslim (Ausubel 2020).

### **3.3.2. Economy**

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Nigeria prides itself on being the giant of Africa not only for population size but also for being the leading economy in the continent in terms gross domestic product (GDP). The country's 2017 GDP was estimated at over \$500 billion (British Council 2012:9). This also helped Nigeria to rank as the 20th largest economy in the world. However, in terms of GDP per capita, Nigeria finds itself as one of the poor performing countries, ranking 17th in Africa alone. The proportion of the population living below the national poverty line reached 67% in 2016 compared to 28% in the 1980s (NPHCDA 2018a:12). The country is also criticised for mismanagement of resources and inequitable distribution of wealth (British Council 2012:10). According to the UNDP (2016:20) report, Nigeria loses 400 billion Naira (>1 billion US dollars) each year because of corruption in the public service.

Nigeria is endowed with abundant natural resources. Gas and oil, minerals, vegetation and forests, agricultural products, large tracts of habitable land are a few to mention. Petroleum production plays a big role in Nigeria's economy by contributing 30-40% to the GDP and 80% of government earnings (OPEC 2019). According to the Organisation of Petroleum Exporting Countries (OPEC) report, Nigeria ranks 8th among the largest proven oil reserves (OPEC 2018:5). The oil sector is the backbone of the economy from a foreign currency earning perspective (FGON 2018:4). However, many argue that it has also become a curse for the country in terms of weakening the other economic sectors, causing colossal environmental disasters to the extent of destroying the livelihood of the inhabitants where the oil wells are located, and indirectly contributing to high economic inequality and rampant corruption practices (Ozuruoke et al 2011:33, British Council 2012:58).

The federal government has been making several policy statements aimed at creating a diversified, sustainable and equitable economy. Modest achievements have been scored in this regard including stabilising the inflation and currency exchange regimes, and attracting foreign direct investment that reached about \$345 million by the end of 2016 (UNDP 2016:14). For example, there has been an effort to diversify the economy by encouraging the banking and communications industry, which has generated high interest from international investors (Lewis 2007:168). Before the introduction of oil in late 1960s, agriculture used to be the main hard currency earner for Nigeria. Though its export earning capacity has diminished, agriculture still absorbs more than 35% of Nigerians as a means of making a living (Njoku & Ihugba 2011:30). However, the sector's contribution to the gross domestic product in 2016 was only 21% (UNDP 2016:9).

### **3.3.3. Health**

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Nigeria is a member of the World Health Organisation and a signatory to a number of international agreements that promote universal health coverage (FGON 2018:3). At country level, health care delivery is a shared responsibility of the federal, state and local governments in addition to the private sector. This arrangement has been instrumental in promoting community based service delivery readily accessible to the end users, particularly in rural areas (Uzochukwu, Onwujekwe & Akpala 2002:379-380). However, as shown in Table 3.1 below, Nigeria's standing on key health indicators is quite low. By government's own admission and as stated in the 2nd national strategic health development plan 2018–2022, Nigeria's health indices are 'among the poorest in the world' (FGON 2018:xi, Onwujekwe et al 2019:1517, Abdulqadir 2018:63).

Maternal and child mortality rates are key indicators that magnify a country's socioeconomic situation and quality of life (NPC & ICF 2019b:22, FGON 2018:11). According to the UNICEF (2015:1) report, the indicators on infant and under-five mortality rates have improved over the past 25 years when compared with the 126 and 213 deaths per 1000 live births respectively, registered in 1990. The nation has a lower rating on a number of indicators than some other sub-Saharan African nations (Adeyi, 2016:288). Abdulqadir (2018:61) stated that "in every 1,000 births in Nigeria, 15 mothers die and only, 1 die in Zimbabwe. For instance, life expectancy

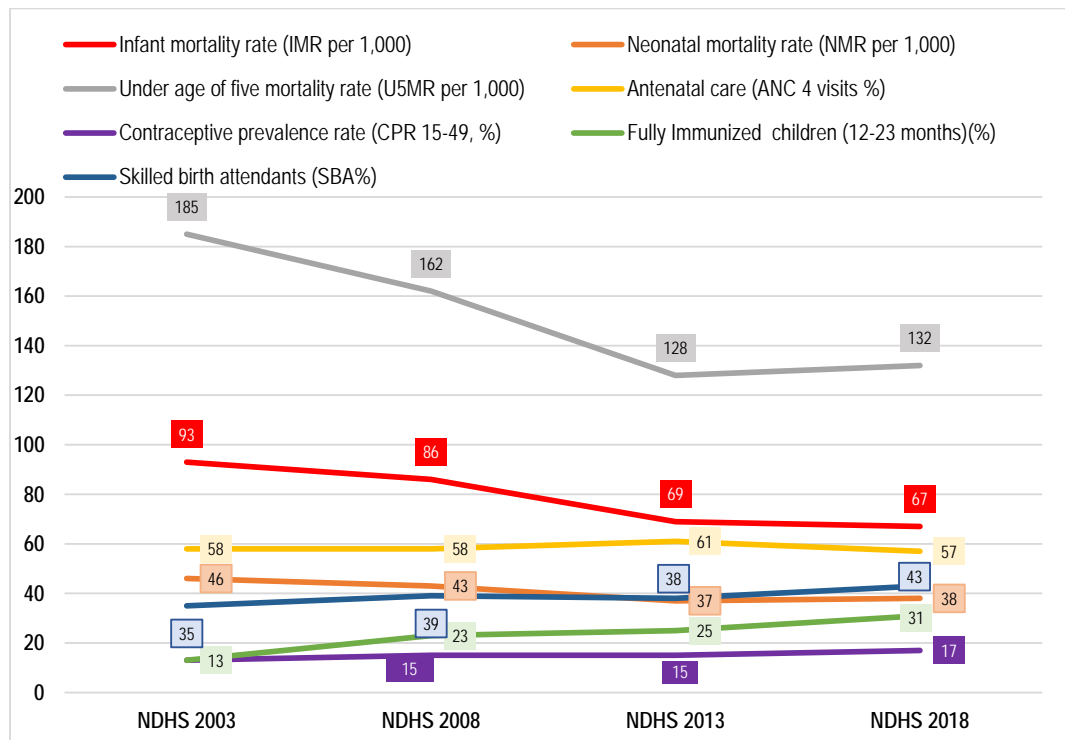
in Nigeria was put in at 51 years as against those of Togo which is 54 years, Lesotho 56, Liberia 54, Zambia 54 and Zaire 53, based on this pathetic situation of women.” According to WHO’s 2018 data for Nigeria, the under-five mortality rate was 120 per 1 000 live births whereas for neonatal, it was 36 per 1 000 live births (WHO 2020). WHO’s data for the under-five mortality rate appears to contradict the findings of the 2018 NDHS shown in Figure 3.2 below.

**Table 3.1: Summary of key health indicators for Nigeria**

Life expectancy at birth male/female (years, 2016)	55/56
Probability of dying under five (per 1 000 live births, 2017)	100
Probability of dying between 15 and 60 years m/f (per 1 000 population, 2016)	372/333
Total expenditure on health per capita (in US\$, 2014)	217
Total expenditure on health as % of GDP (2014)	3.7

*Source: WHO’s Global Health Observatory online database*

Further review of recent trends on selected health indicators compiled from Nigeria’s Demographic and Health Survey (NDHS) which is conducted every five years, revealed that some indicators (e.g. antenatal care, neonatal care, skilled birth attendants and contraceptive prevalence rates) have stagnated, and some even got worse (Figure 3.2). The few indicators that showed improvement include immunisation coverage of 50% in 2018 for Penta3/DPT 3 (three doses of Diphtheria, Pertussis, Tetanus vaccine), which was still way below the international standard of 80-90% (NPC & ICF 2019a:225).



**Figure 3.2: Health-related indicators**

*Source: Nigeria Demographic and Health Survey: 2003-2018*

Despite few macro level improvements, particularly in the health outcome/output indicators, inequities exist among income, geo-political zones, gender and urban-rural divides (UNICEF 2015:5-20). A large portion of people (60%) reside in rural areas and the disparities between rural and urban dwellers in terms of health have been substantial. The United Nations Development Programme (UNDP) reported that less than 49% of people living in rural Nigeria had access to sanitation and clean drinking water, as compared to 72% in urban areas (Armah et al 2018:12). This could be attributed to the lack of fundamental health-related infrastructure and social amenities in rural areas.

The reasons for Nigeria's low performance on national health indicators are partly attributed to the country's unstable political environment, and the economic crisis the country has been going through since independence as briefly mentioned in section 3.2. The country is also prone to epidemic diseases, recurrent outbreaks such as of Lassa Fever, Yellow Fever, Meningitis and Measles. Another challenge the health sector in Nigeria faces is brain drain. Nigeria loses its well-trained medical professionals to a luring working and living environment especially in the USA, Europe or the Middle East (Adeyemi, Joel, Ebenezer & Attah 2018:68). Some

studies indicated that there were about an equivalent number of Nigerian physicians in the Western world compared to the number working in the public sector within the country (Nunn 2005:32). Unless the government and the private sectors collaborate in creating a more enticing environment through the provision of reasonable financial and non-financial incentives to the health professionals, the trend is likely to continue.

#### **3.3.4. Education**

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Education is another key socio-economic variable that plays a prominent role in the development of a nation. Nigeria has made a considerable investment in the education sector, particularly in tertiary education (Emediegwu & Clement 2015:67). According to a study conducted by Nwakasi and Cummins (2018:103-104), the adult literacy rate in Nigeria in 2018 was about 60%, whilst the world literacy rate for the same period was 86% (World Bank 2019b). Dissecting the gender disparity in terms of literacy, a government official report recorded that only 49.7% of the adult females in Nigeria are literate, compared to 69.2% of males (FGON 2018:4). This achievement is low even by standards of some Sub-Saharan African countries such as Ghana with 77% and South Africa with 95% (Kneoma quoted in Nwakasi & Cummins 2018:104).

The United Nations Population Fund's (UNFPA 2019b) adjusted primary school enrolment data for 2017 showed a gender parity index of 0.84, with the net percent of primary-school-age children for the period reported at male 72% and female 60%. However, according to the official statistics published by the Nigerian Federal Ministry of Education, gender parity in terms of school enrolment at primary level is achieved though the gap increases, disfavours females as the educational level increases (FMOE 2017:2-5).

#### **3.3.5. Summary of key socio-economic indices**

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The government of Nigeria laid out the following visions for 2020 (UNDP 2016:1).

- “A peaceful, equitable, harmonious and just society, where every citizen has a strong sense of national identity and citizens are supported by an educational

and healthcare system that caters for all, and sustains a life expectancy of not less than 70 years.

- “A globally competitive economy that is resilient and diversified with a globally competitive manufacturing sector that is tightly integrated and contributes not less than 25% to Gross Domestic Product.
- “A stable and functional democracy where the rights of the citizens to determine their leaders are guaranteed, and adequate infrastructure exists to support a market friendly and globally competitive business environment.
- “A level of environmental consciousness that enables and supports sustainable management of the nation’s God-given natural endowments to ensure their preservation for the benefit of present and future generations.”

On the other hand, looking into the key indicators from independent or authoritative sources that monitor Nigeria’s socio-economic development, the country does not seem to be on track to realise its vision for 2020 (see Table 3.2).

**Table 3.2: Compilation of Nigeria’s key socio-economic indicators**

Indicator for Nigeria	Rate	Source	Remark
Child marriage by age 18, percent, 2006-2017	44	UNFPA World Population Dashboard Nigeria, 2019	Harmful practices that particularly affect girls and women
Female Genital Mutilation (FGM) prevalence among girls aged 15-19, percent, 2017	44	UNFPA World Population Dashboard Nigeria, 2019	
Poverty, percent, 2016	64	UNDP annual report, 2016	
Access to electricity, percent, 2016	40	UNDP annual report, 2016	Less than 20% of the rural households are covered
Nigerians living below international poverty line, percent, 2016	62	UNDP annual report, 2016	
Number of Nigerians living with HIV, in millions, 2016	3.8	UNDP annual report, 2016	This is 2 <sup>nd</sup> highest HIV prevalence globally
Youth unemployment, percent, 2016	47	UNDP annual report, 2016	In 2019, Nigeria updated its youth age classification from 18–



Indicator for Nigeria	Rate	Source	Remark
			35 years to 15–29 years (Faruk 2019).
Demand for family planning, percentage of married women aged 15-19, 2018	36	NDHS 2018 key indicator report	
Gross national income per capita, 2018	1,960	World Bank 2018 Database for Nigeria	

Global development indicators have evolved over time. Nowadays, mere monetary and transactional indices do not necessarily translate in having an impact on the life of the populace. The contemporary indicator championed by the international development community is the Human Development Index (HDI). HDI is a composite indicator that blends key socio-economic variables such as life expectancy, education and per capita income. According to the United Nations Development Programme 2018 statistical update on human development indices, Nigeria's HDI value for 2017 was 0.532 which rendered the country in the low human development category and ranked it in position 157 out of 189 countries included in the report (UNDP 2018:2). Nigeria's 2018 human capital index positioned the country at 152 out of 157 countries, according to the World Bank report (World Bank 2019a).

In summary, considering Nigeria's economic leadership in Africa in terms of GDP, huge natural resources potential and relatively higher-skilled workforce, the country should put its political, policy and strategy acts together in order to achieve the sustainable development goals (SDGs) that the country has signed up to. This researcher, having worked in the country for over 13 years, reads local publications and often engages in discussion with Nigerian and international citizens on their opinion as to why there is such a big gap in terms of inequitable wealth distribution and little development achievements vis-à-vis the enormous potential the country has. The most frequently cited reasons are lack of transparent and accountable governance at all levels, corruption, and challenges related to enforcing the rule of law and maintaining law and order. There is also widespread frustration, to the extent that the youth are not actively engaging their elected leaders to make them deliver on their promises, nor do they see a chance to get access to the enclosed

leadership space where the old guard keeps on changing hands rather than injecting new blood into the political, social and economic sphere.

Having provided an overview on Nigeria, the next section introduces the Federal Capital Territory (FCT) which is the site for this research.

### **3.4. INTRODUCING THE FEDERAL CAPITAL TERRITORY (FCT)**

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This section presents the history, geography, demography, political structure, economic and health issues of the FCT, the seat of the federal government of Nigeria.

#### **3.4.1. History of FCT, Abuja**

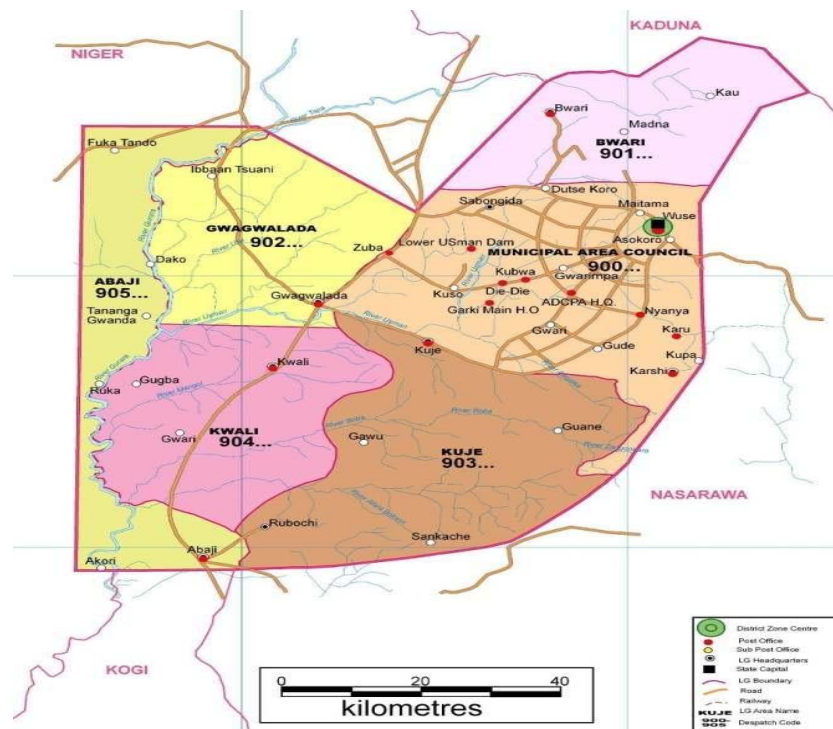
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FCT was established in February 1976 by carving out about an 8 000 square kilometre area in the North Central part of the country (FCDA 2019). The area was intentionally chosen to bring about unity within diversity for the country of over 250 ethnic groups (World Population Review 2019). The previous capital, Lagos, which is still the economic power house of the country, is highly congested. Moreover, it is geographically and demographically skewed towards the south western side of Nigeria. FCT, on the other hand, is strategically situated at the centre of the country, giving relatively equitable access to the whole nation, at least from a distance perspective. The new capital city was named Abuja in 1978 and by December 1991, the federal government formally moved to Abuja (FCDA 2019, Oxford Business Group 2019:4).

#### **3.4.2. Geography, climate and demography**

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FCT is located at the convergence of the main roads of three North Central States called Nasarawa, Niger and Kogi. Abuja's GPS coordinates are 9° 4' 20.1504" N and 7° 29' 28.6872" E. The territory has six area councils, namely Abaji, Abuja Municipal, Gwagwalada, Kuje, Bwari, and Kwali (see Figure 3.3). It is 360 metres above sea level, with habitable weather conditions and characterised by savannah land with fertile soil and potential for rich mineral resources (Oxford Business Group 2019:4).



**Figure 3.3: Map of FCT with its six area councils**

Owing to the influx of people to the city, Abuja is one of the fastest growing cities in Africa in terms of population (World Population Review 2019). FCT’s 8.32% annual population growth rate is above the national average of 2.59%, propelling the territory’s population to over 4 million people according to the 2019 projections (NBS 2018b:8, Oxford Business Group 2019:5, World Bank 2019b). The quest for better job opportunities, a relatively safer living environment compared to the rural environs and better socio-economic facilities is the main reason for the attraction of the city. The costly living conditions at the centre of Abuja create a push effect towards the satellite cities of FCT, which are experiencing approximately 20% -35% annual population growth according to a survey conducted in 2017 (World Population Review 2019, Oxford Business Group 2019:4).

### **3.4.3. Governance**

The current governance arrangement for FCT differs from that of the other States of the Federation. FCT is headed by a minister appointed by the president of the federal republic. The minister oversees various secretariats which anchor the political, economic and social affairs of the territory. The secretariats are led by executive secretaries reporting directly to the FCT minister. The health and human

services secretariat is responsible for “provision of medical and hospital services, health policy formulation and planning, regulation and oversight functions for all medical service providers and manpower development” (FCDA 2019). As such, the secretariat is also in charge of leading and coordinating the immunisation programme at the FCT level.

#### **3.4.4. Economic indices**

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While the country has been struggling to come out of economic recession following the sharp drop in oil export prices, FCT has managed to make economic strides with 11% annual GDP growth rate between 2009 and 2014 (Oxford Business Group 2019:6, World Bank cited in NPHCDA 2018a:12). However, this impressive growth plummeted to 3% in 2017 in the aftermath of the 2016 national recession. The economy then showed a slight recovery in 2018.

The infrastructural development of the FCT is still a work in progress. The administration makes large budgetary allocations to expand of networks and other basic infrastructure throughout the territory (Oxford Business Group 2019:6). Nevertheless, going around the city one would observe quite a glaring number of massive unfinished structures which have been abandoned for many years. While there may be justified reasons for some of the long overdue projects, generally they manifest wastage of national resources.

#### **3.4.5. Education and health indices**

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The literacy rate in the territory is about 90% for men and 81% for women, which is higher than the national average of 75% (World Bank 2019b). According to the 2016 official report published by the Federal Ministry of Education, the territory has achieved gender parity in all school levels (FMOE 2017:23).

FCT has over 236 primary health care facilities, 14 hospitals, 600 private health care facilities and three tertiary facilities (Oxford Business Group 2019:8). According to the Federal Ministry of Health’s Nigeria Health Facility Registry (HFR), there are 834 hospitals and clinics in the FCT (HFR 2019). These facilities also accommodate patients from neighbouring States that aspire to get better medical services. The FCT Minister, Mr Muhammad Musa Bellow, was quoted as saying that “no

meaningful progress can be achieved without a healthy population” (Oxford Business Group 2019:11). In walking his talk, Mr Bellow confirmed that the FCT provides charge-free under-five and antenatal care in public health institutions. However, FCT was not the only State in the country that provided free antenatal care. Such arrangement was implemented in 12 States as part of the national health insurance scheme (Onwujekwe et al 2019:1517). According to an assessment survey conducted by Onwujekwe et al (2019:1521) such schemes were seen as “pro-poor and targeted towards vulnerable women and children”.

Compared to other States in Nigeria, the FCT health indices are mostly above national average. This is not unexpected since FCT, as the capital city of the federation, possesses relatively better social and economic infrastructure. However, the scores registered by recent surveys for FCT are still low by some international standards. For instance, less than half (43%) of FCT women within the childbearing age range (15-49 years) who participated in a survey stated their demand for family planning (NPC & ICF 2019b:24). Out of these women, 19% have unmet family planning needs. Other key indices extracted for FCT from the 2018 demographic and health survey include that 88% of women who had live births between 2014-2019 received antenatal care from a skilled service provider; 63% of women delivered in a health facility and 61% received postnatal checks during the first two days after birth. The British Council (2012:44) report had a much lower assessment, with 36% of women delivering in a health facility. Regarding vaccination, just under half (49.6%) of the children of age 12-23 months received all basic vaccinations (NPC & ICF 2019b:29). The latest National Nutrition and Health Survey (NNHS) report recorded that FCT had a Penta 3 and measles coverage of 80.5% and 85.4%, which is higher than the national average of 57% and 65% respectively (NBS 2018b:54,61).

### **3.5. IMMUNISATION IN NIGERIA**

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#### **3.5.1. Immunisation programme and governance structure**

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The governance of the public health care system in Nigeria is divided between the three levels of government. The federal government is responsible for tertiary care, the state government for secondary care and the local governments for primary care

(NPHCDA 2018a:12). In 1978, Nigeria launched the Expanded Programme for Immunisation (EPI) with the goal of offering regular immunisation for children (Ophori et al 2014:67). The key objective of EPI was to enhance the quality of health amongst children by eliminating the six major diseases, namely measles, whooping cough, yellow fever, polio, diphtheria and tuberculosis (Rahji & Ndikom 2013:1, Ogbonna et al 2017:124). In tandem with these objectives, in 1995, Nigeria adopted the resolutions of the World Health Assembly and the United Nations General Assembly Special Session (UNGASS), intended to ensure that, by 2005, countries would succeed in eradicating polio, eliminate neonatal and maternal tetanus and reducing measles mortality. In addition, the millennium development goals (MDGs) called for the reducing of the rate of child mortality by two-thirds in 2005 (Ophori et al 2014:67). Nigeria further ratified the GVAP goals discussed in section 2.5.3 of chapter two and also laid down by UNGASS, urging member States to ensure complete immunisation of all children up to 1 year of age by reaching 90% national coverage, realising a minimum of 80% coverage within every administrative unit or district, and eliminating vitamin A deficiency by 2010 (WHO 2016c:10, Cohen et al 2014:3).

In order to meet its international commitments and national goals, the government in 2007 made a major structural change to immunisation governance. The National Programme on Immunisation (NPI) was merged with the National Primary Health Care and Development Agency (NPHCDA) following the recommendation of a high-level global review team led by WHO. According to the NPHCDA official website, the agency's mission is "to provide technical and programmatic support to states, LGAs, and other stakeholders in the functioning, planning, implementation, supervision and monitoring of PHC services in Nigeria" (NPHCDA 2009). The government engages stakeholders from time to time to review the progress made with the implementation of its immunisation policies. Inputs from such reviews are factored in when revising policies and guidelines. Notwithstanding the observations in the policy documents, some of which are discussed in section 3.6.2 of this chapter, the gap between the existing policies and practices prevents the programme from achieving its goals.

Despite efforts to increase the demand for, access to and utilisation of immunisation services, the Nigeria Multiple Indicator Cluster Survey (MICS) conducted by government and partners for 2016-2017 reported a very low immunisation coverage

rate of 33% at national level, and in some states, as low as 3% (NBS & UNICEF 2017:37). Although the data collection tool of the survey contains questions related to the reasons why eligible children did not receive a particular vaccine, the report did not contain the feedback on such questions (NBS & UNICEF 2017:486). Frustrated by the persisting low routine immunisation coverage, the federal government of Nigeria declared a national emergency in 2017 to address the situation for the long haul. To this end, a National Emergency for Routine Immunisation Coordination Centre (NERICC) was set up at the federal level with the objectives to “improve detection and responsiveness in the resolution of RI gaps, strengthen leadership and accountability, strengthen coordination, increase data visibility, quality and use for action at all levels, increase fixed and outreach services for immunization for traditional vaccines especially in the very low performing states” (NPHCDA 2020b). Whether or not this initiative, unlike several others before it, will bring about the desired result will be confirmed when another independent survey is conducted and reported. However, the current government leadership that championed the initiative remains quite optimistic about achieving the ambitious objectives mentioned above (WHO 2019b).

### **3.5.2. Immunisation strategies and targets**

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Provision for the immunisation of children in Nigeria is extended through regular immunisation schemes, mass vaccination campaigns and outreach sessions. Among others, as mentioned in section 3.5.1 of this chapter, the National Primary Health Care Development Agency (NPHCDA) is tasked with the responsibility to provide strategic leadership on immunisation and primary health care services in Nigeria. The agency, with support from partners, devised the latest immunisation strategy running from 2018 to 2028. The main objective of their strategic document is to “guide and galvanize efforts aimed at achieving sustainable immunisation outcomes” (NPHCDA 2018a:8). The document duly recognises Nigeria’s declaration of routine immunisation as a national public health emergency in light of the fact that over 4.3 million children remain unimmunised, which is the highest in the world (NPHCDA 2018a:14, Oluwadare 2009:49). The government made a strategic statement by resetting the coverage target for Penta 3 at 84% nationally and average coverage of 69% for the lowest coverage states by the year 2028 (NPHCDA 2018a:22). Considering the vast fluctuations in the rate of Nigeria’s

immunisation coverage documented by various publications, it is appreciated that the government clearly and realistically set a target. However, it should be noted that since the government missed the global vaccination target for 2020 (stated in in section 2.5.3 of chapter two), it is not expected to meet the target by 2028 either.

The high-level strategic interventions contained in the document to achieve these national targets are recapped as follows:

- Reasserting the leadership and accountability role of government at national, state and local levels through informed decisions based on immunisation survey data instead of the controversial administrative data.
- Articulating a clear roadmap towards financial sustainability for a robust immunisation system through the assumption of government ownership by allocating the required budget for vaccine procurement, at the same time putting a robust vaccine management system in place.
- Focusing on generation of demand for immunisation as well as revitalising the human resources required for the health sector.

The document further itemises specific activities that need to be undertaken and maps out roles that need to be played by different stakeholders towards the achievement of the strategies and targets. However, even such an important document did not specifically mention issues of gender in any significant way. It only implicitly stated that there is an intention to foster equity by devising strategies to reach areas with low immunisation coverage. The document also acknowledged the findings from the 2016 national immunisation coverage survey report on some family related issues that were cited as reasons for the incomplete vaccination coverage in Nigeria (NPHCDA 2018a:21-22). Further analysis of the gender responsiveness of this document is presented in section 3.6.2.2 later in this chapter.

### **3.5.3. National immunisation schedule**

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As mentioned in section 2.5.5. of chapter two, countries can take the WHO international immunisation standard as a general guideline and adapt it to their local context to generate a national immunisation schedule. Accordingly, the Nigerian government's 2018 immunisation schedule is shown in Table 3.3 below.



**Table 3.3: Nigeria national immunisation schedule**

<b>Vaccine</b>	<b>Doses</b>	<b>When to give (Age)</b>	<b>Disease Prevention</b>	<b>Route of Administration</b>	<b>Dose</b>	<b>Vaccination site</b>
BCG	1	At birth or as soon as possible till one year	Tuberculosis	Intradermal	0.05ml	Right Upper Arm
Oral Polio Vaccine (OPV)	4	At birth and at 6, 10 and 14 weeks	Poliomyelitis	Oral	2 drops	Oral
Pentavalent	3	At 6, 10 and 14 weeks	Diphtheria, Tetanus, Pertussis, Hepatitis B and Hemophilus Influenza type b	Intramuscular	0.5ml	Left Outer Thigh
Hepatitis B	1	At birth or as early as possible within 2 weeks of age	Hepatitis	Intramuscular	0.5ml	Left Outer Thigh
Measles	2	At 9 and 15 months of age	Measles	Subcutaneous	0.5ml	Left Upper Arm
Yellow Fever	1	At 9 months of age	Yellow Fever	Subcutaneous	0.5ml	Right Upper Arm
Vitamin A	2	9 months & 15 months	Improvement of Sight	Oral	100,000IU 200,000IU	Oral
Inactivated Polio Vaccine (IPV)	1	14 weeks of age	Poliomyelitis	Intramuscular	0.5ml	Right Outer Thigh
Pneumococcal Conjugate Vaccine (PCV)	3	At 6, 10 and 14 weeks	Pneumonia	Intramuscular	0.5ml	Left Outer Thigh
Rota	2	At 6 and 10 weeks	Diarrhoea diseases	Oral	1.2ml	Oral

*Source: National Primary Health Care Development Agency, 2018*

As a country prone to endemic polio and measles outbreaks, children in Nigeria should receive a minimum of three polio vaccine doses and a single dose of measles vaccine. It is imperative that all the vaccines mentioned be administered during the first year of a child's life and delivered over a span of five visits, including the dose delivered at the time of birth. Children in the age group of 12–23 months should effectively complete their immunisation regime. To monitor the immunisation delivery, the country issues guardians and parents with a health card that helps to record the administration of each dose (Adedokun et al 2017:8). The vaccination cards remain with the caregivers to be presented to the vaccinators as required. However, there is a risk of loss or damage to the cards in the hands of the caregivers.

### **3.5.4. Immunisation coverage**

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The purpose of measuring immunisation coverage is to ultimately assess the effect that the intervention has in reducing disease occurrence (Ophori et al 2014:69). There are significant disparities between low-income and high-income nations in terms of immunisation coverage (Ilusanya & Oladosun 2017:485). The same is also true within countries, where disparities in immunisation coverage exist between rural and urban areas and children from rich and poor families (NDHS 2018, Holte et al 2012:384). The huge disparity in childhood immunisation coverage in Nigeria is largely because of systemic, individual and community factors (Antai 2009:8). Antai (2011:2) is of the opinion that regional disparities in terms of immunisation coverage are associated with contextual factors such as ecological and socio-economic circumstances that differentiate one region from the other. As per the definition provided by the Nigerian Ministry of Health, a child is deemed fully immunised if she or he has received BCG vaccination against tuberculosis; three DPT doses to restrict the occurrence of Diphtheria, whooping cough (Pertussis), as well as Tetanus; three doses of oral polio vaccine (OPV); a measles dose; 3 doses of HPV; a dose of yellow fever vaccine; and a meningitis vaccine (Ophori et al. 2014:68, Adenike et al. 2017:2).

In the following sections, the past and current routine vaccination coverage and polio eradication efforts in Nigeria are discussed.

### 3.5.4.1. Routine immunisation coverage

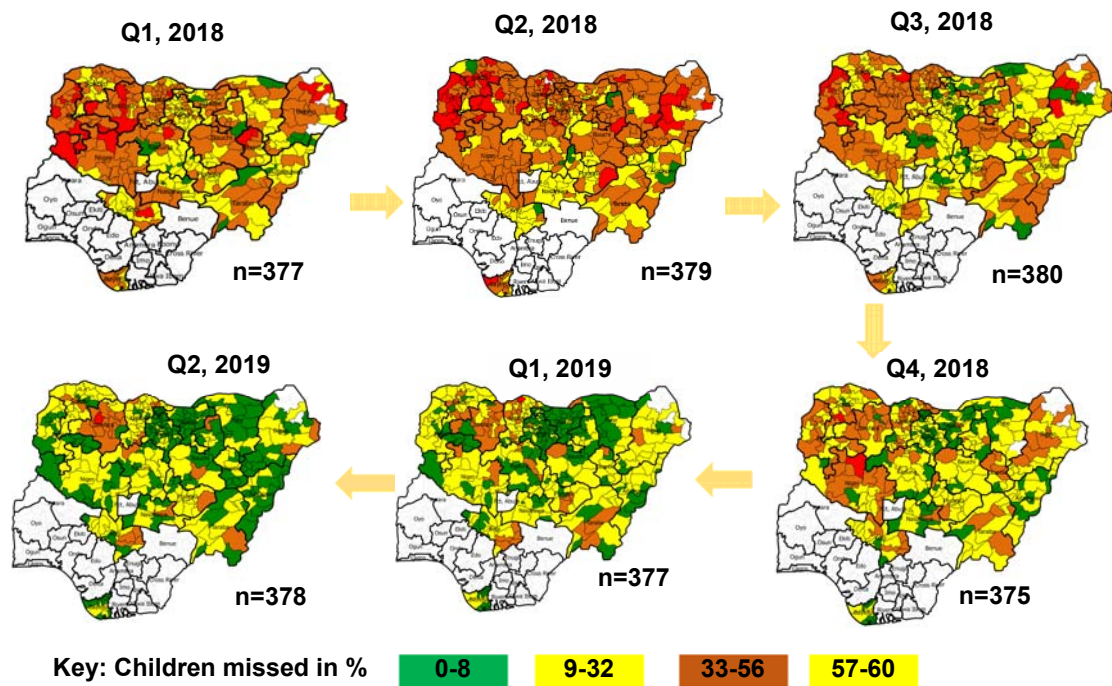
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From the late 1980s to the 1990s, Nigeria witnessed what government called remarkable progress in primary health care development and optimum levels of immunisation, where the country reported 81.5% childhood immunisation coverage (Ophori et al 2014:67, NPHCDA 2019a). However, there was a DPT coverage of 56% which reduced to 31% in 1995, receded to 26% during 1996 and fluctuated between 25–45% from 1997 to 2005 (Sadoh & Oladokun 2012:7224). The country continued to experience a drop in immunisation coverage into the 2000s. Oyefara (2014:2) puts the 2003 full immunisation coverage at 14%, with modest progress to 19% in 2008. This coverage was among the lowest in the world and clearly elucidated the dismal health status of children in the country. The recent (2018) coverage for measles vaccination reported by the National Bureau of Statistics (NBS) was 59%, which is still low compared to the global coverage of 86% (NBS 2018b:58, WHO 2019a). Expressing coverage in percentages can be deceptive. Absolute numbers do better justice to appreciate the magnitude of low immunisation coverage. The finding from MICS 2016-17 quoted in the 2018-2028 immunisation strategic document launched by NPHCDA (2018:14-15), revealed that “the decline in DPT3/Penta 3 in Nigeria from 52% in 2014 to 33% in 2016 has left more than 3.2 million children below the age of 12 months under immunized in 2016 alone, adding to the already existing huge pool of susceptible under-fives which could lead to outbreaks of vaccine-preventable diseases across the country. Implementable and sustainable strategies to vaccinate every eligible child are critical if we are to save the lives of every Nigerian child.”

With regards to the specific immunisation coverage data for FCT, according to the latest 2016-2017 national immunisation coverage survey, the territory had the following results vis-à-vis the national average. The national coverage is shown in parenthesis: BCG 87.5% (53.5%), HepB at birth 68.7% (30.2%), Polio at birth 84.4% (47.4%), Polio 1st dose 71.8% (49.7%), 2nd dose 65.6% (42.5%), 3rd dose, 55.6% (33.2%), Pentavalent-1 87.7% (48.7%), Pentavalent-2 71.9% (39.9%), Pentavalent-3 65.7% (33.3%), Yellow fever 73.7% (38.8%), measles 76.3% (41.7%), full immunisation 46.8% (22.9%), and vaccination cards seen 55.2% (29.0%) (NBS & UNICEF 2017:56). It is important to note that this data was gathered using both verbal and card-based evidence of vaccination. This means that verbal confirmation

by caregivers was used in the absence of a vaccination card presented. The caveat here is that parents and guardians would tend to respond positively to the question on the status of their eligible child if they do not have to show evidence, thereby increasing the overall coverage rate. Although the immunisation coverage data of FCT for all antigens was much better than the national average, overall the key proxy immunisation indicator of DPT3/Penta 3 was short of the international standards for national coverage of 90% by 2015 as shown in section 2.5.3 of chapter two.

In order to stamp out the chronic and persistent low immunisation coverage, the federal government as part of its emergency declaration instituted a periodic monitoring and reporting of immunisation coverage by adopting a Lot Quality Assurance Survey methodology (LQAS). As noted in Figure 3.4, several surveys were conducted in 18 States prioritised for their low immunisation record. There has been improvement in terms of reducing the number of missed children. The colour of the map, with wide coverage of reds and oranges has been gradually turning into yellows and greens representing improved success in addressing missing children as a consequent to a multitude of efforts. Though encouraging, the success rate is still far from elevating the coverage to the desired national standards. Besides, there is a need to independently conduct an immunisation coverage survey to corroborate findings from internal quality assessments like the ones depicted in Figure 3.4.



**Figure 3.4: Routing immunisation lot quality assurance survey results in 18 priority states, 2017-2019**

*Source: National Primary Health Care Development Agency, 2019*

### 3.5.4.2. Polio immunisation coverage

As described in section 3.1, Nigeria was the last polio-endemic country in Africa. Consequently, Nigeria was categorised as an epidemiologically high-risk country that presents a major threat as far as importing or exporting the poliovirus from or to other nations is concerned (Anyene 2014:2). The country has been undertaking mass vaccination campaigns for multiple decades to interrupt the transmission of the virus. Immunisation coverage for polio was at 55% in 1990 (Abubakar et al 2015:176). It dropped to 31.5% during 1995 and further declined to 26% and 19% in 1996 and 1999 respectively. The coverage slightly increased to 26% in 2000 and further rose to 45% in 2005. In between, a major setback to the polio eradication programme occurred when three northern states decided to boycott the programme in 2003. The sceptic attitude of some influential political and religious leaders caused communities to believe that vaccinations can do more harm than good (Rahji & Ndikom 2013:7, Babalola & Aina 2004:31). Their justification for boycotting the programme was based on the belief that vaccination could cause HIV/AIDS and result in sterility (Ozawa et al. 2018:1).

The suspension of the polio immunisation campaigns led to the re-emergence of the wild poliovirus (WPV), which also spread to other nations that had been free of the virus (Ehrenfeld et al 2008:1386). Such smear campaigns or 'genuine' ignorance is not peculiar to Nigeria. In the same vein, specific groups of Muslims and Hindus in India had a long-standing belief that vaccination was actually a clandestine technique and Western conspiracy to enforce family planning by deliberately targeting a certain religious community (Babalola & Aina 2004:19-20, Falade 2014: 21-24, Hussain, McGarvey & Fruzzetti 2015:1, Baguune et al 2017:7). The issue in Nigeria was finally resolved by mounting high-level advocacy and sensitisation efforts from national and international levels. However, in recent times frequent attacks on health workers and communities by insurgent groups in north eastern Nigeria hampered the vaccination efforts by denying health workers access to communities for the delivery of immunisation services (Bolu et al 2018:253).

In spite of several epidemiological, operational and security challenges, with the support of partners Nigeria has made major strides in the fight against polio. By August 2019, the country reached a major milestone by having stayed free from the wild poliovirus for three consecutive years. Once the polio surveillance documents have been reviewed and cleared by high-level global and regional experts, the country will be certified polio free. This will be a national and continental pride. However, many experts caution that there should be no complacency until global polio certification is achieved, as the country still suffers from very low immunity levels. The upsurge in vaccine-derived polioviruses the country has been experiencing since 2018 is a stark reminder that the overall immunisation system should be strengthened to meet international and national standards and safeguard the gains made with polio eradication.

### **3.5.5. Immunisation challenges mentioned frequently in the literature**

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A review of several source materials on immunisation in Nigeria reveals a wide range of challenges that hamper immunisation quality and coverage. The following sections briefly summarise the most frequently mentioned problems and constraints that the immunisation programme in Nigeria has to overcome.

### **3.5.5.1. Sub-optimal state of PHC/RI service facilities**

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Primary health care centres are the main places where routine immunisation services are rendered to the general public. Nigeria has over ten thousand health facilities throughout the country, be they privately or publicly owned (NPHCDA 2018a:12). Still, according to a study conducted by Obembe, Osungbade and Ibrahim (2017:4), there is low utilisation of the available healthcare facilities in the country, especially at periphery levels. Besides, these facilities are inundated with challenges that hinder them from delivering effective public health services. These problems include non-functionality of the primary health care facilities, inaccessibility, and essential supplies being understocked and poorly managed (Babalola & Aina 2004:20-21, NPHCDA 2013:17-18, Abdulqadir 2018:61).

### **3.5.5.2. Challenges with management of health workforce**

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Okereke et al (2015:2) associates health workers' poor performance with low levels of knowledge and skills. On the other hand, it is a common occurrence to hear or read about health workers striking in Nigeria. The main reason is health workers' complaint about inadequate remuneration or non-payment of salary for extended periods of time (Adeloye 2017:3). As a result, services at health facilities are recurrently interrupted. Strikes against low pay or delayed pay are also common among workers in other sectors, such as teachers and petroleum transporters. There is also a high attrition rate among health workers, who leave the health sector for a better paid livelihood. The health workers' low morale sometimes manifests in a bad attitude towards service seekers, which may discourage customers from wanting to come back to the health facilities (Babalola & Aina 2004:25-26, Abdulraheem, Onajole, Jimoh & Oladipo 2011:202). Health seekers can leave their complaints anonymously in a box kept at the health facilities or report their complaints to the facility directors. However, as per the researcher's personal experience, it is doubtful if such provisions are optimally used by the clients or if health managers pay due attention to the complaints lodged and then act upon them.

### **3.5.5.3. Poor data management system**

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The politicisation of demographic data that Nwogu and Okoro (2017:149) alluded to affects immunisation service delivery directly and negatively. In order to attract more resources to their coffers, there is a tendency by some stakeholders to inflate the data on items that are major cost drivers for budgetary allocations. Falsified data leads to wrong forecasting of requirements and consequently creates loopholes for misappropriation and embezzlement of resources. Poor data management and lack of integrity in this regard have detracted from the effectiveness of the immunisation system in Nigeria (Deloitte 2017:11). The government strategic document on immunisation further identified the high turnover rates of trained health workers handling data, inadequate training and misalignment of roles and responsibilities as factors contributing to the poor quality of data (NPHCDA 2013:18). Such are the multi-faceted challenges that emanate from an absence of dynamic solutions that will blend capacity building, a review of incentives, and most importantly the implementation of an effective accountability framework at all levels.

### **3.5.5.4. Budgetary and funding constraints**

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Despite having one of the highest disease burdens according to the 2014 reports published by the World Bank and cited in NPHCDA (2018a:12), only 3.7% of the GDP was allocated for health whilst “household out-of-pocket expenditure as a proportion of total health is over 70%, which is very high”. The provision for health was reduced even further as <2% of the total budget was allocated in 2019 (Health Data Africa 2019). Within the health budget lines, the allocation was mainly targeted towards covering recurrent expenditures, basic health care provision and capital expenditure, in that order. Out of the 10 priority federal ministries with higher allocations, the Ministry of Health was seventh (Health Data Africa 2019). The bulk of Nigeria’s 2019 budget was allocated to ministries responsible for physical infrastructural, transportation and defence. Nigeria’s health expenditure as a share of GDP averaged at 3.6% between 2006 and 2017, with a slight increase to 3.8% in 2017 (Varrella 2020). According to the comparison published by Vallera (2020), the same statistics for Organisation for Economic Co-operation and Development (OECD) countries was 8.8% for the same period. Of course, Nigeria belongs to the low-middle-income countries.



Several government documents admit that the financial allocation for immunisation services in Nigeria has been quite inadequate. This is one of the most cited reasons why primary health care facilities that are charged with immunisation services run out of vaccination stock, are not staffed adequately with skilled health care workers or are poorly maintained (Oluwadare 2009:55). There has been disproportional dependence on external donor funds for immunisation in Nigeria as a result of insufficient budgetary provisions by government (Deloitte 2017:14). In admission of these facts, the government of Nigeria (NPHCDA 2018a:10-11) officially announced that:

- “Clear and explicit path to financial sustainability, backed by a strong letter of commitment and schedule to gradually takeover funding of co-financed vaccines, with \$29m budget provided for vaccines procurement in the NPHCDA 2018 budget – over 100% increase from the 2017 provision.
- “Government commits to 10% annual increase in vaccine co-financing, introduction of vaccine co-financing into service wide votes under the NPHCDA to ensure timely release for procurement of vaccines, and World Bank loans, in the short term.
- “In the medium to long term government plans to list vaccine financing as a first line in the budget for sustainable financing and FMOH and NPHCDA are already working with the National Assembly to initiate the process.”

These are indeed strong statements of commitment whose implementation should be closely scrutinised by all key stakeholders. There are instances where even approved budgets do not translate into disbursement to the right entity, for the intended purpose, and at the right time (NPHCDA 2013:20).

#### **3.5.5.5. Poor vaccine management**

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An effective vaccine management system requires proper planning, execution and monitoring mechanisms. A number of health facilities, particularly those located in areas farther from cities, suffer from recurrent vaccine stockouts (Babalola & Aina 2004:23, NPHCDA 2018a:12). A number of authors cited the primary cause of vaccine shortages as insufficient funds or delays in the release of funds allocated for its procurement (Ophori et al 2014:73, Deloitte 2017:11, Rahji & Ndikom 2013:2).

The delay in the release of funds is mainly attributed to the late approval of fiscal budgets by the national authorities and failure of the responsible agencies to release the approved amounts fully and in time. However, using funding constraints as a lone excuse should not be justified. There are also issues of poor distribution and inadequate accountability in the management of vaccines. In addition, the frequent technical breakdown of cold-chain equipment due to lack of timely maintenance work and chronic shortage of electric power supply also hamper the vaccine management efforts (Oluwadare 2009:54, NPHCDA 2013:18-19).

#### **3.5.5.6. Political interference and lack of accountability**

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The infamous 2003 boycott of the polio eradication efforts in Northern Nigeria, mentioned in section 3.5.4.2 of this chapter, was widely believed to be more politically motivated than religious or scientific (Kaufmann & Feldbaum 2009:1091). Baba and Ayivor (2012:2) put it bluntly that the resistance to the eradication effort that resulted in creating a global health crisis by spreading the poliovirus to 20 countries, was ‘political in origin but religious in operation’.

Lack of political commitment, particularly at State and lower levels detracts from the proper implementation of the immunisation policies and strategies. Rhetorical pronouncements from the federal level are seldom backed by sufficient resource allocations and capacity building. The fact that Nigeria has adopted a federal government system where States exercise sizeable power in terms of deciding on the resources at their disposal, limits the ability of the federal government to enforce accountability for the proper implementation of immunisation policies and judicious use of the limited resources available for the programme. The immunisation system in Nigeria does not have a properly instituted accountability framework (NPHCDA 2018a:19). Sanctioning bad performances and rewarding good ones needs to be systematically monitored and implemented (NPHCDA 2013:28). Politicians are often blamed for interference in issues that require technical decisions (Babalola & Aina 2004:21, Onwujekwe et al. 2019:1517, Abdulqadir 2018:61).

#### **3.5.5.7. Misperceptions and low demand for immunisation**

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Abdulraheem et al (2011:195), citing the study conducted by Alison et al (2005) stated that “parents’ beliefs about immunisation risks and benefits may be the most

common reason for partial vaccination”. There is also a misconception in the Nigerian community regarding which diseases are vaccine preventable or not (Babalola & Aina 2004:21, Ojikutu (2012:229-231). According to a quantitative study conducted in Enugu and Kano States in Nigeria and quoted by Ophori et al (2014:72), participants believed that diarrhoea, fever, convulsion and vomiting are vaccine preventable diseases. Even a number of immunisation decision-makers and caregivers in Katsina State believed that taking polio immunisation alone was enough to protect a child from all vaccine preventable diseases (Ophori et al 2014:72). Oluwadare’s (2009:49-56) study concluded that people who lack easy access to public health facilities and information, or do not use facilities for whatever reasons, are most susceptible to misperceptions and to have poor knowledge about immunisation.

As mentioned in section 2.6.5 of chapter two, some studies attempted to demonstrate a relationship between religious influence and immunisation coverage. Although religious scholars hold diverging opinions on the motivation behind immunisations, Ophori et al (2014:73) corroborated the assertion of a relationship by indicating that the Muslim dominated northern Nigeria had a much lower immunisation coverage (6% in the north west, for example) compared to the 44.6% registered by a Christian dominated south east zone. Low community awareness and politicised religiosity has been used as a fertile ground by some groups to inspire fear, suspicion and conspiracy in opposition to the real objective of immunisation, which is to protect the population against vaccine preventable diseases (Oluwadare 2009:53, Falade 2014:63-65, Ojikutu 2012:228).

The government also acknowledged that myths and misinformation could lead to vaccine refusal (NPHCDA 2013:28, Ilusanya & Oladosun 2017:486, Babalola & Aina 2004:31). There is, therefore, a need to boost the demand for immunisation by creating awareness and allaying the suspicions of the community against the vaccines and their application (Rahji & Ndikom 2013:2, Ojikutu 2012:233-234). Thus, there is a need to design evidence-based and community-centred interventions involving the traditional and religious leaders throughout the immunisation management system (NPHCDA 2013:20).

Sections 3.2 and 3.4 discussed the overall political, economic, and social landscape of the country in general and FCT in particular. Section 3.5 covered immunisation

policies, strategies and practices. The next section highlights another core component of the research – gender in Nigeria.

### **3.6. GENDER IN NIGERIA: POLICY, RHETORIC AND PRACTICES**

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If one agrees that what affects a mother also affects her child, then immunisation is inherently a gendered issue. A British Council (2012:44) report, quoting a survey conducted by the Nigerian Bureau of Statistics (NBS 2007) showed that there is positive and statistically significant correlation between a mother’s educational level and the vaccination and nutrition level of her child. Ilusanya and Oladosun (2017:489), who studied the socio-economic factors influencing the health behaviour of women and immunisation status of children in Nigeria, concluded that background characteristics and health behaviour of women correspond strongly with their decision to get their children immunised or not. Oleribe et al. (2017:4) arrived at a similar conclusion, but added that not only maternal but also paternal variables were significantly related to immunisation coverage. This is why the current researcher opted to discuss gender in Nigeria on its own merits rather than to lump it with other socio-economic determinants.

Section 3.6.3 sheds light on the views of the various authors regarding the challenges that Nigerian girls and women face. Before that, the following section discusses the legal and policy framework that governs gender issues in Nigeria.

#### **3.6.1. Skimming through the policy and regulatory environment**

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Broadly speaking, the Nigerian federal constitution contains some provisions that favour gender equality (Kura 2013:9, NPC & ICF 2019a:285, Folarin & Udo 2014:243, Abdulqadir 2018:61). Nigeria has demonstrated its commitment to internationally ratified agreements pertaining to gender equality and women empowerment. To mention some of the major treaties Nigeria has been party to:

- Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). CEDAW is an international treaty adopted in 1979 by the United Nations General Assembly. Described as an international bill of rights for women, it entered into force on 3 September 1981 and was ratified by 189

states (UN 1979:1, Folarin & Udoh 2014:239). Nigeria signed it on 23 April 1984.

- The Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa, dubbed the "Maputo Protocol" provides far-reaching rights to women in political, economic and social affairs (AU 2003:2-4). It also asserts women's autonomy in their reproductive health decisions and an end to female genital mutilation (AU 2003:7,15).
- United Nations Sustainable Development Goals (UN-SDGs) that targets 17 goals covering a wide range of ambitious social, economic and political development issues. Goal 5 calls for the achievement of gender equality and empowerment of all women by 2030. According to the latest progress report from the UNSDG (2019) secretariat, while some indicators have improved, such as decline in female genital mutilation and early marriages, a number of others continue to show a big gap globally.

Nigeria's Minister of Women Affairs and Social Development, in her statement at the 54th Session of the Commission on the Status of Women/Beijing+15 Review Conference, reaffirmed government's commitment to promote gender equality and women empowerment as enshrined in the international conventions (Suleiman 2010:1). Some of the manifestations of progress she alluded to in her statement were the ratification of national gender policy and implementation of a strategic framework, the establishment of Ministries of Women Affairs in all 36 States and FCT, setting up Women Development Centres to advance research and development on gender issues, and economic recovery initiatives to empower women through provision of finances.

While the country has made some institutional progress, it has a long way to go in terms of fulfilling its commitment to the international treaties on women rights (Folarin & Udoh 2014:249). According to an appraisal report on the implementation of Nigeria's national policy on gender and empowerment, with gender equality programmes and projects in Rivers State from 2006 to 2015 for example it was observed that the policy statements and strategic documents did not yield the desired outcome on the ground (British Council 2012:44, Amadi 2017:25). At national level, government also admits that gender disparities are prevalent in a

number of social indicators rendering Nigeria in position 152 out of 188 countries on gender-related indices (FGON 2018:5). Part of the reasons for the failure is the fact that most of the gender empowerment efforts focus on unsustainable and near-sighted welfare schemes rather than building the capacity of the target group to enjoy equal, long-lasting and impactful opportunities (Amadi 2017:25).

Connel (2005:365) quoted in Amadi (2017:33) pointed out that the national gender policy implies that the concerns of both women and men are espoused. Kura's (2013: 11-15) comprehensive review of the Nigerian gender policy document corroborates this conclusion. However, in the implementation of gender strategies, men are often excluded because of a misconception that gender is about women only (Kura 2013:10). Therefore, the insurmountable challenges women in Nigeria face, some of which are discussed in section 3.6.3 of this chapter, require much more sustained political commitment backed by well-articulated policies, concerted stakeholder engagement, and an adequately funded implementation strategy (Suleiman 2010:3).

Further to skimming through the general gender policy environment in section 3.6.1 above, the researcher also reviewed key policy and strategy documents that are used in the country to guide primary health care in general and immunisation activities in particular. Section 3.6.2 below is devoted to this purpose.

### **3.6.2. Review of key immunisation policy documents from a gender perspective**

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As mentioned in section 4.6.7 of chapter four and also dealt with in section 2.7 of chapter two, the gender responsiveness of these materials was assessed using WHO's gender analysis tool. The highlights of the findings are summarised in the following paragraphs.

#### **3.6.2.1. Second National Strategic Health Development Plan 2018–2022**

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This strategic document was issued by the Federal Ministry of Health that is mandated on the "provision of quality stewardship and services for the health of all Nigerians" (FMOH 2020). This is an overarching health strategic document which emphasises the purpose of "ensuring healthy lives and promoting the wellbeing of

Nigerian populace at all ages” (FGON 2018:i). The document admits the existence of gender disparities by showcasing some social and development related indices. It states that gender inequity affects health in several ways. It also states that gender-based violence is a major public health issue but admits that it is a neglected area. It is indicated that addressing the needs of women and men, girls and boys to achieve fairness, trustworthiness, respect and justice is one of the guiding principles of this strategic plan. Gender inequity is identified as one of the weaknesses of the health system in terms of accessing information and services as well as human resources for health.

Some interventions and key activities proposed to address a few gender-related issues include (FGON 2018:49-88):

- “Train and strengthen human resource capacities at National, State and LGA levels on gender and equity-responsive policy development, planning and implementation of health plans;
- “Scale up prevention, counselling and treatment of gender-based violence such as rape and intimate partner violence;
- “Build capacity of service providers on gender-sensitive, respectful and safe service;
- “Mainstream information on gender sensitive, respectful and safe care services into all in-service training and pre-service (during reviews) training manuals and documents;
- “Improve gender sensitivity in the production of health work force for all cadres at all levels.”

The document has made a number of gender sensitive and gender specific provisions. However, it is short of transformative scale because it does not address the specific causes of gender-based health inequities and is not bold enough in devising a clear accountability framework to enforce gender equality and close women empowerment gaps, particularly at higher decision-making levels. Therefore, the researcher’s overall assessment of this document is that it is gender specific.

### **3.6.2.2. Nigeria Strategy for Immunisation and PHC System Strengthening (NSIPSS) 2018–2028**

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This document was issued by the National Primary Health Care Development Agency (NPHCDA). As stated in section 3.5.1. of chapter three, NPHCDA is the parastatal technical and operational agency for primary health care services, including immunisation. This is a leading strategic document that guides the vision and aspiration of the government to transform the country's immunisation and primary health care landscape within a 10-year time frame in partnership with key stakeholders (NPHCDA 2018a:11).

The document makes no direct mention of 'gender,' 'gender equality,' or 'women empowerment.' It seems to be content with mentioning some aspects of sustainability and equity. The issue of equity is emphasised as fairness in the geographical distribution of immunisation services only. However, it is known that gender inequality, in terms of access and utilisation of services, exists even within a particular geographical set-up that is deemed to have better facilities.

The document largely ignores gender issues except for a few instances where some gender concepts are implied. For instance, the document recognises that women need their husbands' permission to access health services for themselves and their children. Unfortunately, this important document falls short of indicating strategic solutions to address even these limited gender-related issues it scantily mentioned as part of its situation analysis. Therefore, the researcher's overall assessment of this document is **that it is** mostly gender blind, but also gender sensitive to a very limited extent.

### **3.6.2.3. Implementation guidelines for Primary Health Care Under One Roof (PHCUOR)**

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This guideline was originally developed and disseminated by NPHCDA in June 2016. In collaboration with representatives from state primary health care boards, partners and other stakeholders, the agency reviewed and updated the document in March 2018 (NPHCDA 2018b:v). According to the document, the Primary Health Care Under One Roof (PHCUOR) initiative is part of a new governance reform designed to improve primary health care implementation at state and sub-state



levels. PHCUOR is a policy document for the integration of all PHC services under one authority, i.e. the state PHC board. It is intended to reduce fragmentation in primary health care management and service delivery. This effort is in line with the national health act and United Nations' Sustainable Development Goal 3 (SDG3) to achieve universal health coverage (NPHCDA 2018b:1).

One of the pillars of the guideline is addressing the issues of governance and ownership. In the section where the responsibilities of the state PHC board are outlined, it is mentioned that the board is tasked with ensuring that women make up at least 30% of the Ward Development Committees (WDCs). At least one of the women should also hold an executive position in the committee. While this provision for community level participation is commendable, the document does not say much on women representation at higher levels and in other critical pillars, which is a common trend in the Nigerian health care spectrum (Abdulqadir 2018:60). It generally mentions that men and women should be included in the governing structure of the state PHC board. At the local government area (LGA) levels, the guideline states that one representative of women leaders should join the key stakeholders in the Local Government Health Assembly (LGHA) advisory committee.

The document mentions that involving women and other non-health care actors would be one of the key success factors in implementing the guideline. It goes on to admit that gender imbalance is prevalent especially at board level, despite the fact that women and children make up the bulk of the patients that visit primary health care facilities (Abdulqadir 2018:59). Reviewing the state PHC board's detailed organogram, it was observed that the structure does not make any distinct provision for a function that oversees issues of gender. On the other hand, the guideline calls for the need to enact bills, laws and regulations to address gender imbalance challenges. A draft law to constitute the state PHC board obtained from the official website of the NPHCDA proposed to involve women or agencies representing women's interest in the following structures (NPHCDA 2020a:1-8):

- Governing board of the state primary health care board – state ministry of women affairs to be represented as an agency and at least five members of the board to be women. The size of the government board is suggested to be between 12 and 15 members.

- Local government health authority – one representative from women leaders.

While the document makes some general statements on the need to address gender issues through having women representatives serving on the board, it does not demonstrate if proper gender analysis was done that could serve as a basis to mainstream gender in the PHC policy and structure regime at all levels. Therefore, the researcher's verdict of this document is: gender sensitive to a limited extent.

#### **3.6.2.4. Ward Health System Manual**

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This document was revised and released in August 2018 after ten years since its introduction. It is an operational document developed to facilitate the implementation of PHC at the ward and village levels (NPHCDA 2018c:iii). Review of the document through a gender lens led to the following observations.

- One of the objectives of the ward health system mentioned in the manual is to reduce morbidity and mortality amongst the vulnerable groups. Women of childbearing age have been identified as one of such groups (NPHCDA 2018c:3).
- In alignment with the PHCUOR guideline and the proposed State PHC board law, the manual advises that at least 30% of the membership of the WDC should be women and at least one of them should hold an elective post (NPHCDA 2018c:5).
- At village level, the composition of the Village Development Committee (VDC) should also have a representative of a women's group (NPHCDA 2018c:7).
- At facility level, with regard to the composition of the Facility Management Committee (FMC), there is no special quota allotted for women's representation. However, the FMC has been tasked with identifying and addressing problems that discourage women and other members of the community from using health services provided by the facility (NPHCDA 2018c:8-9).
- At community level, the community health personnel are assigned the responsibility to ensure that all pregnant women access antenatal care services (NPHCDA 2018c:21-22).

- Without mentioning how, the document states that upscaling the Community Health Influencers, Promoters and Services (CHIPS) programme will help promote gender empowerment and job creation, particularly for rural and poorer communities (NPHCDA 2018c:55).
- As part of the new initiative dubbed Optimised Integrated Routine Immunisation Sessions (OIRIS), one of the proposed services for integration was offering vocational training for women during routine immunisation sessions (NPHCDA 2018c:58-59).

Whilst appreciating the strong side of the document as per those instances mentioned above, as an operational guide at ward, community and village levels the document was expected to clearly recognise inequities perpetuated by unbalanced gender norms, roles and relations. In the 84-page document, the matter of women representation was raised in a scattered manner. Therefore, the document is gender sensitive with very limited provisions.

### **3.6.2.5. National Standing Orders for Community Health Personnel**

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The Community Health Practitioners Registration Board of Nigeria (CHPRBN) in collaboration with NPHCDA updated the national standing orders for the community health officers/community health extension workers in 2015. The document provides guidelines on how healthcare seekers should be attended to at the PHC facilities (CHPRBN & NPHCDA 2015:1). Similar document was also adapted for junior community health extension workers in the same year. According to the document, “the three cadres of Community Health Workers (CHWs) namely Community Health Officers (CHOs), Community Health Extension Workers (CHEWs) and Junior Community Health Extension Workers (JCHEWs) constitute a critical mass of health care providers at the PHC level and serve as a vital link between the community and the national health system” (CHPRBN & NPHCDA 2015: xvi).

The operational guidelines are quite comprehensive — 394 pages for CHWs/CHOs and 388 pages for JCHEWs. Operational level is where the impact on the health and socio-economic interventions is supposed to be felt. However, reviewing the documents from a gender perspective leaves one with the impression that such an opportunity has been lost. There is no mention of gender or gender issues explicitly

nor implicitly in the document under the immunisation section. In other sections of the document, matters pertaining to women were raised only in areas that concern them with regard to maternity, such as pre-natal, delivery or fertility matters. The only other area where a gender issue is considered is on the referral slip, where the sex of the patient has to be indicated for the purpose of entering it into the national health management information system (CHPRBN & NPHCDA 2015:369).

Therefore, the researcher deemed these operational guidelines as generally gender blind, because despite being a very important operational document, the guidelines fundamentally ignored gender-related issues. They seem to have taken the peculiar issues of gender for granted by appearing to be fair to everyone.

The gender policy and regulatory landscape discussed in sections 3.6.1 and 3.6.2 showed that despite some promising provisions, there are also limitations to the entertaining of gender issues. Even for the limited provisions made in the policy and guideline documents, it is important to verify if they have been practically implemented. Theories aside, what do the realities on the ground look like – especially for women in Nigeria? Section 3.6.3 briefly discusses the situation.

### **3.6.3. What women face in Nigeria**

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The challenges women and girls in Nigeria endure are not very different from what their counterparts in other developing countries are experiencing, particularly those in Sub-Saharan Africa (Kura 2013:8, Mama 1995:38). The similarity emanates from the fact that gender issues are heavily affected by social, cultural, economic and political factors. This thesis will not even attempt to give the impression that it will do justice to the topic by exhaustively documenting the enormous challenges women in Nigeria encounter. However, some of the major challenges that women in the country face are described below, focusing on socio-economic issues.

Table 3.4 summarises extracts from the 2014 and 2018 Nigeria Demographic and Health Surveys (NPC & ICF 2014b:4, 14, NPC & ICF 2019a:223-328), which provide a glimpse of what women in Nigeria experience beyond the common socio-economic burdens they share with their male counterparts. Comparing the findings from the 2018 NDHS with that of 2014, despite a few changes the situation of women in terms of the socio-economic challenges they face has not improved.

**Table 3.4: Highlights of socio-economic challenges  
faced by women in Nigeria**

<p align="center"><b>Education and earning</b></p>	<p>In Nigeria, women are disadvantaged compared to men in terms of both education and earnings, factors that greatly influence the health of women and children. Overall, 38% of women aged 15-49 have received no formal education compared to 21% of men aged 15-49. Likewise, the majority of women that were employed in the 12 months before the survey earned less than their husbands. Women marry much younger than men, which limits women’s educational and earning potential. Nigerian women get married at about 18 years of age, nine years earlier than Nigerian men. However, age at first marriage is higher among more educated women (2014 NDHS).</p> <p>The proportion of currently married women and men employed in the 12 months preceding the survey has remained almost the same in the past five years (2018 NDHS).</p>
<p align="center"><b>Empowerment</b></p>	<p>Overall, married women have less control over their own lives than married men do. Nearly half of married women do not participate in decision making regarding their own health care, major household purchases, or visits to family or relatives. More than one-third of ever-married women report that their husband/partner insists on knowing where she is at all times (2014 NDHS).</p> <p>70% of currently married women who earn cash make independent decisions on how to spend their earnings. Only 31% of currently married women participate in three specified decisions pertaining to their own health care, major household purchases, and visits to their family or relatives (2018 NDHS).</p>
<p align="center"><b>Health risk</b></p>	<p>Men are more likely to engage in higher-risk sexual activity. On average, Nigerian men have many more sexual partners over their lifetime than women—4.1 compared to 1.5. More than 10% of men report having had two or more sexual partners in the past 12 months compared to just 1% of women. Men are less likely than women to get tested for HIV. 25% of women have ever been tested for HIV and received their results compared with 20% of men (2014 NDHS).</p> <p>1% of women and 13% of men had two or more sexual partners during the 12 months preceding the survey. Among respondents who had two or more partners in the past 12 months, 29% of women and 20% of men reported that they used a condom during their most recent sexual intercourse. 8% percent of women and 4% of men reported that they had a sexually transmitted infection (STI) or symptoms of an STI in the 12 months preceding the survey (2018 NDHS).</p>
<p align="center"><b>Abuses and violence</b></p>	<p>Violence against women is common practice in Nigeria. Among Nigerian women, nearly three in ten women have ever experienced physical violence since age 15, and 7% have ever experienced sexual violence. Spousal violence is also high, with one in four ever-married women reporting that they have ever experienced physical, sexual, or emotional violence by their husband/partner. A higher proportion of women (35%) believe that wife beating is justified for any of the specified reasons, compared to 25% of men (2014 NDHS).</p>

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28% of women aged 15-49 have experienced physical violence at least once since age 15, and 11% experienced physical violence within the 12 months prior to the survey. 7% of women aged 15-49 report having experienced sexual violence at least once in their lifetime. Overall, 25% of ever-married women aged 15-49 report ever having experienced emotional, physical, or sexual violence from their spouse, and 19% report having experienced one or more of these forms of violence in the past 12 months. Among ever-married women who had experienced spousal physical violence in the past 12 months, 33% reported experiencing physical injuries. 45% of women who experienced violence never sought help or never told anyone about the violence (2018 NDHS).

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*Source: 2014 and 2018 Nigeria Demographic and Health Surveys (NDHS)*

Further to the highlights presented in Table 3.4 above, the next sections buttress the challenges women and girls in the country encounter in the social, economic and political arenas.

### **3.6.3.1. Patriarchal prejudices and attitudes**

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Both older and the latest research literature agree that Nigeria is a patriarchal society, manifesting in expectations of men to provide the up-keep of the household (Nwakasi & Cummins 2018:109, Folarin & Udoh 2014:248, Ntoimo & Isiugo-Abanihe 2013:8-9, Mama 1995:18, Abdulqadir 2018:65). Such expectations also give inherent power to men to call the shots with respect to decisions that affect the socio-economic affairs of the household and the community at large (Kura 2013:19, Folarin & Udoh 2014:248). There is widely held perception in the society that restricts women's role as daughters, wives, mothers, and home keepers (Mama 1995:14, Abdulqadir, 2018:60).

Such an understanding of a woman's role is more noticeable in the northern part of Nigeria (Babalola & Aina 2004:27-28). Some conservatives felt vindicated when a top federal official who hails from a core northern part of the country made a public statement in an international forum expressing his wife's role as someone who "belongs to my kitchen" (BBC 2016, Rinke & Shalal 2016). Although the official meant to deter his wife from criticising his political administration, the way and tone of his response caused huge uproar among women and human rights advocates (Alagbe 2016). The researcher's informal discussions with some Nigerians on the issue revealed diverse opinions. Most of them, including some women did not take

the matter seriously on the grounds that it is normal for a Nigerian man who grew up in such a patriarchal culture to speak or behave in that manner. Such reaction seems to align with the argument posed by Ntoimo and Isiugo-Abanihe (2013:11) that women in Nigeria primarily associate their status in the community with their roles as mothers and wives. Fapohunda (1982), Olu-Olu (2007) and Orebiyi (2002) quoted in Ntoimo and Isiugo-Abanihe (2013:11) concluded that “gender socialization in many Nigerian societies prepares women to accept housework and child care as feminine duties, even when she is engaged in full-time employment in the formal sector”.

Gender bias, regardless of its reasons, is a disservice to the women and the nation as a whole. It has practical manifestations in low enrolment rates of girls in schools particularly at higher levels. There is a low employment rate for women. If at all employed, they are more dominant in sedentary, low-paying clerical and custodial jobs. Only 36% of the country’s women have joined the workforce (FGON 2018:4). Generally speaking, the women in northern Nigeria lag behind compared to their southern counterparts in terms of such socio-economic indices as occupying economically important positions, freedom to advance through education, and heading households (NPC & ICF 2014b:2-15).

### **3.6.3.2. Forced/early marriages**

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According to research commissioned by the Immigration and Refugee Board of Canada (2012) on the prevalence of forced marriages in Nigeria, child marriages are rampant – especially in the northern part of the country. The study attributes this practice to cultural, religious, geographic, socio-economic, and ethnicity factors. In most cases, early marriages subject girls to fistula, which is one of the major public health problems in Nigeria (FGON 2018:15). The stereotype that Islam faith allows child marriage has been challenged by some religious scholars. According to some studies that reviewed the Islamic teachings on the concept of marriage in general and child marriage in particular, child marriage is forbidden in Islam (Sulaiman 2016:13, Walker 2015:54-56). Nonetheless, Abubakar (2017:2) points out that women in Nigeria, particularly in rural areas, are not given much right even to choose their partner. This leads to various forms of abuse and increased divorce rates, often to the detriment of the women.

According to the organisation called Girls Not Brides (2017), the country is a signatory to a number of international and regional declarations that aim to curb and even eliminate early and/or child marriage practices. Nigeria has also enacted legislation to prohibit child marriage by setting a minimum age of 18. However, most of the northern States have not ratified the legislation into their State laws (DOS 2012:51-52, Girls Not Brides 2017). For example, according to an article in *The Guardian* newspaper, 39% of girls are married before the age of 15 (Clarke 2015). Although there are broad legal frameworks, the Nigerian government did not put adequate instruments in place to enforce its national commitment against child marriage (Canada 2012).

A report compiled by Girls Not Brides (2017), a global consortium of civic societies, concluded that child marriage is driven by gender-related beliefs and practices. The report itemised the key factors that provide fertile soil for such malpractices, summarised in Table 3.5 below.

**Table 3.5: Socio-economic ramifications of early/child marriage in Nigeria**

Factors	Manifestations
Level of education	73% of Nigerian women with no formal education were married before 18, compared to only 9% who had completed higher education. Further education is almost impossible for some girls, who have little choice but to depend on their husbands for the rest of their lives.
Political and economic ties	Some girls are married off by their parents to enhance political and social alliances with rich families or business partners and to improve their economic status.
Gender norms	Some Nigerian men reportedly prefer to marry children. Girls are not accepted as equal partners within marriages, which contributes to a sense of low self-worth. A 2004 study shows that domestic violence is more common among marriages involving young girls in Nigeria.
Violence against girls	The abduction of 276 Chibok girls in 2014 was just one instance of a disturbing tactic used by Boko Haram – child marriage as a weapon of war. Christian and Muslim girls have been kidnapped and married off by Boko Haram in an attempt to dismantle communities and attract male recruits who are awarded “wives” if they fight. Some parents have been killed for refusing to marry off their daughters.



Factors	Manifestations
Poverty	The humanitarian crisis in North Eastern Nigeria has left more than two million people displaced since 2016. Families facing extreme famine and living in refugee camps sometimes marry off their daughters because they lack alternative survival options.

*Source: Girls Not Brides, 2017*

### **3.6.3.3. Polygamy**

Scholars such as Anyanwu (2013:1) advise that due attention should be accorded to marital practices, which have direct bearing on the demography and economic development of a nation. There are both monogamous and polygamous marriage practices in Nigeria. Monogamous marriage is between one spouse and a partner. According to the International Encyclopaedia of Anthropology, the most common form of polygamy is “a marriage between one person and two or more spouses simultaneously” (Zeitzen 2018:1). Polygamy is common in Nigeria, particularly in the northern part of the country where the majority of the population are Muslims. Nigerian civil law does not recognise polygamous marriages. However, 12 States, all in the northern part of the country which also enacted Sharia law, recognise polygamous marriages. Ntoimo and Isiugo-Abanihe (2013:11), quoting the various reports of the National Population Commission, reported that the trend of polygamous marriage in Nigeria has been declining from 41% in 1990 to 33% in 2008. The reasons for the reduction could be economic rather than cultural or religious.

According to a household survey conducted in Nigeria by Anyanwu (2013:1) and published by the African Development Bank, there is a direct and statistically significant correlation between forms of marriage and poverty. The study concluded that there is a higher susceptibility to poverty in polygamous marriages than in monogamous ones. With due respect to the religious justifications, polygamous practices put women in a weaker bargaining position vis-à-vis the men, which affects their share of available socio-economic benefits. The women will become submissive for fear of lacking deserved fair treatment since they have to compete with other women for their husband’s attention, resources and care of their children.

#### **3.6.3.4. Violence and psychosocial distress**

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A number of publications point out that violence against women is rampant and is creating gender inequality in Nigeria (Gunnala et al 2016:6, Ntoimo & Isiugo-Abanihe 2013:12, Suleiman 2010:3, British Council 2012:33). Traditional practices such as widowhood rites, male child preferences and many other socio-cultural misconceptions lead to discrimination against females (Hilber et al. 2010b:64, Ajayi, Olanrewaju FO, Olanrewaju, A & Nwannebuife 2019:12-17). In addition, heavy workloads, lack of power and decision-making opportunities deprive women from their quality of life as well as rights. Boy child preference leads to low self-esteem in girls, who are susceptible to abuse from a young age and constrained from developing their potential.

In Nigeria, not unique from other countries of a similar cultural setting, beating women and children is tolerated as an act of discipline by some segment of the society (British Council 2012:47). Attitude surveys demonstrated that some women also accept this practice as justified under certain circumstances. According to the report compiled by UNICEF (2014:9), more than a third of the women surveyed in 2013 responded that a husband beating his wife is justified. This is a substantial proportion, even though the same report indicated that the figure came down from 46% in 2011. Such a low-esteem attitude can be mitigated with an increase in education and economic empowerment. However, astonishingly, the negative correlation between education and violence against women was challenged by the finding of the 2008 NDHS. Whilst the south west zone of the country has a relatively higher education coverage, 34.5% of married women, 47.5% of never-married women and 43.7% of 15-24-year-old girls experienced various degrees of physical violence (British Council 2012:48, quoting the 2008 NDHS report). These percentages are much higher than the national averages of 13%, 32.9% and 22.8% respectively. Such findings show that socio-cultural values can at times be too entrenched to be influenced by education.

The key highlights from the latest 2018 NDHS on gender-based violence were staggering (NPC & ICF 2019a:426).

- “Experience of violence: Among women aged 15-49, (31%) have experienced physical violence and 9% have experienced sexual violence; 6% of women have experienced physical violence during pregnancy.
- “Spousal violence: 36% of ever-married women have experienced spousal physical, sexual, or emotional violence. The prevalence of one or more of these forms of spousal violence was higher in 2018 than in 2008 (31%) and 2013 (25%).
- “Injuries due to spousal violence: 29% of ever-married women who have experienced spousal physical or sexual violence have sustained injuries; 26% reported cuts, bruises, or aches, and 9% reported deep wounds and other serious injuries.
- “Help seeking: More than half of women (55%) who have experienced physical or sexual violence have never sought help to stop the violence; only 32% have sought help, approximately the same percentage as in 2013 (31%).”

Unfortunately, women’s subjugation through various forms of abuse and psychosocial distress is considered as a private affair with no proper legal or administrative interventions (Sibani 2017:432). Aihie (2010:1) argued that psychosocial distress is an issue of global concern and not peculiar to Nigeria only. Mitigation measures can be effective only when women are given appropriate power and authority in the community and polity (Aihie 2010:1). Furthermore, Abubakar (2017:2) recommends that violence against women should be prosecuted and perpetrators should face the rule of law beyond mere mention in the legal papers and political rhetoric. Unfortunately, the British Council report (2012:49) quoting Mahdi (2011) and Nigeria CEDAW NGO Coalition (2008) lamented that “certain forms of violence are institutionalised” because the current laws fail to offer adequate protection against gender violence. Thus, there is a long and bumpy road ahead to stamp out this gross violation of human rights. But the road has to be walked on steadfastly by galvanising support from key stakeholders so that the country can achieve the SDG-5, aimed at “elimination of all forms of violence against women as well as harmful practices, such as early, forced and child marriage, female genital mutilation and widowhood rites” (UNSDGS 2019).

### **3.6.3.5. Genital mutilations**

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Female genital mutilation (FGM) is a tradition induced procedure which results in partial or total removal of the external female genital parts (Muteshi, Miller & Belizán 2016: 2, UNFPA 2019a). As per current estimates of the United Nations Population Fund (UNFPA), 200 million girls and women are subjected to FGM with its occurrence in direct relation to global population growth. In relative terms, however, other studies argue that the rate of FGM is decreasing, albeit at a slow pace (Muteshi et al 2016: 2, UNSDG 2019). Muteshi et al (2016:2) claim that a girl today is about 33% less likely to be cut than in the 1980s. According to a statement by Phumzile Mlambo-Ngcuka, UN Under-Secretary-General and Executive Director of the United Nations Agency for Women, commemorating the 2018 International Day of Zero Tolerance to FGM, the brutal practice of FGM has a gender inequality ramification by design and consequences (UNW 2019). The statement indicated that FGM is an “act that cuts away equality.... that makes it almost impossible for the girls affected to have the same life chances as boys. These handicaps inflicted on young girls are also handicaps for society, as communities globally lose out on the potential gains that come from thriving, inventive, resourceful women leaders” (UNW 2019).

Victims of FGM predominantly live in Sub-Saharan Africa (UNFPA 2019a). Nigeria being in such a region has one of the highest FGM rates (Girls Not Brides 2017), although some studies suggest that the rate is on a decreasing trajectory in Nigeria too (Muteshi et al 2016:2, UNICEF 2014:7). According to the British Council (2012:50), 27.8% of female children in Nigeria are subjected to FGM with the south east and south west zones the epicentres, where the highest rates are 50.4% and 60.7% respectively. Nigeria was the last African country to ratify the anti-FGM declarations and banned FGM practices by law in 2015 (UNFPA 2019a). With increased community sensitisation and advocacy, there is high hope to further reduce the incidence of FGM (Muteshi et al 2016:2, UNFPA & UNICEF 2017:6). United Nations Children’s Fund (UNICEF), another leading United Nations agency in the combat against FGM, suggests that proper documentation, law enforcement, government ownership and provision of adequate resources are some of the key solutions in the fight against FGM (UNICEF 2019).

The latest joint UN agencies report, specifically on the case of FGM in Nigeria, highlighted that the impact of interventions is felt more when the human investment is community-centred and tells the stories from the victims' perspective (UNFPA & UNICEF 2017:12-22). Such approaches are quite powerful in uprooting this bad practice. To this end, the two agencies have put together a compelling investment case to the international community to sustain the fight against FGM, which is affecting gender equality and human rights and has a direct impact on health, development and the common future of humanity (UNFPA & UNICEF 2018:1-4). The business case appeals for \$1/per girl to prevent the occurrence of FGM on about 68 million potential victims by 2030. Nigeria is among the 16 countries targeted in the investment case.

#### **3.6.3.6. Limited political participation**

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There are no legal restrictions on women from participating in political activities in Nigeria (DOS 2018:29). Legally, they are entitled to hold executive, legislative and judicial positions. In fact, though hugely unrepresented, women have been assuming political positions since the 1980s during the military administrations in the country (Mama 1995:56). However, as Mama (1998:14) indicated, many Nigerian women avoid involving themselves in politics because they perceive it as dangerous and highly corrupted. The corruption cycle is vicious in the sense that one needs to pay bribes even to be considered for a political position. If successful, the person will in return attempt to recoup the money from his/her constituency in an illegal fashion. In fact, in his book entitled *A new taxonomy for corruption in Nigeria*, Page (2018:1) called corruption “the single greatest obstacle preventing Nigeria from achieving its enormous potential.”

As noted in the summary below (Table 3.6) women's rate of representation is close to non-existent despite the fact that they make up half of the total population (Suleiman 2010:1, Kura 2013:18-22, Mbah 2018:10-11). According to Kura's (2013:17) assessment, tradition and culture play a negative role in meaningful political empowerment for Nigerian women.

**Table 3.6: Women’s representation in Nigeria’s top political positions (1999-2015)**

Positions	Total No. of positions	Women’s representation in the year:									
		1999		2003		2007		2011		2015	
		No.	%	No.	%	No.	%	No.	%	No.	%
Presidency	2	0	0%	0	0%	0	0%	0	0%	0	0%
Senate	109	3	3%	4	4%	8	7%	7	6%	8	7%
House of Representatives	360	12	3%	21	6%	26	7%	26	7%	14	4%
Governorship	36	0	0%	0	0%	0	0%	0	0%	0	0%
Deputy Governorship	36	1	3%	2	6%	6	17%	3	8%	4	11%
36 State Houses of Assembly	990	12	1%	28	3%	67	7%	94	9%	46	5%
Total	1,533	28	2%	67	4%	94	6%	98	6%	72	5%

*Source: Adapted from Mbah (2018:10-11), quoting various reports from Nigeria’s electoral commission and women’s Score Card in the 2015 polls.*

The government of Nigeria should be recognised for appreciating these challenges and including them in its policy and strategy documents. The first national gender policy strategic framework was launched by the Federal Ministry of Women Affairs and Social Development in 2008 to implement the gender policy within five years (2008–2013). The framework singled out the following as critical priority areas (FWASD 2008:6):

- “Culture re-orientation and sensitisation to change gender perceptions and stereotypes;
- “Promotion of women’s human rights and in particular focusing on sexual and gender-based violence (SGBV) and in supporting new legislations and legal rights of women;
- “Promoting the empowerment of women and integrating gender within key sectors as highlighted within the national gender policy (Agriculture/Rural Development; Environment/Natural Resource; Gender and HIV/AIDS; Health and Reproductive Health/ Rights; Education/Training; Labour/Employment);
- “Women’s political participation and engendered governance including gender and conflict management and
- “Supporting institutional development including the use of ICT and building strategic partnerships, including identifying new partnerships with men’s organisations, faith-based organisations and traditional institutions”.

While critics agree that having the right policy and strategy is the necessary primary step, it needs to be translated into measurable action and accorded proper functional structure as well as resource backup (Kura 2013:22). According to the assessment of the gender policies and strategies in Rivers State in Nigeria, these ambitions have not been met in a way that has made meaningful impact (Amadi 2017:25). Government on the other hand argues that the policies and strategies have prompted public sectors to introduce gender mainstreaming initiatives and make the necessary budgetary provisions (FWASD 2006:54, Suleiman 2010:1).

For the sake of elaboration, socio-economic, gender and immunisation issues were discussed in separate sections above. However, these variables have a close

interdependence with one another. Section 3.7 below highlights such relationships among the variables mentioned.

### **3.7. BLENDING SOCIO-ECONOMIC AND GENDER DIMENSIONS OF HEALTH AND IMMUNISATION IN NIGERIA**

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Sections 3.3 to 3.6 of this chapter revealed that most of the health, socio-economic and gender indices in Nigeria are alarming. Some statistics show that more than 52% children in the country ail from different sorts of diseases (Abdulqadir 2018:60). It is also noted that the immunisation system indicators are not up to national or international standards. As Ataguba et al (2016:1212) noted, Nigeria carries a major share of the global burden of diseases that are preventable through vaccination. As was discussed in section 2.8 of chapter two, there is a relationship between socio-economic and gender variables vis-à-vis coverage of health in general and immunisation in particular. As Abdulqadir (2018:66) indicated, the huge gender disparity in the Nigerian health sector is the manifestation of the reality in the overall social fabric of the country. Similar instances from literature studies that covered the Nigerian perspective are synthesised in the next paragraphs.

A study conducted by Antai (2012:140) concluded that there are diverse dimensions of gender inequalities associated with immunisation. Contrary to such literature, the recent report by the NBS (2018:56) and sanctioned by UNICEF shows that there is no significant statistical variance between female and male children's immunisation coverage. According to the report, the percentage of children of 12-23 months old who had been vaccinated against preventable childhood diseases at any time before the survey was 78.7% for females and 79.8% for males. Such a finding could conveniently be used as an excuse by some stakeholders not to pay appropriate attention to gender-induced immunisation inequalities. Nonetheless, what is important to note is that the issue of gender goes beyond mere sex disaggregated data on the outcome of the intervention. It is about fostering equity and equality in the intention, the process and the impact on the overall socio-economic development of the community in question.

Socio-economic factors such as the urban-rural divide, which is linked to infrastructure variances, can be the basis for gender and immunisation inequity in Nigeria (Oluwadare 2009:55). In such a situation, women are often subjected to



double jeopardy. They share the difficulties associated with being poor and resident in rural areas, like their male counterparts. In addition to this, however, women are also susceptible to overt and covert discrimination within the rural poor community because of their gender. According to a British Council (2012:20) report “60-79% of the rural work force is women but men are five times more likely to own land. Furthermore, rural Nigerian women tend to refrain or are prohibited from using health services due to distance, lack of appropriate transportation facilities or lack of permission from their spouses or parents (Abubakar 2017:2, Abdulraheem et al 2011:201, British Council 2012:63, Babalola & Aina 2004:27). Poor road networks that connect rural areas to cities also act as an additional barrier for immunisation coverage (Adedini et al 2014:8). Some studies indicate that immunisation rates drop as the distance between households and the facilities increases (Rahji & Ndikom 2013:2, Ojikutu 2012:227).

Akawu and Charles (2018:1-9) in their case study on Nasarawa state of Nigeria, established that poverty has a direct impact on healthcare services by negatively affecting affordability and accessibility, especially for marginalised segments of the society. Babalola and Aina (2004:30) further elaborated on this by stating that poverty directly diminishes the socio-economic stature of women and deprives them of the opportunity to afford quality healthcare and education for themselves and their children. As mentioned in section 2.6.1 of chapter two, mothers with better education were found to have a better vaccination record for their children (Magadi 2002 and Mba 2006, quoted in Oyefara 2014:2). In alignment with the study by NBS (2007) mentioned in section 3.6 of this chapter, a cross-sectional study conducted by Abdulraheem et al (2011:201-202) also concluded that there is a strong association between the educational level of mothers and vaccination status of their children.

Unfortunately, as Gunnala et al (2016:6) and Abubakar (2017:2) stated, women especially in Northern Nigeria have very limited say, if any, in the decision-making process, including on their own education, the education of their children, employment scope or reproductive rights. Most decisions related to the health and well-being of a child is taken by the man of the house. To make things worse, further to what was mentioned in section 3.5.5.4 of this chapter, the budgetary allocation in Nigeria has been too scanty to tackle problems that impact maternal health (Okafor & Akokuwebe 2015:3). Healthcare facilities that are particularly meant to cater for the needs of women, like maternity centres are insufficient and often in poor

maintenance conditions with inadequate infrastructure. A minimum of 70% of Nigerian women gave birth to their children in situations that were very risky (Izugbara et al. 2016:11, British Council 2012:44).

As an instance on the social front, according to a study conducted by Olorunsaiye and Degge (2016:26), religious affiliation could also pose one of the socio-cultural barriers that contribute to poor immunisation performances in Nigeria (section 3.5.4.2 of chapter three). In fact, poor utilisation of immunisation services within communities that were largely Muslim was found to be due to religious and cultural underpinnings that caused mistrust of vaccinations (Singh, Haney & Olorunsaiye 2013:840). However, Taylor (2015:26) disagrees with this assertion based on the findings of his study conducted across three states in Northern Nigeria. Taylor's findings revealed that religious affiliation did not act as a barrier to immunisation and the decision of parents to immunise their children or not was not impacted by it. On the contrary, other socio-economic and political variables impeded decision making about immunisation (Taylor 2015:26). Taylor's conclusion is in contradiction with a number of literature studies which established that due to religious and cultural barriers, immunisation coverage is lower in Northern Nigeria than the national average (sections 3.5.4.2, 3.5.5.7 and 3.5.5.6 of chapter three).

In conclusion, a report released by the British Council (2012:6-7) indicated that women in Nigeria are vulnerable to being deprived of their fair share of the economic and social benefits that their country can afford. The gender disparity has multi-faceted dimensions namely economic dependency, political under-representation, and religious, cultural and social barriers. By most accounts, women are worse off than their male counterparts, arising from widespread patriarchal attitudes and systemic gender discrimination. The following extracts from the British Council report sum up the lamentations of gender advocates for Nigeria.

- “Nearly five times as many judges and permanent secretaries are men rather than women” (British Council 2012:13).
- “Nationally, the maternal mortality rate is 545 deaths per 100,000 live births, nearly double the global average. In the rural North-East region it is 1,549 – over five times that average” (British Council 2012:39).

- “Up to one third of Nigerian women report that they have been subjected to some form of violence. One in five has experienced physical violence” (British Council 2012:48).
- “Nigeria’s House of Representatives has 360 Members. Of these, 25 are women. Only about 4% of local government councillors are women” (British Council 2012:55).

If the country is to tackle its pervasive and deep-rooted economic, political and social challenges, it is crucial to engage women and girls and treat them with equity and equality in all aspects of life. As Abdulqadir (2018:60) clearly stated, “in Nigeria and most cultures in Africa, women are home-makers, centres of the family, and the main custodians of social, cultural and fundamental values of any society. That is why any sustainable positive change is often best achieved through them. In fact, sustainable community development is not possible without addressing the challenges faced by women; understand their needs, demand co-operation and effective participation in all sectors of the society.” The immunisation system could, therefore, be one of the key entry points in this regard because it gives government ample access to women.

### **3.8. CHAPTER SUMMARY**

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This chapter profiled Nigeria and the Federal Capital Territory with focus on their history, geography, demography, health, economic and social aspects. The chapter highlighted that despite its vast natural resources and potential human capital, Nigeria’s economic and health indicators are below an acceptable level for a country that leads Africa in terms of GDP. The chapter also covered immunisation governance structure, strategy, and the national vaccination schedule. Having reviewed various literature sources including authoritative surveys and official reports, it became clear that the country’s immunisation coverage is quite low – not only by international standards but also by the standard of many other African countries’ vaccination performance. Lack of proper management of the health workforce, inadequately equipped primary health care facilities, funding constraints, poor data management, poor vaccine management systems, political interference, lack of accountability, misconceptions and low demand for immunisation were

highlighted as some of the main culprits behind the dismal level of immunisation coverage in the country.

The chapter cited a number of gender-related international and regional declarations that Nigeria is signatory to. The chapter also briefly discussed some of the glaring socio-economic plights faced by the Nigerian women and girls in real life. The country still suffers from horrendous gender-related prejudices and malpractices. Although the broad constitutional provisions on equal treatment of all citizens and the national gender policy could be good starting ground to implement gender equality in the country, there is a long way to go to translate the rhetoric into practice. Moreover, key strategic, policy and operational documents that govern the conduct of immunisation services in the country were reviewed to gauge their gender responsiveness. These documents by and large showed a substantial gap in this regard.

Finally, the chapter attempted to synthesise the concepts of immunisation, socio-economic and gender factors in the country to demonstrate that these are intertwined issues that need a holistic approach to address the low immunisation coverage that Nigeria has been suffering from for so long.

In chapter five the findings from primary data collected using interviews and surveys will be analysed by applying the research design and methodology elaborated upon in chapter four. The findings will then be triangulated with the literature and theories that were discussed in chapters two and three.

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## CHAPTER FOUR: RESEARCH DESIGN, METHODOLOGY AND PROCEDURES

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### 4.1. INTRODUCTION

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This chapter describes the methodology chosen as relevant for the attainment of the research objective. It also outlines the literature used to justify why some methods are preferred over the others as well as their appropriateness and safeguards to mitigate the risks arising from choosing them (Hansen 2006:60). This includes defining the research paradigm that underpins the research methodology. In the words of Ramazanoglu and Holland (2005:9), “methodology in social research is concerned with procedures for making knowledge valid and authoritative.” The research design process is largely influenced by the “philosophical assumptions” the researcher makes to determine suitable methodology (Creswell 2015:15).

The population targeted for the study was profiled and demarcated based on demographic and epidemiological parameters to frame the sample. The rigorous sampling techniques, sample size determination procedures are described in detail. After deciding on the sample size for the survey, steps followed to identify the specific households and health facilities to be included in the survey. These steps are outlined.

This research is fundamentally an empirical case study. As such, it aimed to address the research questions by collecting mainly primary data from real life experience using mixed data collection and analysis methods (Specht 2019:134). To this end, the researcher applied various data collection instruments, including semi-structured questions for key informant interviews and two sets of survey questionnaires. The rationale for the use of these tools along with the key contents of the interview questions and survey questionnaires is set out in this chapter. The adjudication process including the criteria for the recruitment, selection, training and deployment of the data assistants is also documented.

The chapter also describes the data gathering and analysis procedures and strategies adopted for the research. The key variables gathered from various data collection instruments are framed thematically to facilitate their measurement and analysis.

Finally, the chapter discusses the ways and means adopted to ensure validity, reliability and compliance with ethical issues.

## **4.2. THE CHOSEN RESEARCH DESIGN**

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The main objective of a research design is to determine a methodology that is suitable to address the research problem and meet study objectives (sections 1.2-1.4 of chapter one). Fundamentally, this research is a case study since it focuses on immunisation experience in a specified area known as the Federal Capital Territory (FCT) as described in section 3.4 of chapter three. Yin's (2017:1) definition of case studies perfectly describes the appropriateness of this research method. According to Yin, "...case studies are the preferred strategy when 'how' or 'why' questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context".

As also mentioned in section 6.5 of chapter six, the study aimed to generate results that can be potentially extrapolated to other parts of the country that share similar attributes. All things being equal, case studies allow such analytical generalisation, especially the qualitative ones. However, Yin (2017:10) cautions that such generalisations should not be attributed to numerical generalisations. As Zainal (2007:5) noted, conducting a case study is a useful method to bring out data from real-life situations. However, as Hamel et al (1993) and Yin (1994), quoted in Zaina (2007:4) pointed out, it is important to set research parameters objectively and structure the data systematically to mitigate the risk of bias and sloppiness on the part of the researcher.

The researcher employed mixed research methods, including qualitative and quantitative research methods through interviews and field surveys to provide first-hand data for the study. Goertz and Mahoney (2012:48) contend that qualitative and quantitative research designs are complementary to each other. While the quantitative results tell us objectively about the statistical results based on the responses from research participants, the qualitative aspect helps to make more sense of and add interpretations and perceptions to the hard facts under investigation (Goertz & Mahoney 2012:48, Hansen 2006:3). A mixed research approach, although demanding, is also very useful for triangulation by comparing the results obtained from one source with another (Hansen 2006:13). For example,

the findings from field surveys conducted using quantitative sampling techniques can be cross-checked with those from the interviews or desk reviews. However, Sale et al (2002) and Sandelowski (1993) quoted in Hansen (2006:13-14), caution that mixing the two methods for validation purposes could be problematic due to the fundamental differences in their approaches. Qualitative research designs make it possible to collect and analyse detailed accounts given by the research participants on the subject under study (Marvasti 2004:7). According to Thomas et al (2004) quoted in Hansen (2006:3), qualitative research is being adapted increasingly in health research. Because subjective or personal views of participants may be underpinned by emotions, it is important to be very clear with them about the purpose of the study when gathering data. Within the qualitative stream, this study by design is mostly descriptive of the perspectives of the research participants' views of the subject matter (Creswell 2015:21, Hammersley 2012:1). Thus, the study strived to arrive at measurable and qualitative descriptions and results regarding the socio-economic and gender determinants of immunisation in FCT.

Socio-economic and gender variables were analysed as the researcher reviewed the various aspects of the immunisation process in order to understand the needs, risks, opportunities, constraints and consequences that women and men are exposed to (sections 2.5, 2.6 and 2.7 of chapter two). This intention is supported by Ramazanoglu and Holland (2005:2), who contend that "any researcher who sets out to understand gender relations and grasp their impact on people's lives has to consider: how (or whether) social reality can be understood; why conceptions of sexuality and gender have some meanings rather than others; how people make sense of their experiences; and how power inhibits knowledge production."

Therefore, the researcher attempted to ensure that the concerns and perspectives of women were addressed in the course of conducting the research (Hesse-Biber & Leavy 2007:76). Such efforts have a feminist research element to a limited extent and they are justified as stated in section 2.7.2 of chapter two, in that the issue of children's immunisation is inseparable from a mother. Some critics challenge feminist research methodology as unscientific, driven by emotions and as a mere slogan of women's rights activists (Ramazanoglu & Holland 2005:5). Others resent the concept of feminism as a Western cultural infiltration into developing countries (Garry 2012:507). As a result, there are pushbacks from some corners for fear of cultural adulteration. Notwithstanding the side effects of an unconditional adoption

of one culture by another, the widespread acceptance of the concepts of gender and women empowerment is gathering speed and bringing about positive change in political, economic and social spheres across the globe. As a stream of social science, feminist research methodology has evolved over the years, overcoming harsh criticisms and emerging as one of the contemporary research methodologies that has established authoritative knowledge about gender relations (Creswell 2015:27, Hansen 2006:65, Ramazanoglu & Holland 2005:9, 32-35).

In a nutshell, mixed research designs were employed to gather and analyse data from various sources for this case study. Having multiple data sources and research methodologies are instrumental to mitigate the shortcomings of a particular design and augment the gaps.

### **4.3. THE RESEARCH PARADIGM**

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There are a number of research paradigms and philosophical foundations for a research study in academia. Chilisa and Kawulich (2012:5-6) summarised the most frequently used frameworks of assumption based on which a suitable paradigm can be chosen for a particular research. Such paradigms include positivism, post-positivism, constructivism, transformative, and postcolonial indigenous paradigms. Factoring in the literature reviewed, the theoretical framework that underpins the study, the research methodology chosen and other ethical considerations, the researcher has opted for a transformative/emancipatory paradigm. According to Chilisa and Kawulich (2012:5-6), this paradigm has the following features:

- The reason for doing the research is to destroy myths and reconstruct the information gap based on the findings and recommendations in order to empower people to change society radically.
- Its philosophical underpinnings are informed by, among others, critical theory, postcolonial discourses, feminist theories and race-specific theories.
- Ontologically it assumes that multiple realities are shaped by social, political, cultural, economic, race, ethnic, gender and disability values.



- The place of values in the research process is premised on the belief that all science must begin with a value position – some positions are right, some are wrong.
- The nature of knowledge should be flexible enough to accommodate dialectical understanding aimed at critical praxis.
- What counts as truth is informed by a theory that unveils illusions.
- It employs a combination of quantitative and qualitative action research.
- A combination of techniques in the positivist tradition (which is more objective and quantitative) and in the interpretive/constructivist tradition (which is more subjective and qualitative) is used in the transformative paradigm for data gathering.

In the context of this study, therefore, a quantitative research methodology was employed to analyse the statistical association between socio-economic factors including gender and immunization coverage in the household. Survey data on health facilities were also gathered and analysed concurrently. Subsequently, data from the key informants' interviews were collected and qualitatively analysed. Finally, the findings from all data sources including the secondary document review were converged in an integrative manner (Guetterman, Fetters & Creswell 2015:555).

#### **4.4. PROFILING THE TARGET POPULATION AND SAMPLE FRAME**

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As stated in chapter two, section 2.5.4, immunisation is administered through two broad strategies: routine immunisation (RI) and supplementary immunisation activities (SIAs). The more sustainable and regular immunisation session is conducted through RI sessions at fixed health facilities. According to the WHO's official immunisation schedule, there are about 22 approved routine vaccines in service (WHO 2017b:1-10). For the purpose of this study, key actors involved in the administration of pentavalent vaccines were targeted. The pentavalent vaccine combines DPT (Diphtheria, Pertussis/whooping cough and Tetanus), Hepatitis B and Hib vaccines. In Nigeria, DPT and Hepatitis B vaccines are already a part of the immunisation programme. Gradually, they have been replaced by pentavalent

vaccine. Penta3/DPT3 (which is to say completing all three schedules for Pentavalent or DPT vaccines) is the key routine immunisation coverage indicator that can also serve as proxy to measure the status of other vaccination coverage (Babalola 2008:1). A child in Nigeria is said to have been fully immunized if she or he completes the following vaccines itemed in Table 4.1.

**Table 4.6: The revised immunisation schedule after the introduction of pentavalent vaccines**

Vaccine	Schedule
BCG, Hep B birth dose, OPV-O	At Birth
Pentavalent (DPT + Hep B + Hib), OPV	6 weeks, 10 weeks and 14 weeks
Measles and Vitamin A	9-12 months

Accordingly, the sample frame for the household survey of this research is extracted from the target population of the eligible children below two (2) years old, who are supposed to take the vaccines mentioned in Table 4.1 above (WHO 2018b:35).

Table 4.2 below shows that, based on the 2006 national census projection, FCT was projected to have a total population of over 4 million by 2019 (NBS 2018a:8) (section 3.4.2 of chapter three), of which an estimated number of 305 390 children were under 2 years of age as calculated at 6.6% of the total population as per the National Bureau of Statistics single age estimate. Moreover, it is estimated that there were 2 837 settlements, 951 212 households and 521 health facilities in the territory in 2019.

In FCT, one may assume that the territory is relatively urban based, easy to access and better off in terms of infrastructure being the capital of the nation. However, deep analysis of the raw demographic and operational data compiled in January 2019 by the National Primary Health Development Agency (NPHCDA) revealed that out of the total 2 837 settlements in FCT, 68% of them were dominantly rural, 5% riverine, 20% habited by a nomadic population, and 2% security compromised areas. Besides, 7% of the areas were hard to reach owing to their inaccessibility or lack of transportation infrastructure. Slums covered 3% of the urban areas while 18% of the settlements had a Fulani population, essentially nomadic cattle herders.

For further details on the FCT population from which the survey sample was framed, see Appendix 1.

**Table 4.2: Federal Capital Territory Population Sample Frame summary**

Area Council	No. of Ward	Total population (2019 Projection)	Population (<2 years old)	No. of Settlement	No. of Households	No of Health Facilities
Abaji	9	131,235	8,662	240	19,130	32
AMAC	12	2,556,158	168,706	1,111	499,200	239
Bwari	10	850,007	56,100	311	241,447	87
Gwagwalada	9	565,116	37,298	340	96,333	57
Kuje	10	296,550	19,572	325	56,651	56
Kwali	10	228,055	15,052	510	38,451	50
Total	60	4,627,121	305,390	2,837	951,212	521

*Source: Government of Nigeria projections for 2019 based on 2006 census data*

For the purpose of framing the sample of the population, immunisation stakeholders involved in decision making, service delivery, advocacy or resource allocation and parents or guardians with eligible children profiled in Table 4.2 above were targeted.

#### **4.5. SAMPLING TECHNIQUE AND SAMPLE SIZE DETERMINATION**

The main challenge in sampling is to agree on a size that is representative enough for the population. Ideally, one would wish to conduct a study on the entire population. However, such exercise is economically unaffordable and operationally quite complex. For this reason, the study picks samples that represent the views of various key stakeholders (Saris & Gallhofer 2014:4-9). The study used multiple sampling techniques depending on the various features of the data source and targeted population. This research was heavily dependent on primary data sources. The subsequent sections of the chapter detail the sampling techniques and procedures employed for gathering primary data.

##### **4.5.1. Determining the sample size for the household survey**

According to the WHO's Global Health Observatory (GHO 2019), despite complexities arising from sampling design, household surveys are the main data

source for health inequality monitoring since they factor in socio-economic and other inequality dimensions that affect the health of the public. Much of the field data was collected from the survey that targeted households headed by parents or guardians that have children below two years old. Multiple steps were followed to determine the specific households to be surveyed.

Relatively smaller sample sizes are permissible, particularly in researches that involve gathering qualitative survey data. This is because a voluminous amount of information needs to be generated from elaborate questionnaires and interviews with informants and decision makers. Sandelowski (1995:179), quoted in Hansen (2006:52), contends that in qualitative research, it is the logic and power of information that matter rather than the sample sizes. Deducing from this, Hansen (2006: 52) opined that such studies should focus on in-depth investigations on smaller sample sizes than in quantitative research. Malterud, Siersma, and Guassora (2015:7) agree with Hansen that it is not the number of participants in the research that is critical, it is rather the quality of data that should be the focus for adequate analysis.

To enrich the process and outcome of the research, the researcher adopted internationally accepted survey methodology developed by WHO (2018:15-21). The detailed assumptions and calculations to draw the desired sample size are described in the following section.

#### **4.5.1.1. Steps for household survey sample size calculations**

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The sample selection was, to a large extent, guided by the WHO's Lot Quality Assurance Sampling (LQAS) for Immunisation manual which was updated in 2016. LQAS is a survey method that "identifies lots with insufficient vaccination coverage based on the results of a sample of 60 children located in six randomly selected wards" (WHO 2016a:1). Accordingly, the researcher undertook the following procedures:

- Purposefully selected two area councils out of the six in FCT – AMAC, for being urban dominated, and Kwali, for being rural dominated area councils. Such selection was useful to obtain data representing areas with varying socio-economic backgrounds (Acharya et al 2013:331).

- Calculated Effective Sample Size (ESS) to determine the number of survey participants required in order to meet the inferential goal of the survey. This required choosing the expected coverage and the desired precision. Factoring in the guidance from the external reviewers of the research proposal, calling for a realistic sample size which should be smaller than what was originally suggested, the researcher picked the coverage of 80% and the desired precision of  $\pm 10\%$  (see Appendix 2). An 80% coverage rate is well aligned with WHO's national target to protect children from an outbreak (WHO 2016b:5). The desired precision and the expected coverage were calculated at 95% confidence level. The confidence level, measured in percentage terms, is the level of certainty in the sample's representation of the population's response (Creative Research Systems 2016). A 95% confidence level is quite common in researches. The ESS for this study is therefore 88.
- Calculated the design effect (DEFF) – When the survey design is based on a cluster sample instead of a simple random sample, more participants are required in order to achieve the statistical precision specified in step B above. To arrive at such number, there was a need to determine the target number of participants per cluster (m). This varied between 5 and 15 according to the guideline. An average of 10 participants per cluster was taken for this survey. Participants might tend to give similar responses since they often came from similar socio-economic backgrounds, had the same access to services and shared the same attitudes towards those services. Therefore, the responses within a cluster were likely to be correlated, and the degree of correlation affects statistical power and sample size. The intra-cluster correlation coefficient (ICC) is a measure of the correlation of responses within clusters which varies from 0 to 1 (Killip, Mahfoud & Pearce 2004:206). For the coverage survey, an ICC value of 0.167 is conservatively recommended. Therefore, using this parameter, the design effect (DEFF) was calculated as follows:  $DEFF = 1 + (m-1) \times ICC = 1 + (10-1) \times 0.167 = 2.5$ .

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<sup>1</sup> *\*\* symbol represents multiplication*

- Calculated the average number of eligible households to visit. Since we assume that all households with 12–23-months-old children were eligible for the survey, this number was calculated as follows:

$$N \text{ survived at birth per household (HH)} = (YC * BR) / (1000 / HS) * (1000 - IM) / 1000 = (2 * 39) / (1000 / 4.5) * (1000 - 71) / 1000 = 0.326$$

Where:

- YC is the number of years of eligible children in the cohort, which is two (2) years of age
- BR is birth rate of 39 per 1000
- HS is the average household family size of 4.5
- IM is infant mortality rate of 71 per 1000
- NHH is the number of households to find eligible children = 1/ N survived at birth per HH = 1/0.326 = 3.06 (rounded to 3)

Accordingly, an estimated 1 in every 3 HH was assumed to have eligible children for the survey.

- Non-response rate – Some households that were eligible for the survey might not participate, either because the family might be elsewhere at the time the survey took place, because the caregiver might be at home but refuse to participate, or for any other reasons. Using the cluster survey guide, an assumption was taken that 5% of the eligible households would not respond to the questionnaire. Therefore, the inflation factor for non-response take was 1.05.
- Factoring in the parameters above, calculated the number of questionnaires needed for the household survey as: 2 (strata area councils) \* 88 (ESS) \* 2.5 (DEFF). This calculation yielded 441. In the actual field exercise, 501 questionnaires were successfully completed by deploying an adequate and experienced number of data collectors.
- Calculated the total number of households to visit considering the non-response factor as: total completed surveys needed \* number of HH to find eligible child \* non-response rate, i.e. 441\*3\*1.05=1,388
- Calculated the target number of households to visit in each stratum (Area Council) 1 stratum\*ESS\*DEFF\*number of HH to find eligible\* nonresponse rate; 1\*88\*2.5\*3\*1.05=694 HH per stratum (or 1,388 for total households/2 stratum).

- Calculated the number of clusters (settlements) needed in each Area Council as  $ESS \cdot DEFF / \text{target number of participants per cluster}$  i.e.  $88 \cdot 2.5 / 10 = 22$  settlements needed in each area council.
- Calculated the total number of clusters in the survey: Number of stratum (Area Council) \* Number of clusters needed per stratum (Area Council) i.e.  $2 \cdot 22 = 44$ .
- Selected 5 wards by taking 50% of the wards in each of the selected area councils which were randomly picked using the Microsoft Excel RANDBETWEEN function. Random sampling is preferred to avoid bias. However, as King, Keohane, and Verba (1994:125) quoted in Goertz and Mahoney (2012:182) stated, such sampling may also pose a risk of picking samples that may not be informative or are impossible to extract data from due to various constraints.
- Selected 4 settlements on average per ward which were randomly picked using the Microsoft Excel RANDBETWEEN function.
- In each settlement, the guideline estimated that there would be 10 households with eligible children.
- Calculated the total households to visit per cluster/settlement: number of eligible per households \* non-response rate \* target number of participants per cluster, i.e.  $3 \cdot 1.05 \cdot 10 = 31.5$  (32).

The sample size calculation for household survey is summarised in a tabular form as Appendix 3.

#### **4.5.1.2. Approach to determine the specific settlements**

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To select the settlements, a Probability to Proportional Size (PPS) guideline was adopted (WHO 2019g:1-4). Thus, the researcher:

- Obtained the master list of all settlements in FCT (from the polio immunisation campaign data with target population as compiled in January 2019).
- Calculated the cumulative sum of the population sizes until arriving at the total population.

- Determined the number of clusters/settlements to be sampled in each stratum/ward. In this case, the number of clusters sampled in each stratum/ward is five (5).
- Divided the total population by the number of clusters to be sampled, to get the Sampling Interval (SI).  $SI = \text{Total Population}/5$
- Chose a random number between 1 and the SI. This is the Random Start (RS). The first cluster to be sampled contained this cumulative population,  $RS = \text{Randbetween}(1, SI)$ .
- Calculated the next 4 clusters sampled:  $RS + 1*SI$ ;  $RS + 2SI$ ;  $RS + 3*SI$ ,  $RS + 4*SI$ .
- The clusters selected were those for which the cumulative population contained one of the serial numbers calculated in vi above.
- Generated the selected clusters/settlements using Index and Match Function in MS-Excel. This helped to automatically extract the selected clusters/settlements.

The full list of selected wards and settlements with estimated population size and number of households are attached as Appendix 4.

#### **4.5.1.3. Procedures to determine the households selected for the survey**

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According to the LQAS guideline, it is assumed that there are 20 households per settlement in rural areas and 30 households per settlement in urban areas. The LQAS guideline also recommends sampling up to 10 households per settlement. Therefore, for rural settlement, the researcher picked the subsequent settlements by skipping 2 other settlements ( $20/10=2$ ) and 3 ( $30/10=3$ ) for urban settlements. The data collectors were trained to pick the households using the following steps:

- Assign a number to the households from left to right standing at the centre of the settlement.



- To randomly select the first house, spin a bottle/pen and choose the first house in the direction pointed as the starting point of the survey (see diagrammatic depiction of such exercise in Figure 4.1).



**Figure 4.1: Spinning pen to randomly determine direction and select the first household/compound in a settlement**

*Source: Concept adapted from WHO LQAS surveyors training and the diagram, from <http://www.millionvillagechallenge.org/faqs.php>*

- In a settlement with less than or equal to 20 households, which is a likely scenario in a rural setting, continue on the right, skipping one house after each house surveyed, i.e. visiting every second house.
- In a settlement with >20 households/compounds, such as in an urban or semi-urban setting, divide settlement into 4 sectors, randomly select one sector, select the first house in the selected sector using the pen-spinning procedure described above, continue on the right, skipping two houses after each house surveyed, i.e. visiting every third house.
- If unable to get 10 households with eligible children in the assigned settlement, contact the researcher for permission to go to the next settlement.
- If the edge of the settlement is reached before 10 eligible children in the cluster are surveyed, inform the researcher and move to the nearest settlement in the same area council.
- If by any chance there is more than one child under two years old in a household, consider the records of the older child in the data collection.

#### **4.5.1.4. Inclusion and exclusion criteria for the household survey**

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No household survey data was collected from parents/guardians who were below 18 years of age. As stated earlier, the household should have a child below 2 years old to be eligible for the survey.

#### **4.5.2. Sampling for health professional survey**

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Since the expected profile and socio-economic background of the participants in the survey of health professionals at health facility level are mostly homogenous, the sample size for this category was minimal. As such 12 health professionals working in 12 health facilities situated in the two area councils each, a total of 24 surveys were contacted. Accordingly, the health facilities were selected using the procedures described below.

##### **4.5.2.1. Identification of facilities for the health professional survey**

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After obtaining the master list of all health facilities from the polio immunisation campaign's operational data compiled in January 2019, the researcher sorted out the list of health facilities that provided routine immunisation services in AMAC and Kwali area councils. Out of 123 and 45 health service centres in AMAC and Kwali area councils, 14 and 12 health centres were selected respectively, using the Probability to Population Size sampling methodology (WHO 2019g:1-4). The specific steps followed were:

- Listed the area council, ward, health facilities, settlements and population sizes.
- Calculated the cumulative sum of the population sizes to arrive at the total population.

- Determined the number of clusters/HFs to be sampled in each stratum, which is 12.
- Divided the total population by the number of clusters to be sampled to get the Sampling Interval (SI);  $SI = \text{Total Population}/12$
- Chose a random number between 1 and the SI. This is the Random Start (RS). The first cluster to be sampled contained this cumulative population – RS  
=Randbetween(1, SI)
- Calculated the next 4 clusters to be sampled: RS + SI; RS + 2SI; RS+ 3SI; RS+4SI.
- The clusters selected were those for which the cumulative population contained one of the serial numbers calculated in step 6.
- Generated the selected clusters/HFs using Index and Match Function in MS Excel. This helped to automatically extract the selected clusters/HFs.

The full list of the health facilities systematically selected for the health professional survey is attached as Appendix 5.

#### **4.5.2.2. Inclusion and exclusion criteria for health professional survey**

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The selection of health facilities was subjected to the availability of experienced focal persons who had been in the system for at least two years. The views of experienced focal persons would help to get better information about the immunisation program, the challenges and opportunities at the operational level.

Health facilities that do not provide routine immunisation services were excluded from the survey. Moreover, health professionals that had less than two years of work experience were not invited to participate in the survey.

#### 4.5.3. Summary of primary data source sampling frame

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**Table 4.3: Summary of sampling framework for the household and health facility surveys**

<b>Administrative level</b>	<b>Sample frame</b>	<b>No. of samples</b>	<b>Selected sample</b>	<b>Sampling methodology</b>
State	37	1	FCT	Case study
Area Councils	6	2	AMAC, Kwali	Purposive
Wards in AMAC	12	5	Gwagwa, Kabusa, Orozo, Wuse, Gui	Random
Wards in Kwali	10	5	Kwali, Gumbo, Yangoji, Yebu, Wako	Random
Settlements in AMAC and Kwali	1621	44	See Appendix 4	Probability to population size (PPS, per LQAS guideline)
Health Facility	168	24	See Appendix 5	Probability to population size (PPS, per LQAS guideline)

#### 4.5.4. Key informant interviewees

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Further to gathering primary data from immunisation beneficiaries and lower-level service providers through surveys, the researcher purposefully identified 11 officials to provide key information through interviews. The contacted officials were technical experts at national and FCT levels representing government and partner organisations.

In order to safeguard the confidentiality and anonymity of the data gathered from the limited number of these officers, a detailed profile of the individuals and the organisations they represented are not provided. The feedback from these cadres of research participants is presented in triangulation with the health professional survey in section 5.3 of chapter five.

## **4.6. DATA GATHERING PROCEDURES AND INSTRUMENTS**

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From the outset, the researcher secured permission to access documents, locations and participants from the rightful authorities (see Appendix 10). The appropriateness of the instruments used to gather research data largely depends on the research methodology and the logistics available and at the researcher's disposal (Saris & Gallhofer 2014:5, Hansen 2006:68). In this research both primary and secondary data gathering instruments were employed. First, the instruments used to gather primary data, the dominant source of data for the research, are discussed below.

### **4.6.1. Data gathering instruments for field surveys**

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The researcher formulated separate questionnaires for the house-to-house and health professional surveys. Survey questionnaires often solicit answers that are more honest, especially if confidentiality is guaranteed to the participant (Saris & Gallhofer 2014:4-152). The household survey was administered to gather data from parents and guardians that have an eligible child under two years of age. The health facility survey questionnaire was conducted to collect the views of the immunisation service providers. These fairly elaborate survey questionnaires were vetted through expert peer reviews and pilot tested in the field. The questions were amended and updated based on feedback from the expert reviews and the pilot test before embarking on the full-scale field data collection exercise.

For both surveys, the researcher engaged the services of a database developer and utilised a technology called Open Data Kit (ODK). This is a contemporary mobile technology that facilitates the collection, management and use of data. ODK is widely used by leading international organisations such as WHO, Centre for Disease Prevention and Control (CDC-USA), United States Agency for International Development (USAID), International Red Cross and Red Crescent. The application can be downloaded on Android software compatible mobile devices. This technology has the capability to replace paper-based questionnaire data collection and entry into the database if it is utilised properly.

The questionnaires and the participant information notes were converted into ODK compatible format and mounted on the phones used by the data collectors by sharing the link to the database. The ODK database was developed with full right of

access granted to the researcher only. The researcher was able to monitor progress on the survey by using his own mobile device or by accessing the database using secured credentials in real time. The database developer and the researcher entered into a non-disclosure/confidentiality agreement to safeguard the integrity of the database and its contents.

#### **4.6.2. Contents of the household survey questionnaire**

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The household survey questionnaires contained geo-coordinates of the location from which the data was collected, general background of the responder, and immunisation and health-related data including the review of the vaccination card if made available by the parent/guardian in question. Otherwise, the vaccination history of the eligible child was recorded as provided by the parent/guardian. Finally, socio-economic and gender questions were also posed to the participants.

More specifically, in an aim to address the research questions, data on the following variables was gathered in the household survey:

- Personal/demographic profiles
  - Profile of living environment
  - Relationship with eligible child
  - Sex of the child
  - Age of the father and the mother
  - Marital status and form of marriage
  - Religion
  - Ethnicity
  - Language
  - Educational level of the parents/guardian
  - Total number of children in the household
  - Sex and number of eligible children in the household
  - Age of the eldest eligible child in the household
- Place of birth of the first-born child

- Immunisation and health-related variables
  - Experience with using the health facility
  - Distance and duration of a trip to the nearest health facility
  - Possession of vaccination card for eligible children – as reviewed by the data collector
  - Vaccination history of the child as recalled by the parent/guardian
  - Vaccination antigens considered for assessing full coverage, dropout rates of vaccination variables: BCG, Penta1/DPT1, Penta 3/DPT3, OPV, Measles, Yellow Fever
  - Parents'/guardian's experience and knowledge of immunisation and vaccine preventable diseases
  - Main source of information on health/immunisation issues
  - Availability of assistance to take child for immunisation sessions
  - Motivation for seeking immunisation services
- Socio-economic and gender variables
  - Parents' sex preference of a child
  - Leadership of the household (who heads the household)
  - Source of income for the household
  - Adequacy of household Income
  - Socio-economic standing in the community
  - Media use in the household
  - Feedback on main socio-economic barriers to immunisation as perceived by the participant
  - Management of the household affairs:
    - Ability to decide on minor and major transactions
    - Freedom to keep and dispose money
    - Freedom to seek health services for a child
    - Freedom of movement outside of the household

- Spousal support in household chores
  - Cost of vaccination services for the household
    - Direct costs (charged by the health facility, if any)
    - Indirect costs (incurred by the parent/guardian to reach and stay at the facility, e.g. transport, meal, etc)
  - Who gets to decide on vaccination status for the child
  - Who gets to decide on where the mother delivers
  - Most influential figure or body whose opinion is trusted by the household and the community
  - Experience/perception of gender-based violence
- Any other comment that the participant may wish to provide.

The full household survey questionnaire is attached as Appendix 6.

#### **4.6.3. Contents of the health professional survey questionnaire**

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Some of the questions for the health professional survey were aimed at gauging whether or not the service providers appreciate the impact of socio-economic and gender variables on immunisation and lead by example in their own households. The questionnaire contained the following specific themes and variables.

- Personal/demographic profiles
  - Name, type, location and ownership of the health facility where the participant works
  - Responsibility, experience, educational level, language skills, residence setting of the participant
  - Demographic (sex, marital status, age, family size)
- Immunisation and health-related variables
  - Training level on vaccine preventable diseases and immunisation
  - Accessibility, affordability, competency of the health facility to provide quality immunisation services



- Participant's recommendation to increase demand for immunisation services
- Socio-economic and gender variables
  - Participant's self-assessment of socio-economic status within the community
  - Adequacy of remuneration/incentives, timeliness of salary payment
  - Knowledge of community's sex preference in giving priority to vaccinate a child
  - Training level on gender issues
  - Understanding of the relationship between gender and immunisation
  - Effort, if any, to mainstream gender at health facility level
  - Participant's understanding of the major barriers to immunisation
  - Decision making in participant's household on social and economic affairs
  - Most influential figure or body whose opinion is trusted by the household and the community
  - Participant's opinion about the level of tolerance/ justification of spousal beating
- Any other comment to address socio-economic barriers and improve immunisation coverage

The full health professional survey questionnaire is attached as Appendix 7.

#### **4.6.4. Recruitment, training, deployment of data assistants**

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Research assistants were employed to assist the researcher in gathering data from household and health facility survey participants. As indicated in the sampling design, up to 1 388 households might have needed to be visited in search of at least 441 eligible ones. Furthermore, a total of 24 health professional surveys needed to be completed. Factoring in the size of the sample, comprehensiveness of the survey questions and the pre-survey protocol that needed to be judiciously observed, the researcher decided to engage 10 data collection assistants. The procedures followed in recruiting, selecting and training the data collectors are described in the following sections.

#### **4.6.4.1. Recruitment**

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The researcher approached an immunisation expert working for a prominent health organisation to assist in identifying data collectors with a proven track record in conducting similar surveys. This led to 15 curricula vitae being collected and reviewed. The following selection criteria were set:

- Educational qualification: minimum of high school completion
- Experience in health-related field surveys using ODK platform
- Age range: 20-55 years old
- Language: English and at least one local language
- Considerations for equal employment opportunity

All the applicants were invited for selection tests having fulfilled the minimum criteria, and 14 out of 15 applicants showed up for the selection and training session that was held on 15 August 2019. Six of the applicants that sat for the test were female.

Pre-training tests were administered to gauge the knowledge and experience of the applicants in relation to the project. The questions mainly covered how to conduct a survey, and basic gender and immunisation related concepts. The average score for both tests was 8.5 out of 11 which was very encouraging.

#### **4.6.4.2. Training and selection**

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A training and briefing session was conducted with the prospective data assistants. The training team included the researcher, the statistician and the database developer whose services were retained. The training content included:

- Briefing on the purpose of the research – guided by the survey participants information kits
- Sampling methodology particularly how to select the households
- Briefing on the content of the participant information notes, and modalities for soliciting consent to participate in the survey

- Thorough review of the survey questions, which helped a great deal in fine-tuning important questions for better clarity and completeness
- Briefing on the exclusion criteria for both surveys
- Theoretical briefing and demonstration on administering the surveys on ODK
- The need to document key challenges and issues that may be encountered in the field and escalation mechanisms for instant solutions.

At the end of the training and briefing session, similar tests were administered. The average score this time was 9.5 out of 11 points, which was quite satisfactory. Finally, the researcher selected 10 data assistants – 5 female and 5 male – factoring in various parameters mentioned in the recruitment section above.

#### **4.6.4.3. Deployment**

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After completing the selection process, the researcher negotiated and agreed on terms and conditions of engagement with the selected candidates. A non-disclosure/confidentiality agreement was duly signed between the researcher and each of the 10 data assistants individually.

Before their deployment the following logistical arrangements were made:

- Distributed configured data collection Android compatible devices to each data assistant.
- Handed over notebooks, pen and a bag to enable the data assistant to document their key experiences in the field.
- Assigned specific areas (settlements/wards/area council/health facility) of deployment to each data assistant. In designating areas of deployment, special care was taken not to assign women to areas known to pose a very high security risk.
- Designated one team leader per area council among the group of five members. A female and a male team leader were assigned one area council each.

- Reminded them of the need to pay a courtesy visit to the district/village heads to notify the authorities about the project and seek their permission before embarking on the survey.
- Created messaging and email groups to exchange feedback from the field and solve any problems as promptly as possible.
- Advanced their transport allowance to their bank account.
- Developed and shared a field report template to organise feedback from the data collectors on key observations, challenges and remedial actions taken to address these (see Appendix 9).

Before administering the questionnaires, the data assistants were reminded to present the identified participant with the participant information sheet and obtain their agreement to participate. (For full content of the participant information and agreement form, see Appendices 11 and 12). Once agreement was obtained and recorded on the ODK platform, the questions were posed, and responses were entered in real time.

Moreover, each data collector was charged to pilot the survey on at least one health professional and two households in their designated wards. After given clearance on the outcome of the pilot test, the data assistants were deployed to their respective settlement areas to complete the survey within 10 days with at least two health professionals and 10 households per ward at the designated health facilities and settlements.

#### **4.6.5. Data gathering tools from key informants**

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To facilitate the administration of written interviews, semi-structured questions were developed. Semi-structured questions are conducive to posing consistent questions related to the purpose of the research to various interviewees while granting some flexibility for follow-up questions to capture a wider range of views (Galletta 2013:45). As Bradford and Cullen (2012) quoted in Evans (2018:6) stated, semi-structured interviews are one of the most popular data collection tools in social science. Such tools are valuable to capture the subjective viewpoints of participants,

which will provide additional perspectives on the research issues (Flick 2009 as quoted by Evans 2018:2).

The original plan was to conduct face-to-face interviews using voice recorders. However, with the unforeseen COVID-19 pandemic, face-to-face meetings were discouraged. Therefore, the researcher consulted with the study supervisor to conduct written interviews. The amendment to the ethical clearance was also approved by the Department of Development Studies of UNISA. The potential interviewees were contacted and expressed their willingness to respond in writing via email. This helped to mitigate potential health risks to both the interviewee and the interviewer. Furthermore, written responses have the advantage of capturing coherent and structured feedback from the interviewee.

The interview was conducted with immunisation officers at Federal and State levels who are subject matter experts. As such, they are expected to understand the interview questions without much assistance from the researcher. Still, after reviewing their written responses, the researcher contacted the interviewees concerned by telephone when further details or clarification was needed.

#### **4.6.5.1. Contents of the key informant interview questions**

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Most of the key informant interview questions were open ended. This was to allow participants to provide as much relevant information as they could (Turner 2010:756). For the sake of transparency and accountability, a participant information and agreement form was presented to each interviewee (see Appendix 13).

Broadly, the interview questions focused on addressing issues that underpin decisions related to socio-economic and gender dynamics of the immunisation system. The questions could be categorised in the following broad themes.

- General data
  - Code number of the interviewee to accord anonymity
  - Name of the institution and its role in the immunisation system in Nigeria
  - Sex, responsibility, and experience of the participant
- Immunisation related questions were posed to gauge participants' assessment of:

- Overall immunisation system in Nigeria in general and FCT in particular
- Enabling factors for and constraints/challenges against effective vaccination service delivery in FCT by dissecting demand and supply sides of the equation.
- Socio-economic and gender variables
  - Participants' understanding of the key socio-economic determinants of immunisation in Nigeria in general and FCT in particular
  - Availability of gender policy in the participant's organisation and any efforts exerted to mainstream gender in policy, programmes and funding aspects
  - Identifying socio-economic and gender norms, roles and relations in the community that may affect immunisation coverage
  - Overall assessment of the immunisation system in Nigeria/FCT from a gender perspective
  - Interviewees' understanding of the major barriers to immunisation
  - Plans to systematically and sustainably address socio-economic and gender determinants of immunisation in the organisation
  - Recommendations to key immunisation stakeholders such as government, development partners, traditional/religious leaders, academia and service providers to address the socio-economic and gender barriers to immunisation
- General remarks or questions the interviewee may have.

The key informant interview questions are provided in full in Appendix 8.

#### **4.6.6. Feedback from expert review and pilot testing of data collection tools**

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As mentioned earlier, the data gathering instruments were pre-tested before scaling up their application. Such pilot testing helps to ensure relevance, clarity and effectiveness of the data gathering instruments by applying the tools on a small number of selected participants (Galletta 2013:45). Furthermore, subject area experts were approached to review and give feedback on the contents of the tools.

Based on feedback received from the piloting and experts, the data tools were revised before undertaking the full field survey.

#### **4.6.6.1. Changes made on the household survey questionnaires**

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The main changes made on the household survey questionnaires based on feedback from the expert review and pilot testing were:

- Introduced semi-automatic/system-generated codes for each questionnaire instead of manual ones
- Provided better descriptions to capture the immunisation status of the eligible child from vaccination card review or from history as told by the parent or guardian
- Addressed the questions directly to the parents/guardians instead of suggesting that the questions were to be answered through the data collector
- Changed the question on wife beating to spouse beating since the question should not be gender biased and suggestive.
- Corrected settlement names which were erroneously captured in the master database
- Specified that the sex of the main participant should be the one to be captured if the questionnaire was answered by a couple
- Introduced 'other' in several of the questions to avail opportunity to respond to the question more accurately than being obliged to pick from limited options
- Qualified that the data of eldest eligible child be taken if there were perhaps multiple children under two years old in the same household
- Added the option of traditional/religious 'health facilities' as potential places of delivery/birth
- Improved the question on the possession of vaccination cards to ensure that the cards were physically seen and reviewed by the data collector

- Added a question on whether or not the mother of the eligible child had received a tetanus toxoid vaccination
- Included 'government authorities' and 'traditional/religious leaders' in the list of potential sources of information on health/immunisation
- Where the responsibility to address a specific question could be a shared between males and females, posed the question in a unisex form rather than to suggest one sex and ignore the other.

#### **4.6.6.2. Changes made on the health professional survey questionnaires**

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The main changes made on the health professional survey questionnaires were:

- Introduced semi-automatic/system-generated codes for each questionnaire instead of manual ones
- Limited the ownership of health facilities to private and public which suffices the purpose for data collection and analysis while the type of the health facility is described separately
- Added a question on the location of the health facility
- Where the responsibility to address a specific question could be shared between males and females, posed the question in a unisex form rather than to suggest one sex and ignore the other.
- Widened the option to assess the local language proficiency of the service provider
- Added a question on the experience of the health professional
- Added a question on the assessment of the health facility in terms of equipment and staffing
- Added a question on service provider's understanding of the cost that a health service seeker may incur to come to the facility



- Added a few demographic questions to the service provider on their own family immunisation status.

#### **4.6.7. Data gathering mechanism from secondary sources**

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As Goertz and Mahoney (2012:48) stated, qualitative researchers mostly begin their studies from existing knowledge. Accordingly, national policy documents on immunisation, socio-economic, and gender issues were reviewed in order to form the basis for addressing the research questions and to contextualise the study (sections 3.5 and 3.6 of chapter three). This research consequently embarked on the collection and analysis of strategic documents that dwell on gender, socio-economic and immunisation issues at global and Nigeria levels.

Only those materials that were accessible and published by authoritative institutions deemed relevant to address the research questions were selected. The strategic materials were gathered by visiting official websites and libraries of leading institutions on immunisation and government agencies. The researcher physically visited the libraries of WHO Head Quarters in Geneva, Switzerland and United Nations Economic Commission for Africa Head Quarters in Addis Ababa, Ethiopia. Desk reviewed documents included books, articles, newspapers official reports, and other publications relevant to the study obtained from sources as indicated in chapter two, section 2.1. Thematically structured matrices were developed and used in organising the data extraction and analysis.

Convenience sampling method was found to be the most appropriate technique (Goertz 2012:182) for this component of data source. Convenience sampling supports the use of accessible materials based on their relevance to address the research questions (Marshall 1996:522). Marshall (1996:522) and Etikan et al (2016:2) admit that this methodology lacks sophistication although it is cost effective. Agreeing with its advantages, including the fact that convenience sampling is the most commonly used method, Acharya et al (2013:332) cautioned about its limitation. According to him, the results from secondary data chosen using such technique cannot be generalised beyond the sample itself.

The researcher believes that the limitations of this method are mitigated through the augmentation of more robust qualitative and quantitative data gathering tools used

for the primary data sources. The main objective of the qualitative secondary data gathering is to deepen one's understanding of the issues in question. As such, the convenience sampling is complementary. Moreover, the researcher's over 17 years of experience in the immunisation sector was instrumental to pass reasonable judgement in picking adequate and relevant materials for the study. To this end, over 260 literature items were gathered and reviewed.

Selected key materials that prominent immunisation actors use in Nigeria were gauged and the outcome presented in section 3.6.2 of chapter three using the WHO gender analysis tools described in section 2.7.1 of chapter two. This gender analysis tool developed by WHO (2011:120-136) to guide gender mainstreaming for health managers, policies and programmes were put to use by the researcher to assess and rank the key documents according to their responsiveness to gender issues.

#### **4.7. DATA-ANALYSIS STRATEGIES**

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Hansen (2006:137) defines analysis as the process of transforming data into results to arrive at "new understandings, theories and statements about the empirical world." In qualitative research, data analysis can be started while the data collection is ongoing (Galletta 2013:119). Such an iterative process helped the researcher to sharpen the data gathering and analysis strategy based on preliminary data collected from various sources.

The data collected from key informants was coded, arranged and analysed thematically (Hansen 2006:70). According to Mortensen (2020), a thematic analysis is a method that helps to identify and organise patterns from the data obtained through an interview. Anderson (2007:1) also commended thematic content analysis as "most foundational of qualitative analytic procedures and in some way informs all qualitative methods". Adoption of this analysis strategy facilitated comparison of the responses on similar issues by participants who hail from various academic, experience and skill backgrounds, at the same time representing multiple stakeholders. As Evans (2018:3-6) cautioned, there is a need to be prudent when selecting themes to ensure that only relevant issues that address the research questions are incorporated.

The researcher utilised the Statistical Package for Social Science (SPSS) to capture and analyse the data from the household and health professional surveys. SPSS is one of the most popular statistical software packages that can be used to manage a complex dataset (McCormick, Salcedo & Poh 2015:10). By analysing the survey data, the study aimed to explore possible statistical associations between immunisation and gender and other socio-economic variables.

For secondary data sources, the analysis was conducted to determine the overall socio-economic, gender and immunisation situation of the country in general and the FCT in particular, which is covered in chapter three. According to some studies, poor socio-economic and gender indicators can contribute to low immunisation coverage (Hilber et al 2010b:13). Mackenbach (2020:615) further argues that there are conditions where health situations could also determine socio-economic circumstances. The researcher attempted to assess a multi-faceted relationship between the socio-economic determinants and immunisation variables.

To give focus to the analysis of this study, the researcher thematically identified dependent and independent variables whose proxy indicators and basis of measurement are described in the following sections.

#### 4.7.1. Framing and measuring the variables

Table 4.4 summarises the framework for measuring the variables gathered from various data collection tools, particularly from the surveys. The researcher captured these variables in the data collection instruments and briefed the research assistants about the intended meaning of the variables before embarking on the survey exercise.

**Table 4.4: Conceptual framework for measuring the variability of key socio-economic and gender determinants vis-à-vis immunisation**

<b>Variability</b>	<b>Thematic areas</b>	<b>Key variables/ proxy indicators</b>	<b>Basis of measurement key variables</b>
Dependent	Immunisation	Vaccination coverage, dropout rates	See Table 4.5 below for key immunisation indicators, definitions and basis of their measurement

<b>Variability</b>	<b>Thematic areas</b>	<b>Key variables/ proxy indicators</b>	<b>Basis of measurement key variables</b>
Independent	Demographic	<ul style="list-style-type: none"> <li>• Age</li> <li>• Sex</li> <li>• Marital status</li> <li>• Religion</li> <li>• Ethnic background</li> <li>• Family size</li> </ul>	Describe association between demographic data from the survey and the vaccination status of the eligible child
Independent	Socio-economic	<ul style="list-style-type: none"> <li>• Social perception</li> <li>• Residential location</li> <li>• Birthplace of the child</li> <li>• Knowledge/attitude/ about health, VPDs, immunisation</li> <li>• Distance of health facility</li> <li>• Mother's use of antenatal care facilities and TT vaccination status</li> <li>• Socio-economic status and income levels</li> <li>• Media access and usage</li> <li>• Means and cost of access to immunisation services</li> </ul>	Describe association between these key socio-economic variables and the vaccination status of the eligible child
Independent	Gender	<ul style="list-style-type: none"> <li>• Sex preference for a child</li> <li>• Experience and perception of gender-based violence</li> <li>• Awareness/training on gender issues</li> <li>• Gender equality and empowerment:</li> <li>• Freedom of movement</li> <li>• Role in household affairs</li> <li>• Decision making on health and money issues</li> <li>• Sharing of responsibility in household chores</li> </ul>	Describe association between these proxy gender variables and the vaccination status of the eligible child

**Table 4.5: Key immunisation indicator definitions and basis for measurement**

Definition	Indicator
Availability of vaccination card at time of survey	Percentage of youngest children, ages 12–23 months, who have a vaccination card at the time of the survey
Access to immunisation services (Penta 1)	Percentage of youngest children, ages 12–23 months, who received Penta 1 according to the vaccination card or mother's recall at the time of the survey
Utilisation of immunisation services (Penta 3)	Percentage of youngest children, ages 12–23 months, who received a Penta 3 vaccine according to the vaccination card or mother's recall at the time of the survey
Dropout rate (Penta 1 to Penta 3)	Percentage of youngest children, ages 12–23 months, who received a Penta 1 vaccine but did not receive a Penta 3 vaccine according to mother's recall or vaccination card verified at the time of the survey
Fully immunised children by age 12 months (valid coverage)	Percentage of youngest children, ages 12–23 months, who received all doses of all vaccines according to the vaccination schedule by 12 months of age
Fully immunized children ages 12–23 months	Percentage of youngest children, ages 12–23 months, who received age-appropriate vaccination at time of survey
Non-immunised children	Percentage of youngest children, ages 12–23 months, who had not received any dose of any vaccines in the national immunisation schedule by the time of the survey

*Source: Adopted from K4Health Toolkits*

#### **4.7.2. Statistical analysis instruments**

The researcher applied an appropriate statistical analysis on the quantitative data collected from the household survey as generated from the SPSS database. In conjunction with this, qualitative components of the gathered data were described in comparison with standard immunisation policies and practices.

For the statistical analysis, two methods were used – a 2x2 table odds ratio analysis and binary logistic regression analysis. For both methods, SPSS was used to aid in calculating the statistical elements.

#### **4.7.2.1. 2x2 table odds ratio analysis**

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The 2x2 table odds ratio is a “popular measure of strength of association between exposure and outcome variables” (Hailpern & Visintainer 2003:213). Odds ratio (OR) signifies that a particular outcome will take place when exposed to a variable of interest in comparison with the odds of the outcome if there is no exposure to the same variable. Use of odds ratio is common in the health sector (Persoskie & Ferrer 2017:224-228, Hailpern & Visintainer 2003:213).

The outcome of the odds ratio is interpreted as follows (Szumilas 2010:227):

- If  $OR=1$ , then the exposure does not affect odds of outcome
- If  $OR>1$ , then exposure associated with higher odds of outcome
- If  $OR<1$ , then exposure associated with lower odds of outcome

As shown in section 5.2.3 of chapter five, the odds ratio from the 2x2 table was calculated to independently describe the relationship between 35 socio-economic and gender variables on one side, and immunisation outcomes on the other. A confidence interval (CI) of 95% was used in the analysis to yield meaningful statistical significance for the analysis (Szumilas 2010:227). A probability (P) value of  $< 0.05$  also indicates a statistically significant difference between the set of variables. The three statistical indicators i.e. OR, CI and P values are brought together to analyse the statistical significance of the variables under study.

#### **4.7.2.2. Logistic regression analysis**

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Recognising the inter-dependence of socio-economic and gender variables in impacting the immunisation outcomes, a logistic regression analysis was also conducted on selected variables. Logistic regression is a statistical method for analysing a dataset in which there is one or more independent variables that are expected to determine an outcome (Hosmer & Lemeshow 2013:1). Such method is used to describe the data and explain the relationship between one dependent variable and one or more independent variables. Compared to other methods, logistic regression is touted by some scholars for its wide use and ability to give good predictions (Hosmer & Lemeshow 2013:1, Hailpern & Visintainer 2003:213).

Similar to the 2x2 OR tables, the responses from the questionnaires were dichotomised for the logistic regression analysis as well. Such consolidation was found necessary since the frequency of responses recorded for some of the questions were statistically insufficient to derive meaningful interpretation. Therefore, mainly due to the dichotomisation of the responses, among several types of logistic regression analysis available in the literature, binary logistic regression methodology was deemed appropriate.

The odds ratio in the logistic regression represents the constant effect of a predictor on the likelihood that one outcome will occur (Hailpern & Visintainer 2003:215). Unlike the 2x2 OR tables, the logistic regression accomplishes the goal of predicting the outcome as a result of the intervention of the independent variable by keeping the effect of the other variables constant (Hailpern & Visintainer 2003:215). Furthermore, logistic regression measures the strength and statistical significance of each independent variable with respect to the probability of moving from one situation to another. It also test-runs the model fitness and the effect of each explanatory variable on the outcome through the test of goodness of fit.

Some of the key steps taken using SPSS and the resultant outcomes are summarised as follows:

### **Case processing summary and variable encoding for the model**

The case processing summary below shows how many cases were included in the analysis. The second row refers to the one participant with a missing data item, which was consequently excluded from the analysis.

<b>Cases</b>		<b>Number</b>	<b>Percent</b>
Selected cases	Included in analysis	501	99.8
	Missing cases	1	.2
	Total selected cases	502	100.0
Unselected cases		0	.0
<b>Total cases</b>		<b>502</b>	<b>100.0</b>

The dependent variable encoding shows how the outcome variable is encoded as „0“ for „no“ and „1“ for „yes“.

Immunisation access: No=0, Yes=1

Immunisation utilisation: No=0, Yes=1

### Regression model summary

The model summary provides the -2 log likelihood (LL) and pseudo-R<sup>2</sup> values for the full model. The -2LL value for this model is 201.602. The new model, with explanatory variables introduced, is a significantly better fit than the null model. Null model is the logistic regression analysis result without injecting the explanatory variables. The R<sup>2</sup> values indicate approximately how much variation in the outcome is explained by the regression model (Shtatland, Kleinman & Cain 2002:1). The use of Nagelkerke's R<sup>2</sup> is the most appropriate and applicable in the SPSS set up (Walker & Smith 2016:848-849). The R<sup>2</sup> result suggests that the model explains roughly 44% of the variation in the outcome. As Frost (2020) stated, the result scale for R<sup>2</sup> ranges from 0 – 100%. Thus, the result of 44% is a good one in terms of measuring the relationship between the chosen model and the dependent variable.

Omnibus Tests of Model Coefficients				
		Chi-square	Degree of Freedom	Sig.
	Step	114.804	9	.000
	Block	114.804	9	.000
	Model	114.804	9	.000

Model Summary		
-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
201.602 <sup>a</sup>	.205	.437

Estimation terminated at iteration number 7 because parameter estimates changed by a negligible margin (less than .001).



### Hosmer & Lemeshow test

The Hosmer & Lemeshow test is a default test for goodness of fit for logistic regression analysis. It is often used particularly for the binary logistic regression analysis (Fagerland & Hosmer 22662012:447). The Hosmer & Lemeshow test of the goodness of fit suggests that the model is a good fit to the data as  $p=0.147$  ( $>.05$ ). However, the chi-squared statistic, on which it is based, is very dependent on sample size. Therefore, the value cannot be interpreted in isolation from the size of the sample. This p value may change when interactions in the data are allowed.

Chi-square	Degree of Freedom	Sig.
12.090	8	.147

### Classification Table

This table is based on the model that includes the explanatory variables. The model is now correctly classifying the outcome for 93.2% of the cases compared to 90.4% in the null model for immunisation access. For immunisation utilisation, the classification outcome is 85.8% compared to 81.4% in the null model for the same outcome. For both outcomes, the classification yielded a good improvement having scored above the national coverage rate of 80%.

### Classification of immunisation access

Observed		Predicted		
		Access		Percentage Correct
		0	1	
Access	0	19	29	39.6
	1	5	448	98.9
Overall percentage				93.2

## Classification of immunisation utilisation

Observed		Predicted		
		Utilisation		Percentage Correct
		0	1	
Utilisation	0	31	62	33.3
	1	9	399	97.8
Overall Percentage				85.8

The variables selected for the logistic regression analysis, the rationale for choosing them and the statistical outcome of the explanatory and outcome variables are described in section 5.2.4 of chapter five.

To conclude this section, the final results from various sources and analysis are presented using graphs, maps, charts and tables as appropriate. The thesis is structured based on thematic areas to ensure that crucial components of the study are well described in an organised fashion. As Silverman (2003:343) quoted in Hansen (2006:139) stated, iterative/thematic analysis is an approach quite common in health researches to “elicit some external reality such as experiences, events or facts”.

### 4.8. WAYS TO ENSURE VALIDITY AND RELIABILITY

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This study has adopted mixed research by design. For the qualitative component of the design, there is no standardised and traditional scientific measure for validity and reliability of qualitative studies (Hansen 2006:46). Admitting that there are diverse opinions about appropriateness of qualitative research methodologies, Hansen (2006:46) quoting Blaikie (1991), Grbich (1999) and Hammersly (1992) suggested that each qualitative research should be judged on its own merit and not necessarily in relation to another. However, there is a general consensus that any research should have a rigorous and transparent design process and tools to win the trust and confidence of its readership (Saris & Gallhofer 2014:4-8, Hansen 2007:47, 58).

#### **4.8.1. Validity**

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Validity is as a yardstick against which the data collection instruments factually and logically measure what they are designed to measure (Drost 2011:106). Hansen (2006:58) advises that, in qualitative research, how and why research participants were selected, what methods were employed and how the data was analysed should be transparently and scrupulously documented.

The researcher took measures such as expert review of the tools, pilot testing the questionnaires and use of an appropriate medium of communication with the participants to augment the validity of the study. Furthermore, the use of ODK accorded the research additional strength by availing in-built filters during data entry that helped to mitigate errors associated with incoherent patterns.

#### **4.8.2. Reliability**

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In the context of the research design, reliability is a measure of consistency of the data management tools yielding same result/findings despite repetitive applications (Drost 2011:106). The researcher, therefore, used clear and consistent language in data collection tools that would fit the level of understanding of the targeted audience. Moreover, where applicable, the researcher conducted data triangulation in order to corroborate the consistency of the data obtained on similar issues from various sources (Stake 2010: 123).

A research is adjudged as credible and dependable if it meets the criteria of truthfulness, methodological suitability, neutrality, and potential for transferability of findings in a similar set up (Hansen 2006:49-51). As such, this research attempted to transparently and rigorously document the process adopted in designing the tools used for data collection, analysis and reporting.

#### **4.9. ETHICAL CONSIDERATIONS**

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Hammersley and Traianou (2012:16-17) define ethics in social research as “the study of what researchers ought to and not to do, and how this should be decided”. In qualitative research, a researcher develops a working relationship with study participants. It is not always easy to maintain absolute confidentiality and privacy if

the researcher is directly involved in data collection and gets to know the research participants during interactive sessions (Hansen 2006:34). Recognising this, utmost effort was exerted to meet the ethical standards of the study by maintaining a high degree of professional and academic integrity.

Before embarking on the data collection, the researcher approached the right authorities to obtain the appropriate clearance. The study participants were briefed adequately to ascertain their understanding of the purpose of the study (Gallett 2013:45). Participant information and agreement forms were prepared and presented to each study participant for expressing their consent (see Appendices 11, 12 and 13). As contained in these forms, the researcher committed to ensuring that the data obtained from the researchers would solely be used for the purpose of the study. The researcher assured confidentiality of the data gathered from participants so that they would feel free to collaborate on the project.

The immunisation activities, particularly the supplementary campaigns in Nigeria are often incentivised through payment of allowances to vaccination personnel and provision of limited household supplies for some segment of the beneficiaries. Therefore, it was made clear to research participants that no monetary compensation should be expected for providing data for this exercise. Instead, participants were sensitised to appreciate the resultant benefits of the study in improving immunisation coverage in their community and the country at large.

To ensure compliance with the research ethical requirements, the researcher:

- Secured ethical clearance and research permission from FCT, Health Research Ethics Committee on 29 July 2019 under approval number FHREC/2019/01/80/06-08-19 (See Appendix number 10)
- Obtained preliminary clearance on the data collection tools from the research supervisor on 07 August 2019
- Received approval from UNISA research ethical clearance review committee on 19 August 2019, reference number 2019-CHS-Depart-41891961 (See Appendix number 15)
- Was granted permission from the Chair of the Departmental Research Ethics Review Committee on the application for amendment to the ethical clearance

certificate on 19 May 2020. The reason for the change is described in this chapter, section 4.6.5.

## **4.10. LIMITATIONS AND MITIGANTS**

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Overall, the field survey exercise was a huge success. The vast majority of the survey participants were quite hospitable and cooperative once they realised that the research had been cleared by the right body and that the local authorities had given permission for the study to be undertaken at households and health facilities in their area. However, despite several efforts to foresee and proactively put mechanisms in place to address them, some limitations and challenges were still faced.

### **4.10.1. Limitations and challenges**

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The researcher encountered the following challenges:

- Some settlements that were originally selected had to be dropped due to stern security warnings from the ward focal points regarding imminent life-threatening risks to the data collectors due to rampant armed robbery in those areas.
- Some settlements in the database were found to be unpopulated on the ground because the residential estates were under development.
- A few health facilities that were picked from the database were not found on the ground.
- Most of the settlements, particularly in Kwali area councils, were hard to reach due to lack of transport infrastructure. The roads are very rugged. Motorcycle rides was the only means of transport in most cases, which had its own risks and inconvenience particularly for female data collectors who had to comply with certain dressing customs.
- In certain instances, ward or village level authorities were reluctant to grant permission to access the community for the survey even though the official research permit from the FCT administration was presented to them.

- In some areas, it was difficult for people to give their time to answer the survey, owing to the hustle and bustle of urban life.
- Some security personnel were reluctant to allow data collectors enter into an estate or a household.
- The planned in-person face-to-face interviews with key informants were not possible because of the health risks associated with the COVID-19 pandemic.

#### **4.10.2. Assumptions and mitigants to address limitations**

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Factoring in the challenges and limitations emanating either from infrastructural, safety, security or bureaucratic issues, the researcher adjusted certain assumptions and took mitigating steps to address them. To mention the main ones:

- The researcher had to heed credible security advisories to safeguard the wellbeing of those involved in the project. Otherwise, it would have been useful to gather data from communities living in such a difficult environment and analyse the socio-economic implications for immunisation coverage. Still, a number of settlements where the data was collected shared similar traits to a greater or lesser extent. Therefore, the researcher assumed that losing the opportunity to collect data from some settlements would not detract from the diversity of the research base.
- The researcher checked with concerned officers regarding the reason why some settlements or health facilities in the database were not found on the ground. They clarified that this was either due to closure of facilities whose status was not updated in the database or a data entry error from the outset. To avoid bias in selecting a replacement for such facilities or settlements, the researcher re-ran the PPS protocol to pick another one in the same ward.
- According to Robert Chambers (2008:31-32), one of the biases committed in development inquiry is what he termed as spatial bias. It is a bias where some development researchers conveniently avoid certain rural areas due to the infrastructural inconveniences. Cognizant of this, the data assistants were encouraged not to miss hard-to-reach areas for lack of transport or due to cost implications. Such areas are assumed to have a unique socio-economic setting

whose vaccination situation would enrich the research. Therefore, an additional transport allowance was allocated to data assistants assigned to such areas to go to the limits without risking their security and safety.

- When needed, the researcher sought the intervention of higher-level authorities in convincing some ward or village level focal points of the purpose of the study. This effort enabled prompt resolutions of the bottlenecks encountered in the field data collection.
- The resilience and persistence of the data collectors helped to resolve non-compliance by some gatekeepers who denied them access to some estates.
- To mitigate the health risks arising from the COVID-19 pandemic, in close consultation with the research supervisor and consent of the potential participants, the face-to-face interview was conducted in writing via email with the aid of semi-structured interview questions. Telephone discussions were held to probe on some questions that needed further clarifications.

#### **4.11. CHAPTER SUMMARY**

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This chapter presented the research design and methodology espoused by the researcher after exploring various options identified from reviewing the relevant literature and best practices followed by prominent organisations. The research was demonstrated to have blended multiple methodologies, sampling designs and procedures in order to systematically organise and analyse the data.

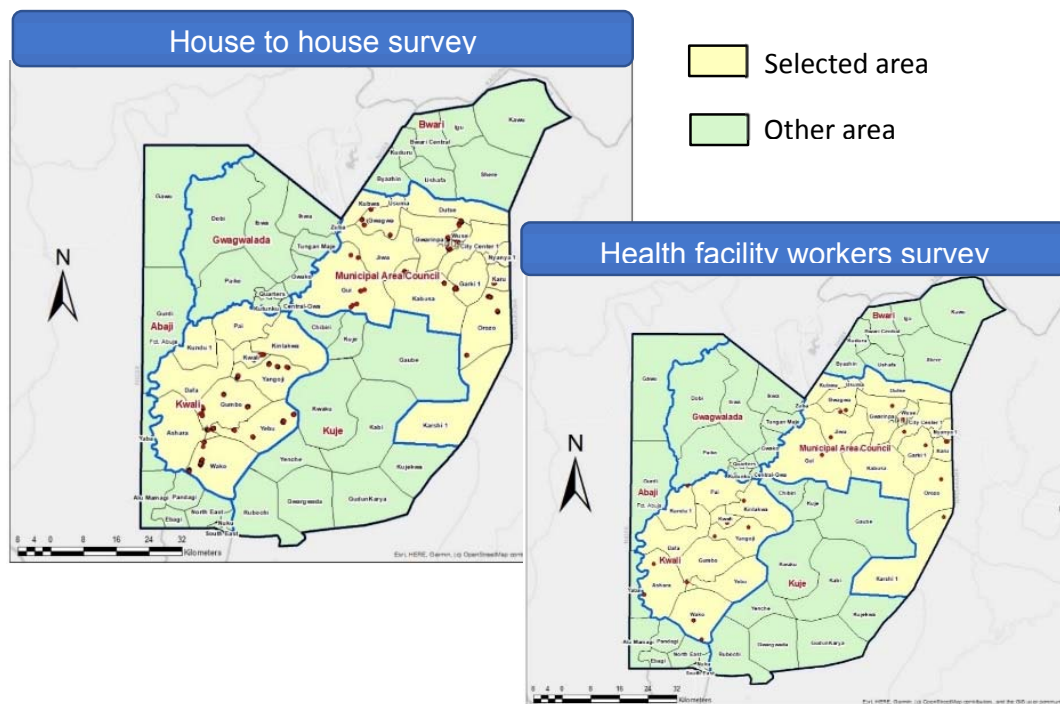
Over 260 documents and literature items were reviewed as secondary data sources, and 501 household surveys, 24 health facility surveys and 11 key informant interviews were conducted to gather primary data. Based on the data collected, the independent and dependent variables were identified and thematically organised to analyse their association with the proxy indicators for socio-economic and gender determinants of immunisation. The chapter also discussed the ways and means followed to ensure validity and reliability, and steps taken to comply with ethical issues.

Based on the foundation laid down in this chapter, the next chapter will present and analyse the results and findings.

## CHAPTER FIVE: DATA PRESENTATION AND ANALYSIS

### 5.1. INTRODUCTION

In this chapter, the data collected from selected households and health service provider surveys as well as from key informant interviews is presented and analysed. General statistical descriptions of dependent and independent variables are presented. The variables are subjected to further analysis vis-à-vis access and sustained utilisation of immunisation services.



**Figure 5.1: Geographic location of data collection for field surveys**

Figure 5.1 above shows the geographical location of the areas where survey data from 501 households and 26 immunisation service providers was collected. Owing to the use of electronic data collection mechanisms and pilot tested questionnaires, all the survey data was accepted into the database for analysis. The data collected from the different sources will now be presented and discussed in the respective sections, which are further sub-divided into various thematic areas.



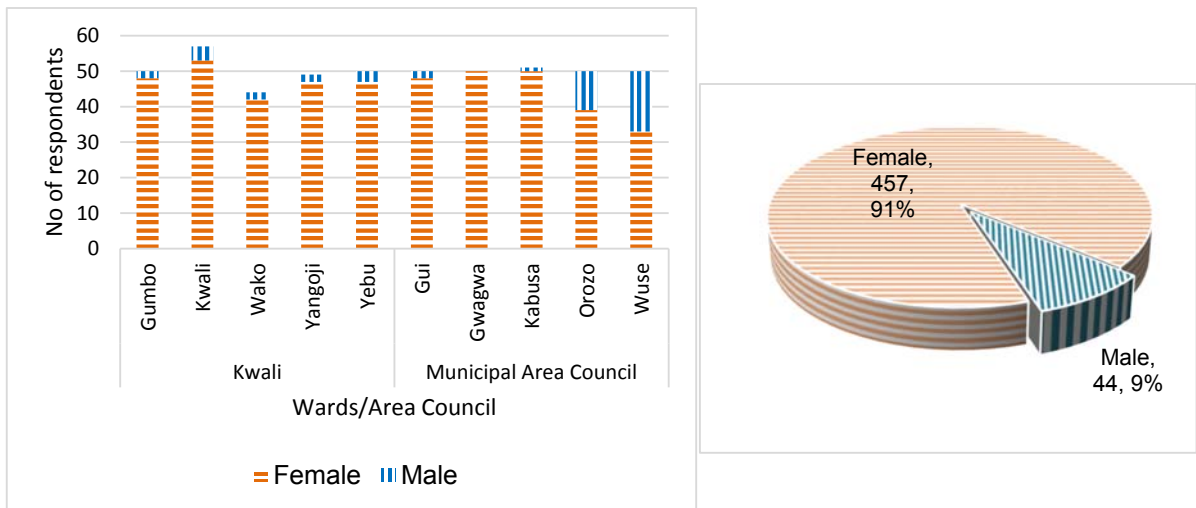
## 5.2. HOUSEHOLD SURVEY DATA ANALYSIS

### 5.2.1. General information on participants

The household survey data was collected from sources from diversified backgrounds in order to offer a voice to various stakeholders in a systematic manner. Most of the participant profiles are presented along with the sections where the corresponding immunisation data is analysed.

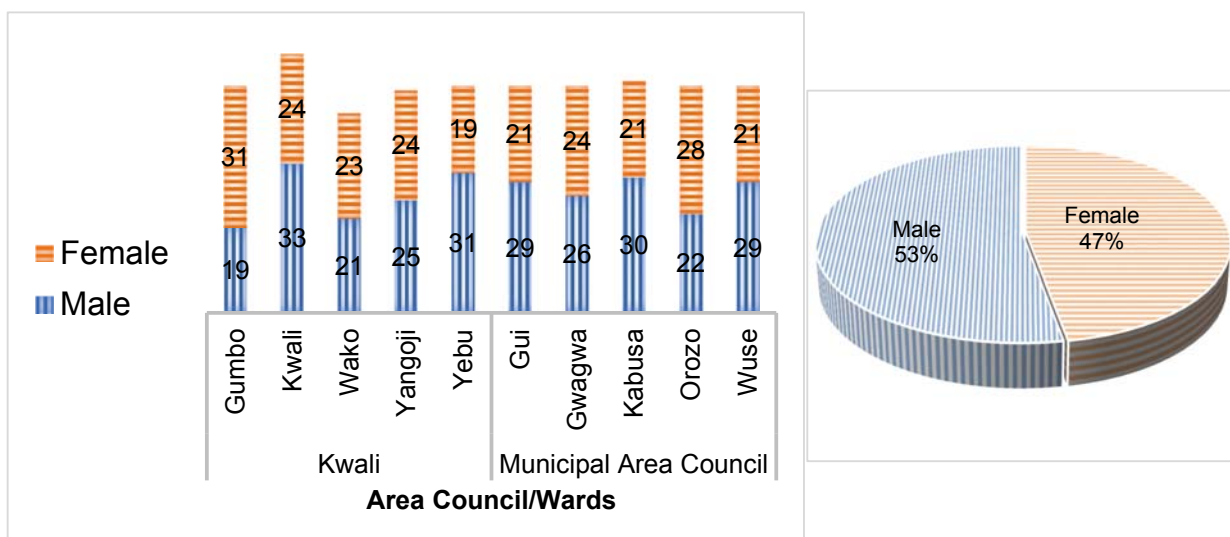
#### 5.2.1.1. Sex disaggregation of household survey data

Out of the total of 501, the vast majority (91%) of the participants were females. This was not by design on the part of the researcher, as the data would be collected from any of the parents or guardians that were willing and available to provide the information. This could be attributed to a tendency to delegate children's health affairs to mothers, particularly in a society like Nigeria (Ntoimo & Isiugo-Abanihe 2013:11).



**Figure 5.2: Sex composition of participants by area council and ward**

On the other hand, the sex distribution of eligible children in the households was more evenly spread in each of the 10 wards visited (see Figure 5.3): 53% of the eligible children were males while the remaining 47% were females. As mentioned in chapter four, section 4.4, eligibility of a child means the child was below two years of age and had gone through the vaccination cycle until at least up to DPT3 levels.



**Figure 5.3: Sex composition of eligible children targeted in the survey**

#### 5.2.1.2. Summary of key socio-economic variables

A number of general and specific socio-economic variables were gathered from the household surveys. For ease of review at a glance, the frequency and proportion of these key variables are compiled in Table 5.1 below.

The majority of the participants (61%) were rural based, followed by semi-urban (25%) and urban (14%) dwellers. 84% of the eligible children were under the care of both parents living together while 14% were being raised by a single mother, and the remaining 2% were under the custody of a guardian. None of the eligible children was raised by a single father. Monogamous marriage was the most common type (78%) while 17% had a polygamous marriage arrangement and the remaining 5% reported that they were unmarried, which might include the guardians. 59% and 41% of the participants reported Christianity and Islam as their religious affiliation respectively. Such ratio slightly differs from the religious demographic pattern of the FCT residents according to the latest update from the World Population Review (2020), which puts half of the population as Muslims, 40% Christian, and the remaining 10% following indigenous faith. In terms of ethnic composition, 29% of the participants identified themselves as Gwari, 19% as Hausa, 10% as Igbo, 8% as Yoruba. Hausa was the most widely (39%) spoken language reported by the participants, followed by English (24%), Igbo (8%), Yoruba (6%), the rest (22%) reported to speak other languages.

73% of the mothers were 18-30 years old, followed by 27% that fell in the age bracket of between 31 and 49. On the other hand, the majority of husbands (76%) were in the age range of 31-49 years, which is 10 years older than the age bracket in which the majority of the wives fell. Such an age gap between wife and husband is quite common in Nigeria, where the husbands are expected to be much older than their spouses. In fact, according to the report compiled by Ausubel (2020) for the World Economic Forum, “Christian men in Nigeria are 9.2 years older than their female partners, on average, while Muslim men are 13.0 years older”.

In terms of exposure to education, the attainment of the father was relatively better, with 32% of them reporting to have acquired higher education compared to 23% of the mothers. Conversely, the majority of mothers reported to have attended primary school (24%) or had no formal education (17%) when compared with fathers’ educational levels (19% primary education and 15% no formal education). The proportion of secondary education attainers was almost at par – 34% for fathers and 35% for mothers. To a great extent, these findings are in alignment with the national statistics published by the Federal Ministry of Education, particularly on the aspect of men having better exposure to higher education than women (FMOE 2020).

Affirming the patriarchal nature of the Nigerian society discussed in chapter three section 3.6.3.1, 87% of the responders reported that the households were headed by the father. 7% assumed joint headship of the household while 4% of the households were reported to be led by the mother. Farming was the most cited (40%) means of making a living for the household followed by trade (23%), private employment (22%), and public service (14%).

These and other socio-economic and gender variables will be discussed and analysed in detail in subsequent sections of this chapter by associating them with the access and utilisation of immunisation services.

**Table 5.1: Descriptive statistical summary of general socio-economic variables (by number and percentage) – house-to-house survey**

Variables	No. of participants	Percentage
Residential setting of participants:		
Rural	307	61.3
Urban	194	38.7

<b>Variables</b>	<b>No. of participants</b>	<b>Percentage</b>
<b>Responsibility for the eligible child:</b>		
Both parents live together	421	84.0
Single mother	70	14.0
Guardian	10	2.0
<b>Marital status of the participant:</b>		
Married	466	93.0
Single	26	5.2
Separated	4	0.8
Divorced	3	0.6
Widowed	2	0.4
<b>Marriage type of the participant:</b>		
Monogamy	390	77.8
Polygamy	84	16.8
Unmarried	27	5.4
<b>Religious affiliation:</b>		
Christianity	296	59.1
Islam	205	40.9
<b>Ethnic composition of the responder:</b>		
Gwari	145	28.9
Huasa	93	18.6
Igbo	51	10.2
Yoruba	42	8.4
Bassa	39	7.8
Ganagana	19	3.8
Gwandrara	2	0.4
Afo	1	0.2
Other	109	21.8
<b>Languages spoken:</b>		
English	122	24.4
Hausa	197	39.3
Igbo	39	7.8
Yoruba	32	6.4
Other	111	22.2
<b>Age range of the mother:</b>		
18-30 Years	364.00	72.7
31-49 Years	135.00	26.9
Above 49 years	1.00	0.2
Unknown	1.00	0.2

Variables	No. of participants	Percentage
Age range of the father:		
18-30 years	77.00	15.4
31-49 years	382.00	76.2
Above 49 years	40.00	8.0
Unknown	2.00	0.4
Education level of the father:		
Higher	162	32.3
Secondary	171	34.1
Primary	95	19.0
None	73	14.6
Education level of the mother:		
Higher	116	23.2
Secondary	176	35.1
Primary	122	24.4
None	87	17.4
Head of the household:		
Father	436	87.0
Both parents	33	6.6
Mother	20	4.0
Other	12	2.4
Source of household income:		
Farming	201	40.1
Trade	115	23.0
Private employment	111	22.2
Public servant	68	13.6
Support from extended family and friends	6	1.2

### 5.2.2. Overall immunisation coverage analysis

Key immunisation indicators were selected and summarised for general comparison with official and latest large-scale surveys conducted on immunisation coverage in Nigeria in general and FCT in particular. It is important to note that the sample size for the data collected from the two area councils would not be large enough to draw full conclusions on the FCT as far as immunisation coverage indicators are concerned. However, as can be noted in the table below, the calculations on the key immunisation indicators from this research provided interesting revelations when compared with the official health related surveys. The findings are summarised in the subsequent paragraphs.

**Table 5.2: Result of key immunisation coverage indicators from the research in comparison with national surveys**

Indicator <sup>1</sup>	Operational Definition <sup>2</sup>	Research Survey <sup>3</sup>	2018 NNHS <sup>4</sup>	2016_17 NICS/MICS <sup>5</sup>	Remark
Availability of vaccination card at time of survey	Percentage of children, aged 12–23 months, who have a vaccination card at the time of the survey	82%	69.5%	55%	
Access to immunisation services (Penta 1)	Percentage of children, aged 12–23 months, who received Penta 1 according to the vaccination card or mother’s recall at the time of the survey (history)	90%	87.8%	88%	80% by card only & 90% by card+ history
Utilisation of immunisation services (Penta 3)	Percentage of children, aged 12–23 months, who received a Penta 3 vaccine according to the vaccination card or mother’s recall at the time of the survey	81%	80.5%	66%	72% by card only & 81% by Card + History
Fully immunised children aged 12–23 months	Percentage of children, aged 12–23 months, who received all age-appropriate vaccination at time of survey	60%	Not available	47%	Card only = 57% and Card + History = 60%
Non-immunised children	Percentage of children, aged 12–23 months, who had not received any dose of any vaccines in the national immunisation schedule at the time of the survey	6%	11%	Not available	29 out of 501 sampled
Drop-out rate (Penta 1 to Penta 3)	Percentage of children, aged 12–23 months, who received a Penta 1 vaccine but did not	9.9%	Not available	Not available	Target = <=10%

Indicator <sup>1</sup>	Operational Definition <sup>2</sup>	Research Survey <sup>3</sup>	2018 NNHS <sup>4</sup>	2016_17 NICS/MICS <sup>5</sup>	Remark
	receive a Penta 3 vaccine according to mother's recall or vaccination card verified at the time of the survey				

Sources:

<sup>1,2</sup> Key immunisation indicators and their operational definitions are adopted from Knowledge SUCCESS, Johns Hopkins Centre for Communication Programs, <https://knowledgesuccess.org/resources/k4health-toolkits/>

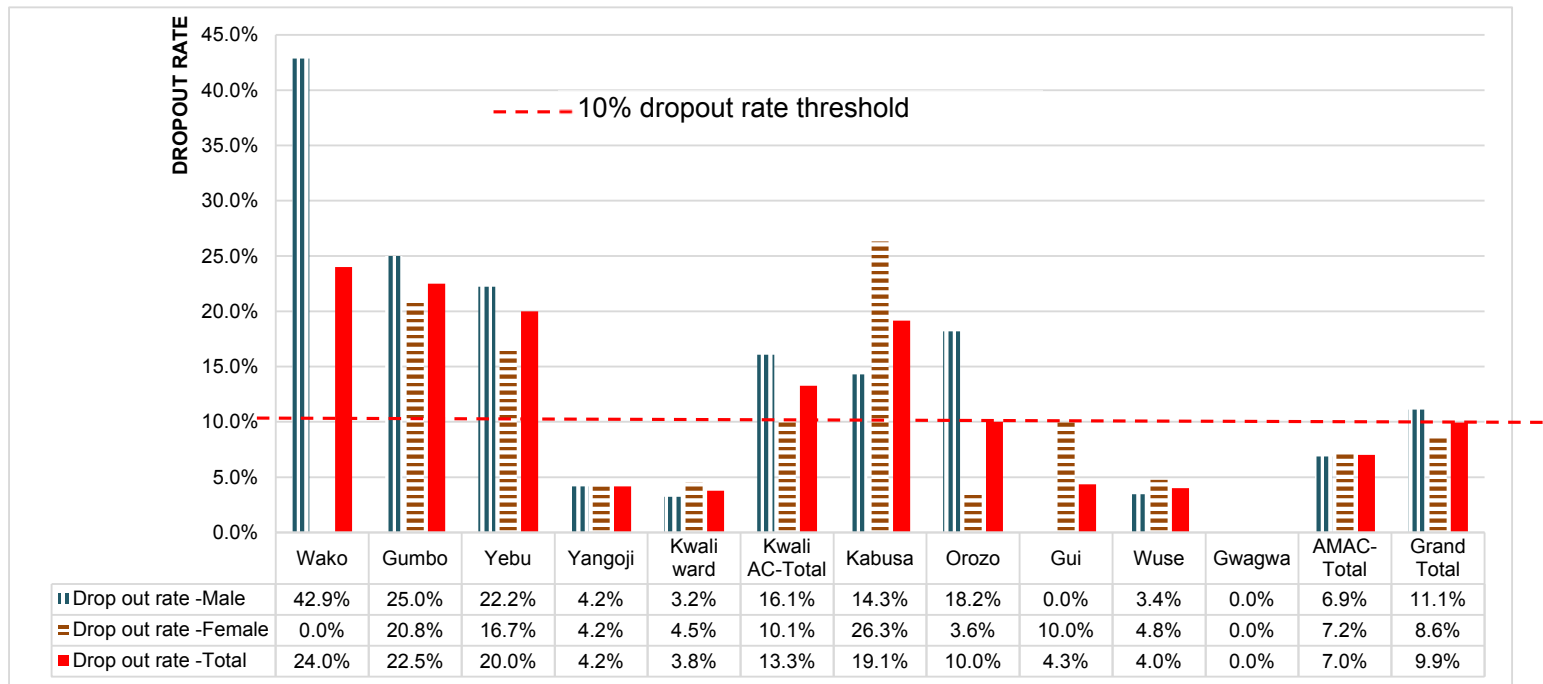
<sup>3</sup> Researcher's survey data

<sup>4</sup> 2018 Nigeria National Nutrition and Health Survey (NNHS) data for FCT (NBS 2018b)

<sup>5</sup> 2016 Nigeria National Immunisation Coverage Survey/Multiple Indicator Cluster Survey (NICS/MICS) data for FCT (NPHCDA & NBS 2017)

The households in the selected area councils showed a remarkable 82% combined rate of card possession, which was higher than compared to the recent official surveys for the FCT, 69.5% per NNHS 2018 and 55% per 2016/17 NICS/MICS. Given the inclusion of Abuja, the core urban centre of the FCT where the household survey showed a card possession rate of 86%, it is not surprising that the overall finding for this indicator was higher than the 2018 NNHS and 2016/17 NICS/MICS results. The NNHS and NICS/MICS data covers more rural areas of FCT which bring down the average card possession rate for the territory. For access and utilisation rates, the observations from cards, and where these were not available from the verbal response of the caregiver on the vaccination history of the child were taken. The findings on access rate for Penta1 from this research (90%) was very close to the official surveys (87.5% NNHS 2018 and 88% 2016/17 NICS/MICS). In the same vein, the 81% utilisation rate for Penta 3 found by this research was almost the same as the findings of the 80.5% per 2018 NNHS. However, when compared with the 2016-17 NICS result of 66%, there was wide variation, which requires further investigation. The 60% fully immunised and the 6% non-immunised proportions were found to be favourable when compared to the 47% and 11% data found in 2016-17 NICS/MICS and 2018 NNHS respectively.





**Figure 5.4: Dropout rate by sex, wards and area councils**

The internationally accepted target for immunisation dropout is to keep it under 10% (Baguune et al 2017:2). Therefore, any finding from the survey above this threshold was subjected to further scrutiny and analysis. No record was found on dropout rates from the two official survey documents reviewed. The research finding of 9.9% for the two sampled area councils of FCT was just at the border of the threshold. However, as shown in Figure 5.3, the very high dropout rates of Gumbo (very high for both sexes), Wako (very high for males) and Yebu (very high for both sexes) wards of the Kwali area council and Ozoro (males), Kabusha (very high for females) wards of the AMAC need special attention for further study and focused intervention (section 6.5 of chapter six). Overall, the rural dominated Kwali area council had a dropout rate above the desired threshold for both sexes whilst the urban dominated AMAC registered under the threshold for same. This aspect is discussed further under section 5.2.3.2.

### **5.2.3. Descriptive analysis of immunisation coverage vis-à-vis socio-economic and gender variables**

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Other things being constant, variables believed to have association with immunisation coverage are analysed in terms of access and utilisation of immunisation services using Penta1 and Penta 3 respectively as a proxy. Pentavalent vaccine is the conjugation of five vaccines comprising DPT (Diphtheria, Pertussis, Tetanus), Hepatitis B and Hib Vaccines which is introduced in several countries since 2011 (Bairwa et al 2012:1314).

To a great extent, descriptive analysis was used to examine the immunisation indices associated with the respective exposure variables gathered from the house-to-house survey data. The association of the exposure variables vis-à-vis immunisation coverage is analysed using a 2x2 table odds ratio (OR). For ease of analysing the statistical significance of the associations of the variables, a number of responses from this survey were dichotomised. The odds ratio analysed in this section considered the individual exposure variable contained in the respective questions independent of the impact of variables from other questions. In other words, the odds ratio analysis in this section is not confounded.

In interpreting the odds ratio results, the category put first is the intervention category of the exposure variable, while the latter one is the control or reference or non-

intervention category. The category with the advantage to improve immunisation coverage is taken as an intervention category within the exposure variable. For example, for an independent exposure variable dubbed “residence area,” “urban” is the intervention category while “rural” is the reference / control / non-intervention category. This is because urban dwellers are presumed to have an advantage of better immunisation infrastructure than their rural counterparts.

The statistical outcomes of 38 categories that stemmed from 35 exposure variables are summarised in Appendix 14. Confidence interval (CI) of 95% was applied in this analysis which is commonly used by several studies to represent statistical significance (Szumilas 2010:227). Where  $OR > 1$  and  $P$  value is  $< 0.05$ , the odds ratio is considered as statistically significant. Accordingly, out of the 38 outcome categories, 18 (47%) categories produced statistically significant results for both immunisation access and utilisation. 6 (16%) were statistically significant either for access (3 categories) or for utilisation (3 categories). The remaining 14 (37%) categories were statistically significant neither for access nor utilisation.

Where the odds ratio could not be produced for the particular survey variable due to the nature of the question or inadequacy of responses, the corresponding immunisation indices related to the particular variable are simply indicative descriptions, not of statistical significance.

#### **5.2.3.1. Associating sex of the child with immunisation**

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Figures 5. 2 and 5.3 above captured the sex composition of the eligible children and the caregivers that responded to the survey. As depicted by Figure 5.4, the overall dropout rate for males (11.1%) was higher than for females (8.6%), which to some extent debunks the notion that in patriarchal society like Nigeria, parents treat their male children more favourably to receive immunisation services (Hilber et al 2010b:64). Anyene (2014:4), whilst agreeing that such preferential treatment exists in such societies, also affirmed that the sex related variances among immunised children are not that substantial. In the same vein, the outcome of the statistical analysis in relation to the sex of the eligible child (male as intervention category and female as reference category) was not significant, with immunisation access  $OR: 1.37$ ,  $CI: 0.75$  to  $2.48$ ,  $P=0.3042$  and immunisation utilisation  $OR: 1.0$ ,  $CI: 0.64$  to  $1.59$ ,  $P<0.9648$ .

The association of the participants' (caregivers') sex, female as intervention category and male as a control/reference category, was statistically significant neither with immunisation access OR: 1.49, CI: 0.44 to 5.02, P<0.5171 nor immunisation utilisation OR: 1.9, CI: 0.71 to 4.86, P<0.2049.

### 5.2.3.2. Residential setting

**Table 5.3: Residential setting and immunisation indicators**

Residential setting	Number	Proportion	Dropout rate	Access rate	Utilisation rate
Rural	307	61%	14.8%	85.7%	73.0%
Urban	194	39%	3.2%	97.9%	94.8%
Total	501	100%	9.9%	90.4%	81.4%

As shown in Table 5.3, the majority of the participants (61%) categorised their residential area as rural. The immunisation key indicators for the urban dwellers were very positive in terms of very low dropout rate of 3.2% and high level of access and utilisation rates at 97.9% and 94.8% respectively. On the other hand, the vaccination card records indicated that the rural dwellers had a higher dropout rate at 14.8%, with a lower access rate at 85.7% and utilisation rate at 73.0% than the urban ones.

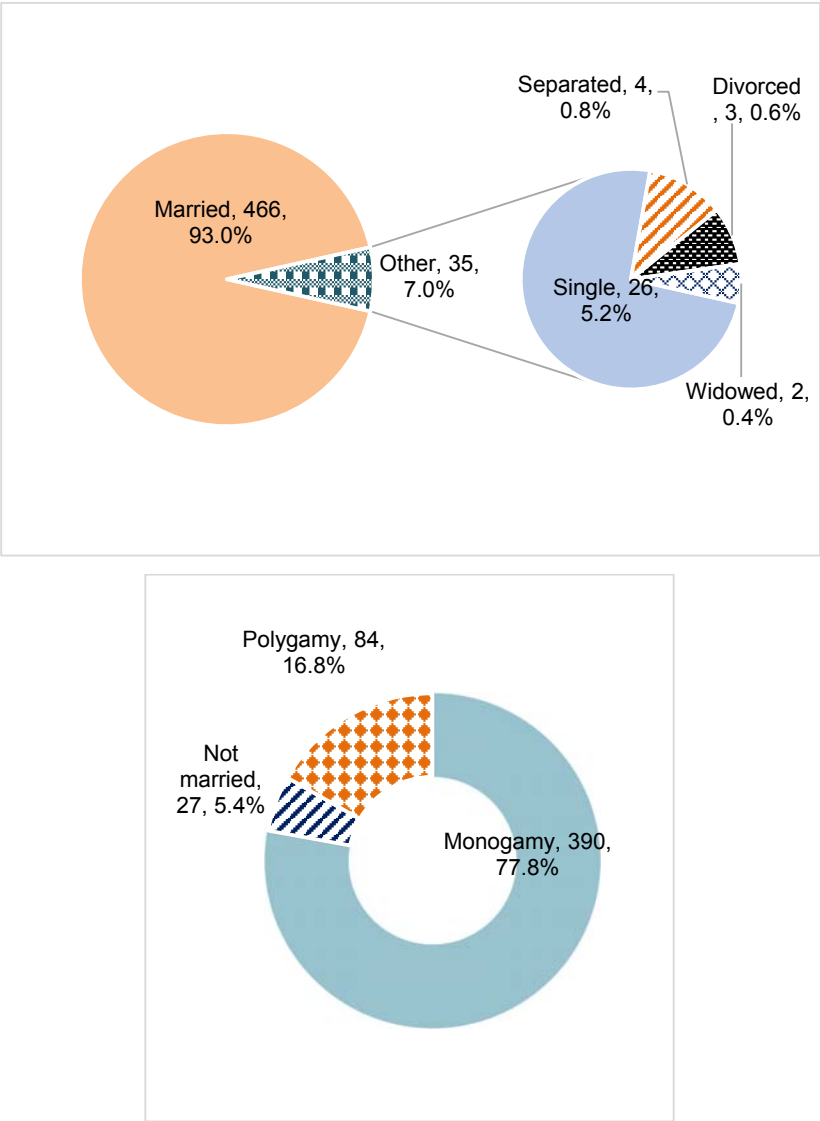
The residence area exposure variable was dichotomised into an “urban” and “rural” category, with urban as intervention category. The analysis for this variable was found to be statistically significant for both immunisation access (OR 7.95, CI: 2.81 to 22.49, P=0.0001) and immunisation utilisation (OR 6.8, CI: 3.44 to 13.52, P<0.0001). The interpretation of this statistical finding is that with 95% confidence interval, the urban dwellers were found 7.95 times more likely to access immunisation services and 6.8 times more likely to utilise same compared to rural dwellers.

As stated in chapter three, sections 3.3.3, 3.3.5, 5.3 and 3.7, such disparity is expected knowing the fact that the rural areas have worse infrastructural challenges, inadequate health facilities and generally less socio-economic and gender related

advantages when compared to urbanised areas (Armah et al 2018:12, UNDP 2016:16, Holte et al 2012:384, Oluwadare 2009:55).

**5.2.3.3. Marital status and marriage type of participants**

93% of the participants were married followed by 5.2% of them being single and a fraction of them either separated, divorced or widowed. In terms of marriage type, monogamous marriage was found to be the most common one comprising 77.8%. 16.8% of the participants reported to be in a polygamous marriage while the remaining 5.4% reported as unmarried.



**Figure 5.5: Marital status and marriage type of participants**

According to a study conducted by Rossi (2015:2) marital status of parents or the living arrangements of mothers did not make a difference to the rate of immunisation. For this survey also, both monogamous and polygamous marriage types yielded just under 10% dropout rate. Which means the marriage types did not show any substantial association with immunisation in this survey. However, the utilisation rate of Penta3 for families in polygamous marriage was lower at 77.4% compared with that of monogamous marriage at 82.3%.

The statistical analysis also yielded weak association with immunisation access OR: 0.26, CI: 0.04 to 1.96, P=0.1921 and immunisation utilisation OR: 1.1, CI: 0.47 to 2.61, P = 0.8207 (taking married couples as intervention variable and others as a control/reference variable). However, other studies showed statistically significant association for this variable in similar geo-political settings. For example, a study conducted in Ghana concluded that married mothers were less likely by 69% to drop from utilising immunisation services with 95% CI and P value of 0.001 (Baguune et al 2017:5).

Marriage type also showed statistically not significant results with monogamy and polygamy as intervention and reference categories respectively. The result for immunisation access was OR: 1.69, CI: 0.84 to 3.41, P=0.1432 and immunisation utilisation OR: 1.4, CI: 0.77 to 2.41, P = 0.2935.

#### 5.2.3.4. Responsibility for the eligible child's care

**Table 5.4: Responsibility of the participants to the eligible child**

Responsibility	Number	Proportion	Dropout rate	Access rate	Utilisation rate
Both parents live together	421	84%	8.4%	93.3%	85.5%
Single mother	70	14%	24.0%	71.4%	54.3%
Guardian	10	2%	0.0%	100.0%	100.0%
Total	501	100%	9.9%	90.4%	81.4%

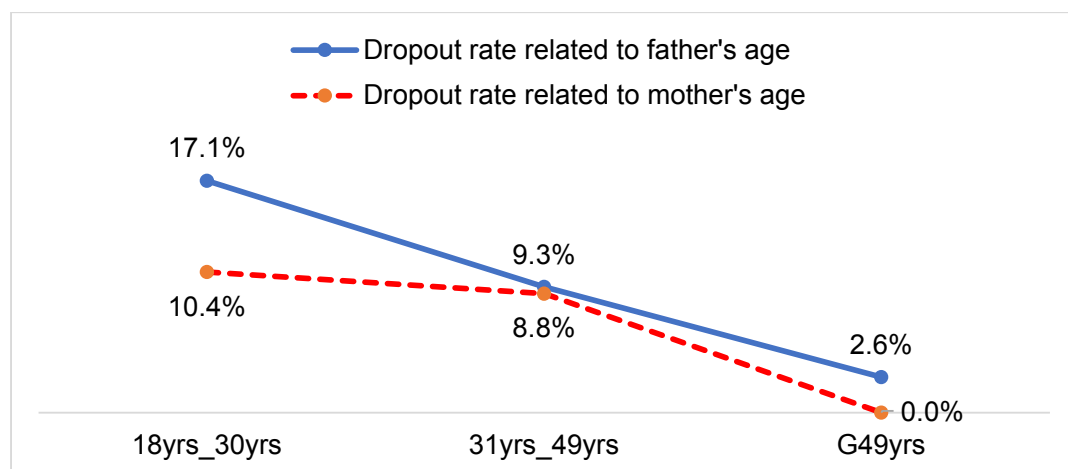
The large majority (84%) of the eligible children were being raised by married couples followed by 14% single mothers and 2% guardians. Those children that enjoyed the company of both parents showed a stronger immunisation record with

8.4% dropout rate, 93.3% access rate and 85.5% utilisation rate. However, it is alarming to note that there was a very high dropout rate of 24.0% among children who were being raised by single mothers. The high dropout rate registered for single mothers or those not married could be attributed to the doubling up of their role in taking care of both paternal and maternal responsibilities, and the extra economic burden they carried in the absence of a financial contribution from the absent father.

For the purpose of statistical analysis, the responses to this question were dichotomised into “married couples” as intervention variable and “single parent” as a control/reference variable. Guardians, representing a negligible proportion (2%) were excluded from the statistical analysis. The analysis showed strong statistical association with immunisation access OR: 5.61, CI: 2.95 to 10.7, P<0.0001 and immunisation utilisation OR: 5.0, CI: 2.89 to 8.55, P<0.0001. Accordingly, married couples were found to be 5.61 and 5 times more likely to respectively access and utilise immunisation for their children compared to the single parents.

### 5.2.3.5. Age profile of the participants

As indicated in Table 5.1, 72.7% of the mothers were under 30 years of age compared to the 15.4% of fathers in the same age bracket. On other hand, 26.6% of the mothers were between 31 and 49 years old while this bracket represented the larger age segment of the fathers, which constituted 76.2%.



**Figure 5.6: Age profile of parents in relation to immunisation dropout rates**

As shown in Figure 5.6, the findings from the survey caused a negative slope between age and the dropout rate for both father and mother of the eligible child.

For the age bracket of 18-30 years, both parents recorded a dropout rate above the threshold of 10% although the fathers' dropout rate (17.1%) exceeded by far. For the age bracket of 31-49 years, the dropout rates related to both fathers and mothers fell down below 10%. For those above 49 years of age, which is beyond the normal childbearing age category for a mother, the dropout rate was 0%. The dropout rate related to the fathers' age above 49 years also decreased substantially to 2.6%.

For ease of analysing and presenting the variable related to parent's age, the range was regrouped into above 30 (intervention category) and 18 to 30 years (reference category). This is taking a cue from the above paragraph, which appeared to suggest that as parents matured with age, their utilisation of immunisation services improved. The analysis showed weak statistical association with immunisation indicators for both mothers' and fathers' ages. For mothers' age in relation to immunisation access, the result was OR: 1.30, CI: 0.41 to 2.6, P=0.4701 and immunisation utilisation OR: 0.93, CI: 0.40 to 2.17, P = 0.8736. For fathers' age in relation to immunisation access, the result was OR: 0.93, CI: 0.40 to 2.17, P=0.8739 and immunisation utilisation OR: 1.50, CI: 0.87 to 2.8, P=0.1360.

#### 5.2.3.6. Religion of the participant

As shown in Table 5.5 below, the immunisation indicators for the Christian participants were better compared to their Muslim counterparts with a dropout rate of 8.8% and 11.7% respectively. As described in chapter two, section 2.6.5, such finding seems to align with Anyene's (2014:6) assertion that the influence of some Islamic scholars on the community with the spread of conspiracy theories against vaccination might have contributed in discouraging parents from using immunisation services in Nigeria.

**Table 5.5: Immunisation indicators by religion**

Religion	Number	Proportion	Dropout rate	Access rate	Utilisation rate
Christianity	296	59.1%	8.8%	92.2%	84.1%
Islam	205	40.9%	11.7%	87.8%	77.6%
Total	501	100%	9.9%	90.4%	81.4%

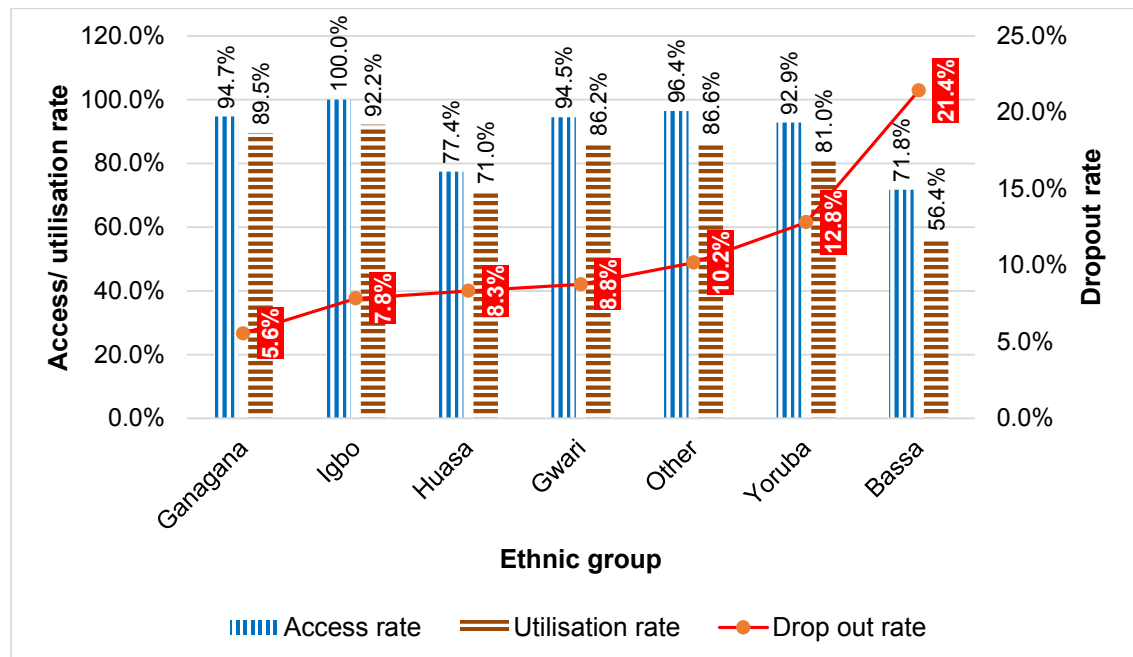
However, religious affiliation of the participant did not yield a strong statistical association. With Christianity as intervention category and Islam as reference



category, the results were OR: 1.65, CI: 0.91 to 2.99,  $P < 0.1006$  and immunisation utilisation OR: 1.7, CI: 0.934 to 3.1,  $P < 0.0824$ .

### 5.2.3.7. Ethnicity of the participant

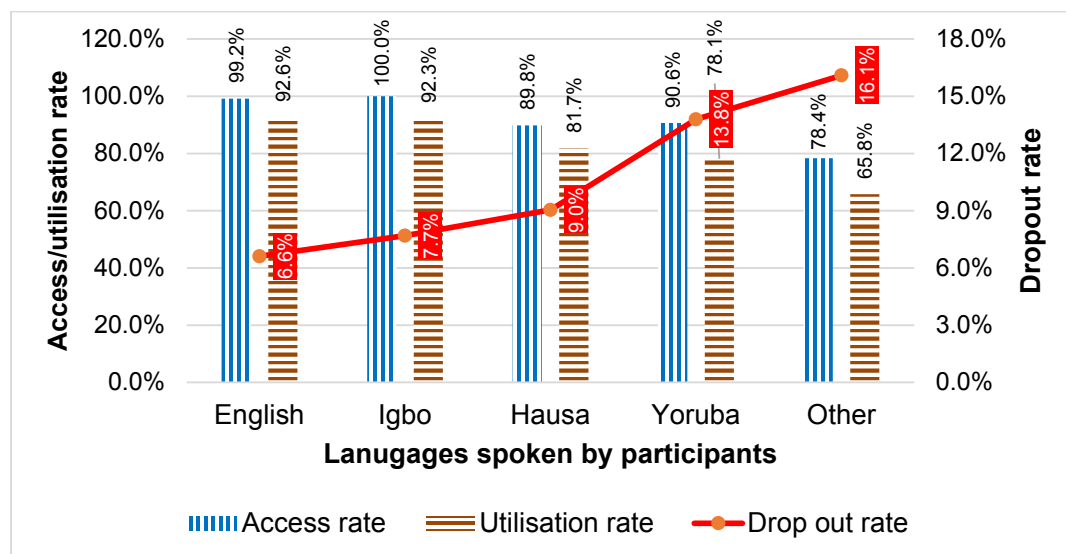
As stated in chapter two, section 2.8, ethnic culture plays an important role in influencing household decisions, including on the utilisation of immunisation services (Singh et al 2013:3). Studying cultural differences of the ethnic groups in the FCT is beyond the scope of the research. However, there were major variations in the immunisation indicators when broken down by ethnic group. As shown in Figure 5.7 below, the Bassa and Hausa ethnic groups had the lowest access and utilisation rate compared to other ethnic groups. However, while Hausa, Igbo and Ganagana ethnicities demonstrated that those that started to access the immunisation services maintained the utilisation, the Bassa and Yoruba responders showed a high dropout rate of 21.4% and 12.8% respectively. Further study is recommended on the relationship between ethnicity and immunisation especially for those with very high dropout rates. Due to challenges in dichotomising the ethnic related variables, 2x2 OR statistical analysis was not conducted for this variable.



**Figure 5.7: Immunisation access, utilisation and dropout rates by ethnic groups**

### 5.2.3.8. Language spoken by the participant

The official working language in Nigeria is English. However, many other local languages are widely spoken by the community. English speakers are presumed to have been exposed to formal education, and have better access to advocacy and sensitisation materials, which are primarily prepared in English. As noted in Figure 5.8 below, those that responded that they could communicate in English had the lowest dropout rate of 6.3% and highest in terms of access rate of 99.2% and utilisation rate of 92.6%. They are followed by Igbo and Hausa speakers who scored below the dropout threshold of 10%. However, the Yoruba and other language speakers had very high dropout rates of 13.8% and 16.1%. The researcher hopes that such findings will attract interest for further studies and for the devising of innovative communication strategies by experts in this area.

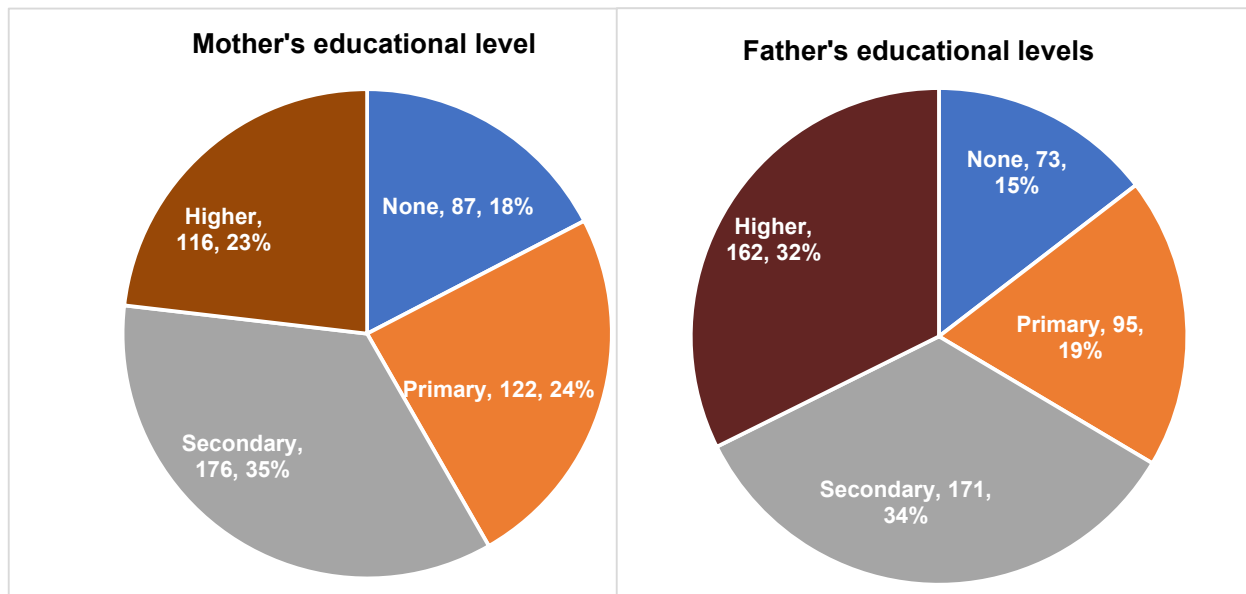


**Figure 5.8: Immunisation access, utilisation and dropout rates by languages spoken by participants**

### 5.2.3.9. Education level of caregivers

As briefly described in section 5.2.1.2 earlier and depicted in Figure 5.9 below, there was no wide variation between the father's and mother's level of formal education. Still, the proportion of the mothers receiving higher education was smaller by 9% than that of the fathers. Inversely, mothers accounted for the larger number when it comes to receiving no education or the lowest level of formal education. Such

disparities are common in developing countries including Nigeria (Anyene 2014:7, FMOE 2017:2-5).

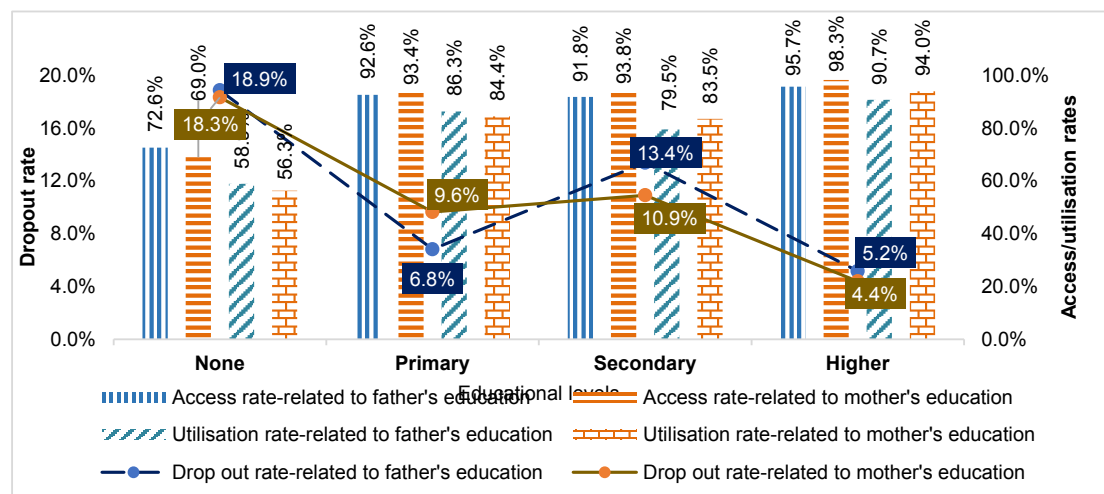


**Figure 5.9: Composition of parents' education level**

As stated in section 2.6.1 of chapter two, several studies have shown that there is positive association between education and healthcare uptake in general and immunisation coverage in particular (Khan & Ajmal 2011:119, Anyene 2014:7, Feletto & Sharkey 2019:1). As depicted by Figure 5.10 below, the survey results also confirmed that the higher the educational level of the caregivers, the better the immunisation indices. For parents with no formal education, the dropout rate was >18%. On the other hand, those who received primary or higher education had below 10% dropout rate. However, the dropout rate was >10% for those parents that reached secondary educational level which is in contradiction with the premise of positive correlation between education and immunisation. Such findings require further investigation.

Chapter three, section 3.7 stated that mother's education level has a strong association with the immunisation level of her child (Abdulraheem et al 2011:201-202). In this survey, the mothers who had attained secondary and higher education showed much lower dropout rates and much higher immunisation access and utilisation rates compared to those of fathers in the same academic category.

The statistical analysis of this variable also generated strong association with immunisation for both mothers' and fathers' education. The educational level variable was dichotomised into literate (primary education and higher) as an intervention category and illiterate (no formal education) as non-intervention category. The odds ratio for the mother's education was much stronger with OR: 8.41, CI: 4.5 to 15.8,  $P < 0.0001$  and immunisation utilisation OR: 5.1, CI: 3.04 to 8.43,  $P < 0.0001$ . This means a literate mother was 8.4 and 5.1 times more likely to respectively access and utilise immunisation services for her child than an illiterate one. The result for the father's education statistical analysis was OR: 5.39, CI: 2.83 to 10.24,  $P < 0.0001$  and immunisation utilisation OR: 4.0, CI: 2.36 to 6.92,  $P < 0.0001$  which could be translated as meaning that a literate father was 5.4 times to access and 4 times to utilise immunisation services for his child than an illiterate one.

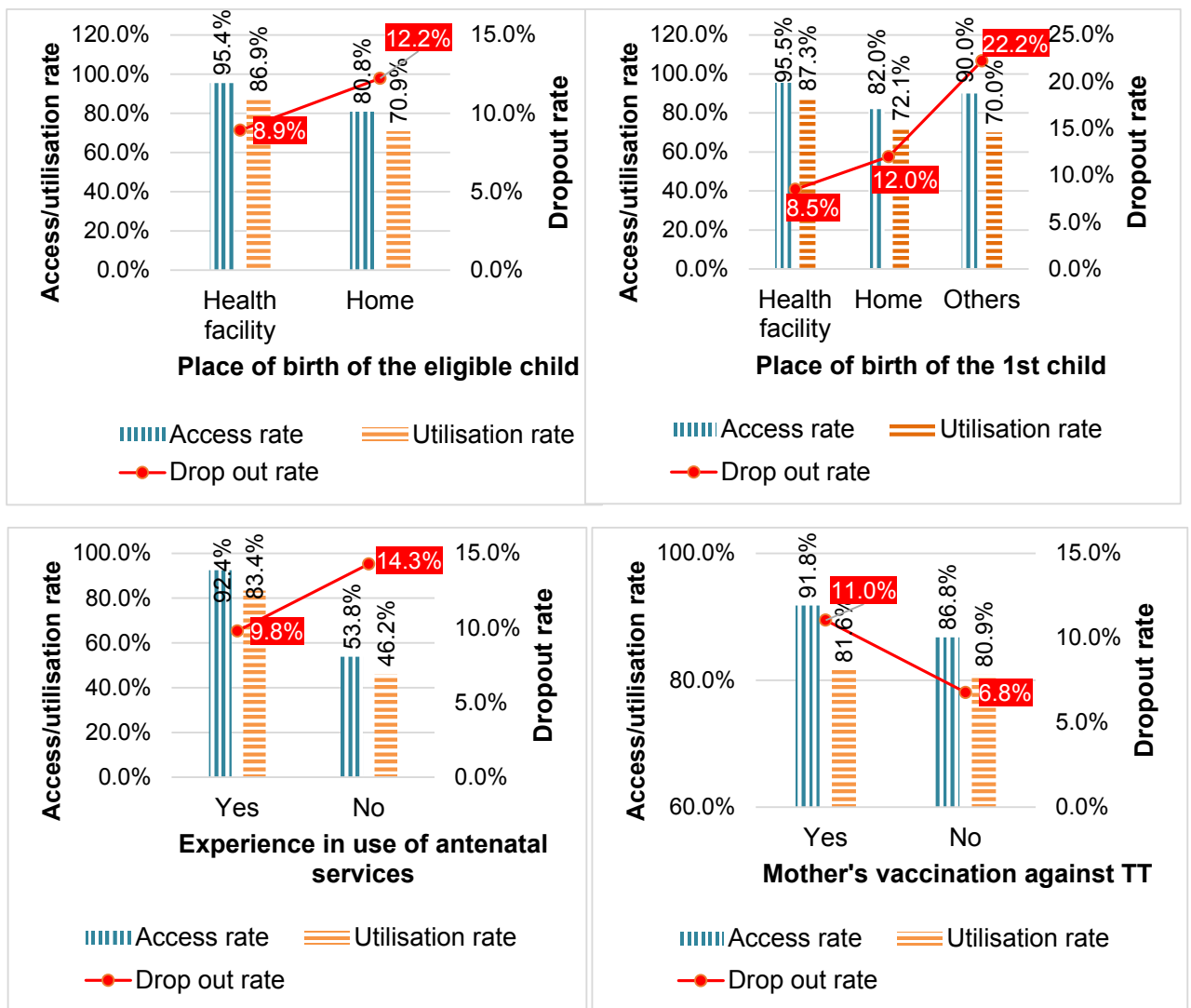


**Figure 5.10: Education level of caregivers, utilisation and dropout rates**

### 5.2.3.10. Experience in usage of health facilities

The survey showed that those parents with experience in the use of health facilities by giving birth at such places have favourable health indices. As shown in Figure 5.11, parents who delivered their first or the eligible child in a health facility recorded a below 10% dropout rate. Likewise, mothers who had experience in the use of antenatal services also showed better immunisation indicators (9.8% dropout rate) compared to those who didn't (14% dropout rate).

However, the outcome of the survey on the relationship between the vaccination of mothers against tetanus toxoid (TT) and their children’s Penta vaccination dropout rates deviated from the pattern exhibited by other similar variables. The dropout rate for those mothers that received TT vaccines increased compared to those that did not receive the vaccine. The TT vaccination status of the mother was according to their recollection. The researcher was not able to obtain vaccination cards from the mothers in this regard. As Feletto and Sharkey (2019:2) rightly warned, it is also important to point out that women are not a “homogeneous population” to hold similar experiences in terms of access and utilisation to resources or to react in the same manner to health service deliveries.



**Figure 5.11: Experience in maternal use of health facilities and immunisation indicators**

The statistical findings in relation to the caregivers' experience and knowledge of a health facility are itemised as follows:

- **Exposure variable: birth place of the first-born child**
  - Intervention category: born at a health or other facility
  - Reference category: born at home
  - Immunisation access OR: 4.44, CI: 2.34 to 8.44,  $P < 0.0001$ 
    - Conclusion: statistically significant
  - Immunisation utilisation OR: 2.5, CI: 1.61 to 4.01,  $P < 0.0001$ 
    - Conclusion: statistically significant

Interpretation: parents who gave birth to their first-born child at facilities other than their homes were found 4.44 and 2.5 times more likely to access and utilise immunisation services respectively compared to those that gave birth at their homes.

- **Exposure variable: birth place of the eligible child**
  - Intervention category: born at a health or other facility
  - Reference category: born at home
  - Immunisation access OR: 4.61, CI: 2.45 to 8.69,  $P < 0.0001$ 
    - Conclusion: statistically significant
  - Immunisation utilisation OR: 2.7, CI: 1.68 to 4.23,  $P < 0.0001$ 
    - Conclusion: statistically significant

Interpretation: parents who gave birth to their child eligible for DPT vaccines at facilities other than their homes were found 4.61 and 2.7 times more likely to respectively access and utilise immunisation services compared to those that gave birth at their homes.

- **Exposure variable: Knowing the nearest health facility**
  - Intervention category: Yes (i.e., the participant knows about the nearest health facility)
  - Reference category: No (i.e., the participant does not know about the nearest health facility)
  - Immunisation access OR: 2.14, CI: 0.45 to 10.23,  $P < 0.3383$ 
    - Conclusion: statistically not significant
  - Immunisation utilisation OR: 1.7, CI: 0.43 to 6.41,  $P < 0.4571$

- Conclusion: statistically not significant

Interpretation: Although both immunisation access and utilisation for this variable were found to be statistically not significant, those who know where their nearest health facility is, are still 2.14 and 1.7 times more likely to respectively access and utilise immunisation services compared to those that have no such knowledge.

- **Exposure variable: Mother's experience of antenatal care**
  - Intervention category: Yes (i.e., the mother used antenatal care)
  - Reference category: No (i.e., the mother did not used antenatal care)
  - Immunisation access OR: 10.45, CI: 4.5 to 24.27,  $P < 0.0001$ 
    - Conclusion: statistically significant
  - Immunisation utilisation OR: 5.8, CI: 2.61 to 13.12,  $P < 0.0001$ 
    - Conclusion: statistically significant

Interpretation: mothers who received antenatal care were 10.45 and 5.8 times more likely to respectively access and utilise immunisation services compared to those who did not.

- **Exposure variable: Mother's vaccination status against TT**
  - Intervention category: Yes (i.e., the mother was vaccinated against TT)
  - Reference category: No (i.e., the mother was not vaccinated against TT)
  - Immunisation access OR: 1.7, CI: 0.92 to 3.17,  $P < 0.0927$ 
    - Conclusion: statistically not significant
  - Immunisation utilisation OR: 1.1, CI: 0.64 to 1.74,  $P < 0.8454$ 
    - Conclusion: statistically not significant

Interpretation: Although both immunisation access and utilisation for this variable were found to be statistically not significant, the mothers who received TT vaccine were 70% and 10% more likely to respectively access and utilise immunisation services compared to those that were not vaccinated.

- **Exposure variable: Use of health facility for any other purpose**
  - Intervention category: Yes (i.e., the participant has experience of the use of a health facility)

- Reference category: No (i.e., the participant has no experience of the use of a health facility)
- Immunisation access OR: 2.55, CI: 0.99 to 6.58, P<0.0535
  - Conclusion: statistically not significant
- Immunisation utilisation OR: 1.3, CI: 0.54 to 3.12, P<0.5535
  - Conclusion: statistically not significant

Interpretation: Although both immunisation access and utilisation for this variable were found to be statistically not significant, those who had ever used a health facility were still 2.55 and 1.3 times more likely to respectively access and utilise immunisation services compared to those that had no such experience.

As noted from the above statistical findings, experience in the use of health facility was found to be positively associated with immunisation coverage to a great extent.

#### **5.2.3.11. Possession of vaccination cards**

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Ownership of an immunisation card was found to be a very important predictor for immunisation coverage by some research findings (Babalola & Lawan 2009:48, Bagueune et al 2017:5). As stated earlier in this chapter, this survey showed a high rate (82%) of vaccine card possession by the caregivers.

The statistical analysis of this indicator also manifested a strong association with the immunisation status of the eligible child. With possession of a card as an intervention category and non-possession as a reference category the statistical figures were calculated as immunisation access OR: 28.68, CI: 13.5 to 60.91, P<0.0001 and immunisation utilisation OR: 6.5, CI: 3.89 to 10.71, P<0.0001. This means, those caregivers who maintained vaccination cards were 28.68 and 6.5 times more likely to access and utilise immunisation for their children respectively than those who did not possess the cards.

#### **5.2.3.12. Information and knowledge about immunisation and health facilities**

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As shown in Table 5.6, survey participants were asked various questions regarding their basic knowledge about the close-by facilities, immunisation, vaccine



preventable diseases and child health related information. The vast majority of the participants (97.8%) knew the whereabouts of the nearby health facility. 83.6% of the participants confirmed that they had some knowledge about immunisation (83.6%). 63.1% of the survey participants responded to have some exposure to child health information while half (49.5%) of them said they knew about diseases that vaccine can prevent. Those who responded to have knowledge of the health facility near their geographic areas registered higher access rates (90.6%) and utilisation rates (81.6%) and lower dropout rates (9.9%).

According to the data gathered from the survey, the average distance from a health facility for rural dwellers was 1.9 kilometres with a standard deviation of 1.8 kilometres. For urban areas, the average distance was 1.4 kilometres with a standard deviation of 0.8 kilometres. For rural residents, as Anderson (2014:345) pointed out, distance from health facilities could be an impeding factor for accessing immunisation services.

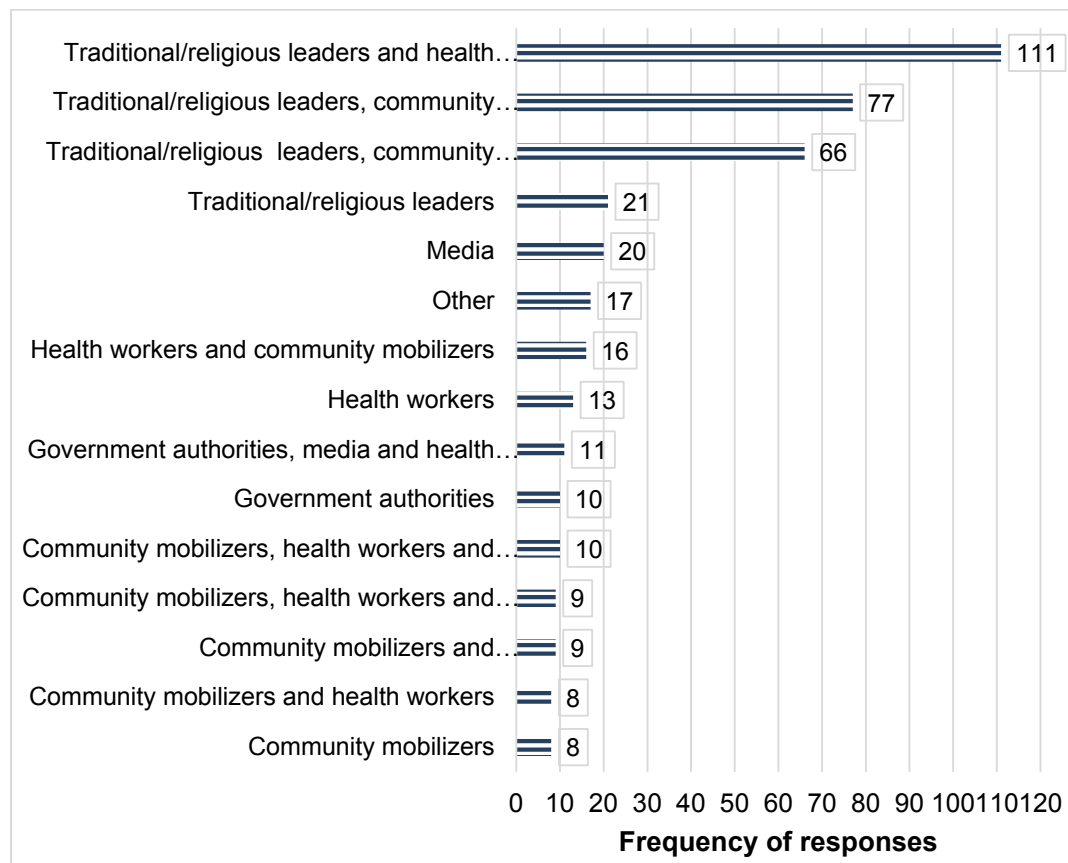
**Table 5.6: Response on knowledge of nearest health facility**

Question	Answers	Number	Proportion	Dropout rate	Access rate	Utilisation rate
Do you know where the nearest health facility is?	Yes	490	97.8%	9.9%	90.6%	81.6%
	No	11	2.2%	11.1%	81.8%	72.7%
Do you have some knowledge about immunisation?	Yes	419	83.6%	8.3%	95.5%	87.6%
	No	82	16.4%	22.6%	64.6%	50.0%
Have you been exposed to child health information?	Yes	316	63.1%	8.9%	95.9%	87.3%
	No	185	36.9%	12.0%	81.1%	71.4%
Do you know diseases that are vaccine preventable?	Yes	248	49.5%	9.8%	98.8%	89.1%
	No	253	50.5%	10.1%	82.2%	73.9%
Total (for each of the questions)		501	100.0%	9.9%	90.4%	81.4%

Those with some knowledge about immunisation, child health or vaccine preventable diseases scored favourable dropout rates of 8.3%, 8.9% and 9.8% respectively. Such findings are consistent with multiple literatures referred to under

chapter two, section 2.6.6 where information on health in general and immunisation in particular has a positive impact on improving immunisation coverage (Hilber et al 2010b:64, Kawakatsu et al 2015:1532, Douba et al 2015:724, Russo et al 2015:2, Antai 2011a:137).

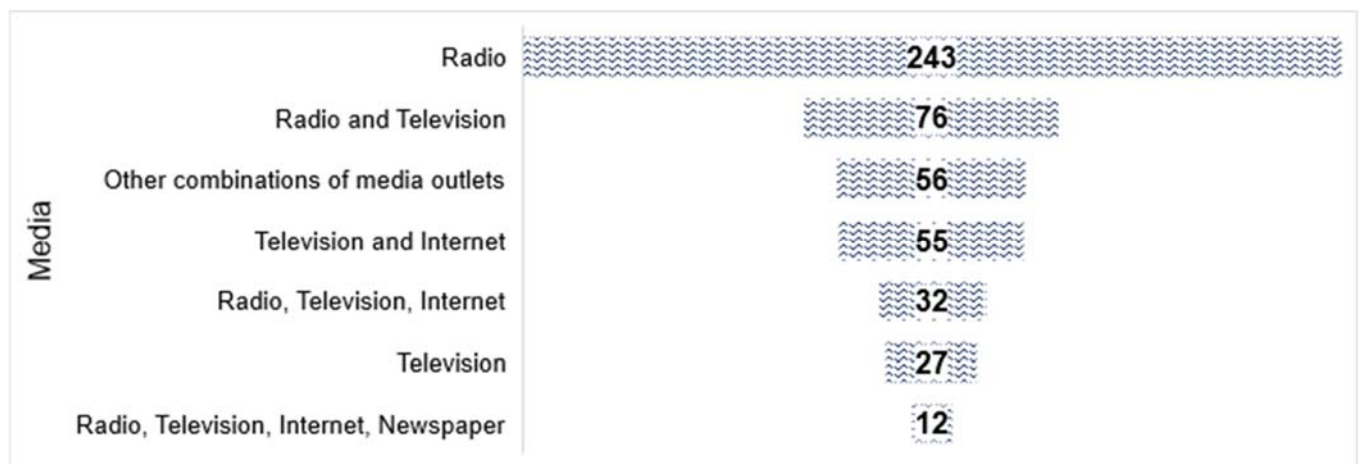
Regarding the source of health-related information, a combination of 56 responses were gathered from the survey. For ease of analysis and presentation, the top 15 responses are shown in Figure 5.12. Health workers were the most frequently identified as a source of information for 22% of the participants. They were followed by community mobilisers in combination with health workers (15%), community mobilisers alone (13%), media (4%) and community mobilisers and traditional/religious leaders (4%).



**Figure 5.12: Source of information on health/immunisation**

According to the survey results, radio was picked as the most frequented medium to receive information by 49% of the surveyed households (see Figure 5.13). In combination with the other media, radio usage could reach up to 72%. Television was the second most cited medium, mostly in combination with radio, internet or

newspapers (accounting for 40%). Internet accessibility seemed quite low, with only 20% of participants indicating its use in combination with radio, television or newspapers.



**Figure 5.13: Number of participants who chose most frequently used media**

The statistical analysis for variables related to participants' knowledge and information about immunisation is summarised below. All three variables in this regard have produced strong statistical association with the immunisation indices.

- **Exposure variable: participant's knowledge about immunisation**
  - Intervention category: Yes (i.e., the participant has some knowledge about immunisation)
  - Reference category: No (i.e., the participant has no knowledge about immunisation)
  - Immunisation access OR: 11.52, CI: 6.04 to 21.97,  $P < 0.0001$ 
    - Conclusion: statistically significant
  - Immunisation utilisation OR: 7.1, CI: 4.19 to 11.89,  $P < 0.0001$ 
    - Conclusion: statistically significant

Interpretation: participants who had some knowledge about immunisation were 11.5 and 7.1 times more likely to respectively access and utilise immunisation services compared to those who had none.

- **Exposure variable: exposure to child health information**
  - Intervention category: Yes (i.e., the participant had some exposure to child related health information)

- Reference category: No (i.e., the participant did not have any exposure to child related health information)
- Immunisation access OR: 5.44, CI: 2.79 to 10.59, P<0.0001
  - Conclusion: statistically significant
- Immunisation utilisation OR: 2.8, CI: 1.75 to 4.39, P<0.0001
  - Conclusion: statistically significant

Interpretation: participants who had some exposure on child related health information were 5.44 and 2.8 times more likely to respectively access and utilise immunisation services compared to those who had none.

- **Exposure variable: knowledge about vaccine preventable diseases**

- Intervention category: Yes (i.e., the participant knew about diseases that are vaccine preventable)
- Reference category: No (i.e., the participant did not know about diseases that are vaccine preventable)
- Immunisation access OR: 17.67, CI: 5.41 to 57.69, P<0.0001
  - Conclusion: statistically significant
- Immunisation utilisation OR: 2.9, CI: 1.77 to 4.71, P<0.0001
  - Conclusion: statistically significant

Interpretation: participants who had knowledge about diseases that are vaccine preventable were 17.67 and 2.9 times more likely to respectively access and utilise immunisation services compared to those who did not.

### **5.2.3.13. Reasons for vaccination compliance and non-compliance**

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Participants were asked to pick their main reasons either for vaccinating their children or not. As shown in Table 5.7 below, the majority of the participants (50.1%) chose being well informed about the usefulness of the vaccines. This is encouraging since it represents a positive pull effect that can be capitalised on in sensitisation and advocacy efforts. The other options picked mostly represented push effects. 10.8% of the participants mentioned that their fear of being blamed by their family or community in case their children got sick from vaccine preventable diseases was the main reason for vaccinating them. The rest of the responses were a combination of both push and pull factors.

Table 5.7: Main reasons for vaccinating a child

Reasons for vaccination	Number	Percentage
Because I am well informed about the usefulness of vaccines	251	50.1%
For fear of social or family blame in case my child gets sick from vaccine preventable diseases	54	10.8%
Because I am well informed about the usefulness of vaccines/For fear of social or family blame in case my child gets sick from vaccine preventable diseases	44	8.8%
Pressure from my religious/community/traditional leader/ For fear of social or family blame in case my child gets sick from vaccine preventable diseases	11	2.2%
Because I am well informed about the usefulness of vaccines/Pressure from my religious, community or traditional leader	10	2.0%
Because I am well informed about the usefulness of vaccines/Pressure from my spouse	10	2.0%
For fear of social or family blame in case my child gets sick from vaccine preventable diseases/Pressure from my religious, community, traditional leader	8	1.6%
For fear of social or family blame in case my child gets sick from vaccine preventable diseases/Pressure from my spouse	7	1.4%
Pressure from my religious, community or traditional leader/Pressure from my spouse	7	1.4%
Pressure from my religious, community or traditional leader/Because I am well informed about the usefulness of vaccines	6	1.2%
Others	93	18.6%
<b>Total</b>	<b>501</b>	<b>100%</b>

Conversely, a question was posed to those households that declined to present their children for vaccination to state their reasons for non-compliance. The main responses are compiled in Table 5.8. For ease of analysis, responses picked by five or more households have been summarised in the table.

**Table 5.8: Reasons for non-compliance with vaccination schedules**

<b>Chosen responses</b>	<b>No. of responses</b>	<b>Dropout rate</b>	<b>Access rate</b>	<b>Utilisation rate</b>
XV. Multiple household responsibilities/busy schedule	46	28.6%	91.3%	65.2%
I. Absence of immunisation services at health facility	21	0.0%	100.0%	100.0%
IX. Inconvenience of vaccination hours	17	5.9%	100.0%	94.1%
XIII. Long waiting hours at health facility	16	21.4%	87.5%	68.8%
II. Access of road/transport to go to health facility, IV. Cost of transport, VI. Distance to health facility	13	27.3%	84.6%	61.5%
X. Lack of information	12	0.0%	58.3%	58.3%
II. Access of road/transport to go to health facility, VI. Distance to health facility	12	10.0%	83.3%	75.0%
IX. Inconvenience of vaccination hours, XIII. Long waiting hours at health facility, XV. Multiple household responsibilities/busy schedule	9	33.3%	100.0%	66.7%
II. Access of road/transport to go to health facility	9	0.0%	88.9%	100.0%
IV. Cost of transport	8	0.0%	100.0%	100.0%
II. Access of road/transport to go to health facility, IV. Cost of transport, VI. Distance to health facility, IX. Inconvenience of vaccination hours	6	16.7%	100.0%	83.3%
II. Access of road/transport to go to health facility, III. Attitude of health service providers, IV. Cost of transport, V. Customs and cultural beliefs	5	0.0%	100.0%	100.0%
Others	124	10.3%	94.4%	84.7%

Among the specific options provided in the survey questionnaire, most of the participants picked multiple household responsibilities or busy schedule. The dropout rate associated with this response was 28.6%. The other variables that showed high dropout rates were long waiting hours at health facilities (21.4%), combination of issues concerning access to road, transport to go to health facility,

cost of transport, distance to health facility (27.3%), combination of factors including inconvenience of vaccination hours, long waiting hours at health facility, multiple household responsibilities (33.3%), and multiple factors involving challenges related to access to road, transport to go to health facility, distance to health facility, and inconvenience of vaccination hours (16.7%). As explained in chapter two, section 2.7.2, such health systems related barriers have direct gender dimensions, which negatively affect mothers with multiple roles coupled with money and power constraints.

A number of participants (124 out of 501) picked other answers not specified in the survey. Apart from those who stated that they had no reasons for non-compliance, the following answers were provided:

*Always traveling to village*

*It sometimes causes running temperature to the child which is discouraging*

*Inadequate health equipment at the hospital*

*If the child is ill, I won't allow him to get immunized.*

*Immunisation causes high temperature for the children and its discouraging, because of that our husband don't like us going for immunisation.*

*The child develops fever and I have to spend money on buying drugs and they don't give mosquito nets alongside. Formerly they use to give other pluses such as vitamin C but they stopped so I also don't need the vaccine.*

#### **5.2.3.14. Child sex preference**

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As noted in chapter two, section 2.8, child sex preference is discussed in the WHO's gender analysis framework to investigate factors that influence immunisation coverage (Hilber et al 2010b:3). For this reason, a specific question on this issue was posed to the survey participants. As shown in Table 5.9 below, the overwhelming majority (99.6%) of the participants responded that they had no particular preference between male or female child in terms of getting vaccinated. This suggests that the child's sex was not a determining factor that influenced the decision of parents to vaccinate or not to vaccinate.

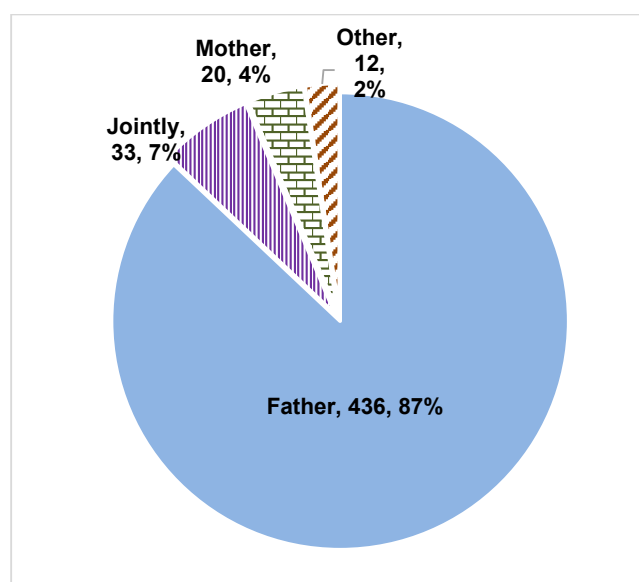
**Table 5.9: Sex preference in vaccinating a child**

Sex preference for vaccinating your child	Number	Proportion	Dropout rate	Access rate	Utilisation rate
No particular preference, we give both sexes equal treatment	499	99.6%	10.0%	90.4%	81.4%
Give priority for female child	1	0.2%	0.0%	100.0%	100.0%
Give priority for male child	1	0.2%	0.0%	100.0%	100.0%
Total	501	99.8%	9.9%	90.4%	81.4%

### 5.2.3.15. Head of household

Empowerment in the family emanates largely from the role a mother and a father play in the household. The 2018 Nigeria Demographic and Health Survey (NDHS) reported that women headed only 15% of rural households and 22% of urban households (NPC & ICF 2019b:32). The findings from this research were in line with what was expected of a patriarchal society like Nigeria, where 87% responded that the father was the head of the household, followed by 7% headed by the mother and the father jointly. Just 4% were led by mothers only whilst the remaining 2% were headed by brothers, in-laws, grand parents or other relatives (see Figure 5.14). For the 20 household that responded to be headed by a female, 19 of these females were single mothers who were raising the child on their own. While the access rate attributed to these single mothers was an impressive 100%, their dropout rate is high at 15%. This could be explained by the multiple role a mother has to play in the household, compounded by the absence of a father who would have assisted economically and socially. Households where the children were raised by relatives and guardians also scored a very high dropout rate of 20%, probably suggesting the vulnerabilities of children who are without maternal/paternal care.





**Figure 5.14: Proportion of heads of household**

**Table 5.10: Immunisation indices by head of household**

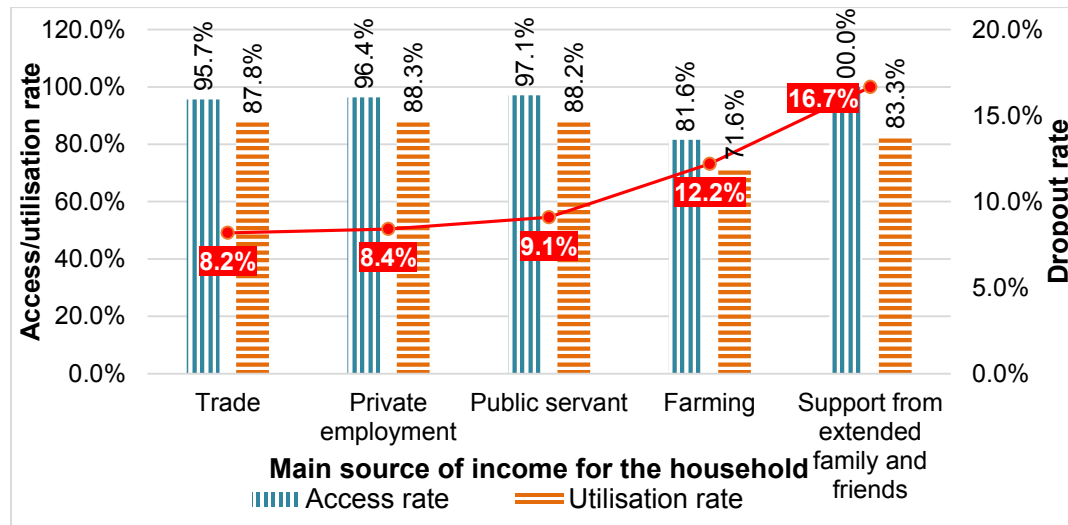
Head of household	Dropout rate	Access rate	Utilisation rate
Father	9.7%	90.1%	81.4%
Jointly	6.7%	90.9%	84.8%
Mother	15.0%	100.0%	85.0%
Other	20.0%	83.3%	66.7%
Total	9.9%	90.4%	81.4%

### 5.2.3.16. Economic variables

#### Source of income

As shown in Table 5.1, the majority (40%) of the survey participants made a living from farming. They were followed by households who earned their income from trading activities (23%), private employment (22.2%), public service (13.6%) and lastly with support from extended family and friends (1.2%). As indicated in Figure 5.15, those households that made their living mainly from trade, public service or private employment had a lower dropout rate than the 10% threshold. However, those that engaged in farming or depended on support from extended family and friends had higher dropout rates of 12.2% and 16.7% respectively. Income derived from handouts from family and friends or subsistence farming is presumably low. As

described in chapter three, section 3.5.4, income levels affect immunisation coverage (Ilusanya & Oladosun 2017:485). Moreover, Holte et al (2012:384) also implied that rural dwellers whose means of earning a living depends on farming, are susceptible to low immunisation coverage.



**Figure 5.15: Immunisation indices by main source of income**

For the convenience of statistical analysis, the source of income was dichotomised into ‘farming’ as reference category and trade, private employment, public servant and support from extended family were lumped into ‘others’ as intervention category. The analysis showed strong statistical association with immunisation access OR: 5.93, CI: 2.94 to 11.93,  $P < 0.0001$  and immunisation utilisation OR: 2.9, CI: 1.83 to 4.62,  $P < 0.0001$ . Accordingly, those responders who engaged in non-farming means of earning income were found to be 5.93 and 2.9 times more likely to respectively access and utilise immunisation for their children compared to those engaged in farm related activities for their living.

### **Adequacy of income**

As summarised in Table 5.11, the majority (77.8%) of the survey participants indicated that they were somehow managing on the income they earned. 17.2% of them adjudged their income as quite adequate while the remaining 5% said it was very inadequate. Those that stated that they were ‘somehow managing’ scored the highest dropout rate of 10.6%. Those that claimed to earn ‘quite adequate’ income had a lower dropout rate of 9%. However, those that responded that their income

was very inadequate surprisingly scored a very low dropout rate of 4%. This finding is contrary to the literatures quoted in chapter two, section 2.6.2 which stated that caregivers with a high level of income have a better likelihood of attending immunisation sessions (Antai 2011a:143). Probably, the subjectivity of the answer to this question might have contributed to the exceptionality of this finding when compared with widely accepted research findings regarding the relationship between income and immunisation coverage.

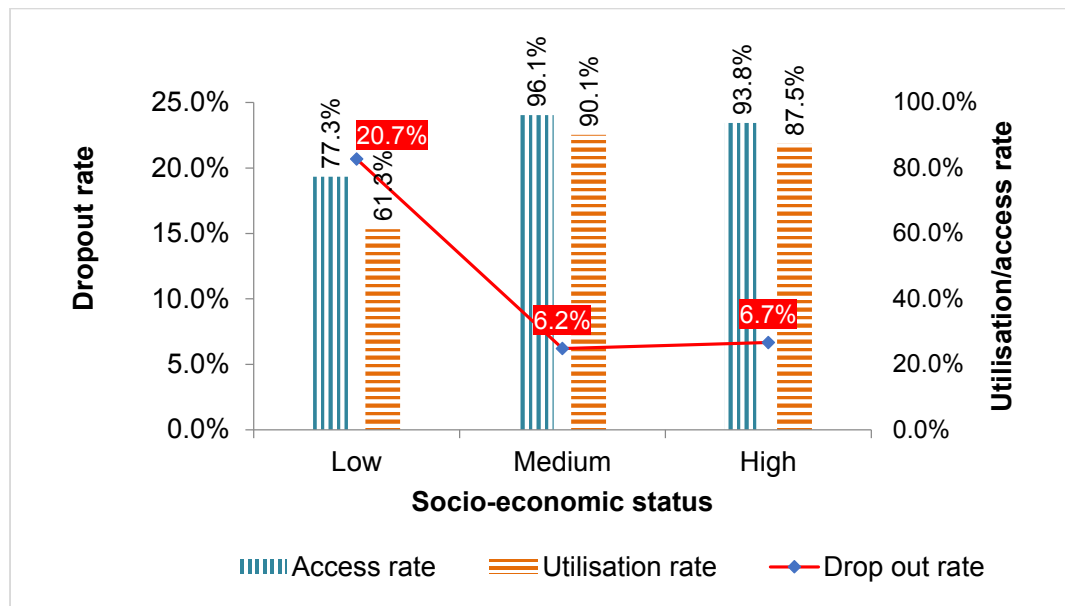
**Table 5.11: Assessment of household income level**

<b>Adequacy of income</b>	<b>Number</b>	<b>Proportion</b>	<b>Dropout rate</b>	<b>Access rate</b>	<b>Utilisation rate</b>
Somehow managing	390	77.8%	10.6%	89.7%	80.3%
Quite adequate	86	17.2%	9.0%	90.7%	82.6%
Very inadequate	25	5.0%	4.0%	100.0%	96.0%
Total	501	100.0%	9.9%	90.4%	81.4%

For this variable, the responses on income adequacy were broken down into 'adequate' as intervention category and 'inadequate' as reference category. The analysis showed that the variable was statistically not significant, with immunisation access OR: 1.04, CI: 0.47 to 2.31,  $P < 0.9232$  and immunisation utilisation OR: 1.1, CI: 0.6 to 2.01,  $P < 0.769$ .

### **Socio-economic assessment**

Survey participants were asked to assess their overall socio-economic status. The majority (66.9%) of them assessed themselves to have a medium level socio-economic status, followed by 29.9% participants responding as low and 3.2% as high. As revealed in Figure 5.16, those households that self-assessed as having medium and high-level socio-economic status scored very low dropout rates of 6.2-6.7% and high access/utilisation rates of over 90%. On the other hand, the responders who labelled their socio-economic status as low showed abysmal immunisation indices with a dropout rate of 20.7%, access rate of 77.3% and utilisation rate of 61.3%.



**Figure 5.16: Immunisation indices by perception of socio-economic status**

To facilitate statistical analysis, the responses from the participants were re-grouped into ‘medium and high’ as intervention category and ‘low’ as a reference category. The analysis for this variable showed strong statistical association with immunisation access OR: 7.06, CI: 3.66 to 13.61,  $P < 0.0001$  and immunisation utilisation OR: 5.7, CI: 3.52 to 9.19,  $P < 0.0001$ . Accordingly, those responders who assessed their socio-economic status as medium and high were found to be 7.06 and 5.7 times more likely to respectively access and utilise immunisation for their children compared to those who labelled themselves as in the low socio-economic hierarchy. Accordingly, unlike the response of low income adequacy described earlier, the association of socio-economic levels with immunisation coverage upheld the findings in reviewed literatures in chapter two, section 2.8 and chapter three, section 3.6 and 3.7 (Antai 2011a:143, Ilusanya and Oladosun indicated 2017:485, NPC & ICF 2004:137, Hilber et al 2010b: 3, Oluwadare 2009:55).

### 5.2.3.17. Influential figures that shape the opinion of households

As explained under social cognitive theory in section 2.3.2 of chapter two, it is important to identify influential figures and personalities that shape the opinions and decisions of the household and the community at large. Table 5.12 summarised the responses of the survey participants on this issue. In this survey, the majority (65.9%) of the participants picked traditional/community leaders as the most

influential figures, followed by government authorities and religious leaders scoring a similar 10.8%. 9.8% of the participants considered health experts as their influential figures. The other 2.8% mostly specified that the ‘youth chairmen’ were the influential or trusted figures in their communities. In relation to the immunisation indices, those that mentioned traditional/community leaders and others (youth chairmen) had unfavourable dropout rates of 13.9% and 23.1% respectively. On the other hand, those that picked government authorities, religious leaders and health experts seemed to exhibit very low dropout and high access and utilisation rates.

**Table 5.12: Influential / trusted figure in the community**

<b>Most influential/ trusted figure for you and your community</b>	<b>Number</b>	<b>Proportion</b>	<b>Dropout rate</b>	<b>Access rate</b>	<b>Utilisation rate</b>
Traditional/community leader	330	65.9%	13.9%	87.3%	75.2%
Government authorities	54	10.8%	3.8%	98.1%	94.4%
Religious leader	54	10.8%	0.0%	94.4%	94.4%
Health experts	49	9.8%	0.0%	98.0%	95.9%
Other	14	2.8%	23.1%	92.9%	71.4%
Total	501	100.0%	9.9%	90.4%	81.2%

### **5.2.3.18. Household gender equality and empowerment proxies**

In chapter two, section 2.7.2, various literatures were reviewed which documented that empowered women and those that face lesser burdens of gender-related barriers were likely to have better immunisation coverage. These issues were also partly described in chapter three, section 3.6 from the Nigerian perspective. This survey contained several questions that could serve as proxy to gauge gender equality and empowerment issues within the targeted households. Such issues revolved around ability and involvement in making decisions on financial, health, and social matters as well as having perceptions and experience related to gender-based violence (NPC & ICF 2014b:4).

The responses on each of the issues are analysed in the subsequent sections. In order to contextualise the analysis of the responses, it is important to recall that 91%

of the participants were females. Therefore, a response of 'myself' almost always implies mothers and 'spouse' mostly refers to the husband.

### **Decision-making on financial issues**

As compiled in the left side of Table 5.13 for the question on who makes the decisions on buying/selling small items in the household, the majority (43.7%) of participants said 'myself only,' followed by 'jointly' (32.7%), 'spouse only' (22.6%) and lastly 'others' (1%). Relating the responses to the key immunisation indicators, those that responded 'myself' were found to show a high dropout rate of 11.5%. Where the spouse only was in charge of making decisions on small transactions, the dropout rate was very low at (5.7%). Where decisions were made jointly, the dropout rate was below the threshold at 9.8%. Although their access rate was a full 100%, those who responded that such decisions were made by others did not follow through as the utilisation rate declined to 80%, leading to a very high dropout rate of 20%.

**Table 5.13: Decision-making on household transactions**

Who makes decisions about buying/selling in your household?	Small items					Major items				
	Number	Proportion	Dropout Rate	Access rate	Utilisation rate	Number	Proportion	Dropout rate	Access rate	Utilisation rate
Jointly	164	32.7%	9.8%	93.3%	84.1%	233	46.5%	11.7%	95.7%	84.5%
Myself only	219	43.7%	11.5%	95.0%	84.0%	66	13.2%	7.9%	95.5%	87.9%
Spouse only	113	22.6%	5.7%	77.0%	72.6%	196	39.1%	8.1%	82.1%	75.5%
Others	5	1.0%	20.0%	100.0%	80.0%	6	1.2%	16.7%	100.0%	83.3%
<b>Total</b>	501	100.0%	9.9%	90.4%	81.4%	501	100.0%	9.9%	90.4%	81.4%

As stated in the NDHS document, gender empowerment is partially manifested in women's ability to make decisions on major household purchases (NPC & ICF 2014b:4). According to the 2014 NDHS findings, the majority of married women in Nigeria had little control over major issues. The finding from this research supported this narrative. As shown on the right side of Table 5.13, only 13.2% of the participants stated that only they made decisions on major purchases as compared to 39.1% who mentioned that only their spouses decided. However, 46.5% of them also mentioned that they had a say by jointly deciding with their spouses. Those women that decided by themselves had the lower dropout rate of 7.9% followed by 8.1% for those where only spouses decided. In the joint decisions, the dropout rate went above the threshold at 11.7%.

The variables derived from decision making on household transactions generated interesting statistical findings. For the sake of statistical expediency, the responses on making decisions about small or major household transactions were split into others versus spouses or joint versus single decisions. Thus, the findings are summarised as follows:

- **Exposure variable: Decision making on buying/selling small household items by:**
  - Intervention category: Mother only
  - Reference category: Spouse only
  - Immunisation access OR: 5.65, CI: 2.67 to 11.94,  $P < 0.0001$ 
    - Conclusion: statistically significant
  - Immunisation utilisation OR: 2.0, CI: 1.15 to 3.44,  $P = 0.0142$ 
    - Conclusion: statistically significant

Interpretation: Where mothers were the ones that made decisions on buying/selling small household items, they were 5.65 and 2.0 times more likely to respectively access and utilise immunisation services for their child compared to when the decisions were made by their spouses only.

- **Exposure variable: Decision making on buying/selling small household items by:**
  - Intervention category: both spouses jointly



- Reference category: one of the spouses only
- Immunisation access OR: 1.74, CI: 0.87 to 3.52, P=0.1196
  - Conclusion: statistically not significant
- Immunisation utilisation OR: 1.3, CI: 0.80 to 2.17, P=0.2788
  - Conclusion: statistically not significant

Interpretation: Where decisions on buying/selling small household items were made jointly by the spouses, they were 74% and 30% more likely to respectively access and utilise immunisation services for their child compared to when the decisions were made by a singular parent.

- **Exposure variable: Decision making on buying/selling major household items by:**

- Intervention category: Mother only
- Reference category: Spouse only
- Immunisation access OR: 4.57, CI: 1.36 to 15.38, P=0.0143
  - Conclusion: statistically significant
- Immunisation utilisation OR: 2.4, CI: 1.05 to 5.27, P=0.0380
  - Conclusion: statistically significant

Interpretation: Where mothers were the ones that made decisions on buying/selling major household items, they were 4.57 and 2.4 times more likely to respectively access and utilise immunisation services for their child compared to when the decisions were made by their spouses only.

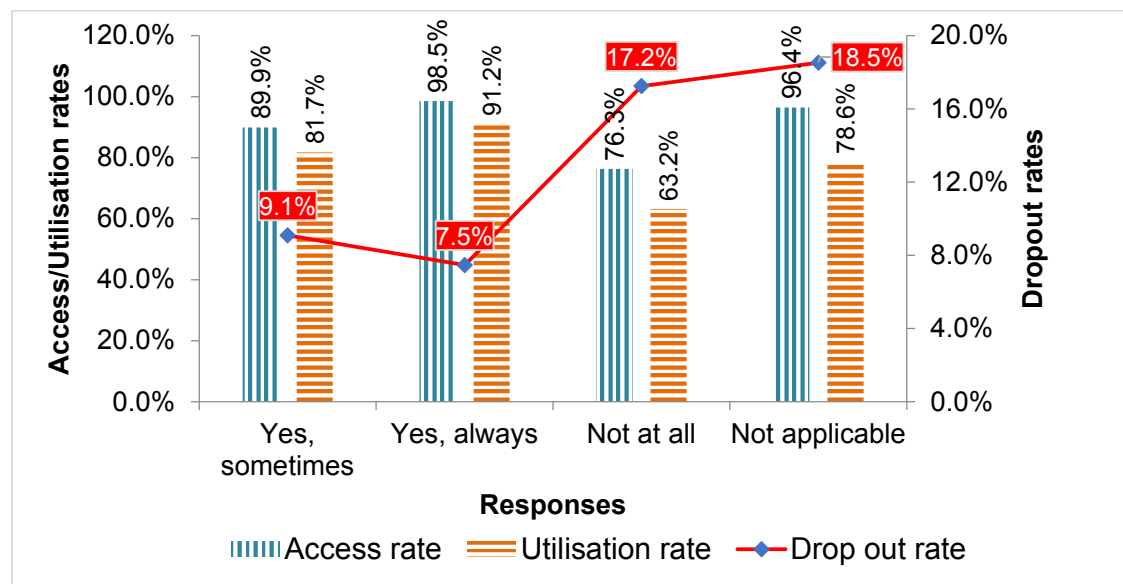
- **Exposure variable: Decision making on buying/selling major household items by:**

- Intervention category: both spouses jointly
- Reference category: one of the spouses only
- Immunisation access OR: 3.78, CI: 1.84 to 7.78, P=0.003
  - Conclusion: statistically significant
- Immunisation utilisation OR: 1.5, CI: 0.94 to 2.36, P=0.0920
  - Conclusion: statistically significant

Interpretation: Where decisions on buying/selling major household items were made jointly by the spouses, they were 84% and 50% more likely to respectively access and utilise immunisation services for their child compared to when the decisions were made by a singular parent.

### Spousal consultation on financial issues

In answer to the question on whether the responder gets consulted by the spouse on how the household money is spent, 73.3% of them said ‘yes-sometimes’, 13.6% responded ‘yes-always’, 7.6% chose ‘not at all’ and 5.6% ticked ‘not applicable’ implying that there was single parenthood or guardianship in the household. As shown in Figure 5.17, those parents that were consulted on monetary issues scored high on immunisation indicators with dropout rates below 10%. On the other hand, those that were not consulted at all or had no spouse to consult with, had very high dropout rates at 17.2% and 18.5% respectively.



**Figure 5.17: Spousal consultation on household expenditures**

For statistical analysis, the responses to this question were dichotomised into ‘Yes’ as intervention variable and ‘No’ as a control/reference variable. The analysis yielded immunisation access OR: 2.52, CI: 0.90 to 7.04, P=0.0786 and immunisation utilisation OR: 1.1, CI: 0.40 to 3.02, P = 0.8497. In both cases, the statistical outcome was not significant. Still, where there was consultation between spouses on financial issues, respondents were more likely to access and utilise immunisation services.

## Decision-making on healthcare seeking issues

The finding from the question on who usually decides on the seeking of health services for the child, was that 70.9% of the respondents said 'jointly' followed by 15% who stated 'myself only' and 14% 'spouse only' (Table 5.14). Those that decided jointly or where spouses only decided scored a good dropout rate of 9.1%. This could indicate that immunisation messages that target both men and women are necessary despite the stereotype that the affairs of the child are the sole responsibility of the mother.

On the other hand, where mothers were the only ones that got to decide on health care issues for their child, the dropout rate was found to be higher at 15%. Most of the households surveyed responded that they practised participatory decision making in their household. This finding was contrary to some literature premises that assert that, in Northern Nigeria, women have very limited say on issues – including the health of the child (chapter three, section 3.7). This exception could be attributed to the cosmopolitan nature of FCT, which is believed to be less conservative than the core northern part of the country. It is also believed that when women are able to decide on issues by themselves, the likelihood that they will have better immunisation indices is also not supported by this particular finding.

**Table 5.14: Decision-making on seeking health service for the child**

Who usually decides on seeking health services for a child?	Number	Proportion	Dropout rate	Access rate	Utilisation rate
Jointly	355	70.9%	9.1%	92.7%	84.2%
Myself only	75	15.0%	14.7%	90.7%	77.3%
Other	1	0.2%	0.0%	100.0%	100.0%
Spouse only	70	14.0%	9.1%	78.6%	71.4%
Total	501	100.0%	9.9%	90.4%	81.4%

The variables derived from who makes decisions on seeking health services for a child yielded mixed statistical findings. The responses to this question were split into mother versus spouses and joint (both spouses) decisions versus single spouse/guardian decisions.

The findings are summarised as follows:

- **Exposure variable: Decisions on seeking health services for a child were made by:**
  - Intervention category: Mother only
  - Reference category: Spouse only
  - Immunisation access OR: 2.65, CI: 1.01 to 6.95, P=0.0478
    - Conclusion: statistically significant
  - Immunisation utilisation OR: 1.4, CI: 0.65 to 2.89, P=0.4159
    - Conclusion: statistically not significant

Interpretation: Where a mother was the one that made decisions on seeking health services for her child, she was 2.65 and 2.4 times more likely to respectively access and utilise immunisation services for the child compared to where the decisions were made by her spouse only. However, the immunisation utilisation odds ratio was not statistically significant.

- **Exposure variable: Decision on seeking health services for a child was made by:**
  - Intervention category: both spouses jointly
  - Reference category: one of the spouses only
  - Immunisation access OR: 2.26, CI: 1.23 to 4.14, P=0.0081
    - Conclusion: statistically significant
  - Immunisation utilisation OR: 1.8, CI: 1.14 to 2.93, P=0.0118
    - Conclusion: statistically not significant

Interpretation: Where decisions on seeking health services for the child were made jointly by the spouses, they were 2.26 and 1.8 times more likely to respectively access and utilise immunisation services for their child compared to where the decisions were made by a singular parent.

### **Permission to leave the house**

The majority (69.5%) of participants needed permission from their spouse to leave the house. This proportion is much higher than the finding indicated in the 2014 NDHS (quoted in chapter three, section 3.6), which was that more than 33% of the married women reported that their spouses needed to know their whereabouts at all times (NPC & ICF 2014b:4). Section 3.7 of chapter three also mentioned that,

among other reasons, having to obtain permission from the spouse to go to health facilities was one of the factors inhibiting immunisation coverage (Abubakar 2017:2, Abdulraheem et al 2011:201, British Council 2012:63, Babalola & Aina 2004:27).

As shown in Table 5.15 below, for those that needed permission to leave the house, although the dropout rate was below 10%, the access rate of 88.5% was the lowest compared to the other participants. For those that did not need permission to leave the house or did not have a spouse at the time of the survey, their dropout rate was 10.1% and 16.7% respectively. For both of these categories, their access rate was quite high (above 94%). However, it appears that without spousal support or encouragement, they did not follow through in order to complete the child's Penta3 vaccination.

**Table 5.15: Spousal permission to leave the house**

<b>Do you need permission from your spouse to go out of the house?</b>	<b>Number</b>	<b>Proportion</b>	<b>Dropout rate</b>	<b>Access rate</b>	<b>Utilisation rate</b>
Yes	348	69.5%	9.1%	88.5%	80.5%
No	115	23.0%	10.1%	94.8%	85.2%
Not applicable	38	7.6%	16.7%	94.7%	78.9%
Total	501	100.0%	9.9%	90.4%	81.4%

The responses to this question were regrouped into 'No' as the intervention variable and 'Yes' as a control/reference variable. The analysis showed strong statistical association for immunisation access with OR: 2.35, CI: 1.07 to 5.2, P=0.0324. The result for immunisation utilisation was not statistically significant with OR: 0.9, CI: 0.56 to 1.4, P = 0.6120.

### **Spousal assistance with household chores**

Probably owed to the urban dominance of the research setting, the majority (79.2%) of the participants stated that they received some sort of assistance with the household chores from their spouse (see Table 5.16). As stated in chapter two, section 2.7.2, the multiple roles that women play in the household are one of the gender related barriers to immunisation (Hilber et al 2010b:12-13). The finding from this research seems to support this notion. For those participants who did not receive spousal support nor had a spouse at all, their dropout rates were quite high

at 18.2% and 17.1% respectively. On the other hand, those households where the couples supported each other in handling the household chores appeared to exhibit impressive immunisation indicators.

**Table 5.16: Spousal assistance with household chores**

Does your spouse assist in household chores?	Number	Proportion	Dropout rate	Access rate	Utilisation rate
Not at all	67	13.4%	18.2%	82.1%	67.2%
Not applicable	37	7.4%	17.1%	94.6%	78.4%
Yes, sometimes	348	69.5%	8.2%	90.8%	83.3%
Yes, always	49	9.8%	6.4%	95.9%	89.8%
Total	501	100.0%	9.9%	90.4%	81.4%

Statistically, the responses, which were dichotomised into ‘Yes’ as intervention variable and ‘No’ as a control/reference variable, brought about mixed results. For immunisation access, this variable showed no statistical significance with immunisation access OR: 1.66, CI: 0.86 to 3.23, P=0.1342. Still, the OR favoured wives who received assistance from their husbands with household chores. On the other hand, the immunisation utilisation with OR 2.1, CI: 1.30 to 3.55, P=0.0028 was statistically significant. The households where husbands assisted with the chores were 2.1 times more likely to utilise vaccination than those where this did not happen.

### **Gender-based violence**

As stated in chapter three, section 3.6, violence against women is quite common in Nigeria (NPC & ICF 2014b:4, Girls Not Brides 2017, Gunnala et al 2016:6, Ntoimo & Isiugo-Abanihe 2013:12, Suleiman 2010:3, British Council 2012:33). The 2014 NDHS also found the incidence of spousal violence to be high, with about 25% of women experiencing varying degrees of physical, sexual or emotional abuse (NPC & ICF 2014b:4). A more recent report on the 2018 NDHS painted a much worse picture related to gender-based violence, as highlighted in section 3.6.3.4 of chapter three (NPC & ICF 2019a:426).

In a conservative society, it is to be expected that the community will be reserved about disclosing sensitive information such as alleged violence perpetrated by their

spouses. While the majority (88%) of the participants stated that they did not experience gender-based violence, the other 12% responded that they have had such experience (Table 5.17). Whilst the literature cited in chapter two, section 2.7.2 indicated that there is an opposite relationship between gender-based violence and higher immunisation coverage, the finding from this survey yielded a different result where those who reported to have experienced gender-based violence seemed to have better immunisation indices.

On the other hand, only a small proportion (5.4%) of the participants seemed to condone such behaviour while the vast majority (94.6%) of them responded that spouse beating is not justified under any circumstances. On this particular question, the immunisation indices for those that seemed to tolerate such behaviour was quite dismal with 16.7% dropout rate, 66% access rate and 55.6% utilisation rate.

**Table 5.17: Experience and perception of gender-based violence**

Response	Have you experienced gender-based violence such as spouse beating?					Is spouse-beating justified under certain circumstances?				
	Number	Proportion	Dropout Rate	Access rate	Utilisation rate	Number	Proportion	Dropout rate	Access rate	Utilisation rate
No	441	88.0%	10.4%	91.8%	82.3%	474	94.6%	9.7%	91.8%	82.9%
Yes	60	12.0%	6.3%	80.0%	75.0%	27	5.4%	16.7%	66.7%	55.6%
Total	501	100.0%	9.9%	90.4%	81.4%	501	100%	9.9%	90.4%	81.4%



The variables analysed on the issue of gender-based violence returned mostly statistically significant results. The findings are summarised as follows:

- **Exposure variable: experienced gender-based violence such as spouse beating:**
  - Intervention category: No (i.e., the responder did not experience gender-based violence)
  - Reference category: Yes (i.e., the responder has experienced some gender-based violence)
  - Immunisation access OR: 2.81, CI: 1.37 to 5.77, P=0.0048
    - Conclusion: Statistically significant
  - Immunisation utilisation OR: 1.6, CI: 0.82 to 2.92, P=0.1743
    - Conclusion: statistically not significant

Interpretation: Those who did not experience gender-based violence were 2.81 and 1.6 times more likely to respectively access and utilise immunisation services for their child compared to those who did experience it. However, the immunisation utilisation odds ratio was not statistically significant.

- **Exposure variable: Spouse beating under certain circumstances justified:**
  - Intervention category: No
  - Reference category: Yes
  - Immunisation access OR: 5.58, CI: 2.35 to 13.24, P=0.0001
    - Conclusion: statistically significant
  - Immunisation utilisation OR: 3.9, CI: 1.75 to 8.60, P=0.0008
    - Conclusion: statistically significant

Interpretation: Those responders who said spouse beating was not justified under any circumstances were 5.58 and 1.75 times more likely to respectively access and utilise immunisation services for their child compared to those who tolerated such behaviour.

#### **5.2.4. Logistic regression analysis of immunisation coverage vis-à-vis key socio-economic and gender variables**

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Section 5.2.3 of this chapter presented the descriptive and, where possible, 2x2 odds ratio analysis of most of the variables in relation to immunisation access and

utilisation independent of the impact of other variables. In other words, such analysis assumed all other variables had no effect on the immunisation outcome variable. However, in addition to explaining the relationship between the dependent and independent variables, it is necessary to also recognise the interdependence of the variables and control the impact of other variables on the immunisation outcome while focusing on the one under consideration.

Due to the complexity of analysing all the survey variables at once, the researcher shortlisted nine key socio-economic and gender variables for confounded logistic regression analysis of the whole 501 sampled cases (observations). Those variables which showed statistical significance in the 2x2 table odds ratio analysis were selected for the logistic regression analysis. Duplication of variables that measure relatively similar issues was avoided.

As described in detail under section 4.7.2.2. of chapter two, to adjudge the statistical analysis outcome as significant, the Sig (P value) should be less than 0.05, Exp (B) value which is the OR should be above 1. It is also important to be reminded that the Wald value emphasises the magnitude/strength of the significance of that specific variable.

#### **5.2.4.1. Logistic regression analysis result on immunisation access**

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As shown in Table 5.18, the regression analysis produced mixed results from a statistical significance point of view.

**Table 5.18: Logistic regression analysis result summary for immunisation access**

Variables in the Equation	Reference Category	Intervention Category	Statistical results							
			B <sup>1</sup>	S.E. <sup>2</sup>	Wald <sup>3</sup>	DF <sup>4</sup>	Sig. <sup>5</sup>	Exp (B) <sup>6</sup>	95% C.I. <sup>7</sup> .for EXP(B)	
									Lower	Upper
Residence area	Rural	Semi-Urban, Urban	1.206	.635	3.602	1	.058	3.339	.961	11.598
Mother's education level	None/ Illiterate	Literate (primary, secondary, and Higher)	1.446	.434	11.105	1	.001	4.245	1.814	9.933
Birthplace of eligible child	Home	Other (Health facility/ traditional birth attendant/ Other)	.455	.409	1.234	1	.267	1.576	.706	3.514
Use of antenatal care	No	Yes	1.254	.549	5.212	1	.022	3.504	1.194	10.279
Knowledge about immunisation	No	Yes	2.087	.396	27.786	1	.000	8.060	3.710	17.513
Source of household income	Farming	Others	.193	.483	.160	1	.689	1.213	.471	3.126
Decision making on major household transactions	Single (Me, Spouse, other)	Joint	.621	.470	1.747	1	.186	1.861	.741	4.673
Decision making on vaccinating a child	Single (Me, Spouse, other)	Joint	.575	.438	1.726	1	.189	1.777	.754	4.190
Gender-based violence experience	No	Yes	1.085	.483	5.053	1	.025	2.961	1.149	7.629
Constant			-3.220	.749	18.470	1	.000	.040		

*Key to the statistical variables:*

*B – constant, preferred to be positive value*

*S.E. – standard error – acceptable when the value is less than 1*

*Wald – a test of magnitude/strength of the significance of that specific variable. Wald helps to test whether the variable is making a significant contribution to the prediction of the outcome.*

*DF – degree of freedom – the value is 1 for all because of dichotomised responses, the formula for DF being (n-1)*

*Sig. – refers to P value which tells us the statistical significance of the effect of the explanatory variable on the outcome variable*

*Exp(B) – logistic regression odd ratio*

CI – Confidence interval

A brief interpretation of the outcome of the binary logistic analysis for the immunisation access is presented below.

### **Residence area**

Urban dwellers were 3.34 times more likely than rural dwellers to access immunisation, with Sig. (P) value of 0.58, CI: 0.96 to 11.6. However, this variable did not produce a statistically significant effect on access because the P value is slightly higher than 0.05.

### **Mother's education**

Literate mothers were 4.25 times more likely to access immunisation than those mothers with no education. This variable was statistically significant, with a P value of 0.001, CI: 1.81 to 9.93. The Wald value of 11.1 also showed statistically significant effect.

### **Birthplace of eligible child**

The children delivered at a health facility or by a traditional birth attendant were 1.57 times more likely to access immunisation than those born at home, CI: 0.71 to 3.51. However, with a P value of  $>.05$ , this result was not statistically significant.

### **Use of antenatal care**

Those mothers that used antenatal care were 3.5 times more likely to access immunisation than those with no antenatal care experience. This variable is statistically significant with a P value of 0.022, CI: 1.94 to 10.23. The Wald value of 5.2 also shows significant statistical effect.

### **Knowledge about immunisation**

The result for this variable implied that caregivers who had immunisation knowledge were 8.0 times more likely to access immunisation than those with no such knowledge, CI: 3.71 to 15.51. This variable yielded not only a statistically significant result with a P value of 0.000, it also had a strong statistical effect with a Wald value of 27.79.

### **Source of income**

Participants with a non-farming source of income were 1.2 times more likely to access immunisation than participants who depended on farming for their living, CI: 0.47 to 3.13. Nevertheless, with the P value of  $>0.05$  this variable was not statistically significant.

### **Decision-making on major household transactions**

Participants who made joint decisions on buying or selling major household items were 1.86 times more likely to access immunisation than those who single-handedly made the decisions, CI: 0.75 to 4.19. However, this variable did not produce statistically significant result with a P value of 0.189.

### **Decision-making on vaccinating a child**

Participants who made joint decisions on child vaccination were 1.77 times more likely to access immunisation than those participants who made single-handed decisions, CI: .74 to 4.67. However, the P value of 0.186 rendered it statistically not significant.

## **Experiencing gender-based violence**

Participants with no gender-based violence experience were 2.96 times more likely to access immunisation than those with such experience, CI: 1.15 to 7.63. This variable yielded a statistically significant value (P 0.025). The Wald value of 5.053 is also strong.

### **5.2.4.2. Logistic regression analysis result on immunisation utilisation**

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Table 5.19 summarises the results of the regression analysis on the selected variables from an immunisation utilisation perspective.

**Table 5.19: Logistic regression analysis result summary for immunisation utilisation**

Variables in the Equation	Reference Category	Intervention Category	Statistical results							
			B	S.E.	Wald	DF	Sig.	Exp (B)	95% CI for EXP(B)	
									Lower	Upper
Residence area	Rural	Semi-Urban, Urban	1.598	.392	16.652	1	.000	4.945	2.295	10.656
Mother's education level	None/ Illiterate	Literate (primary, secondary, and Higher)	1.278	.335	14.522	1	.000	3.588	1.860	6.923
Birthplace of eligible child	Home	Other (Health facility/ traditional birth attendant/ Other)	.247	.295	.701	1	.403	1.280	.718	2.283
Use of antenatal care	No	Yes	1.029	.496	4.295	1	.038	2.798	1.057	7.404
Knowledge about immunisation	No	Yes	1.613	.308	27.454	1	.000	5.017	2.744	9.171
Source of household income	Farming	Others	-.473	.336	1.983	1	.159	.623	.323	1.203
Decision making on major household transactions	Single (Me, Spouse, other)	Joint	-.044	.299	.021	1	.884	.957	.533	1.719
Decision making on vaccinating a child	Single (Me, Spouse, other)	Joint	.116	.300	.150	1	.698	1.123	.624	2.024
Gender-based violence experience	No	Yes	.361	.389	.863	1	.353	1.435	.670	3.073
Constant			-2.324	.626	13.766	1	.000	.098		

*NB – the definitions of the statistical variables are provided below Table 5.18*

The results from the regression analysis on the association of the selected variables with immunisation utilisation are summarised below.

### **Residence area**

Urban residents were 4.94 times more likely than their rural counterparts to utilise immunisation (CI: 2.30 to 10.66). Unlike the result for immunisation access, the statistical outcome for immunisation utilisation was quite significant with a P value of 0.00. The Wald value of 16.65 also yielded a significant statistical effect.

### **Mother's education**

In the same vein as the result for immunisation access, that of immunisation utilisation was also found to be statistically significant with a P value of 0.000. The figures showed that literate mothers were 3.59 times more likely to continue to utilise immunisation than those mothers with no education (CI: 1.86 to 6.92). The Wald value of 14.5 also showed a statistically significant effect.

### **Birthplace of eligible child**

Children delivered at a health facility were 1.28 times more likely to continue to utilise immunisation than those born at home (CI: 0.718 to 2.28). However, like the immunisation access the P value of this variable (0.40) showed no statistical significance for utilisation of immunisation services.

### **Antenatal care**

Surveyed mothers who had experience of using antenatal care were 2.80 times more likely to utilise immunisation than those with no such experience (CI: 1.06 to 7.4). The P value of 0.38 showed that the result was statistically significant. The Wald value of 4.3 also manifested significant effect of the variable.

### **Knowledge about immunisation**

Those caregivers with some knowledge about immunisation were 5.01 times more likely to continue to utilise immunisation services than those with no such knowledge (CI: 2.74 to 9.17). The P value of 0.000 along with the Wald value of 57.45 showed a very strong statistical significance and effect.



### **Source of household income**

Survey participants who made a living from non-farming activities were 0.625 (<1) times more likely to continue to utilise immunisation services than those that generated their household income from farming (CI: .32 to 1.20). The statistical result was not significant with a P value of 0.159, implying that the source of income did not determine much of the decision of the caregivers on whether or not to continue utilising immunisation.

### **Decision-making on major household transactions**

Couples who decided jointly on buying or selling major household items were 0.96 (<1) times more likely to continue utilising immunisation services than those that decided unilaterally (CI: 0.53 to 1.72). Like the result for immunisation access, this variable did not produce a statistically significant result either, with a P value of 0.884.

### **Decision-making on vaccinating a child**

Participants who made joint decisions on child vaccination were 1.12 times more likely to continue to utilise immunisation than those participants who made single-handed decisions (CI: 0.62 to 2.02). The P value of 0.7 rendered this variable statistically not significant.

### **Experiencing gender-based violence**

Those survey participants that indicated they had not suffered any gender-based violence were 1.44 times more likely to continue to utilise immunisation than the participants that disclosed their experience of such violence (CI: 0.67 to 3.07). Unlike the outcome of the statistical analysis for immunisation access, the immunisation utilisation result was not statistically significant with a P value of 0.35.

#### **5.2.4.3. Synthesising the results from the logistic regression analysis**

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As summarised in Table 5.20, the binary logistic regression analysis revealed mixed results from a statistical significance perspective. Out of the nine variables selected, four variables – namely mother’s educational level, experience in usage of antenatal

care, knowledge about immunisation, and gender-based violence experience – were found to be statistically significant for immunisation access. For continued utilisation of immunisation services, area of residence, mother’s educational level, experience in the use of antenatal care, and knowledge about immunisation were found to be statistically significant. Only two variables were statistically significant on both the immunisation access and utilisation dimensions. These variables are experience in the use of antenatal care and knowledge about immunisation.

**Table 5.20: Summary of the statistical significance outcome of the binary logistic analysis**

<b>Variables in the Equation</b>	<b>Immunisation access</b>	<b>Immunisation utilisation</b>
Residence area	Not significant	Significant
Mother's education level	Significant	Significant
Birthplace of eligible child	Not significant	Not significant
Use of antenatal care	Significant	Significant
Knowledge about immunisation	Significant	Significant
Source of household income	Not significant	Not significant
Decision making on vaccinating a child	Not significant	Not significant
Decision making on major household transactions	Not significant	Not significant
Gender-based violence experience	Significant	Not significant

The 2x2 table odds ratio analysis discussed in section 5.2.3 provided insight into the likelihood of the outcome based on the intervention of the variable in question. As described under section 5.2.4 of this chapter, that analysis was without recognising the impact arising from the other variables. In other words, the existence of other variables was not recognised entirely. On the other hand, as mentioned early on, analysing multiple variables using the logistic regression analysis process took into consideration the overall effect of all nine the selected variables in determining the outcome.

Comparing the result of the statistical analysis between the two methods for the selected nine variables, the following issues were observed.

- For all variables, the degree of statistical significance was more favourable for the 2x2 table odds ratio analysis than for that of the logistic regression analysis.

It therefore appears that the introduction of multiple variables in the regression analysis has weakened the significance value of most of the variables.

- With respect to the likelihood of the outcome occurrence, for all variables except experience of gender-based violence, the 2x2 table odds ratio produced substantially higher OR values.
- For the variable of gender-based violence experience, the logistic regression analysis odds ratio was slightly higher.
- As discussed in chapter four, section 4.9.2, the regression analysis has a bi-product of predicting the future outcome following the intervention of a variable. The 2x2 odds ratio does not make a predictive analysis. The magnitude of the significance of the predictive variable is represented by the Wald value.

Accordingly:

- Residential area, mother's educational level, knowledge about immunisation, and use of antenatal care facilities had a very high Wald value for both immunisation access and utilisation outcomes.
- Gender-based violence experience showed a significant Wald value for the component of immunisation access only.

### **5.2.5. Profiling the unimmunised**

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As shown earlier in Table 5.2, out of the 501 households surveyed 29 of them and representing 11% of the total sampled population, did not receive any dose of vaccine in the national immunisation schedule by the time of the survey. It would be important to profile the key socio-economic and gender variables of these non-immunised segments. For the sake of efficiency, those variables that have generated statistically significant values as shown in Appendix 14 were selected in the analysis.

#### **Residential area**

All the unimmunised children were from the Kwali area council and 93% resided in rural areas. Kwali area council is dominantly rural compared to the AMAC. As

described in section 5.2.3.2, the households who resided in urban areas were almost 7-8 times more likely to access and utilise immunisation services. It appears, therefore, that rural residency and thus less health and socio-economic infrastructure was one of the main factors inhibiting vaccination for this segment of the survey participants.

### **Responsibility for the eligible child**

In a slight majority (52%) of the households, unimmunised children were under the care of single mothers while 48% of them were cared for by married couples. Given the marginal difference between the married couples and single mothers, this factor did not seem to have a major role in the decision of the households not to immunise the child.

### **Education level of caregivers**

As discussed in section 5.2.3.9, the association of education level of the parents/guardian with immunisation status was found to be strong in this survey. For the unimmunised children there was a similar pattern. The education levels of the fathers was 48% no education, 10% primary level, 34% secondary level and 7% higher level. For the mothers, 69% no education, 14% primary level, 14% secondary level and 3% higher level. In summary, the majority of the parents (58% fathers and 83% mothers) had no or lower than secondary education level, which might have contributed partly to the non-immunisation of their children.

### **Experience in the use of health facilities**

The majority (69%) of the mothers of both the first-born and the vaccination eligible children that were never immunised indicated that the children were born at home rather than at a health facility or other places. As analysed in section 5.2.3.10 of this chapter, the same parameter was found to be statistically significant both in terms of access and utilisation of immunisation. It was also described that those that gave birth at a health facility appeared to have a positive association with favourable immunisation indices.

Conversely, the mother's use of antenatal care did not seem to relate much to the non-immunised status of the child. Despite being found statistically significant in the

overall analysis, 62% of the participants with unimmunised eligible children had used antenatal care facilities.

### **Possession of vaccination cards**

As stated in section 5.2.3 of this chapter, Penta1 and Penta3 vaccination status were chosen as proxy indicators of immunisation access and utilisation respectively. However, there are other types of vaccines that are administered to children as a result of which vaccination cards could be issued for the eligible children. In profiling the unimmunised children, it was discovered that none of the households surveyed could confirm possession of vaccination cards for their children who were not vaccinated against the antigens chosen for this survey. This finding aligns with the literature quoted in section 5.2.3.11 of this chapter indicating that ownership of immunisation card could be a crucial predictor of immunisation coverage.

### **Exposure to health-related information**

The majority of the caregivers of the unimmunised children had none or low exposure and knowledge about immunisation and child-related health information.

- 83% of them responded that they did not have knowledge on immunisation
- 79% of them stated that they did not have exposure to child health information
- 97% of them replied that they did not know diseases that are vaccine preventable.

As summarised in section 5.2.3.12 of this chapter, the findings from the results of the overall survey showed that these variables had positive association with immunisation indices. The odds ratio analyses for the same were also substantially significant.

### **Income and socio-economic self-assessment**

The majority (86%) of the participants in this segment made their living from farming. This could be attributed to the rural nature of the Kwali area council where they live. 10% of them were in trading and 3% in public service. Given the pre-dominance of subsistence farming in the rural areas, it was not unexpected that the majority (86%) assessed themselves to be of low socio-economic status. In both instances, the

findings here are consistent with the descriptive and odds ratio analysis related to the sources of income and socio-economic assessments discussed in section 5.2.3.16 of this chapter.

### **Gender equality and empowerment proxies**

As documented in section 5.2.3.17 of this chapter, those gender equality and empowerment proxy variables that manifested statistically significant odds ratios in the overall survey analysis showed mixed results with the corresponding immunisation indices although most of the findings aligned with existing literatures.

Looking into these variables in reference to the households with unimmunised children, the findings are briefly described as follows.

- In terms of where the decision-making rests when it comes to buying/selling small and major household items, respectively 62% and 69% of the participants stated that only their spouses decide. By implication, it is the husbands that decide on such issues since the vast majority (90%) of the survey participants who did not immunise their children were women. In other words, most of the mothers were not the ones to make decisions, not even on small value household transactions.
- 72% of them stated that they received support from their husbands with household chores, while 28% said outright that their husbands did not assist or that did not have a spouse anyway. As the literature asserted, alleviating women's multiple household burdens could contribute positively to addressing gender induced immunisation barriers (Hilber et al 2010b:12)
- With respect to who decides on getting the child vaccinated, only 21% of the participants stated that they (mothers) decided on their own. 41% stated that they decided jointly with their spouses, 21% said the decision rested with their spouse only, while the remaining 17% stated that another extended family member decided for them.

### **Experience and understanding in gender-based violence**

79% of the participants in this category expressed that they did not encounter gender-based violence while 21% responded that they had such experience. The same proportion (79%) of the participants also stated that they did not condone

gender-based violence such as spouse beating. On the other hand, 21% of the participants found spouse beating justified under certain circumstances. Despite the similarities in the proportion of participants in terms of their experience and perception of gender-based violence, it was not possible to establish whether it was the same participants that experienced gender-based violence that also expressed tolerance for such behaviour.

Having described and analysed the findings from the household survey in the previous sections, the following sections will discuss the perspectives from health professionals at selected health facilities, FCT and federal levels.

### **5.3. ANALYSIS OF DATA FROM THE HEALTH PROFESSIONALS**

#### **5.3.1. General information on participants**

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The data from health professionals was gathered from two streams and using different data collection tools. The professionals interviewed at the federal and FCT health department were approached to provide strategic and tactical perspectives on the issues raised. On the other hand, the health workers at service delivery level were surveyed to get their take on operational issues in the areas of their deployment. While the scope and depth of their responses may vary, the themes raised were essentially similar. Therefore, the feedback from the two streams are analysed together in the following sections to compare and contrast their perspectives.

##### **5.3.1.1. Key informant interviewees' profile**

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As stated in section 4.5.4 of chapter four, key informant interviews were conducted with 11 officials. These officers represented the federal government, the FCT administration, and key immunisation partners with a presence in Nigeria and representing international, regional and private sector organisations. Professionally, they are technical experts on planning, coordination, policy and strategy development, monitoring and evaluation of immunisation programmes at federal and FCT levels. Two of the officers were also gender focal points for the immunisation programme in their respective organisations. In terms of sex composition, 5 of them were female and 6 were male. On average, they had 12

years of work experience in the field of immunisation, ranging from 5 to over 20 years. In order to safeguard the confidentiality of the interviewees, more specific profiles cannot be provided.

### 5.3.1.2. Health care facility level officers' profile

In order to capture the perspectives of the vaccination service providers at primary health care service level, a limited scope survey was conducted on the 26 health workers, covering 25 settlements and using the methodology outlined in section 4.5.2 of chapter four. A summary of the general variables is presented in Table 5.21. The distribution of the survey was equitably divided among the two area councils – 12 from Kwali area council and 14 from AMAC. The majority (73.1%) of the health facilities visited were lower level health centres while the remaining 26.9% were hospitals. In terms of ownership, 84.6% of the health facilities were public and the other 15.4% were private. 57.7% of the participants mentioned that they lived in rural areas while the rest resided in either semi-urban (19.2%) or urban (23.1%) settings. More than 80% of the service providers were between 30 and 50 years old and most (92.3%) of them were married.

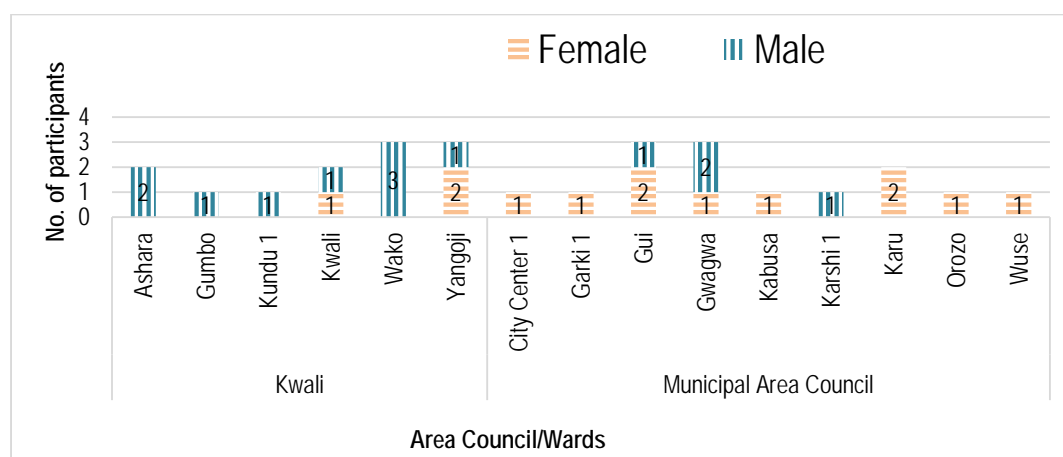
**Table 5.21: Summary of general variables' descriptive statistics–health facility workers' survey**

Variables	Number of participants	Percentage
Area Council		
Kwali	12	46.2
AMAC	14	53.8
Type of health facility		
Health centre	19	73.1
Hospital	7	26.9
Ownership of health facility		
Public	22	84.6
Private	4	15.4
Residential setting of participants		
Rural	15	57.7
Urban	5	42.3
Age group		
18yrs_30yrs	4	15.4



Variables	Number of participants	Percentage
31yrs_40yrs	10	38.5
41yrs_50yrs	11	42.3
≥50yrs	1	3.8
Marital status		
Married	24	92.3
Single	2	7.7

Not by design but by coincidence, the overall sex composition of the participants was perfectly even, i.e. 13 each. However, when it comes to the specific wards, as noted in Figure 5.18, there were instances where only male or female health care officers were available at the health facility to participate in the survey.

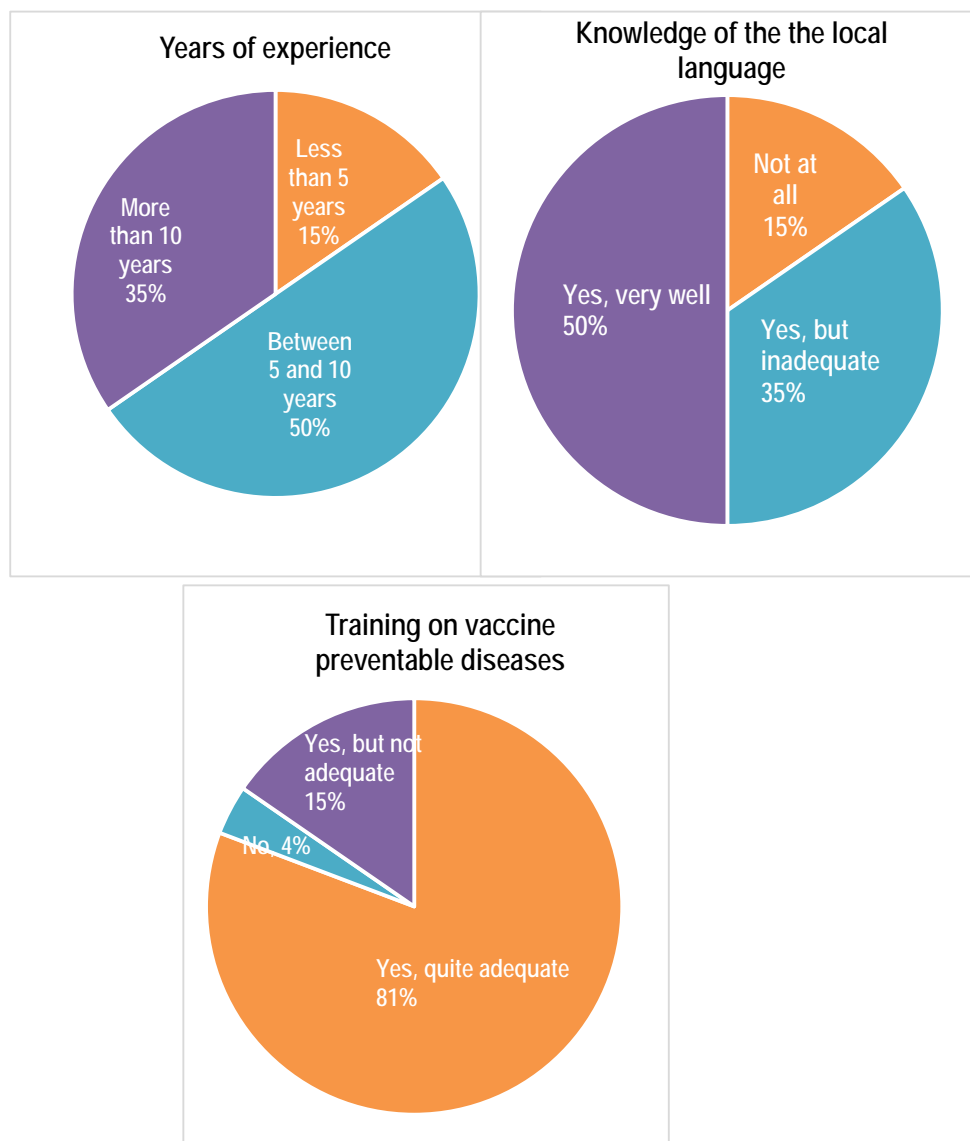


**Figure 5.18: Distribution of health facility workers' survey participants by area council, ward and sex**

As shown by the compendium of charts below (Figure 5.19), the service providers had a varying degree of qualification, skill and experience to perform their duties. 85% of them had experience above 5 years. While 50% of the health facility workers responded that they communicated very well in the local language, 35% expressed the inadequacy of their local language proficiency and the remaining 15% could not speak the language at all. Given the fact that 100% of the health service providers responded to have higher education, it was expected that most of the service seekers and providers would be able to communicate using the official language, which is English. However, in a rural setting not being able to speak the local

language could pose a serious communication barrier given the relatively lower literacy rates there.

With respect to the question on training, the participants gave overwhelmingly positive feedback: 81% of them assessed that the training they received on vaccine preventable diseases was quite adequate. 15% received the training but did not perceive it as adequate, while the remaining 4% stated that they had not received any training on the subject.



**Figure 5.19: Qualification, experience and skills of the immunisation service providers at health surveyed health facility level**

### 5.3.2. Immunisation service delivery

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The key informants at national and FCT levels gave feedback on their general assessment of the immunisation system in Nigeria. All the interviewees largely agreed that the overall immunisation system in Nigeria leaves a lot to be desired. They ranked it in the range between low and average (see some verbatims below). Their assessment, which they said is ultimately manifested through a low national vaccination coverage rate, is also in alignment with the recent coverage statistics discussed in chapter three, section 3.5.4.

*Moderate, with plenty of room for improvement.*

- Federal level government official

*Still battling with issue of coverage.*

- FCT level government official

*Improvement has been seen over a few years but generally coverage and performance is low*

- Officer from international partner agency

The most common areas of strength identified by the interviewees included the existence of functional governance structures, formulation of technical policies and guidelines, coordination platforms between the federal and state levels, and better community awareness. According to them, weak coordination at lower levels (between States and LGAs), dilapidated health facilities, and political interference were weak links that required much improvement. Being probed on what form the political interference takes in actual terms, one interviewee clarified that some politicians attempt to dictate on the posting of health workers, push for diversion of funds and influence decisions on where to erect new health facilities.

Their answer to the same question, but focusing on the immunisation system in FCT, was that the territory's performance is a reflection of the national situation. The majority of them agreed that FCT's immunisation performance is moderate compared to other states. Only one of the interviewees assessed that FCT provides quality immunisation services. However, although some of the FCT immunisation coverage such as for measles and Penta 3 were above the national average as discussed in chapter three, section 3.4.5, the territory falls short of meeting the

national and international targets for a number of antigens. All of the key informants agreed that population influx to the capital city causes additional stress on the health system of the territory. Notwithstanding the challenges, the interviewees stated a number of factors that enabled FCT to provide comparatively better vaccination services. These factors are discussed in their respective thematic areas in the following sections in order to triangulate the responses with the surveyed frontline health workers, where possible.

### **5.3.2.1. Accessibility and affordability**

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Based on the health workers' survey data, the average distance from between a health worker's residency and workplace was 3.71 kilometres with a standard deviation of 6.25. 73% of the health facility staff responded that they lived within a distance of one kilometre from their health facility. 96.15% of them stated that it took them one hour to reach their workplace. Therefore, in terms of distance and time, the health facilities could be easily accessible for the majority of the health workers. All but one of the participants mentioned that the health facilities were available at normal working hours to provide immunisation services. 24 out of the 26 participants emphasised that the health facilities were accessible to the community without much difficulty in terms of time and distance. However, the researcher observed a discrepancy in their response as noted in section 5.3.2.3 of this chapter, where access to the health facilities was the most cited barrier to immunisation by the same participants.

With respect to the cost of immunisation, respectively 92.3% and 88.5% of the survey participants indicated that both the direct and indirect costs of the health facilities are affordable to the health seekers. However, according to the data obtained from the key informant interviews there was a widespread recognition that although vaccination is provided free of charge at government health facilities, the indirect costs such as transport expenses to access the facilities can be an inhibiting factor for poor caregivers in the rural areas. Moreover, the opportunity cost borne by caregivers in attending vaccination sessions for their children in lieu of engaging in farm or market activities was also appreciated. 7 out of 11 key informants believed that women are more susceptible to bearing the opportunity cost, since they are often the ones bringing their children to immunisation sessions. The key informants

further stated that both men and women face financial and social vulnerability that may affect their ability to access and use immunisation services. However, the majority of them agreed the level of vulnerability is higher for women, those with old age, and those who reside in rural areas. It was stated that the vulnerability of women emanates from their dependence on their spouses for household income.

### 5.3.2.2. Human and material infrastructure

According to the health workers' survey, 69.2% of females and 84.6% of males believed that their health facilities were staffed with competent and skilled workers to provide quality immunisation services (Table 5.22). The 15.4% variance between females' and males' responses on the staffing situation at their health facilities needs further investigation. The feedback from the key informant interview was also corroborated by the health workers' assessment. According to the interviewed officials both at federal and FCT levels, the availability of a competent immunisation workforce at health facility level is one of the relative strengths of the immunisation system in FCT. However, as pointed out under section 5.3.2.4 of this chapter, an official from the FCT stated that the staff strength is not good enough to meet the work demand at some health facilities, particularly in remote areas.

**Table 5.22: Self-assessment of immunisation services providers competency**

Health facility staffed with competent skilled workers	Female		Male		Total	
	#	%	#	%	#	%
Yes	9	69.2%	11	84.6%	20	76.9%
No	4	30.8%	2	15.4%	6	23.1%
Total	13	100.0%	13	100.0%	26	100.0%

84.6% of both female and male survey participants had a similar assessment of the health facility as well accommodated in a befitting facility. Unlike the positive assessment of staff competency, the response on the adequacy of material and vaccine supplies was not very impressive at health facility level. 57.7% of the total participants mentioned that material and vaccine supplies were satisfactory. What was more interesting was the substantial divergence of opinion between female and male responders on this issue. 76.9% of the female health facility workers

responded that the health facility is appropriately equipped while only 38.5% of their male counterparts provided the same response (Table 5.23).

10 out of 11 (91%) key informants at the national and FCT levels, however, were of the opinion that the health facilities were adequately stocked with vaccines and devices. Three of the key informants further stated that FCT has an advantage of hosting the national vaccine strategic warehouse to easily receive the vaccines when facilities run out of stock. As stated in chapter three, section 3.5.5.5, several literature sources documented that the inadequacy of vaccines and supplies at health facilities cause major challenges in immunisation services delivery (Babalola & Aina 2004:23, NPHCDA 2018a:12, Ophori et al 2014:73, Deloitte 2017:11, Rahji & Ndikom 2013:2). As an intersection point where the demand and supply for immunisation meet, the assessment of the health service workers on vaccine adequacy at their facility should be taken seriously.

**Table 5.23: Adequacy of material and vaccine supplies at health facility as per health worker’s survey**

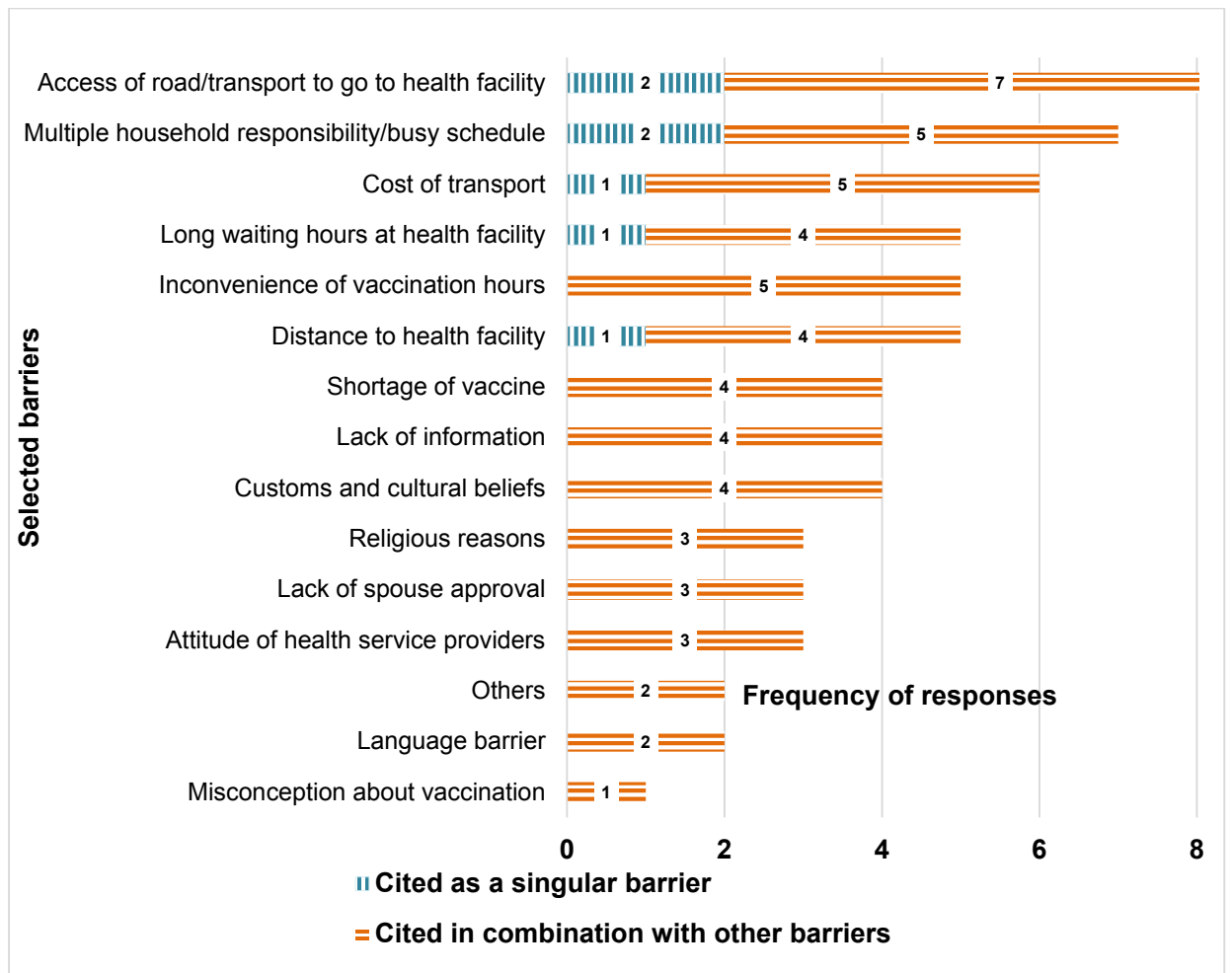
Response	Female		Male		Total	
	#	%	#	%	#	%
Adequate	10	76.9%	5	38.5%	15	57.7%
Not adequate	3	23.1%	8	61.5%	11	42.3%
Total	13	100.0%	13	100.0%	26	100.0%

### **Barriers to immunisation**

The surveyed health facility workers were asked to select options from the list of barriers that hamper immunisation coverage. The most frequently cited (nine times) barrier was the challenges related to access to road/transport to go to the health facility. As stated by Adedini et al (2014:8) and referred to in section 3.7 of chapter three, poor road networks act as a barrier to immunisation in Nigeria. In the second place, the health facility workers alluded to the multiple household responsibilities of mothers as a barrier to immunisation due to their busy schedules. This was also mentioned in chapter two, section 2.3.2 as a gender-related barrier to immunisation in the health system (Hilber et al 2010b:12). This particular challenge topped the list

of response scores in the house-to-house survey analysed under section 5.2.3.13 (Table 5.8) of this chapter.

From discussions with key informants it is clear that although the average distance to a health facility was not too long (1.4 kilometres as stated in section 5.1.1.11 of this chapter), the fact that the roads were rugged might have contributed to the cost of transport, being the third most cited barrier to immunisation that the health workers pointed out. Long waiting hours at health facilities (ranked 4<sup>th</sup> in the house-to-house survey), inconvenience of vaccination hours (ranked 3<sup>rd</sup> in the house-to-house survey) and distance to health facility (ranked 5<sup>th</sup> in the house-to-house survey) received 5 votes each as barriers to immunisation in the survey of health facility workers. Language barriers, misconceptions about immunisation and other factors were selected as barriers by the least number of survey participants. The specified barriers under 'others' were lack of cold chain facilities at the health centre and security concerns.



**Figure 5.20: Barriers to immunisation identified by the health facility workers**

The key informants were also asked to rank 18 commonly known immunisation barriers in order of their relevance among factors impacting vaccination coverage in FCT. The responses were quite divergent, both among the individual interviewees and the organisations they represented. As illustrated in Table 5.24, there was no agreement among the federal and territory level officials on the priority factors that hinge on the FCT immunisation system. The differences were apparent even among those FCT officials working for the same office.



**Table 5.24: Prioritising the barriers to immunisation by key informant interviewees**

Priorities	Federal level officials							FCT level officials			
	Government official	Partner agency - A	Partner agency - B1	Partner agency - B2	Partner agency - C	Partner agency - D	Partner agency - E	FCT official - I	FCT official - F	FCT official - G	FCT partner agency - H
Top three barriers	Customs and cultural beliefs	High cost of transport	Customs and cultural beliefs	Absence of immunisation services at health facility	Misconception about vaccination	Lack of information on health/immunisation	Fear of social stigma	Customs and cultural beliefs	High cost of transport	Inconvenience of vaccination hours	Inconvenience of vaccination hours
	Lack of information on health/immunisation	Distance to health facility	Gender discrimination	Lack of information on health/immunisation	Lack of information on health/immunisation	Misconception about vaccination	Community/health service providers gender bias	Inconvenience of vaccination hours	Multiple household responsibility of mothers	Lack of spouse approval	Lack of spouse approval
	Access of road/transport to go to health facility	Long waiting hours at health facility	Lack of spouse approval	Access of road/transport to go to health facility	Customs and cultural beliefs	Religious reasons	Misconception about vaccination	High cost of transport	Inconvenience of vaccination hours	Misconception about vaccination	Misconception about vaccination
Bottom three barriers	Shortage of vaccine	Inconvenience of vaccination hours	Language barrier at health facility	Inconvenience of vaccination hours	Lack of spouse approval	Political pressure	Access of road/transport to go to health facility	Shortage of vaccine	Fear of social stigma	Shortage of vaccine	Multiple household responsibility of mothers
	Religious reasons	Shortage of vaccine	Fear of social stigma	Religious reasons	Access of road/transport to go to health facility	Gender discrimination	Shortage of vaccine	Political pressure	Lack of information on health/immunisation	Gender discrimination	Gender discrimination
	Absence of immunisation services at health facility	Misconception about vaccination	Political pressure	Customs and cultural beliefs	Inconvenience of vaccination hours	Fear of social stigma	Absence of immunisation services at health facility	Lack of spouse approval	Gender discrimination	Community/health service providers gender bias	Community/health service providers gender bias

Among the barriers in the top three categories, the most cited one was misconception about vaccination, being picked by four interviewees. Customs and cultural beliefs as well as lack of information on health/immunisation were often the cause of misconceptions, according to four interviewees. Interviewees equally selected inconvenience of vaccination hours as a barrier. High cost of transport and lack of spousal approval were picked by three interviewees each.

Broadly speaking, there was a convergence of answers between the higher level health professionals and the lower level health facility workers in agreeing that cost of transport is among the top barriers. However, on the other factors there appeared to be differing opinions on the priority order of the key barriers to immunisation. For example, misconception about vaccination was the option least selected as a barrier to immunisation among health facility level survey participants, whilst it was top of the list among the key informants. Such discrepancies may undermine the efforts of the key stakeholders to design appropriate policies and strategies, as well as to allocate resources to tackle the most impactful barriers.

### **5.3.2.3. Demand creation for immunisation**

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On the question of what main challenges are faced in FCT in relation to the demand for immunisation, the key informants identified a number of factors. It is apparent that the diversity of their responses about the same programme they are all involved in, can indicate how complex the challenges are to improve the demand for immunisation. Without taking their voice, the responses from officers representing various stakeholders are assorted as follows.

*Low education of mothers, vaccine hesitancy, cost attached to vaccines in private health facilities, attitude of health workers, adverse effects following immunisation (AEFI), unfounded rumours.*

- Federal level government official

*Inadequate awareness creation using mainstream media particularly for routine immunisation services, village development committee working sub-optimally in the area of community mobilization, no awareness creation in the remote communities*

*mainly due to poor funding for communication activities, health workers' weak interpersonal skills as they attend to caregivers.*

- Officer from international partner agency

*Some caregivers not aware of the timing for vaccination, communities not adequately involved in planning for immunisation particularly as it relates to timing*

- Officer from international partner agency

*Elite class (influential figures) rejection of immunisation services especially during vaccination campaigns, increased dropout rates due to the high rate of population movement from other states and within FCT.*

- Officer from international partner agency

*Lack of knowledge and awareness about immunisation, no felt needs or lack of motivation on the part of caregivers.*

- Officer from regional partner agency

*Clients not able to access vaccination services due to distance to health facilities, fear of AEFI deterring parents from bringing their children for vaccination, vaccine hesitancy based on predisposed beliefs.*

- Officer from private sector partner agency

*Poor demand creation efforts mostly by health workers, caregivers not returning for remaining antigens for fear of AEFI.*

- FCT level partner agency

*Poor staff strength, difficulties in accessing hard-to-reach and security compromised areas, funding gaps, and religious beliefs and norms.*

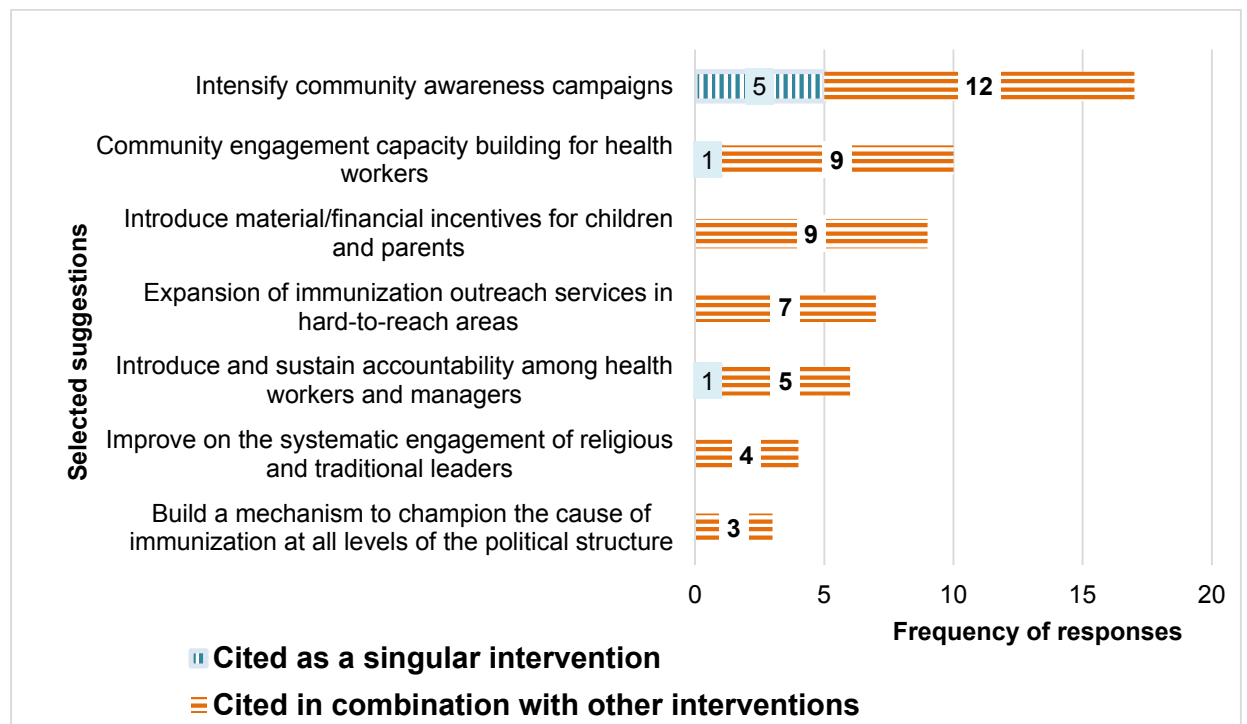
- FCT level government official

*Lack of enough awareness by the caregivers*

- Another FCT level government official

As we note from the feedback from the key informants above, some blame the demand creation problem on the gaps from the service providers' side, some blame it on the caregivers, and some widen the scope and label it as a broader systemic issues. In proffering solutions, survey participants were asked to suggest measures to sustain and create more demand for immunisation services. As shown in Figure

5.21, most of the health facility workers picked the need to intensify community awareness campaigns, 17 times in total. As stated in section 3.5.5.7 of chapter three, low community awareness facilitated the spreading of false information on vaccine preventable diseases (Oluwadare 2009:53, Falade 2014:63-65, Ojikutu 2012:228). Building the capacity of health workers on community engagement skills was the 2<sup>nd</sup> most cited suggestion, followed by the recommendation to introduce material/financial incentives for children and adults to create more demand for immunisation. However, monetisation of the demand for immunisation services is likely to be quite costly and unsustainable in the long term.



**Figure 5.21: Suggestions to create more demand for immunisation services**

The challenges listed by the key informants and the suggestions made by the survey participants are to a great extent complementary. The demand creation constraints pointed out by the key informants are closely related either to low education, lack of awareness or information, poor work attitude or performance, misconceptions about immunisation, or inaccessibility of health facilities. Therefore, as clearly identified by the survey participants (Figure 5.21), intensification of community awareness, systematic engagement of traditional/religious leaders, capacity building and accountability of the frontline health workers, and expansion of vaccination outreach

are well placed to tackle the challenges acknowledged by the high level immunisation stakeholders.

### **5.3.3. Socio-economic variables**

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The key informants identified several socio-economic determinants of immunisation in Nigeria in general and FCT in particular. A federal government official stated that income of mothers, educational levels of mothers, distance to health facilities, cost of vaccines at private health facilities, and funding levels as some of the key socio-economic factors. For interviewees from partner agencies, cultural beliefs, knowledge and awareness levels on the benefits of immunisation, accessibility of health facilities, and income level played an important role in the decision of caregivers to utilise immunisation services. One interviewee from a national level partner agency stated that:

*Out of pocket expenditure for health still makes some pregnant women not to access antenatal services and delivery in a hospital setting leading to missed opportunity for proper education on immunisation.*

Although immunisation is provided free of charge in the public health facilities, the costliness of other maternal health care services deprives the health workers of an opportunity to hold sensitisation sessions for mothers that would have come to the health facilities had they been able to afford it. For the FCT level interviewees, while they agree with the federal level informants on the income and accessibility related issues, they also pointed out an aspect of women empowerment. According to them, restrictions on women's ability to move around without the permission of their husbands, together with their financial dependence on their husbands for the transport cost to visit health facilities, determine immunisation uptake.

The interviewees further stated that poor communities, rural residents, illiterate people, women with poor education and economic status, and communities living in hard-to-reach areas are more vulnerable to be affected by the socio-economic factors. Of the five interviewees that mentioned that women have more vulnerabilities even within a given socio-economic setup, four were female. The male interviewees gave more emphasis to general income and accessibility issues. All the interviewees also expressed their opinion that access to and control over

resources affect the risk of and vulnerability to vaccine preventable diseases. They overwhelmingly suggested that because men control the resources in the household, they get to decide on the majority of issues including access to health for the family members. As a result, women and their children are more vulnerable to the risk of vaccine preventable diseases because women do not have much control over the resources required to use health services without the blessing of their husbands. One interviewee from an FCT partner agency put it as:

*Male parents most of the time determine the immunisation of their children. They give permission to mothers to take children for immunisation. They also provide the transport or some sort of financial backing to female parents to take children to the hospital whenever they are sick*

The interviewees were divided in their response to the follow-up question of whether the level of vulnerability to vaccine preventable diseases is different for females and males. 7 out of 11 said yes, there was a difference and the level of risk and vulnerability was higher for females. The rest of them (4 out of 11), however, did not perceive any gender induced difference in this regard.

Building onto the same issue, all the interviewees except one agreed that the level of individual or community empowerment influences risk and vulnerability to vaccine preventable diseases. According to the respondents, the more empowered the individual or the community, the more likely they are to seek immunisation services, thereby reducing their risk of succumbing to vaccine preventable diseases. The desired level of community empowerment could emanate from sensitisation and awareness (knowledge is power), political support (being represented by respected and patriotic elected officials at state and federal levels) and economic infrastructure such as roads, schools, and natural resources.

As stated in section 5.2.3.9 of this chapter, existing research referred to in the literature confirms the close correlation between education levels of parents and immunisation of children. The response from the interviewees to the question whether the education levels of parents influence the risk and vulnerabilities of their children with regard to vaccine preventable diseases, was resoundingly affirmative. They all agreed that the higher the education level of the parents, the more likely they were to get their children vaccinated. This assertion was also confirmed by the

house-to-house survey conducted. However, on the follow-up question of whether or not the degree of exposure to the risk was different for boys and girls, there was no consensus among the key informants. One interviewee who answered that there was indeed a sex preference in vaccinating a child, stated that some parents:

*...allow the boy child to be vaccinated rather than the girl child because they feel that vaccines are meant to target female fertility.*

Another interviewee agreed that the coverage difference between the two sexes is quite minimal, affirming that parents bring their children without sex prejudice and vaccinators discharge their duties without discrimination. One of the interviewees with gender expertise further stated that in some households, where the mother has no or little education, there might not be much motivation to have her child vaccinated regardless of the child's sex.

A similar question was asked regarding the influence of employment opportunities on vulnerability to the risk of vaccine preventable disease. The answer was mostly 'yes' implying that those with gainful employment are more likely to have their children vaccinated and vice versa. Here also there was disagreement among the interviewees on whether or not there is a difference between females and males in relation to employment opportunity and vulnerability to disease. 5 out of 11 said 'yes', there is a difference, while the remaining 6 said there was no difference. For those who believed that there is a difference, their point of contention was that women who engage in income generating activities are able to pay for transport to vaccination posts and extra costs associated with vaccination from their own purse. If they are in the formal sector, they may be covered by insurance from their employers.

All interviewees agreed that socio-cultural factors affect the health-seeking behaviour of parents in relation to their decision on immunising their children. When asked to elaborate, they provided the instances below, presented verbatim. Responses that cover similar themes are provided sequentially. Broadly, the answers touched on issues of affordability, empowerment and most dominantly the influence of culture on the society.

Further to the matter of affordability for most communities in poor socio-economic circumstances, going to the health facility is not foremost in their minds. They first try to find a solution from alternative sources such as traditional or religious systems, and not only because they are discouraged by the perceived or real cost of seeking out modern health services.

*The belief or concern that seeking health from health facilities will cost more than seeking alternate care.*

- Federal level government official

Some women, even if they can afford to or are convinced that they need to utilise the health services for their children, are prevented by restrictions on their movement, as the two answers below illustrate.

*Purdah (seclusion, exclusion) that restrict women's movement outside the household, women's unequal status in society.*

- Officer from international partner agency

*In some parts of the northern region of Nigeria, women are not allowed to go out of the house until after 40 days of delivery. This affects women health-seeking behaviour.*

- Officer from private sector partner agency

As noted from the following responses, the power of cultural beliefs on immunisation was emphatically underlined by the majority of the key informants.

*People live by their cultural beliefs and so they will resist anything that is contrary to their customs. It will take a lot of education, sensitisation and dialogue to change their mindset.*

- Officer from international partner agency

*In some cultures, people prefer traditional medicine to modern methods like vaccination.*

- Officer from international partner agency.

*Some cultures believe in non-orthodox treatment and as such, do not access health care. Some believe that seeking health care is a taboo.*

- Officer from regional partner agency



*Some cultures try to keep away from the orthodox injectable because it has some effect on their beliefs, so they keep away from immunisation.*

- FCT level partner agency

*Certain cultures do not share the belief in vaccine preventable diseases.*

- FCT level government official

*Certain cultural or religious beliefs in the country abhor vaccination.*

- Officer from international partner agency

*Because of poverty, ignorance and illiteracy most people in this group keep away from orthodox medicine.*

- FCT level government official

The researcher asked a follow-up question on whether or not these socio-cultural factors affect the health-seeking behaviour of men and women differently, and the majority (7 out of 11) answered 'yes.' The main explanations were that the culturally-induced movement restrictions do not often apply to men, because men control the resources. On the other hand, those that did not see any differential effect among men and women clarified their position by stating that cultural beliefs and their effects are the same for all genders living in the same community. One interviewee even took it to a different dimension. He stated that the effect is there, but it does not favour men in particular. This is because, according to the interviewee, men are the gatekeepers of the home in most of the cultures in the country.

As members of the larger community they reside in, the health facility workers were asked to assess their own socio-economic status. As depicted in Table 5.25, the majority of them assessed their status as medium (84.6% for both females and males combined). As described earlier in section 5.2.3.16 of this chapter, the majority (66.9%) of the household survey participants also assessed their socio-economic status as medium. On the other hand, 23.1% of the male health workers at health facilities perceived their socio-economic status as low, while none of their female counterparts gauged theirs as such.

**Table 5.25: Self-assessment of overall socio-economic status by health facility workers**

Rank	Female		Male		Total	
	#	%	#	%	#	%
Low	0	0.0%	3	23.1%	3	11.5%
Medium	12	92.3%	10	76.9%	22	84.6%
High	1	7.7%	0	0.0%	1	3.8%
Total	13	100.0%	13	100.0%	26	100.0%

The responses on socio-economic status corresponded with the self-assessment feedback on incentives and remuneration arising from the employment situation of the surveyed health facility workers. As summarised in Table 5.26, most (76.9%) of the responders overall assessed their income as somehow fair and able to sustain a modest living. Here also the male responders appeared less satisfied than their female counterparts. 23% of male responders found their remuneration and incentives inadequate and demotivating as compared to 7.7% of the females. This finding on salary adequacy coupled with the self-assessment of socio-economic status suggests that, probably, women are more appreciative of their income generating occupation than men.

The overall reading of the feedbacks from these health workers did not paint a very bad picture as far as their own socio-economic stature is concerned. This finding is not altogether in tandem with what was stated in section 3.5.5.2 of chapter three, namely that, in Nigeria, health workers' strikes are rampant due to delays, inadequacy or non-payment of salaries. However, the fact that almost half (46.2%) of the health facility workers responded that their salary is not paid timely is a challenge that begs solution from the authorities.

**Table 5.26: Assessment of incentives and remuneration received by health facility workers**

Response	Female		Male		Total	
	#	%	#	%	#	%
Quite adequate and motivating	0	0.0%	2	15.4%	2	7.7%
Somehow okay and can sustain a living	12	92.3%	8	61.5%	20	76.9%
Inadequate and demotivating	1	7.7%	3	23.1%	4	15.4%
Total	13	100.0%	13	100.0%	26	100.0%

## Influential figures in the community

For 84.6% of the male and 53.8% of female health facility workers, traditional/community leaders were considered the most influential figures whose opinion is trusted by the community they serve (Table 5.27). As stated in section 5.2.3.17 of this chapter, the same group of influencers were also put at the top of the list by the house-to-house survey participants. For 23.1% of the female participants, health experts rank second, followed by 15.4% and 7.7% for religious leaders and government authorities respectively. For male participants, government authorities and religious leaders were picked equally by 7.7% of the participants.

**Table 5.27: Most influential/trusted figure in the community**

Response	Female		Male		Total	
	#	%	#	%	#	%
Government authorities	1	7.7%	1	7.7%	2	7.7%
Health experts	3	23.1%	0	0.0%	3	11.5%
Religious leaders	2	15.4%	1	7.7%	3	11.5%
Traditional/community leader	7	53.8%	11	84.6%	18	69.2%
Total	13	100.0%	13	100.0%	26	100.0%

The majority (9 out of 11) of key informants were of the opinion that women are more inclined to consult traditional healers and therefore seek alternative therapies for vaccine preventable diseases. Among women, the key informants believed that those that are poorer, uneducated, or lack financial means are more susceptible to attend to the services of traditional healers. Two key informants that responded that both men and women equally consult traditional healers defended their response by stating that such decisions are dependent on the faith of the person rather than his or her gender, money or education. An interviewee that answered it is mostly men that resort to alternative therapies for vaccine preventable diseases, based his premise on the fact that in a patriarchal society like in Nigeria, it is predominantly men that can interact with traditional healers more easily and publicly.

### 5.3.4. Gender variables

Some specific questions were presented to the health facility workers to assess their perception, appreciation and competency on gender related issues. These are discussed in the following sub-sections.

#### 5.3.4.1. Sex preference in immunising a child

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For the question regarding if the responders believed the community gives priority to one sex or the other in vaccinating a child, the overwhelming majority (96.2%) responded that they did not believe the community has any particular preference but rather gives both sexes equal treatment. This result is commensurate with the house-to-house survey result presented under section 5.2.3.14 of this chapter.

#### 5.3.4.2. Training on gender issues

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As stated in section 2.7 of chapter two, gender is a crucial variable and determinant of health in general and immunisation in particular (WHO 2010:14-16, Men et al 2012:22, Jones et al 2008:20-28). The participants were asked if they received any training on gender related issues. As shown in Table 5.28 below, 61.5% of them did not receive any training at all while 26.9% received some training but they did not assess it to be adequate. Only 11.5% of the surveyed health facility workers found the training adequate.

**Table 5.28: Training received by health facility workers on gender issues**

Response	Female		Male		Total	
	#	%	#	%	#	%
Not at all	9	69.2%	7	53.8%	16	61.5%
Yes, but not adequately trained	3	23.1%	4	30.8%	7	26.9%
Yes, adequately trained	1	7.7%	2	15.4%	3	11.5%
Total	13	100.0%	13	100.0%	26	100.0%

Discussing this aspect with some of the key informants, they admitted that, most of the time, training on gender issues is given at the higher level and to selected officers. Such training is mostly confined to those who are considered as gender focal points or women. The training is not cascaded down to the operational and frontline levels in any organised way.

#### 5.3.4.3. Gender responsiveness of immunisation

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The key informants were asked to describe their understanding of gender responsiveness regarding immunisation and the specific gender norms, roles or

relations in the community that may contribute to low immunisation coverage. The most frequently cited issue was women's constrained agency in the household to make decisions, such as ability to leave the house and have their children vaccinated. According to the responders, gender inequalities are exacerbated by the lower education, lower income, and more limited access to information that women have to endure in the country. All except one interviewee agreed that these gender norms affect men and women differently. The interviewees confirmed that women are disproportionately and negatively affected by these norms, which is a manifestation of the overall social fabric in favour of men in economic, political and social spheres.

One interviewee described a real-life experience where a woman he had met in an immunisation session overruled the decision of her husband and refused to get her child vaccinated for religious reasons. By the interviewee's own admission such encounters are rarities, because in most cases the decision of the men is unrefuted by the women, especially in the northern part of the country. All the interviewees agreed that the daily activities of women and men affect their vulnerability to vaccine preventable diseases at varying scale. In elaborating on their responses, although some women may have the permission of their husbands to vaccinate their child, if they are engaged in farm work or petty trading activities on top of their household responsibilities, they may be too busy to attend immunisation sessions. Regarding men, whether or not they are engaged in income generating activities, they tend to leave the responsibility for child health care to their wives. Such delegated responsibility may not necessarily be accompanied by the resources women require to fulfil it.

In chapter two, section 2.7.2, it was discussed that the general perception of immunisation from a gender perspective is that it is gender neutral. The key informants were asked to give their overall assessment on the gender sensitiveness of the immunisation system in Nigeria in general and FCT in particular. It should be pointed out once again that the concept of gender can be very complex, elusive or misunderstood by a number of officers even at higher levels. The answers obtained also reflected the variation in interviewees' understanding of the gender concept or its relations with the immunisation system. One interviewee from the federal level thought the immunisation programme in Nigeria was 'gender specific.' Four interviewees from the federal level partner agencies and one from the FCT labelled

the immunisation system as 'gender sensitive'. One informant from the federal partner agency accorded the immunisation system the most favourable category as 'gender transformative.' Five of the interviewees including those with gender expertise ranked the system as 'gender blind.'

The interviewees were asked to provide explanations for their assessments which are summarised as follows:

- For the federal level government official, the immunisation programme is gender specific because women are mostly the caregivers who take the children to health facilities.
- Those that labelled the immunisation programme as gender sensitive argued that:

*The country's immunisation policy of 2009 clearly stated that no vaccination preference should be given to a particular gender. Male and female children have an equal right to be vaccinated.*

- Officer from international partner agency

*On paper, there is an encouragement for women to use the services, but in reality, their socioeconomic status may not allow them.*

- Officer from international partner agency

*There is gender sensitiveness for immunisation in FCT.*

- FCT level government official

*We do not have enough data on gender inequality. Therefore, we can say that the programme is gender sensitive.*

- Officer from regional partner agency

- Those that labelled the immunisation programme as gender blind justified their position stating that:

*The Nigerian immunisation programme only pays lip-service to issues of gender equality as there is no proper framework for implementation and monitoring.*

- Officer from international and regional partner agencies

*The immunisation system in Nigeria is not gender selective. Every gender has an equal opportunity if she or he avails herself/himself at the vaccination post for immunisation*

- FCT level partner agency and government official
- From those that labelled the immunisation programme as gender transformative:

*All children are considered for immunisation equally regardless of gender.*

- Officer from international partner agency

Comparing the rankings and explanations given above with the interpretations of the gender responsiveness assessment scale discussed in section 2.7 of chapter two, incongruity is observed particularly by those who labelled the programme as gender sensitive, gender specific or gender transformative. Actually, in most cases, the explanations provided by the interviewees fit into the category gender blind or gender neutral.

On the other hand, as shown in Table 5.29, 69.2% of the health worker survey participants stated that, from their experience, immunisation was ‘gender neutral’ 23.1% of them rated immunisation practices as ‘gender sensitive.’ 7.7% of the participants categorically responded that they did not know how to answer this question. Statistically, the finding from the health worker’s survey appeared to resonate with the majority of the key interview informants’ verdict given the close ramification and contextualisation of gender blindness and gender neutrality. The caveat here also is that the gender concept can be too complex to be understood, especially by the frontline health workers. Moreover, gender blindness in policy and strategy formulation and operational implementation does not necessarily mean that the gender impact of the programme will be neutral.

**Table 5.29: Gender responsiveness of immunisation system**

Immunisation is:	Female		Male		Total	
	#	%	#	%	#	%
Gender blind	8	61.5%	10	76.9%	18	69.2%
Gender sensitive	4	30.8%	2	15.4%	6	23.1%
I don't know	1	7.7%	1	7.7%	2	7.7%
Total	13	100.0%	13	100.0%	26	100.0%

#### 5.3.4.4. Efforts to conduct gender analysis and mainstreaming

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Regarding availability of a gender policy in their respective organisations, 2 interviewees gave an outright 'No', 6 interviewees confirmed that they have one at global level but not adopted to the local context, and 3 interviewees responded that they had a local gender policy specific to their office. It was remarkable to note that two officers working for the same office but with different specific responsibilities had opposing responses on the existence of a gender policy in their organisation.

The interviewees were also asked to describe if any effort was made to mainstream gender in their respective organisations. Responses below that reflect a similar essence are put sequentially.

Some responses completely denied the need to conduct gender analysis and mainstreaming, citing as reasons either that gender is a non-issue in immunisation or that equal opportunity was already offered to any child during vaccinations. The following three interviewees seemed to be contented with the status quo.

*The effort in this regard is expressed through encouraging the involvement of women in ward development committees, use of women groups to sensitise mothers during house visits, involvement of women groups in immunisation defaulter tracking, provision of services related to women alongside immunisation services.*

- Federal level government official

*Every gender has equal access to immunisation services. There is no gender discrimination for immunisation services. As such, there is no specific resource needs for a particular gender.*

- Officer from international partner agency

*Every child has the right to vaccination.*

- Officer from private sector partner agency

On the other hand, for two interviewees quoted below the fact that their organisation collects some sex disaggregated data is tantamount to mainstreaming gender. While collecting such data is a small step in the right direction, it is far from what needs to be done.



*There is no evidence to show that a particular gender is given more preference in implementation of the immunisation programme. However, gender is captured in all immunisation data tools and surveys.*

- Officer from international partner agency

*Gender issues have been integrated into the organisation's strategic document. The immunisation specific gender strategy focuses on sex disaggregation of programme data.*

- Officer from international partner agency

Some responders quoted below stated that efforts were put in place by their organisation to tackle gender barriers to immunisation, although these efforts do not appear to be integrated or sustained.

*The organisation monitors the aspect of gender equity in immunisation service provision. It also promotes women to be treated equally and receive services when they bring their children for vaccination.*

- Officer from international partner agency

*The participation of women in most programmes is encouraged by the organisation in ensuring that women are given preferential treatment over men.*

- FCT level partner agency

*The government incentivises mothers to participate in immunisation service programmes such as conditioned cash transfer to the poorest of the poor. We also run special programmes to identify and award the best breastfed and fully immunised child.*

- FCT level government official

*The health programme officers were trained to mainstream gender.*

- FCT level government official

From the responses above, it was observed that there is very shallow understanding by most of the high-level immunisation policy makers and strategic managers of what gender mainstreaming entails. Some responders appeared to be content with just a slogan about their organisation's commitment to gender equality, denouncing gender discrimination or mere provision of fringe handouts to mothers for meeting some immunisation milestones. There was also a general misunderstanding that

the gender issue is about women only. In a nutshell, the instances provided by the responders were a far cry from a well thought out gender mainstreaming effort.

Survey participants were also asked if there had been any effort to conduct gender analysis and gender mainstreaming at the health facility they work for. Notwithstanding that such activities could be complex to comprehend, let alone to implement, the responses from the participants were largely incongruous with the expected reality on the ground. 69.2% responded that there has not been any such effort in their health facility while 15.4% felt that the efforts were inadequate. The remaining 15.4% adjudged that the efforts were adequate (Table 5.30).

**Table 5.30: Gender analysis and mainstreaming effort at the health facility**

Response	Female		Male		Total	
	#	%	#	%	#	%
Not at all	9	69.2%	9	69.2%	18	69.2%
Yes, but inadequately	3	23.1%	1	7.7%	4	15.4%
Yes, adequately	1	7.7%	3	23.1%	4	15.4%
Total	13	100.0%	13	100.0%	26	100.0%

#### **5.3.4.5. Gender equality and empowerment proxies**

The questionnaires for the health facility workers included questions to assess the degree to which gender empowerment prevails in decisions on economic and health-related issues by the participants in their respective households. These are discussed under the following subthemes.

##### **Decision-making on financial issues**

As shown in Table 5.31, for the question regarding who makes decisions about buying/selling small items in their household, 61.5% of females responded that they decide themselves, 30.8% of them stated that they decide jointly with their spouse and the remaining 7.7% said their husbands unilaterally decide. On the men's front, it appears that 76.9% of them delegate decisions on small transactions to their spouses or decide jointly. With respect to major transactions, both female and male participants (46.2% each) decide consultatively with their spouses. Women's

decision making on their own diminishes substantially (by 38.5%) when we compare the decisions on small (61.5%) and major (23.1%) transactions.

Almost all survey participants (100% of females and 92.3% of males) asserted that they were allowed to keep some money aside for use at their disposal. Overall, the ability among men and women to make decisions on either small or major transactions seems to follow the same pattern as in the household survey on similar empowerment proxy indicators and discussed under section 5.2.3.18 of this chapter. However, in relative terms, because the women health worker survey participants have a job, these women seemed to have a better voice in decisions about the household disposable income than their counterparts in the household survey.

**Table 5.31: Decision-making process on buying/selling household items**

Response	Decision to buy/sell small items						Decision to buy/sell major items					
	Female		Male		Total		Female		Male		Total	
	#	%	#	%	#	%	#	%	#	%	#	%
Joint	4	30.8%	5	38.5%	9	34.6%	6	46.2%	6	46.2%	12	46.2%
Me	8	61.5%	3	23.1%	11	42.3%	3	23.1%	4	30.8%	7	26.9%
Spouse	1	7.7%	5	38.5%	6	23.1%	4	30.8%	3	23.1%	7	26.9%
Total	13	100.0%	13	100.0%	26	100.0%	13	100.0%	13	100.0%	26	100.0%

The survey also showed that, to a varying degree, there was consultation among the spouses on what to spend the household money on. However, as shown in Table 5.32, while 76.9% of the female participants stated that their husbands consult them on such financial matters, 92.3% of the males responded that their wives consult them on similar issues. Though the difference is marginal, the women seemed to consult their husbands more than they were consulted by their husbands. Here also the pattern in the responses to this question is similar to some extent to the pattern in the house-to-house survey discussed under section 5.2.3.18 of this chapter.

**Table 5.32: Consultations with spouse on what to spend the household money on**

Response	Female		Male		Total	
	#	%	#	%	#	%
Not at all	2	15.4%	0	0.0%	2	7.7%

Response	Female		Male		Total	
	#	%	#	%	#	%
Not applicable	1	7.7%	1	7.7%	2	7.7%
Yes, always	1	7.7%	6	46.2%	7	26.9%
Yes, sometimes	9	69.2%	6	46.2%	15	57.7%
Total	13	100.0%	13	100.0%	26	100.0%

### Decision-making on family health issues

Most of the health facility workers surveyed (53.8% females and 61.5% males) responded that they and their spouses jointly decide on health services for their child (Table 5.33). The female health workers appeared to make such decision more independently when compared to the pattern of responses from their male counterparts as well as from the female participants in the house-to-house survey. This seems to validate the idea that women who are economically empowered tend to take health decisions for their family more independently.

**Table 5.33: Decision-making on seeking health services for the child**

Decision made by:	Female		Male		Total	
	#	%	#	%	#	%
Jointly	7	53.8%	8	61.5%	15	57.7%
Myself only	5	38.5%	4	30.8%	9	34.6%
Other	1	7.7%	0	0.0%	1	3.8%
Spouse only	0	0.0%	1	7.7%	1	3.8%
Total	13	100.0%	13	100.0%	26	100.0%

Virtually all the key informant interviewees agreed that women's and men's responsibilities at household, community and workplace levels influence their vulnerability to vaccine preventable diseases. However, when it comes to seeking and using immunisation services, just like the health worker's survey participants, the interviewees pointed out that women disproportionately dominate the attendance at immunisation sessions. According to the verbatim comment from one interviewee:

*Women seek immunisation services more because they are the ones always with the children. They are the ones who eventually take the children to health*

*facility for immunisation. They are the ones vaccination teams meet at home when they come for vaccination.*

Only one female key informant differed in her opinion that men demonstrate immunisation seeking behaviour more than women. Probing her on her response, she clarified that men as bread winners for their household tend to decide on all affairs of the household, including the health of family members.

### **Gender-based violence**

In spite of the literature quoted in section 5.2.3.17 of this chapter regarding the gender-based violence pattern in Nigeria, virtually 100% of both female and male responders expressed their personal belief that spouse beating is not justified under any circumstances. Barring the issues of transparency in answering such sensitive questions, the response from the health facility workers did not come as a surprise given their educational level and exposure.

### **5.3.5. Way forward proposed by health officials**

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Pursuant to the gaps observed in addressing the questions discussed especially under section 5.3.4.4 of this chapter, the key informants were asked to elaborate in a more systematic and sustainable way on any future plans to address socio-economic and gender determinants of immunisation in their respective organisations. Nine of them responded that there were such plans, one informant responded 'not really' and another said she was not aware that there was one. Those that said there were such plans explained their responses as follows:

*We plan to institute a structure for engagement of the community members to increase awareness on immunisation while providing other primary health care services. The plan aims to elaborate and devise robust community engagement mechanism with line-listing of eligible children and structured data harmonisation meetings between community leaders and health workers. There is also a plan to redesign the child health card to monitor return for services with a portion kept at the custody of traditional leaders.*

- Federal level government official

*The federal government has several strategies to take vaccination to communities particularly in the rural, inaccessible and security compromised areas. These include interventions such as routine immunisation intensification, hard-to-reach project, and Local Immunisation Days (LIDs).*

- Officer from international partner agency

*Everybody is given equal opportunity to explore their potential and be leaders. There is no particular issue in relation to sex identities as long as any caregiver demonstrates interest and capability to utilise immunisation services.*

- FCT level government official

*Efforts are underway to integrate global polio gender strategy into all aspects of immunisation and vaccine preventable diseases surveillance activities.*

- Officer from international partner agency

*Our organisation is a gender-transformative organisation and women are always given priorities in employment and other opportunities.*

- Officer from international partner agency

*In order to address equity issues, the office is working on providing services to the underserved populations. These include immunisation in urban slums, border communities, scattered, hard-to-reach, nomadic and migrant and farming populations. For gender issues, the organisation plans to focus on interventions that target women groups in small cooperatives that will address their poor socioeconomic status to be able to fend for themselves and their families.*

- Officer from regional partner agency

*In our organisation, gender balance is something we treat with all seriousness. Women issues are encouraged to be included in every aspect of the organisation.*

- FCT level partner agency

*Our office gives everybody equal opportunity to explore their potential and be leaders so long as one has the requisite qualification and experience.*

- FCT level government official

*We plan to conduct awareness campaigns on gender equality.*

- FCT level government official

Although the researcher was not presented with any substantive plan mentioned by the key informants, from their brief response stated above, the plans appear to be about business as usual to a great extent. The aspect of gender in particular seems to have been ignored completely or implied in a very scanty way if one goes by the explanations provided by them above. In section 6.4.1 of chapter six, the researcher will provide recommendations to key stakeholders that aim to address the socio-economic and gender related barriers to immunisation.

#### **5.4. CHAPTER SUMMARY**

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This chapter presented the data collected from households and health service providers by means of surveys and key informant interviews. As described in the profiling of survey participants and interviewees, a wide spectrum of responders representing diverse groups with regard to sex, age, education and income levels and professional occupations were involved.

The socio-economic and gender variables identified from the data collected were described and analysed by mixing qualitative and quantitative methods. The analyses were presented under different themes in order to logically address the research question.

Overall, the analysis showed that there is close association between immunisation coverage and most aspects of socio-economic and gender variables. It was also evident from the key informants' responses that the appreciation, understanding, determination and application of socio-economic variables in general and gender issues in particular were incongruent, not only inter-organisationally but also intra-office. For most part, the reviewed key documents were found to be largely gender blind or gender neutral, which agrees with the feedback from the majority of household and health facility survey participants.

Chapter six will synthesise the key findings from the research to lay the foundation for drawing conclusions and recommendations.

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## CHAPTER SIX: SUMMARY, CONCLUSION AND RECOMMENDATIONS

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### 6.1. INTRODUCTION

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This chapter summarises the key findings and issues, draws overall conclusions and makes recommendations regarding actions needed from key immunisation stakeholders. It synthesises and triangulates the findings detailed in chapter five with primary and secondary data gathered by using the methodology described in chapter four, along with insights gained from the relevant literature and situation analysis as discussed in chapters two and three respectively. To facilitate the synthesis of major discussion points, the summary sections of this chapter will be grouped along thematic lines in order to address the research questions as outlined in chapter one. To this end, it is important to reiterate what the key research questions were.

The major research question this study aspired to answer was what the socio-economic and gender determinants of immunisation were and how they affected immunisation coverage in FCT. The following secondary questions were also formulated to complement the core research question:

- i. What is the historical and present immunisation coverage pattern in FCT in relation to the national coverage and global target?
- ii. What is the relationship of social, economic and gender variables with immunisation systems in FCT?
- iii. What are the strategic gender needs that must be analysed in relation to immunisation in FCT?
- iv. Do parents perceive that they are empowered enough to overcome socio-economic barriers in order to influence the demand and supply side of immunisation in terms of equity, access, adequacy, affordability and sustainability?
- v. What specific role do socio-economic and gender factors have in the vaccination seeking behaviour of a household?



- vi. Is gender mainstreamed in the policies and practices of the immunisation system at Federal and FCT levels?

Section 6.2 below addresses these research questions by clustering them into distinct thematic areas. Section 6.2.1 summarises the key immunisation coverage issues thereby addressing research question number 1. The main research question, which is also rephrased in sub-question number 2 regarding identifying the socio-economic and gender determinants of immunisation, is discussed under section 6.2.2. Research questions 3 and 4 are covered under section 6.2.3, which deals with the role and relationship of gender as well as identifying the strategic gender and empowerment needs in relation to immunisation in FCT. Section 6.2.4 addresses research question number 5 and recaps the specific role that socio-economic and gender variables play in shaping the vaccination seeking behaviour of a household. Finally, research question number 6 will be dealt with in section 6.2.5, summarising the responses of health professionals regarding efforts to mainstream gender in the policies and practices of the immunisation system.

## **6.2. SUMMARY OF KEY FINDINGS ADDRESSING THE RESEARCH QUESTIONS**

### **6.2.1. Assessing the immunisation coverage focusing on FCT**

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Measuring vaccination coverage produces one of the key indicators to assess whether progress is made in reducing child morbidity and mortality (NPC & ICF 2019a:224). Reducing child morbidity and mortality through vaccination in its turn is one of the most vital and cost-effective public health interventions contributing to the attainment of Sustainable Development Goal 3 (SDG-3) (UNSDG 2020).

In this study, the vaccination status of the FCT was reviewed by perusing the latest official immunisation coverage reports. As indicated in section 3.5.4 of chapter three, overall, the immunisation coverage of the territory is much better than the national average for almost all antigens. In chapter five, section 5.2.2, the key vaccination coverage indices were analysed in comparison with the two recent national immunisation and demographic and health surveys. Although the timeframes of the surveys vary, the results for the vast majority of the FCT immunisation indicators were below the global standard in both 2015 and 2020. The dropout rates for each

of the wards that the research covered were compared against the standard threshold of below 10%. Although there was a major variance in dropout rates among the wards, based on the sampled target population the overall rate of 9.9% for FCT appeared encouraging.

As pointed out in table 5.2 of chapter five and section 3.5.4 of chapter three, taking the results for Penta 3 as a proxy for vaccination coverage, FCT had a coverage of 65.7% whilst the national average for the same antigen was 33.3% (NBS & UNICEF 2017:56). Such results can be deceiving unless they are measured against international standards for national targets. The results may also lead to complacency, as was evident during the key informant interviews when some officials seemed to boast about their ratings in comparison with the rest of the country (section 5.3.2 of chapter five). However, as noted in chapter two, section 2.5.3, the global vaccine action plan had set the standard of 80% coverage for DPT3/Penta3 by the end of 2015 for every district (WHO 2016c:10). Measured against this milestone, FCT did not achieve the target. The 2020 global target is even higher in that all districts should achieve 80% for all antigens. According to the demographic and health survey conducted in Nigeria, the 2018 achievement of FCT for DPT was 73.5%, and 49.6% for all basic vaccinations (NPC & ICF 2019b:29). Although no official coverage survey has been conducted yet for 2020, according to the last PAPA-LQAS (Programme Assessment for Performance Management and Action – Lots Quality Assurance Sampling) report compiled for the second quarter of 2019, the territory is not on track to meet the desired performance on routine immunisation or quality indicators, having scored 73% for the proportion of children appropriately immunised as per vaccination card records (NPHCDA 2019b:32, Nursing World Nigeria 2020).

Given its comparative advantages as the capital of the nation with relatively better access to political, social and economic infrastructures, FCT's immunisation performance would be expected to meet the international standards and even over-compensate to improve the abysmal national average. This is why it was necessary to understand what the key socio-economic determinants of immunisation were that needed be addressed in order to improve immunisation coverage in the territory. This is notwithstanding the fact that socio-economic and gender issues are not the only factors that contribute to low immunisation coverage.

## **6.2.2. Identifying the socio-economic and gender determinants of immunisation**

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As described in chapter five, sections 5.2.1.2 and 5.2.3, this research has identified several socio-economic determinants of immunisation using various data collection and analysis methods discussed in section 4.6 and 4.7 of chapter four. Bringing these determinants to light was crucial to understand their relevance to and degree of association with immunisation coverage, and assess if there were differences in vulnerability or vaccination outcomes arising from the interventions induced by socio-economic and gender variables (Blas 2011:2). Moreover, analysing these variables can pave the way to address inequities that exist in immunisation service delivery. The existing inequities in accessing and utilising immunisation services can be made more visible by dissecting the various elements of gender and other socio-economic parameters.

From the literature reviewed in chapters two and three, the surveys conducted on households (section 5.2 of chapter five) and health facilities, and the interviews held with key informants (section 5.3 of chapter five), over 40 socio-economic and gender variables were identified and analysed using different types of methodologies. Further to the descriptive analysis of these variables vis-à-vis the corresponding immunisation indices under the household survey (section 5.2.3 of chapter five), 35 exposure variables were dichotomised into 38 outcome variables in order to conduct a 2x2 table odds ratio analysis. As compiled in Appendix 14, 18 outcome variables were found to be statistically significant for both access to and utilisation of immunisation services. Three variables were statistically significant from an access perspective only, while two of them were statistically significant utilisation wise. 15 variables were not statistically significant for either access or utilisation of immunisation services.

Although the outcomes were dichotomised for ease of statistical analysis, a large number of independent variables affecting immunisation access and utilisation were identified. These predictor variables could affect the outcome individually without necessarily having any correlation with another independent variable. Recognising these facts, a logistic regression analysis was conducted on nine variables that were selected based on the statistical outcome of the 2x2 OR table and avoiding duplication of variables that implied similar concepts. The outcome of the logistic

regression analysis for immunisation access and utilisation was presented in chapter five, section 5.2.4.

The next section succinctly synthesises the association of the various socio-economic and gender variables with immunisation.

### **6.2.3. The role and relationship of socio-economic and gender determinants in immunisation**

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Gender issues are often implied within socio-economic variables. They are intertwined in the sense that what affects the socio-economic aspects of a society has gender ramifications, and vice versa (Kabeer 2012:7). As Hilber et al (2010a: 16-18) pointed out, a specific socio-economic barrier to immunisation has a gender dimension. After all, as noted in section 2.8 of chapter two, socio-economic identities are inherently gendered (Mama 2001:69). A mother or a father who perceives their socio-economic stature as relatively better than the majority of the community tends to feel more confident and manifest a sense of empowerment to tackle the immunisation barriers. The variables that define the role and relationship of socio-economic and gender determinants with immunisation are summarised in the following sections. These variables are clustered under major themes in order to facilitate the triangulation of key findings from various data sources.

#### **6.2.3.1. Accessibility and service delivery**

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Under accessibility and service delivery, the findings gathered from key stakeholders on infrastructure and quality of the facility that renders immunisation services are discussed. The ease of access to a health facility partly depends on the distance that the caregivers reside away from such a facility. This research found that residential setting was an important determinant affecting access and utilisation of immunisation services. Health facilities in rural areas are sparsely distributed compared to urban areas (Armah et al 2018:12, UNDP 2016:16, Holte et al 2012:384, Oluwadare 2009:55). As a result, rural dwellers are expected to travel long distances, thus having to pay higher transport costs or taking many hours to make it to the immunisation sessions on time. As shown in section 5.2.3.2 of chapter five, 61% of the household participants lived in rural settings. The immunisation indices from the surveyed households in urban areas were found to be better than

in the rural areas. The 2x2 table odds ratio analysis discussed under section 5.2.3.2 of chapter five yielded statistically significant results for both access and utilisation outcomes. The logistic regression analysis also delivered a strong statistical association with immunisation utilisation (section 5.2.4.1 of chapter five) but not with immunisation access (section 5.2.4.2 of chapter five).

The residential location patterns of the service providers were similar to those of the service users. 57.7% of the health facility workers resided in rural areas (table 5.21 of chapter five). As discussed in section 5.3.2.1 of chapter five, for the majority of the health workers their place of work was accessible without much difficulty from a time and distance perspective. However, the health workers were of the opinion that access to the health facilities for the community was among the top barriers to immunisation. Both the service seekers and service providers agreed that the ruggedness of the roads, and the scarcity of transport means in the rural areas and urban outskirts were among the main obstacles hindering access of the facilities (sections 5.2.3.13 and 5.3.2.3 of chapter five). Driven by the nature of the roads and lack of adequate transportation, the surveyed households complained about the high cost of transport to visit the nearest health facility. Such indirect costs were also recognised by the health workers as well as the key informants as an obstacle to immunisation given the subsistence income of the majority of households (section 5.3.2.1 of chapter five).

Both the health seekers and health service providers were asked to assess the quality of immunisation services at the health facility. The service seekers cited the inconvenience of vaccination hours and long waiting times at the health facilities as being among the top five barriers to immunisation (Table 5.8). According to the descriptive analysis provided in section 5.2.3.13, those that cited long waiting hours as a hindrance for vaccination had a very high dropout rate (21.4%) associated with their response. However, all but one of the surveyed health workers did not agree with this complaint, stating that their health facility operated at normal working hours and thus implying that waiting time was not an issue at their facilities (section 5.3.2.1 of chapter five).

Among other factors, the unwarranted attitude of some health workers was disclosed by the key informants as one of the factors that inhibited greater demand for immunisation (section 5.3.2.4, chapter five). However, as shown in Table 5.8

(section 5.2.3.13 of chapter five), this challenge was among the least cited by household survey participants as a reason for vaccination non-compliance. On the other hand, the majority (69.2%) of the health facility workers assessed their offices as staffed with competent and skilled personnel to provide quality immunisation services (Table 5.22 of chapter five). In the same vein, as described in section 5.3.2.2 of chapter five, key informants appeared to agree with the frontline workers that the immunisation workforce in FCT has the requisite technical competency to discharge their responsibilities.

In order for a health facility to provide quality immunisation services, it is imperative that the physical environment be conducive. It should also have adequate stocks of vaccines and supplies. As stated in section 5.3.2.2 of chapter five, 84.6% of the health workers surveyed were appreciative of their respective facilities in the sense that the buildings were fit for purpose. However, these survey participants were much less impressed with the adequacy of supplies and vaccines, with 57.7% ranking it as satisfactory. It is also worth noting that only 38.5% of male responders felt that their facilities were appropriately equipped compared to 76.9% of female responders. On the other hand, the feedback from the key informants at FCT and national level was overwhelmingly positive, with 91% of them stating that the health facilities were adequately stocked with vaccines and devices. This wide gap in assessment between female and male responders at health facility level, as well as between the health professionals at health facility level and FCT/national level, could either arise from information gaps or perceptions and needs that have to be addressed.

Another defining factor for the provision of a high level of immunisation services is the qualification and experience of frontline workers. As shown by figure 5.19 of chapter five, 85% of the surveyed workforce at health facility level had at least 5 years of experience on the job. 81% of the responders also believed that the training on vaccine preventable diseases they received was adequate. As stated in sections 5.3.1.1. and 5.3.1.2 of chapter five, 100% of the health workers had college level education and over 12 years of work experience on average. However, only 50% of the responders felt that they had adequate knowledge of the local language, while the majority of the surveyed households (>75%) primarily spoke local languages as described in Table 5.1 of chapter five. The language barrier between health seekers and health providers is expected to detract from the quality of immunisation services

since not all communities, especially in rural areas, are expected to be able to communicate in English.

### **6.2.3.2. Demographic and social norms**

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In this section, demographic and social issues such as sex, age, marital status, religion, ethnicity, and the role of traditional/religious leaders in relation to immunisation are covered.

As discussed in section 5.2.1.1 of chapter five, 91% of the household survey participants were females, which could be attributed to the tendency to delegate the affairs of children's health to mothers (Ntoimo & Isiugo-Abanihe 2013:11). However, there was more equitable representation of eligible children in terms of sex with 53% and 47% being female and male respectively. According to the descriptive analysis on association of sex of the eligible child with immunisation discussed in section 5.2.3.1 of chapter two, the dropout rate associated with males was higher (11.1%) compared to that of females (8.6%). However, such differentials in immunisation coverage prominently discussed in literature, mostly favour male children (section 2.7.2 of chapter two). There are also sources of literature that stated that there is not a strong association between sex of the eligible child and vaccination (Anyene 2014:4). The findings from this research corroborate with the findings of the likes of Hilber et al (2010a:17) and Anyene (2014:4). The result produced by the 2x2 odds ratio analysis for both immunisation access and utilisation was not statistically significant for this variable (sex of the eligible child). In the same vein, the sex of the household survey responders also did not yield a statistically significant association (section 5.2.3.1 of chapter five). Gender, however, which is way beyond biological sex identity, plays an important role in immunisation.

As shown in Figure 5.6, as the age of the caregivers increased, the dropout rate decreased. Although the 2x2 odds ratio for this variable did not yield a strong statistical association with immunisation access and utilisation, it may be important to focus a bit more on the younger caregivers to improve their immunisation uptake. As shown in Figure 5.5 of chapter five, the majority of the household survey participants (93%) were married couples, out of which 77.8% were in monogamous relationships. According to the statistical analysis, marriage status or type of marriage did not have any meaningful association with immunisation, as described

in section 5.2.3.3. This finding also resonated with the conclusion drawn by Rossi (2015:2) that such variables do not make a difference to the rate of immunisation coverage.

The other demographic or social variables that did not seem to have statistical significance on immunisation indicators was religion. Nonetheless, there was a higher dropout rate associated with followers of the Islamic faith (Table 5.5 of chapter five), which confirms with the results of the study conducted by Anyene (2014:6) on the role of religion and other variables in routine immunisation in Nigeria. Although statistical analysis was not conducted for ethnicity, primary languages spoken, and influential figures trusted by the targeted households – this being due to challenges in dichotomising the variables – the high dropout rates linked to Yoruba and Bassa as tribes, Yoruba as a primary language, and traditional/community leaders as influential figures are of interest for further investigation (Figures 5.7, 5.8 and 5.12 of chapter five). As shown in Tables 5.12 and 5.27, traditional/community leaders were chosen as the influential figures by most of the household and health professional survey participants. However, their real impact in convincing caregivers to improve their immunisation update should be studied in more depth.

The sharing of responsibility for the care of eligible children and parents' education levels were among the variables that resulted in statistically significant association with both immunisation access and utilisation as far as the 2x2 OR analysis is concerned. As described in sections 5.2.3.4 and 5.2.3.9 of chapter five, those households where both parents assumed responsibility for the eligible child's care, or were literate, were found to be more likely to access and utilise immunisation services than households where the children were being raised by single mothers or were illiterate. The logistic regression analysis discussed in sections 5.2.4.1 and 5.2.4.2 of chapter five also corroborated the 2x2 OR statistical findings on education of the mother, which findings were found to be significant for outcomes pertaining to both access and utilisation. The value of education, particularly that of the mother, in improving immunisation uptake was also emphasised in the feedback from health professionals (sections 5.3.2.4 and 5.3.3. of chapter five) as well as in literature discussed in section 3.6 of chapter three (British Council 2012:44, Ilusanya & Oladosun 2017:489).



### **6.2.3.3. Knowledge about and exposure to health**

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In this section, the feedback on the knowledge and exposure that responders have regarding use of health facilities for themselves or their eligible children is recapped. As shown in Figure 5.11 of chapter five, such variables generally had a positive association with immunisation indicators.

The 2x2 OR statistical analysis of the household survey delivered mixed results as described in section 5.2.3.10. Knowing about the nearest health facility, having any experience in the use of a health facility, and the mother's vaccination status against TT proved to be statistically not significant. On the other hand, where mothers gave birth to their child in a health facility, used antenatal care, were in possession of a vaccination card, or had general knowledge on child health in general and immunisation in particular, a statistically significant association with the vaccination status of the eligible child was found. As discussed in section 5.2.3.11 of chapter five, possession of a vaccination card was used as an important predictor of immunisation coverage (Babalola & Lawan 2009:48, Baguune et al 2017:5). Similarly, the logistic regression analysis done on three variables chosen for further review also returned mixed outcomes (Tables 5.18 and 5.19). The outcome for birthplace of the eligible child was not statistically significant for either immunisation access or utilisation. On the other hand, the use of antenatal care and knowledge about immunisation bore statistically significant relevance for immunisation access as well as utilisation.

As shown in 5.12 of chapter five, the majority of the households stated that they obtained most of their health-related information from a combination of traditional/religious leaders and health workers. However, the adequacy and quality of information transmitted to the caregivers was questioned by the key informants. As indicated in Table 5.24 of chapter five, lack of information on health in general and immunisation in particular was among the top three barriers to immunisation. Moreover, as discussed under 6.2.3.2 of chapter six, whether or not the information obtained from traditional/religious leaders had an impact on the immunisation uptake of the households is a matter for further review. Appreciating this gap, some key informants suggested that the mainstream media should be used to complement the efforts to increase community awareness of immunisation (section 5.3.2.4 chapter five). In this regard, Hilber et al (2010a:12-13) cautioned that

information that is not transmitted in a manner that can be accessed and understood by the majority of the caregivers will not be effective (Table 2.5 of chapter two).

#### **6.2.3.4. Economic issues**

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In this section, the feedback from various data sources on the relationship between source of household income, adequacy of income and assessment of socio-economic status is summarised.

It was noted in Table 5.1 that the majority of the household survey participants made a living from farming. With subsistence farming widely practised in FCT, it could be expected that the farmers would earn a small disposable income (Holte et al 2012:384). As described in section 5.2.3.16 of chapter five, low performance on immunisation indicators was associated with low income levels, which is also backed by Ilusanya and Oladosun (2017:485) as described in chapter three, section 3.5.4. The 2x2 OR analysis revealed that the source of income was found to be statistically significant for both immunisation access and utilisation. However, the result of the logistic regression analysis for the same variable was not statistically significant for immunisation access and utilisation outcomes (sections 5.2.41 and 5.2.4.2 of chapter five).

Affirming Holte et al's (2012:384) assertion on the relationship between farming and low-income levels, as shown in Table 5.11, 82.8% of the household survey participants assessed that they were either just managing or had very inadequate income. Unlike the source of income variable, adequacy of income was not found to be statistically significant either for immunisation access or for utilisation (section 5.2.3.16 of chapter five). In spite of the statistical correlations, the feedback from the key informants recognised that caregivers who earn low incomes, especially those dwelling in rural areas, were constrained in their ability to afford the indirect costs of immunisation (sections 5.3.2.1 and 5.3.3 of chapter five). The health facility workers suggested, among other things, that financial and material incentives should be provided to caregivers to address the income-related barriers to immunisation. However, as stated in section 5.3.2.4 of chapter five, to financially incentivise immunisation will not be sustainable in the long term and would create an unwanted precedence for the delivery of other public goods as well.

Socio-economic status dominantly stems from the level of income, among other factors. Moreover, as the key informants suggested, those with lower socio-economic status are more vulnerable to health-related risks (section 5.3.3 of chapter five). Although the majority of the household survey participants stated that their income level was less than desired, most of them (66.9%) seemed to be contented with their socio-economic status in the community. The descriptive analysis of those that labelled their status as medium to high showed much better immunisation indices. Such survey analysis was substantiated by a number of authors quoted in chapter two, section 2.8 and chapter three, sections 3.6 and 3.7 (Antai 2011a:143, Ilusanya & Oladosun 2017:485, NPC 2004 & ICF:137, Hilber et al 2010a: 3, Oluwadare 2009:55). This variable also yielded statistically significant results based on the 2x2 OR analysis.

On the side of the health facility workers, as shown in Table 5.25 of chapter five, the vast majority (92.3%) of them regarded themselves to be in the medium socio-economic bracket. This is not diverging much from the feedback from the household survey participants on similar variables depicted in Figure 5.16 of chapter five. The fact that the surveyed frontline workers did not have many complaints about their income levels and socio-economic status is an encouraging factor. This is because delays in the payment of salaries is an issue of concern given the persistent national health workers crisis discussed in section 3.5.5.2 of chapter three. As some research shows, any delay or inadequacy of remuneration directly affects the morale and attitude of service providers, thereby causing a further barrier to immunisation (Babalola & Aina 2004:25-26, Abdulraheem et al 2011:202). However, as per the positive feedback from the service providers and the key informants at territory and federal levels, the attitude of health service providers was among the least of concerns as far as barriers to immunisation are concerned (Figure 5.20 of chapter five). It was nevertheless a concern.

#### **6.2.3.5. Empowerment and agency**

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Gender empowerment and agency issues are key factors that, if addressed systematically and deliberately, would lead not only to gender equality and equity but would also contribute to the development of a nation (Kabeer 2012:6, Hilber et

al 2010a:12-13). A number of variables were reviewed under this theme in this research. Some of the key highlights are summarised in the following sections.

Power emanates from the role a person plays in a particular situation or environment in a certain capacity with some resources at their disposal. As shown in section 5.2.3.15 of chapter five, only 4% of households surveyed confirmed to be headed by mothers. This finding validated the narrative discussed in section 3.6.3.1 of chapter three regarding the fact that Nigeria is predominantly a patriarchal society where men call most of the shots. The statistics emerging from this research on households headed by women showed much lower numbers than the national average reported by the 2018 Nigeria Demographic and Health Survey (NDHS), which put the figure at 15% for rural and 22% for urban households (NPC & ICF 2019b:32). Nevertheless, the immunisation indices corresponding to the households headed by women were much worse than those led by men. This appears to be contrary to the rhetoric that when a mother has the whole house under her control, she is more likely to access and utilise immunisation. According to the findings from the household survey, if a woman was head of the household, it was because she was a single mother (section 5.2.3.15 of chapter five). Such a scenario would only compound her plight to manage the household, let alone handling the challenges associated with attending to her child's healthcare issues. As shown in Table 5.8 of chapter five, holding multiple household responsibilities was the most frequently cited reason for immunisation dropout.

As indicated in Table 5.13 of chapter five and 3.4 of chapter three, the majority of women did not get to decide on household financial issues. This trend corresponds with the 2014 Nigerian demographic and health survey discussed in section 5.2.3.18 of chapter five. The immunisation indicators where the women decided on small transactions were worse than when they were in charge of major transactions. The 2x2 table OR analysis for this variable was statistically significant. This could uphold the argument that with economic empowerment, women's ability to access and utilise immunisation might be better (section 2.7.2. of chapter two).

Without conducting OR analysis, a number of empowerment indicators showed a positive correlation with immunisation indices. For instance, those wives who were consulted by their husbands on what to spend the household money on, those wives who received assistance from their husbands with household chores, and those who

did not condone spouse beating, regardless of the reason, had favourable immunisation indicators. On the other hand, there were a few outliers among these variables such as that mothers deciding on health services for their child by themselves showed higher dropout rates than those that decided jointly or where the decisions were made by their spouses (Table 5.14 of chapter five); mothers who did not need permission from their spouse to go out of the house showed a higher dropout rate, although the access and utilisation rates for them were the highest (Table 5.15 of chapter five); and mothers who stated that they had experienced gender-based violence had higher dropout rates than those who did not seem to have had such experience (Table 5.17 of chapter five). The association of wife beating with the likelihood of vaccination access aligns with the finding of Singh et al (2013: 4). As shown in Appendix 14, the OR analysis generated mixed statistical significance for these variables. However, the logistic regression analysis of empowerment indicators did not yield statistically significant results, except for the gender-based violence experience related to immunisation access (Table 5.20 of chapter five).

As discussed in 5.3.4.5 of chapter five, the majority of the empowerment indicators analysed for the health professional survey followed a similar pattern as the household survey in the sense that the gender equality pendulum tilts towards men rather than women in most cases. However, it was generally better for the health professionals because the women have income generating/professional jobs as opposed to most of the women from the household survey.

In a nutshell, findings under these empowerment proxy variables indicate that single agenda gender interventions preclude appreciation of the fact that there are more factors at play than just to be in charge of a household, have permission to leave the house, or the ability to make own decisions on vaccination if issues of equality and empowerment are to be addressed. Nevertheless, the findings showed that the households, especially the women, were not empowered enough to overcome the socio-economic barriers to immunisation.

#### **6.2.4. Relating the socio-economic and gender determinants to vaccination seeking behaviour theories**

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In section 2.3 of chapter two, a number of theories on public health-seeking behaviours were discussed. As Glanz and Bishop (2010:400) asserted, well thought through and proven theories are crucial for effective programmatic interventions. The relationship of those theories with health in general and immunisation in particular was discussed in sub-sections 2.3.1 to 2.3.9 of chapter two. The following table summarises the applicability and relationship of relevant theories with socio-economic and gender determinants of immunisation that were identified in this research.

**Table 6.1: Applicability of health-seeking behaviour theories and their relationship with the socio-economic and gender variables**

<b>Theory with leading literature references</b>	<b>Variable</b>	<b>Applicability/relationship</b>	<b>Limitations and other remarks</b>
Health belief model (Champion & Skinner 2008:47, Glanz & Bishop 2010:402)	Residential area, age, sex, ethnicity, marital status, religion and educational levels, knowledge about health facilities, knowledge about health/ immunisation, experience in using health services	This theory pertains to the beliefs and perceptions that people have about their exposure and reaction to health risk and which are affected by social and gender characteristics, some of which are indicated herein.	Although these variables have an effect on people's perceptions, their impact can be heavily influenced by other factors such as affordability and accessibility of health services.
Social cognitive theory (McAlister, Perry & Parcel, 2008:172-173)	The role of traditional/religious leaders, community mobilisers, the attitude and behaviour of the health workers	This theory takes the health belief theory a step further by assuming that people also learn from observing the actions of others. Thus, the role of community influencers and health officials, including their readiness to lead by example, is crucial to spur immunisation uptake. This researcher has, therefore, studied these stakeholders including their influence and effectiveness in community engagement and communication.	Although the traditional and religious leaders exert an influence over their constituency with regard to customs, and for moral and religious purposes, how systematic and effective their engagements have been from an immunisation perspective needs further review.
Social ecological model (Glanz & Bishop 2010:400,	Profiling the caregivers, care takers, policy makers, implementers, community partners in relation to their	Mapping out the key players in the immunisation ecosystem and understanding their behaviour, perceptions and strategy is pertinent to	It is hardly possible to meet the needs of all stakeholders at all times. However, the government must adopt a beneficiary-

<b>Theory with leading literature references</b>	<b>Variable</b>	<b>Applicability/relationship</b>	<b>Limitations and other remarks</b>
Feletto & Sharkey 2019:2, Kolff, Scott & Stockwell 2018:1637)	knowledge, attitude, beliefs, influence, empowerment, social status, service delivery, policies and strategies	comprehensively address the barriers to immunisation coverage. Thus, the data the researcher collected and analysed in this research had representation from multiple key immunisation stakeholders in Nigeria/FCT. The role and perception of individual households, their community, the organisational setup of the health service providers, operational actors and policy makers have been discussed in the study	centred strategy to address the barriers to immunisation by balancing its means with its needs but without ignoring the inter-dependency of the socio-economic and gender variables at household, community, health systems level.
Andersen's healthcare utilisation (Andersen 1968:15)	Cultural and personal beliefs, demographics, residence area, household income, social capital/standing, healthcare, demand and supply equation of immunisation	Regardless of scientific justification and efficacy of vaccines, cultural and personal beliefs can be too strong to convince caregivers of the advantages of immunisation. Even after addressing aspects of cultural barriers, the caregivers should have the economic means and infrastructural facilities to utilise healthcare services. Economic and political empowerment of the community also plays an important role in enabling healthcare seeking behaviour. There is also a need to match the supply and demand side of immunisation.	It may be unrealistic to call for a cultural or economic revolution for the sake of immunisation. However, policy makers and strategists should bear in mind the multi-faceted implications of one intervention for the other. Equilibrium must be maintained on the demand and supply side of immunisation, i.e. matching perceived needs, actual needs and available services.



We can infer from the above table that no single theory is sufficient to conceptualise the issues and devise a strategy that could comprehensively and effectively address the gaps in immunisation coverage. The relevance and applicability of some theories vary from one factor to the other. As mentioned in section 2.3.9 of chapter two, it is more beneficial to apply multiple but relevant theories to holistically determine the variables that can contribute for improvement of immunisation coverage.

### **6.2.5. Efforts to mainstream gender in policies and practices of immunisation systems**

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A show of commitment by a government to mainstream gender is primarily manifested through developing the right vision, policy, implementable strategy and operational guidelines. The next step is to communicate clearly to the constituencies its determination to fulfil the visions and goals in a systematic and timely manner. Equally important is that the government needs to allocate the required resources to operationalise its plan, which will be the key indicator of ownership and leadership. The researcher directed enquiries directly and indirectly to various stakeholders regarding efforts to mainstream gender in their respective systems.

As stated in section 5.3.4.4 of chapter five, the government and most of its partners do not have organisation-wide and programme-specific gender policies. The government appears to be contented with the national gender policy, which predictably does not mention immunisation-specific gender barriers. On the part of health partners also, those that had a gender policy at headquarter level failed to adapt the policy to their local/country context. From the interviews with key informants it became clear that some of the officers were not even aware of the existence of such policy, although another colleague in the same organisation would sometimes confirm that it existed.

It was found from discussions with key informants that their understanding of gender mainstreaming as a concept was shallow and overly simplistic. A number of them assumed that gender was mainstreamed simply because they did not discriminate between male and female vaccination beneficiaries, they collected sex disaggregated data, they had a slogan which promotes gender equality, or because they encouraged women participation. On the other hand, as shown in Table 5.30,

the majority (>92%) of the health professional survey participants disclosed that there was no or inadequate effort to conduct gender analysis and mainstreaming at their respective health facilities. One of the pre-conditions to mainstream gender is to train the personnel on gender issues. According to the survey results from the health professional survey this condition was not met. The majority (69.2%) did not receive any such training at all, 23.1% received inadequate training, and only 7.7% considered their training to be adequate (Table 5.28 of chapter five). The feedback from the key informants also confirmed that such training, if any, was given to only a few high-level officials (section 5.3.4.2 of chapter five).

The health professionals at health facility, FCT and national levels who were contacted mostly suggested that the immunisation programme was either blind or neutral towards gender (section 5.3.4.3 of chapter five). The descriptions provided by the key informants of efforts put in place to conduct gender analysis and gender mainstreaming were a far cry from what is desired (section 5.3.4.4 of chapter five). Finally, the researcher's review of relevant policy and guideline documents showed that despite some scanty efforts, the materials were largely gender blind (section 3.6.2 of chapter three).

### **6.3. CONCLUSIONS**

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As stated in section 1.4 of chapter one, the research had one primary objective and three secondary objectives. Since the research objectives stemmed from and were closely linked to answering the research questions, they have already been recapped under section 6.2 of chapter six. The study has achieved the main objectives of identifying the socio-economic and gender determinants of immunisation in FCT (section 6.2.2. and 6.2.4 of chapter six). To achieve the primary objective, the following secondary objectives were also pursued:

- To analyse past and current immunisation coverage in Nigeria in general and the territory in particular (section 3.5.4 of chapter three, section 5.2.2 of chapter five, section 6.2.1. of chapter six).
- To conduct statistical and qualitative analyses to determine the association between immunisation coverage and socio-economic variables including gender (sections 5.2.3 and 5.2.4 of chapter five, section 6.2.3. of chapter six).

- To conduct a desk review of key immunisation policy and strategy documents in order to assess gender gaps and efforts to address them (section 3.6.2. of chapter three, section 6.2.5. of chapter six).

Having addressed the research questions and met their objectives, the following key conclusions can be drawn from the findings of the research.

- The immunisation coverage of FCT is better than the national pattern discussed in section 3.5.4 of chapter three. However, FCT's immunisation coverage rates for key proxy indicators stated in section 5.2.2 of chapter five were far below the international targets discussed in section 2.5.3 of chapter two.
- The sex of the child did not play a prominent role in the vaccination status of the targeted households. This finding aligns with a study conducted by Hilber et al (2010a:17) and Feletto and Sharkey (2019:2) that found children have the same likelihood of being vaccinated in most countries. Other things being constant, this finding contradicts the notion that male children are often prioritised in a patriarchal society like Nigeria as discussed in section 3.6.3.4 of chapter three.
- The analysis of different socio-economic and gender variables yielded different levels of statistical significance, and some were not altogether statistically significant. These are succinctly recapped below for ease of reference.
  - As documented in section 5.2.3 of chapter five, the variables that showed statistical significance in relation to immunisation as per the 2x2 OR analysis were as follows:
    - For both immunisation access and utilisation: Urban residency, married couples, literate mothers and fathers, children born at a health facility, mothers with experience of using antenatal care, possession of vaccination cards, caregivers with knowledge of immunisation, exposure to child health information, knowledge about vaccine preventable disease, earning a living from non-farming sources, self-assessed socio-economic status being medium or high, mothers in charge of making decisions on household transactions, holding the position that spouse beating is not justified under any circumstances.
    - For immunisation access only: where the mother decided on seeking health services including vaccination for her child by herself, where a wife did not

need permission to leave the house, where gender-based violence was not experienced.

- For immunisation utilisation only: husband's consultation with wife on how to spend household money and husband's assistance with household chores.
- Socio-economic variables that were found to have no statistical significance in this study for either immunisation access or utilisation as per the 2x2 OR table association include:
  - Sex, marital status, marriage type, age, religion of the household survey participants; sex of the eligible child; knowledge about the nearest health facility; use of health facility; mother's vaccination against TT; adequacy of income; permission for the mother to keep some money at her disposal; and decision making on where the mother delivers the child.
- Regarding the outcome of the regression analysis, as stated in section 5.2.4.3 of chapter five, only nine variables were shortlisted for further analysis. Accordingly, the mother's education level, use of antenatal care and knowledge about immunisation were found statistically significant for both immunisation access and utilisation. Residence area and gender-based violence experience were found statistically significant only for immunisation access and immunisation utilisation respectively. Birthplace of the eligible child, source of household income, decision-making ability on vaccinating a child, and decision-making ability on major household transactions were found not to be statistically significant for either immunisation access or utilisation.
- As stated under section 5.2.3 of chapter five, in spite of the degree of statistical significance, for the vast majority of the variables the descriptive analysis showed logical association with immunisation indices. This is to say that favourable socio-economic and gender variables were associated with lower dropout and higher access and utilisation rates.
- Although no rigorous statistical analysis was conducted on the data collected from the households with unimmunised children, as the qualitative descriptions showed in section 5.2.5 of chapter five, the socio-economic and gender variables associated with them were largely unfavourable. This is to say that the

majority of the households with unimmunised children were dominantly linked with rural residency, single motherhood, no or low education level, children born at home, no possession of vaccination cards, low level of exposure to health-related information, farming as a source of income, and husbands deciding on household transactions.

- On the part of government, there appears to be much focus on the supply side of immunisation compared to the demand side of it. If there are vaccines and supplies at the health facility and whoever shows up is vaccinated, the facility operators feel that their job is done. Even for the demand creation component, the emphasis is more on advocacy and use of influential figures to convince parents to bring their children for vaccination. The underlying socio-economic and gender barriers of the health service seekers are often overlooked.
- Based on the analysis of the health facility workers' profile and feedback from the FCT and key informants at national level, the health facilities in FCT were staffed with well-educated and experienced personnel. However, their training and awareness of gender-related barriers to immunisation was quite inadequate, if not non-existent.
- There was a general appreciation by the health professionals that levels of education, socio-economic status and gender empowerment as well as cultural and religious beliefs affect the behaviour, risks and vulnerability of health seekers in the face of vaccine preventable diseases (section 5.3.3 of chapter five). Nevertheless, there was no clear message from the key informants on whether there was any intention on the part of government and partners to factor these variables into future policy and strategy documents.
- From the health seekers that managed to visit the health facilities, there were not many complaints regarding quality of service delivery. Such assessment corresponded with expectations of national level authorities given the better immunisation infrastructure at FCT level compared to other parts of the country. However, the irregular supply of vaccines and devices, indirect costs of immunisation, ruggedness of roads, and security compromised areas detract from the demand for vaccination service delivery.

- Government has introduced a number of new interventions and structures to improve immunisation coverage such as NERICC, OIRIS, and CHIPS (sections 3.5.1, 3.6.2 and 3.6.2.5 of chapter three). These programmes touch upon some aspects of women empowerment and job opportunities for poorer communities as part of efforts to improve immunisation performance in geographically disadvantaged areas. However, unlike what is advised by Blas et al (2011:2), there was no evidence whether the socio-economic and gender impact of these interventions were not properly analysed and measured (section 2.4 of chapter two).
- Gender is not only about women, although this seemed to be a widespread misunderstanding among the public and even the health actors. Nor should immunisation be. The important role that men play in immunisation appeared to be often understated. Such perception was evidently observed in the course of collecting household survey data. Without any sex preference on the part of the data collectors, 91% of households referred to the mothers to answer the survey questions (Figure 5.2 of chapter two). As shown in section 5.2.3.15 of chapter five, 87% of the households were in fact headed by men. Gender equality cannot be achieved without the participation and cooperation of men, who disproportionately control power and resources in the society.
- For a number of the health professionals contacted, there was a construed understanding that all it takes to be gender sensitive is not to discriminate against service users based on their sex. However, as discussed in section 2.7 of chapter two, much more than that is required. This is one important manifestation of the big knowledge gap where concepts of gender are concerned, and a gap that needs to be addressed.
- As stated in chapter two, section 2.7.1, gender mainstreaming goes beyond what appeared to be lip-service on the part of the policy makers. Having reviewed the feedback from the health professionals at grassroots level, the key informants' views on the gender responsiveness of the immunisation system which is mostly adjudged as gender blind, efforts to conduct gender analysis and mainstream gender at the health facility and higher levels, as well as having reviewed key immunisation policy documents from a gender perspective, it is safe to conclude that there is little or no effort to mainstream gender in the policies and practices

of the programme (sections 5.3.4.2, 5.3.4.3, 5.3.4.4 and 5.4 of chapter five and section 3.6.2 of chapter 3).

- Finally, immunisation presents the country with a unique entry point to access each community, settlement and household. As such, it avails the platform not only to improve immunisation coverage but also to transform the country from its current political and economic woes if packaged and strategised properly by espousing gender empowerment, social justice and economic equity. Addressing gender barriers is not only an end in itself from a social justice point of view but also a means to achieve economic prosperity as a nation. The economic benefits of immunisation have been proven by a number of research studies discussed in section 2.5.6 of chapter two. Drawing from the findings of this research, we can conclude that the country is mostly not on track to seize this opportunity as far as the data gathered and analysed on FCT is concerned.

It is important to map out properly the roles that different stakeholders need to play to address the strategic socio-economic and gender barriers to immunisation. The following section, therefore, outlines the key recommendations in this regard.

#### **6.4. RECOMMENDATIONS**

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Immunisation is the right of the child and the obligation of government and caregivers. Despite huge financial outlays but modest outcomes in terms of coverage, several studies insist that immunisation remains one of the most cost-effective development interventions in low-income and middle-income countries such as Nigeria. According to a study by Jamison et al (2013) quoted in WHO (2019:28), “11% of recent economic growth in low- and middle-income countries resulted from a reduction in preventable deaths across the life course.”

Gender induced disparities of immunisation do not begin and end at the point of vaccination. Immunisation is inherently gendered – biologically due to attachment of a mother with her child before, during and after birth – as well as socially, where women are often subjected to a disproportionately high burden of childcare that their spouses and the community expect her to shoulder. Whatever affects the women, affects the children and vice versa. However, most of the crucial decisions in a household, including on the generation and disposal of resources, are made by men

in patriarchal societies like Nigeria. Caution must be heeded that, whether perceived or real, gender equality efforts geared to bringing down men to the level of women in terms of access to resources and opportunities, are doomed to failure. Rather, the focus should be on efforts to conscientiously and systematically address the social, economic and gender barriers that women face, with full participation of men not only to tackle the persistently low rate of immunisation coverage but also to achieve the sustainable development goals. The key to this is indigenising the perception and applicability of gender concepts for buy-in by the individual households, communities and the whole immunisation ecosystem.

Introducing a new set of interventions is a necessary but not sufficient mechanism to address inequities emanating from gender, social, or economic aspects of the beneficiaries (Blas 2011:2). It is also important to thoroughly analyse the differential vulnerabilities of a segment of the society in relation to each other. To this end, it is important to map out the key stakeholders in the immunisation sector in relation to the specific roles they could play in addressing the identified gaps.

#### **6.4.1. Recommendations for key stakeholders**

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All key stakeholders should unequivocally agree that immunisation and gender are inextricably entangled. The recommendations to the key stakeholders in Nigerian immunisation programmes could propel them into action once this premise is well appreciated. However, the feedback obtained from key informants, as documented under section 5.3.5 of chapter five, was not reassuring enough to guarantee their strong commitment to address socio-economic and gender determinants of immunisation in their respective institutions. There are numerous stakeholders in the immunisation landscape in Nigeria. However, for the convenience of making focused recommendations, the stakeholders have been grouped as follows along with the specific suggestions regarding the role they could play in improving immunisation coverage by addressing socio-economic and gender determinants of immunisation. In crafting these recommendations, feedback from the household and health facility survey participants as well as from interviews with key informants were also factored in.



#### **6.4.1.1. Federal government**

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The Government of Nigeria should be prepared to take bold measures to revamp the immunisation system in the country. For far too long, the immunisation coverage in the country has been unacceptably low. A great deal of resources from national treasury and donors have been spent to implement several quick fixes and short-term measures which did not yield the ultimately desired effect. Such quick gains have not yielded fair returns except for political expedience. To this end, the researcher recommends the following:

- The socio-economic determinants of health are not exclusively within the domain of the Ministry of Health and its parastatal agencies. In fact, the determinants mostly fall outside the health sector (WHO 2019h:34). Therefore, there is a need to undertake a structural review of the primary healthcare system which should link immunisation not only to the ministry of health but also establish strong associations with other ministries responsible for education, budget and finance, economic development, social welfare and women affairs. This multi-sectoral coordination effort can be achieved by affording the agency for immunisation programmes more autonomy from hierarchical bureaucracies, while involving representatives from the concerned ministries in the governance structure to encompass planning, implementation, monitoring and evaluation of the programme as part of the primary health care service package.
- One key variable that was proven to have a strong association with immunisation is education, particularly the mother's education. The government should invest more in rural education outreach programmes. Service delivery house to house, at fixed immunisation posts and outreaches should be integrated with public and private school systems. Immunisation should be a pre-requisite for admission of students to schools at all levels. School curricula should include immunisation as subject matter particularly in higher education and as part of adult literacy campaigns.
- Until the road infrastructure in rural and inaccessible areas is well developed, the government should establish a mechanism to subsidise the transport expenses of caregivers travelling from rural areas to a health facility, and should provide adequate transport allowances to health workers engaged in outreach services.

- In the short and medium term, efforts to increase awareness among both service users and providers through health workers and traditional/religious leaders should be stepped up. This awareness should not be only about enforcing vaccination, but should also include the social, economic and gender ramifications of immunisation.
- The government must have a well thought through national immunisation gender policy with clear indicators and accountability framework. All its policies and strategic documents on immunisation and PHC should be reviewed to ensure that they are gender transformative. The government should put in place a mechanism to protect the immunisation programme from undue political interference by federal, state, local and community leaders as well as from unwarranted pressures by some partners and donors.
- A demand for immunisation must not be constrained by obstacles from the supply side. Therefore, the government should resolve challenges related to vaccine supply, cold chain management, and health infrastructural issues including equity and fairness in personnel remuneration and capacity building opportunities. It is also in the best interest of the programme to conduct a joint physical assessment of the availability of vaccine and supplies at the health facilities involving the three tiers of Federal, FCT and Area Council programme coordinators.
- Government must be resolute in its fight against detrimental cultural practices against girls and women such as female genital mutilation, early marriage, gender-based violence and similar issues discussed in section 3.6.3 of chapter three. Further to the advocacy, sensitisation and capacity building efforts, there should be a robust legal protection mechanism to address non-compliance on the part of fanatic groups that propagate negative messaging and discourage the demand for immunisation.
- Ultimately, the commitment of government at all levels should be cemented through allocation of adequate and sustainable human, financial and material resources in order to address socio-economic and gender determinants of immunisation.

#### **6.4.1.2. FCT administration**

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The FCT administration should not be contented with consistently scoring above national average coverage results. It should rather be guided by international standards as far as immunisation coverage is concerned. It should tap its comparative advantages of being the seat of the federal government where political, economic and human capital is concentrated. In the same vein, as proposed for the national authorities above, the territory's administration should package immunisation with other attractive public goods such as education, primary healthcare, employment opportunities, and gender empowerment initiatives in order to sustain the demand for vaccination. Particular attention should be given to institute affirmative action to boost the participation of women and girls in education, skills and vocational training, and income generating engagements. To this end, an FCT-wide legal, policy and strategy framework should be put in place.

The FCT administration should coordinate with its partners to develop a territory specific gender policy for an immunisation programme with a clear action plan and monitoring mechanisms. All its immunisation strategy and policy documents should be reviewed to ensure that they are gender transformative. The administration should provide a conducive, motivating and well-equipped environment for both health service providers and caregivers at primary healthcare facilities. Rigorous and tailor-made sensitisation and awareness sessions have to be conducted for community leaders and parents (men and women) as well as guardians to increase the demand for immunisation. The benefits of addressing socio-economic and gender determinants of immunisation should be clearly discussed along with practical examples that resonate with the health workers, caregivers and community leaders. The administration should also foster a mechanism for the communities to have a true sense of ownership of the programme by making them part of the planning, implementation and review processes.

#### **6.4.1.3. Service providers at health facility level**

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Health workers in conjunction with traditional/religious leaders were ranked among the top sources of reliable health-related information for the surveyed households (Figure 5.12 of chapter five). The majority (97.8%) of the survey participants also

confirmed that they knew where the nearest health facility was. The immunisation policy makers and strategists should therefore capitalise on this vote of confidence by the caregivers who participated in the survey.

First impressions of their experience at a health facility are crucial to make healthcare seekers want to come back for more healthcare interventions for both themselves and their children. Studies have shown that a mother who received a tetanus vaccination or delivered at a health facility is more likely to have her child vaccinated (section 5.2.3.10 of chapter five). The service providers at the health facility have a crucial role to play in ensuring that the environment is conducive for their clients. This includes receiving the service seekers in a positive, gender-sensitive and welcoming attitude, speaking their language and communicating effectively. The service providers should also use the opportunity to educate the service seekers on vaccine preventable diseases and multi-faceted benefits of immunisation, since gaps were observed as per the survey data as indicated in Table 5.6 of chapter five. Studies show that basic health literacy, regardless of the caregiver's educational level is positively correlated with immunisation uptake (Feletto & Sharkey 2019:3). The interaction between health service providers and health seekers should not be a one-way engagement in an instructional fashion. The health service providers should create opportunity for clients to ask questions, and take care to understand their beliefs and appreciate their concerns. The feedback from the clients should be documented systematically and shared with key stakeholders, including at federal level for appropriate action. Moreover, each facility in FCT should have at least one female health professional that could cater to women's specific needs – be it from health or cultural perspectives.

The FCT administration should ensure that the health workforce is well trained on gender issues, intrinsically and extrinsically motivated, and equipped with the necessary technical competencies. Regular and well-planned outreach services have to be conducted by each facility in close collaboration with traditional, religious and community leaders in order to trace vaccination defaulters and access communities in hard-to-reach areas. A robust accountability framework with socio-economic and gender determinants of immunisation factored in has to be put in place.

#### **6.4.1.4. Traditional, religious and community leaders**

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As gatekeepers of cultural and moral standards, traditional, religious and community leaders should protect their community from the politicisation of immunisation by government and non-state actors. To this end, the religious/traditional leaders should be independent from government financial handouts. Government should empower them with resources, knowledge and information so that they can play an effective bipartisan role in serving their constituency. As stated in section 3.5.5.7 of chapter three, traditional and religious leaders must be involved in the community based health interventions to debunk misconceptions and address socio-economic and gender barriers to immunisation. In applying the social cognitive theory discussed in section 2.3.2 of chapter two and recapped in Table 6.1 of this chapter, the traditional, community and religious leaders should lead by example. They should be at the forefront of seeking out immunisation services for their children and family. Action speaks louder than words and works more effectively for the community, especially where lower literacy levels prevail or for those who cling to conservative beliefs.

On the aspects of gender equality and women empowerment, due care must be taken not to give an impression of imposing external ideology on the traditional and religious system (Table 2.5 of chapter two). The messaging and sensitisation materials should be derived from relevant provisions enshrined in the religious and cultural scripts and should approach the issues of women from a human rights perspective. The pros and cons of gender empowerment should be thoroughly discussed with the community leaders using practical instances that resonate well with them and are very familiar to the targeted community.

#### **6.4.1.5. Caregivers – parents and guardians**

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Parents and guardians should be empowered to demand that immunisation is the right of their children and to assume responsibility for presenting them at the health facility for service. The caregivers should be supported to organise themselves at community level and actively engage in the planning and implementation of integrated primary healthcare services, including immunisation through their representatives. Sensitised and empowered members of the community can be

change agents and play an invaluable role in tracking immunisation defaulters and ensuring compliance with established policies and practices. To that end, they need to receive basic health education including on the importance of gender equality and women's empowerment for the betterment of their own household, community and country at large. Such sensitisation efforts should be cognizant of religious and cultural sensitivities. Practical examples should emphasise that an empowered woman is an asset rather than a liability for her husband and community. Such benefits include relieving the husband from the perceived or real burden of having to worry about all aspects of the household.

The husbands should be aware that the affairs of children's health are their concern too. They should join their wives in immunisation sessions. Husbands were found to be relatively better educated (Figure 5.9 of chapter five), and the association of education with immunisation was proven to be very strong (section 5.2.3.9 of chapter five). None of the parents should play a passive role in the affairs of the household in general and immunisation in particular.

As Hilber et al (2010a:3) pointed out, women with limited access to money find it difficult to access preventive health services. Financial independence is a very strong and arguably the most practical source of empowerment. The government should encourage banking and telecommunications firms to expand banking networks and mobile payment infrastructure, especially in rural areas. The government and such key stakeholders should devise an incentive mechanism that encourages women to have their own means of accessing and disposing money.

#### **6.4.1.6. Donors and partners**

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Donors and partners play a critical role in immunisation programme in Nigeria. Further to their advocacy and technical support, they provide substantial funding for the programme. Pursuant to the Paris declaration on aid effectiveness, donors and partners should leverage their comparative advantage wisely and effectively (OECD & UNDP 2019: 18). Accordingly, donors and partners are called upon to:

- Strengthen government's capacity to assume its rightful ownership, leadership and coordination role on immunisation and its determinants. Gavi's initiative towards gradually transitioning the country from external grant dependence to

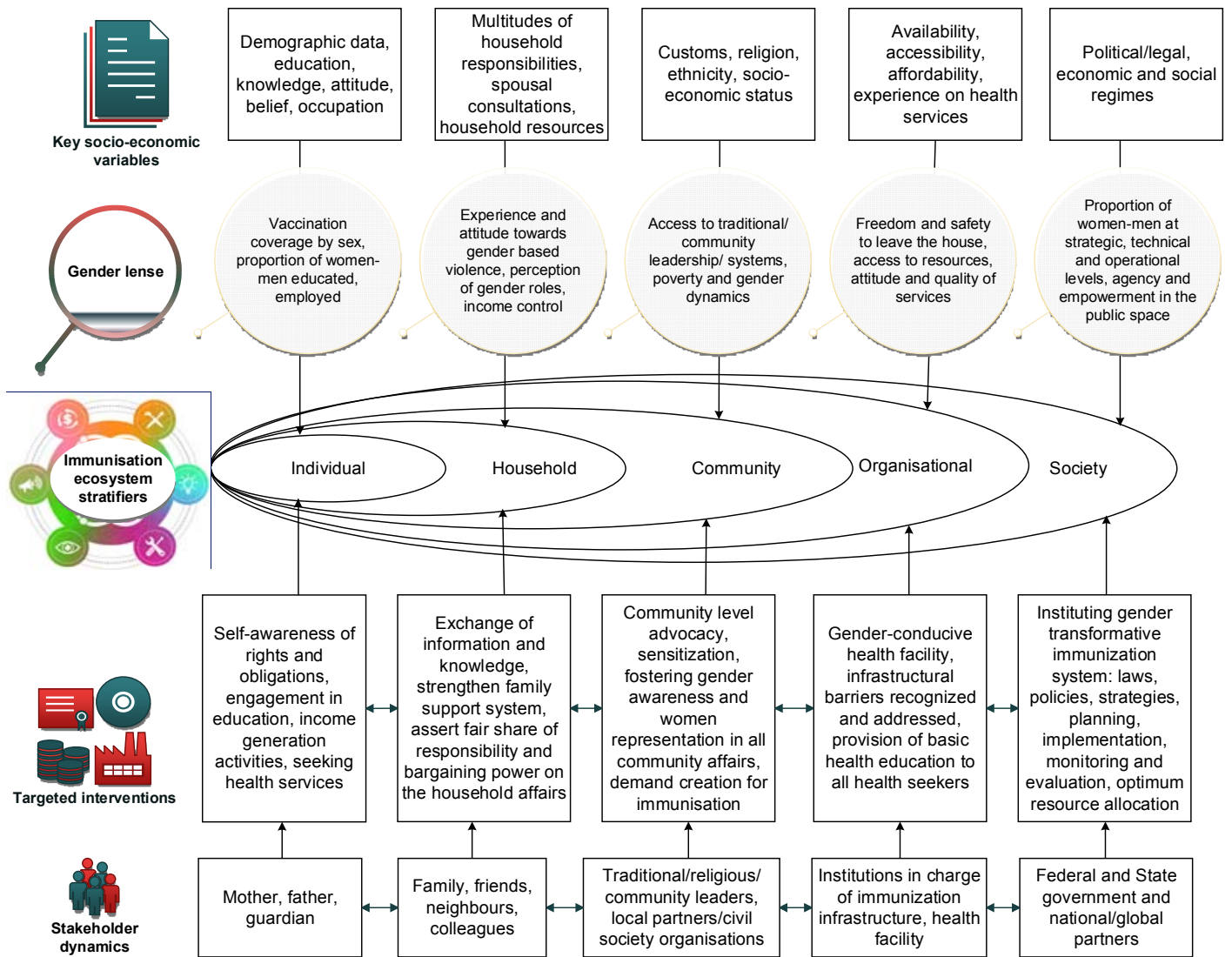
domestic financing is one example of helping government to assert its ownership (Deloitte 2017:11).

- Provide strategic technical and financial support to government focusing on a community based and integrated approach to provide basic public goods, including immunisation, as a package in lieu of vertical and short-term interventions.
- Develop agency specific gender policy pertaining to immunisation, factoring in the political, social, economic and epidemiological context of the country. The policy should be aligned with government gender policy and factor in the inputs of key stakeholders including representatives of the end beneficiaries.
- Encourage government and implementing partners to include gender equity as an aspect of the value for money requirement when awarding a grant, evaluating progress and measuring impact.
- Build the capacity of immunisation actors to conduct socio-economic and gender analyses, mainstream them into their immunisation policies, strategies and practices at all levels.

#### **6.4.2. Proposed framework to address socio-economic and gender determinants**

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As discussed in section 6.2.4 of chapter six, four theoretical frameworks were identified to better understand the dynamics of the socio-economic and gender determinants in influencing the immunisation service seeking behaviour. By amalgamating the relevant elements of the health belief model, social cognitive theory, the social ecological model, and Andersen’s healthcare utilisation model discussed in chapter two, sections 2.3.1, 2.3.2, 2.3.3, and 2.3.8 respectively, and summarised in Table 6.1 of chapter six, a consolidated framework is proposed. The diagram in Figure 6.1 is a framework that depicts the interaction of different stakeholders employing various interventions and factoring in the socio-economic determinants of immunisation while having gender at the centre of their focus to meet the objective of improving vaccination coverage.



**Figure 6.1: Framework to integrate socio-economic and gender determinants of immunisation with the role and interventions of key stakeholders**

The framework reemphasises that single-entry intervention to address socio-economic and gender barriers to immunisation will not be effective. Rather, a holistic, multi-faceted and systemic approach depicted by the diagram acknowledges the interdependence of the stakeholders and their actions within the sphere of the immunisation eco-system. It is paramount to appreciate that all stakeholders have an important role to play while recognising the need to identify the weak links that may keep the intended goals from being achieved.



## 6.5. RESEARCH CONTRIBUTIONS AND ASPECTS FOR FURTHER STUDY

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As mentioned in section 6.4.2 above, a single agenda intervention will not help to uproot the persisting challenges of low immunisation coverage. Most of the literature reviewed often addressed either gender issues only or discussed social determinants with subtle reference to gender. This study, however, attempted to comprehensively review social, economic and gender determinants in relation to immunisation coverage in FCT. The researcher has not come across any such first-hand study for Nigeria in general, and FCT in particular, that dwelled on such numerous issues.

Therefore, the contribution of this research to the existing body of knowledge lies in its comprehensive documenting of the multi-faceted socio-economic and gender determinants of immunisation in FCT, Nigeria. Based on the findings from first-hand surveys which were triangulated with the existing literature, the study made a number of recommendations to different stakeholders to address the gaps in immunisation coverage. It is also believed that the outcome of this research can be extrapolated to benefit not only FCT but other states that share similar contexts.

However, given the limitations and scope of this research, there are issues that require further study. Some such aspects are as follows.

- The underlining causes of gaps in immunisation indicators among different ethnic groups or language speakers in FCT need to be further researched as suggested in section 5.2.3.7 and 5.2.3.8 of chapter five.
- As indicated under section 5.2.2 of chapter five, the core reasons behind the very high immunisation dropout rate in certain wards of FCT such as Gumbo, Wako, Yebu, Ozoro and Kabusha need a more focused investigation than merely attributing the high dropout rate to the dominantly rural setting.
- As indicated in section 5.3.2.2 of chapter five, the gap between the perceptions of men and women health workers of the competency and quality of the frontline workforce needs further review. The women seemed less impressed. On the other hand, the men appeared to be underwhelmed by the

appropriateness of their health facilities' equipment. This aspect also needs to be studied in more depth.

- This study focused more on the demand side of the immunisation equation. Studying the socio-economic and gender determinants of the supply side of immunisation would be beneficial to attempts at stamping out the causes of low vaccination coverage more holistically.
- Finally, the socio-economic and political make-up of Nigeria is, to some extent, distinct from one geo-political zone to the other. While the methodology and tools designed for this research can be adopted, fresh data may need to be collected in states that have different social, cultural and economic dynamics than FCT.

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## Appendix 1: Federal Capital Territory population sample frame

Area Council	Ward	Total Population	Population (<2yrs)	No. of Settlements	No. of Households	No of Health Facilities
Abaji	Alu Mamagi	4,981	329	15	441	2
	Central Abaji	5,920	391	9	1,098	2
	Ebagi	4,990	329	7	468	2
	Gawu	30,713	2,027	52	2,996	4
	Gurdi	16,900	1,115	39	2,085	3
	North East	18,190	1,201	26	4,673	6
	Nuku	13,925	919	23	3,488	5
	Pandagi	11,941	788	22	1,175	3
	South East	5,775	381	12	1,735	2
	Yaba	17,900	1,181	35	971	3
<b>Abaji Total</b>		<b>131,235</b>	<b>8,662</b>	<b>240</b>	<b>19,130</b>	<b>32</b>
Bwari	Bwari Central	46,435	3,065	23	92,088	10
	BYAZHIN	115,477	7,621	35	16,923	7
	Dutse	217,813	14,376	52	40,192	21
	Igu	4,947	327	11	3,474	4
	Kawu	30,785	2,032	54	3,506	5
	Kubwa	94,575	6,242	33	32,174	15
	Kuduru	71,285	4,705	24	20,091	5
	Shere	71,985	4,751	28	4,116	7
	Ushafa	98,370	6,492	27	11,455	6
	Usuma	98,335	6,490	24	17,428	7
<b>Bwari Total</b>		<b>850,007</b>	<b>56,100</b>	<b>311</b>	<b>241,447</b>	<b>87</b>
Gwagwalada	Central-Gwa	79,545	5,250	38	19,611	5
	Dobi	37,550	2,478	50	3,608	7
	Gwako	43,415	2,865	31	8,449	7
	Ibwa	49,540	3,270	58	10,274	7
	Ikwa	63,886	4,216	24	11,788	4
	Kutunku	94,910	6,264	32	15,292	7
	Paiko	33,635	2,220	39	6,050	2
	Quarters	14,785	976	16	4,952	2
	Tungan Maje	55,920	3,691	32	8,142	7



Area Council	Ward	Total Population	Population (<2yrs)	No. of Settlements	No. of Households	No of Health Facilities
	Zuba	91,930	6,067	20	8,167	9
<b>Gwagwalada Total</b>		<b>565,116</b>	<b>37,298</b>	<b>340</b>	<b>96,333</b>	<b>57</b>
Kuje	chibiri	106,105	7,003	25	12,259	7
	Gaube	49,215	3,248	70	11,522	13
	GudunKarya	14,490	956	36	5,844	6
	Gwargwada	6,310	416	14	1,647	2
	Kabi	19,305	1,274	36	5,142	7
	Kuje	60,500	3,993	40	9,600	9
	Kujekwa	13,325	879	38	2,054	3
	Kwaku	13,020	859	20	4,731	3
	Rubochi	8,415	555	33	2,344	5
	Yenche	5,865	387	13	1,508	1
<b>Kuje Total</b>		<b>296,550</b>	<b>19,572</b>	<b>325</b>	<b>56,651</b>	<b>56</b>
Kwali	Ashara	18,595	1,227	85	4,803	5
	Dafa	14,225	939	85	1,285	4
	Gumbo	20,325	1,341	47	3,248	3
	Kinlakwa	27,525	1,817	62	6,027	6
	Kundu	11,420	754	48	1,693	4
	Kwali	49,550	3,270	56	6,022	4
	Pai	23,935	1,580	19	5,997	5
	Wako	27,650	1,825	37	3,357	7
	Yangoji	22,280	1,470	52	4,341	6
	Yebu	12,550	828	19	1,678	6
<b>Kwali Total</b>		<b>228,055</b>	<b>15,052</b>	<b>510</b>	<b>38,451</b>	<b>50</b>
AMAC	City Center-1	111,896	7,385	98	35,586	28
	Garki-1	265,010	17,491	105	50,436	33
	Gui	426,714	28,163	129	20,823	9
	Gwagwa	96,234	6,351	47	27,785	15
	Gwarinpa	722,473	47,683	303	157,151	39
	Jiwa	117,095	7,728	65	35,981	14
	Kabusa	334,151	22,054	157	88,931	28
	Karshi-1	102,914	6,792	61	9,204	3
	Karu	141,298	9,326	84	26,119	21
	Nyanya-1	61,185	4,038	23	10,069	9
	Orozo	121,322	8,007	25	21,802	8

<b>Area Council</b>	<b>Ward</b>	<b>Total Population</b>	<b>Population (&lt;2yrs)</b>	<b>No. of Settlements</b>	<b>No. of Households</b>	<b>No of Health Facilities</b>
	Wuse	55,866	3,687	14	15,313	32
<b>AMAC Total</b>		<b>2,556,158</b>	<b>168,706</b>	<b>1,111</b>	<b>499,200</b>	<b>239</b>
<b>Grand Total</b>		<b>4,627,121</b>	<b>305,390</b>	<b>2,837</b>	<b>951,212</b>	<b>521</b>

Source: Government of Nigeria projections for 2019 based on 2006 census data (6.6% of the total population is estimated to be under 2 years of age as per the National Bureau of Statistics guideline).

## Appendix 2: Effective sample size (ESS) by expected coverage and desired precision

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Calculated at 95% confidence level

Desired Precision	Expected Coverage				
	50-70%	75%	80%	85%	90%
±3%	1,097	892	788	663	518
±4%	622	517	461	394	315
±5%	401	340	306	265	216
±6%	280	242	220	192	160
±7%	207	182	167	147	125
±8%	159	143	131	117	101
±9%	126	115	106	96	83
±10%	103	95	88	80	70

Source: WHO's Lot Quality Assurance Sampling (LQAS) for Immunisation manual which was updated in 2016.

### Appendix 3: Sample size calculations summary for household survey

Category	Description	No.	Remark
A	Number of Strata (Areas Council)	2	Number of strata
B	Effective Sample Size (ESS)	88	The researcher picked ESS with 80% expected coverage and desired precision of $\pm 10\%$
C	Design Effect (DEFF)	2.5	DEFF= $1+(m-1) * ICC$ where m is # of participants per cluster (m=10). And ICC=0.167
D	Average number of households per cluster	3	Assuming that one eligible participant in every 3 households
E	Non-Response factor	1.05	Assuming 5% non-response rate
F	Total completed questionnaires needed (households with eligible children)	441	category (A * B * C)
G	Total Number of households to be visited to get the completed interviews	1,388	category (A*B*C*D*E)
H	Target number of HHs to be visited in each Stratum (Area Council)	694	Category (B*C*D*E)
I	Cluster (settlement) to visit per Area Council	22	Category (B*C/m) where m is number of participants
J	Total Number of Cluster (settlement) in the survey	44	Category (A*I)
K	Number of sampled Wards per Area Council (Strata)	5	There are 10 wards per area council (50% are selected randomly)

<b>Category</b>	<b>Description</b>	<b>No.</b>	<b>Remark</b>
L	Number of Settlements per ward	4	I/K
M	Number of households per settlement	10	As per the Lot quality assurance survey (LQAS) guideline of WHO (2016)
N	Total households to visit per cluster/settlement	32	$D * E * M$ (number of eligible per households * non response rate * target number of participants per cluster) Calculating based on the information stated in the steps

**Appendix 4: List of wards and settlements with estimated population size and number of households**

S/N	Area Council	Ward	Settlement	Population	Estimated no. of households
1	Abuja Municipal	Gwagwa	Saburi Extension Estate	1,015	169
2	Abuja Municipal	Gwagwa	Deidei By Mosque	3,430	572
3	Abuja Municipal	Gwagwa	Saburi 2	4,245	708
4	Abuja Municipal	Gwagwa	Tashaa 2	4,840	807
5	Abuja Municipal	Gwagwa	Bagusa Right	7,570	1,262
6	Abuja Municipal	Kabusa	Basic Estate	457	76
7	Abuja Municipal	Kabusa	AMAC Market Area	920	118
8	Abuja Municipal	Kabusa	Tudun Wada Zone A.	1,175	196
9	Abuja Municipal	Kabusa	Sauka Kahuta	1021	127
10	Abuja Municipal	Kabusa	Dnako Village	2,530	422
11	Abuja Municipal	Orozo	Munape	1,250	208
12	Abuja Municipal	Orozo	Kurudu 2	5,500	917
13	Abuja Municipal	Orozo	G/Mangoro	7,900	1,317
14	Abuja Municipal	Orozo	Ang Gade	2,860	477
15	Abuja Municipal	Orozo	Kuduru 1	10,700	1,783
16	Abuja Municipal	Wuse	Zone 4	3,305	551
17	Abuja Municipal	Wuse	Zone 6	3,730	622
18	Abuja Municipal	Wuse	Wuse 2a	6,236	1,039
19	Abuja Municipal	Wuse	Zone 7	6,789	1,132
20	Abuja Municipal	Wuse	Maitama C	10,381	1,730
21	Abuja Municipal	Gui	Rug Ardo	270	45
22	Abuja Municipal	Gui	Iddo B	2,435	406
23	Abuja Municipal	Gui	Rugan Deberi	10,940	1,823
24	Abuja Municipal	Gui	Tungan Wakili	15,285	2,548
25	Abuja Municipal	Gui	Rugan Fulani Miyatti Allah	18,495	3,083
26	Kwali	Kwali	Lambata Mr Dogara Street	1,205	201
27	Kwali	Kwali	Ang Hassan 2	3015	155
28	Kwali	Kwali	Police Barrack/ Sabon Gari	615	103
29	Kwali	Kwali	Angwan Bwamba B	745	124
30	Kwali	Kwali	Phase II QRTS	1,135	189
31	Kwali	Gumbo	Rugan Isah	125	21

<b>S/N</b>	<b>Area Council</b>	<b>Ward</b>	<b>Settlement</b>	<b>Population</b>	<b>Estimated no. of households</b>
32	Kwali	Gumbo	Lukoda	715	119
33	Kwali	Gumbo	Shekpete	1,075	179
34	Kwali	Gumbo	Piri	4,630	772
35	Kwali	Gumbo	Kwaita Hausa	5,725	954
36	Kwali	Yangoji	Ijah Dabuta	1605	321
37	Kwali	Yangoji	Daka	505	84
38	Kwali	Yangoji	Mal Musa	775	129
39	Kwali	Yangoji	Angwan Primary School	895	149
40	Kwali	Yangoji	Ijah Sarki	1,005	168
41	Kwali	Yebu	Pache	380	63
42	Kwali	Yebu	Nyitse	480	80
43	Kwali	Yebu	Kwaita Sabo	1,005	168
44	Kwali	Yebu	Kigbe	1,525	254
45	Kwali	Yebu	Yebu	2,215	369
46	Kwali	Wako	Sabon Gari	795	133
47	Kwali	Wako	Kunbityi	1,115	186
48	Kwali	Wako	Dangara	1,725	288
49	Kwali	Wako	Sadu	3,030	505
50	Kwali	Wako	Angwan Sarki	3,240	540

Source: Government of Nigeria projections for 2019 based on 2006 census data

## Appendix 5: List of health facilities selected for health professional survey

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S/N	Ward	Settlement	Health facility
1	AMAC	City Center-1	Police clinic area one
2	AMAC	Garki-1	Kobi PHC
3	AMAC	Gui	Naf Hospt
4	AMAC	Gwagwa	Una Clinic
5	AMAC	Gwarinpa	Jahi PHC
6	AMAC	Jiwa	Bassan Jiwa PHC
7	AMAC	Jiwa	Jiwa PHC
8	AMAC	Kabusa	Precious Clinic
9	AMAC	Karshi-1	Karshi General Hospt
10	AMAC	Karu	Karu PHC, ECWA Clinic
11	AMAC	Orozo	Gidan Magoro PHC
12	AMAC	Wuse	Wuse District Hospt
13	Kwali	Ashara	Fogbe PHC
14	Kwali	Ashara	Maikwari PHC
15	Kwali	Gumbo	Kwaita Hausa PHC
16	Kwali	Kinlakwa	Kilankwa 2 PHC
17	Kwali	Kinlakwa	Sheda PHC
18	Kwali	Kundu-1	Kundu PHC
19	Kwali	Kwali	Kwali BHC
20	Kwali	Kwali	Kwali Gen Hospt
21	Kwali	Wako	Bukpe PHC
22	Kwali	Wako	Yewuti PHC
23	Kwali	Yangoji	Ijah Sarki PHC
24	Kwali	Yangoji	Yangoji FSP



## Appendix 6: Household survey questionnaires (revised for ODK compatibility)

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### 1. Please press to capture your GPS coordinates:

latitude (x.y °) \_\_\_\_\_

longitude (x.y°) \_\_\_\_\_

altitude (m) \_\_\_\_\_

accuracy (m) \_\_\_\_\_



### Part I – GENERAL BACKGROUND

2. Date of data collection: yyyy-mm-dd

#### 3. Area Council

Kwali       Municipal Area Council

4. Select ward:

5. Enter three (3) digits serial number

*(Last 3 digits of generate unique code for this participant)*

6. Select ward to generate unique code

- |                                |                                     |                                |
|--------------------------------|-------------------------------------|--------------------------------|
| <input type="radio"/> Ashara   | <input type="radio"/> Yangoji       | <input type="radio"/> Kabusa   |
| <input type="radio"/> Dafa     | <input type="radio"/> Yebu          | <input type="radio"/> Karshi 1 |
| <input type="radio"/> Gumbo    | <input type="radio"/> City Centre 1 | <input type="radio"/> Karu     |
| <input type="radio"/> Kinlakwa | <input type="radio"/> Garki 1       | <input type="radio"/> Nyanya 1 |
| <input type="radio"/> Kundu 1  | <input type="radio"/> Gui           | <input type="radio"/> Orozo    |
| <input type="radio"/> Kwali    | <input type="radio"/> Gwagwa        | <input type="radio"/> Wuse     |
| <input type="radio"/> Pai      | <input type="radio"/> Gwarinpa      |                                |
| <input type="radio"/> Wako     | <input type="radio"/> Jiwa          |                                |

7. Survey Unique code for participant is:

8. Settlement name: \_\_\_\_\_

9. Residence area:  Urban  Semi  Rural

10. Responsibility for the child care:  Married couple  Single mother  Guardian  Other. Specify other:

11. Sex of the main participant:  Female  Male

12. Marital status:  Single  Married  Separated  Divorced  Widowed

13. Form of marriage:  Monogamy  Polygamy  Not married

14. Age range of the mother:  18-30 years  31- 49 years  Above 49 years  Other Specify other: \_\_\_\_\_

15. Age range of the father:  18-30 (years)  31-49 (years)  Above 49 (years)  Other: Specify other: \_\_\_\_\_

16. Religion of participant:  Christianity  Islam  Other

Specify other: \_\_\_\_\_

17. Ethnic group of the participant:

- |                                |                                |                                    |
|--------------------------------|--------------------------------|------------------------------------|
| <input type="radio"/> Afo      |                                |                                    |
| <input type="radio"/> Bassa    | <input type="radio"/> Gwandara | <input type="radio"/> Hausa/Fulani |
| <input type="radio"/> Ganagana | <input type="radio"/> Gwari    | <input type="radio"/> Igbo         |

Koro

Yoruba

Other

Specify other:

18. Language spoken:  Hausa  Igbo  Yoruba  English  Other

Specify other:

19. Education level of the father of the oldest eligible child:

None  Primary  secondary  Higher

20. Education level of mother of the eldest eligible child:

None  Primary  Secondary  Higher

21. Education level of the guardian (if applicable)

None  Primary  Secondary  Higher

22. Total no of children in the household \_\_\_\_\_

23. Sex and no of children under 2 years:

a. sex of children under 2 years; (tick multiple answers if applicable)

Female  Male

b. Number of male(s) under 2: \_\_\_\_\_

c. Number of female(s) under 2: \_\_\_\_\_

24. Age of the oldest child in the household eligible for vaccination:

<3 months  3-5 months  6-8 months  9-11 months  12-33 months

25. Place of birth of the first-born child:  At the health facility  At home  Traditional/Religious centre  Other Specify other:

26. Do you know the nearest health facility?  Yes  No  not sure

27. Have you ever used the nearest health facility before?  Yes  No

28. Distance from the nearest health facility in Kms \_\_\_\_\_ In hours \_\_\_\_\_

## **PART II IMMUNIZATION AND HEALTH-RELATED**

29. Where was the oldest eligible child born?

At health facility  At home  Traditional/Religious Centre

30. Possession of vaccination card for eligible children-card seen by data collector:

Yes  No

31. Status of child's immunization according to the card or history: please answer YES/NO based on observation (card) or parent's response (history) in the next few questions:

Antigen: BCG

a. Vaccinated by Card?  Yes  No

b. Vaccination by History  Yes  No

c. Remark: \_\_\_\_\_

Antigen: DPT1/Penta 1

a. Vaccinated by Card  Yes  No

b. Vaccinated by History?  Yes  No

c. Remark: \_\_\_\_\_

Antigen: DPT3/Penta3

a. Vaccinated by card?  Yes  No

b. Vaccinated by History?  Yes  No

c. Remark: \_\_\_\_\_

Antigen: OPV1

a. Vaccinated by card?  Yes  No

b. Vaccinated by history  Yes  No

c. Remark: \_\_\_\_\_

Antigen: OPV2

a. Vaccinated by card?  Yes  No

b. Vaccinated by history  Yes  No

c. Remark: \_\_\_\_\_

32. Did the mother use antenatal care facilities?  Yes  No  Not sure
33. Did the mother receive tetanus toxoid vaccination?  Yes  No  Not sure
34. Do you have some knowledge about immunization?  Yes  No
35. Have you been exposed to child health information?  Yes  No
36. Do you know diseases that are vaccine preventable?  Yes  No
37. What is the source of your information on health/immunization? (*tick multiple answers if applicable*)  Community Mobilizers  Government Authorities  Health workers  Media  Traditional/Religious leaders  Other Specify other:
38. Do you have someone to assist in taking your child for immunization?  
 Yes  No
39. If you have your child vaccinated, what is your main reason for having your child vaccinated? (*tick multiple answers if applicable*)
- Because I am well informed about the usefulness of vaccines
- For fear of social or family blame in case my child gets sick from vaccine preventable diseases
- Pressure from my spouse
- Pressure from my religious/community/traditional leader
- Other, Specify: \_\_\_\_\_

### **PART III - SOCIO-ECONOMIC AND GENDER RELATED**

40. Do you have sex preference in giving priority for vaccinating your child?
- Give priority for male child
- No particular preference, we give both sexes equal treatment
41. Head of household:  Mother  Father  Jointly
- Other, Specify: \_\_\_\_\_
42. Main source of income for the household:  Farming  Trade  Public Servant  Private employment  Support from extended family and friends

Other, specify: \_\_\_\_\_

43. Does your household earn adequate income to care for the family?

Quite adequate  Somehow managing  Very inadequate

44. How do you access your socio-economic status compared to your community?

Low  Medium  High

45. Which of the following Media do you use in the household? (*tick multiple answers if applicable*)  Newspaper  Radio  TV  Internet

46. What are the main challenges you face in seeking and benefitting from immunization services? (*tick multiple answers if applicable*)

I. Absence of immunization services at healthy facility

II. Access off road/transport to go to health facility

III. Attitude of health service providers

IV. Cost of transportation

V. Customs and cultural beliefs

VI. Distance to healthy facility

VII. Fear of social stigma

VIII. Gender discrimination

IX. Inconvenience of vaccination hours

X. Lack of information

XI. Lack of spouse approval

XII. Language barrier

XIII. Long waiting hours at healthy facility

XIV. Misconception about vaccination

XV. Multiple household responsible/busy schedule

XVI. Political reasons

XVII. Religious reasons

XVIII. Shortage of vaccine

Other, specify: \_\_\_\_\_

47. Decision making on household social and economic affairs:

a. Who makes decision about buying/selling small items in your household?

Myself only       Spouse only       Jointly       Other, specify: \_\_\_\_\_

b. Who decides in buying/selling major items in your household?

Myself only       Spouse only       Jointly       Other, specify: \_\_\_\_\_

c. Are you allowed to keep some money aside for use at your disposal?

Yes       No

d. Does your spouse consult you on what to spend the household money on?

Yes, always       Yes, sometimes       Not at all       Not applicable

48. Who usually decides on seeking health services for a child?

Myself only       Spouse only       Jointly       Other, specify: \_\_\_\_\_

49. Do you need permission from your spouse to go out of the house?

Yes       No       Not applicable

50. Does your spouse assist in household chores?

Yes, always       Yes, sometimes       Not at all       Not applicable

51. How much does it cost you to go to a health facility? (In Naira) \_\_\_\_\_

52. How much more do you incur to have your child vaccinated at a healthy facility? (In Naira) \_\_\_\_\_

53. Who usually decides to have a child vaccinated?

Myself only       Spouse only       Jointly       Other, specify: \_\_\_\_\_

54. Who makes decision about where the mother delivers?

Myself only       Spouse only       Jointly       Other, specify: \_\_\_\_\_

55. Who is the most influential figure in your community or whose opinion do you trust most?  Religious leader  Traditional/community leader  Government authorities  Health experts  Other, *specify*:\_\_ \_\_\_\_\_

56. Have you experienced gender-based violence such as spouse beating?  
 Yes  No

57. Is spouse-beating justified under certain circumstances?  Yes  No

#### **PART IV – GENERAL COMMENTS**

58. Any comment to improve immunization services for your child and community?

**END OF SURVEY**

**Thank you very much for your cooperation**



## Appendix 7: Immunization service providers survey questionnaire

### PART 1 – GENERAL BACKGROUND

1. Please press to capture your GPS coordinates:

Latitude (x.y°) \_\_\_\_\_

Longitude (x.y°) \_\_\_\_\_

Altitude (m) \_\_\_\_\_

Accuracy (m) \_\_\_\_\_



2. Date of survey: yyyy-mmm-ddd

3. Area council:  Kwali  Municipal Area Council

4. Enter three (3) digits serial number

*Last 3 digits to generate unique code for this participant* \_\_\_\_\_

5. Select ward to generate Unique code

- |                                |                                     |                                |
|--------------------------------|-------------------------------------|--------------------------------|
| <input type="radio"/> Ashra    | <input type="radio"/> Yangoji       | <input type="radio"/> Kabusa   |
| <input type="radio"/> Dafa     | <input type="radio"/> Yebu          | <input type="radio"/> Karshi 1 |
| <input type="radio"/> Gumbo    | <input type="radio"/> City Center 1 | <input type="radio"/> Karu     |
| <input type="radio"/> Kinlakwa | <input type="radio"/> Garki 1       | <input type="radio"/> Nyanya 1 |
| <input type="radio"/> Kundu 1  | <input type="radio"/> Gui           | <input type="radio"/> Orozo    |
| <input type="radio"/> Kwali    | <input type="radio"/> Gwagwa        | <input type="radio"/> Wuse     |
| <input type="radio"/> Pai      | <input type="radio"/> Gwarinpa      |                                |
| <input type="radio"/> Wako     | <input type="radio"/> Jiwa          |                                |

6. Survey Unique code for participant is:

7. Settlement: \_\_\_\_\_

8. Name of health facility: \_\_\_\_\_

9. Type of health facility

Hospital  Health centre  Other, specify: \_\_\_\_\_

10. Location of HF  Urban  Semi-urban  Rural

11. Ownership of the health facility  Public  Private  NGO

12. Position/responsibility \_\_\_\_\_

13. How long have you served as health professional?  <5 Years  5 – 10 Years.  
 > 10 Years

14. Residence area of the service provider  Urban  Semi-urban  Rural

15. Age range of the health service provider

18 – 30 (Years)  31- 40 (Years)  41 – 50 (Years)  Above 50 (Years)

16. Sex  Female  Male

17. Marital status  Single  Married  Separated  Divorced   
Widowed

18. Do you speak the local language of the community you serve?

Yes, very well  Yes, but inadequate  Not at all

19. Education level  Primary  Secondary  Higher  
a. Distance of your residence from the health facility In KM(s) \_\_\_\_\_ in Hours(s) \_\_

## **PART II – IMMUNIZATION AND RELATED-HEALTH INFORMATION**

20. Have you had any training on vaccine preventable diseases and immunization?  
 Yes, quite adequate  Yes, but not adequate  No
21. Is the health facility available at normal working hours for immunization services?  
 Yes  No
22. Is the healthy facility equipped with competent skilled workers on duty to provide quality immunization service?  Yes  No
23. Is the health facility accessible to the community without much difficulty?  
 Yes  No
24. Are the services in this health facility affordable given the direct costs for the health seekers?  Yes  No  Not applicable
25. Are the services in this health facility affordable given the indirect costs for the health seekers?  Yes  No
26. On average, how much does it cost for health seekers to get routine vaccination per child at your health facility (in Naira) \_\_\_\_\_
27. Is the health facility appropriately equipped with materials and vaccine supplies?  
 Yes  No
28. Is the health facility well accommodated in a befitting facility?  Yes  No
29. What measures do you suggest to sustain and create more demand for immunization services and foster gender equality? *Multiple selection application*
- I. Community engagement capacity building for health workers
  - II. Intensify community awareness campaigns
  - III. Expansion of immunization outreach services in hard-to-reach areas
  - IV. Introduce material/financial incentives for children and parents
  - V. Introduce and sustain accountability among health workers and managers
  - VI. Improve on the systematic engagement of religious and traditional leaders
  - VII. Build a mechanism to champion the cause of immunization at all levels of the political structure

## **PART III – SOCIO-ECONOMIC AND GENDER RELATED**

30. How do you access your socio-economic status compared to your community?  
 Low  Medium  High
31. How do you access your incentives and remuneration arising from your employment?  
 I. Quite adequate and motivating  
 II. Somehow okay and can sustain a living

III. Inadequate and demotivating

32. Are you paid your salary on time?  Yes  No

33. Do you have any children under 2 years of age?  Yes  No

(a) Number of FEMALE children < 2 years' old: \_\_\_\_\_

(b) Number of MALE children < 2 years' old: \_\_\_\_\_

34. Are your children < 2 years of age fully immunized?  Yes  No

35. Do you believe that the community has sex preference in giving priority for vaccinating their child?

Yes, mostly gives priority for male child

Yes, mostly gives priority for female child

No particular preference, they give both sexes equal treatment

36. Have you ever received any training on gender?

Yes, adequately trained  Yes, but not adequately trained  Not at all

37. In your experience, immunization is:

I. Gender biased  II. Gender neutral  III. Gender blind

IV. Gender sensitive  V. I don't know

38. Has there been any effort to conduct gender analysis and gender mainstreaming at the health facility you work for?

Yes, adequately  Yes, but not adequately  Not at all  Other, specify: \_\_\_

39. What do you think are the major barriers for immunization? *Multiple selection application*

I. Absence of immunization services at healthy facility

II. Access of road/transport to go to health facility

III. Attitude of health service providers

IV. Cost of transport

V. Customs and cultural beliefs

VI. Distance to health facility

VII. Fear of social stigma

VIII. Gender discrimination

IX. Inconvenience of vaccination hours

X. Lack of information

XI. Lack of spouse approval

XIII. Long waiting hours at health facility

XIV. Misconception about vaccination

XV. Multiple household responsibility

XVI. Political reasons

XVII. Religious reasons

XVIII. Shortage of vaccine

Other, specify: \_\_\_\_\_

40. Decision making on household social and economic affairs

a. Who makes decision about buying/selling small items in your household?

Myself only       Spouse only       Jointly       Other, specify \_\_\_\_\_

b. Who decides in buying/selling major items in your household?

Myself only       Spouse only       Jointly       Other, specify \_\_\_\_\_

c. Are you allowed to keep some money aside for use at your disposal?

Yes       No

d. Does your spouse consult you on what to spend the household money on?

Yes, always       Yes, sometime       Not at all       Not applicable

41. In your own household, what do you think often decides on seeking health services for a child?

Myself only       Spouse only       Jointly       Other, specify: \_\_\_\_

42. Who is the most influential figure in the community you serve whose opinion is trusted most?

Religious leader       Traditional/community leader       Government authorities

Health experts       Other

43. In your opinion, is spouse beating justified under certain circumstances?

Yes       No

#### **PART IV – GENERAL COMMENTS**

44. Any comment to improve immunization services (coverage)

45. Any comment to address socio-economic and gender barriers to immunization

END OF SURVEY

*Thank you very much for your cooperation*

## Appendix 8: Key informant interview questions

---

### 1. General data:

- 1.1. Code Number: \_\_\_\_\_
- 1.2. Name of the Institution \_\_\_\_\_
- 1.3. Role of the institution in immunisation \_\_\_\_\_
- 1.4. Date of interview \_\_\_\_\_ Time \_\_\_\_\_
- 1.5. Sex of interviewee: Female , Male
- 1.6. Responsibility of the interviewee \_\_\_\_\_
- 1.7. Years of experience in immunisation \_\_\_\_\_

### 2. Immunisation related questions

- 2.1. How do you assess the overall immunisation system in Nigeria? \_\_\_\_\_  
In FCT \_\_\_\_\_

What are the enabling factors for effective vaccination service delivery in FCT? \_\_\_\_\_

- 2.2. What are the main challenges you face in vaccination service delivery in FCT?
- 2.2.1. Demand related \_\_\_\_\_
- 2.2.2. Supply related \_\_\_\_\_

### 3. Socio-economic and gender related questions

- 3.1. What are the key socio-economic determinants of immunisation in Nigeria in general and FCT in particular? \_\_\_\_\_
- 3.2. Do you have a gender policy in your organization? \_\_\_\_\_
- 3.3. What efforts have been put to mainstream gender in your organization particularly in the areas of immunisation policy, program implementation and funding? \_\_\_\_\_
- 3.4. What are the specific gender norms, roles or relations of the community that may contribute to poor vaccination coverage? \_\_\_\_\_
- 3.4.1. Do these norms affect men and women similarly or differently? \_\_\_\_\_
- 3.4.2. Does the affected group belong to a particular socioeconomic, ethnic or marginalized group? \_\_\_\_\_

- 3.4.3. Do the daily activities of women or men affect the risk for and vulnerability for vaccine preventable diseases (VPDs)? \_\_\_\_\_
- 3.4.4. Do you believe that access to and control over resources affect the risk of and vulnerability to VPDs? \_\_\_\_\_
- 3.4.5. Does the level of individual or community empowerment influence the risk for and vulnerability to VPDs? \_\_\_\_\_
- 3.4.5.1. Is this different for women, men, boys and girls? \_\_\_\_\_
- 3.5. Do educational levels of parents influence the risk for and vulnerability of their children against VPDs? \_\_\_\_\_
- 3.5.1. Is this different for boys and girls in the target population? \_\_\_\_\_
- 3.5.1.1. How? \_\_\_\_\_
- 3.6. Do paid employment opportunities influence the risk for and vulnerability to VPDs?
- 3.6.1. Is this different for women and men in the target population? \_\_\_\_\_
- 3.6.1.1. How? \_\_\_\_\_
- 3.6.2. Do women's and men's household, community and workplace responsibilities influence the risk for and vulnerability to VPDs? \_\_\_\_\_
- 3.7. Are both women and men seeking immunisation services appropriately? \_\_\_\_\_
- 3.7.1. Who is attending immunisation services? Women? Men? Certain age groups? Certain socioeconomic groups? \_\_\_\_\_
- 3.7.2. Who is consulting traditional healers or seeking alternative therapies for VPDs?
- 3.7.2.1. Women? \_\_\_\_\_
- 3.7.2.2. Men? \_\_\_\_\_
- 3.7.2.3. Certain age groups? \_\_\_\_\_
- 3.7.2.4. Certain socioeconomic groups? \_\_\_\_\_
- 3.7.2.4.1. Why these groups? \_\_\_\_\_
- 3.8. Do sociocultural factors affect health seeking behaviour related to this condition?
- 3.8.1. How? \_\_\_\_\_
- 3.8.2. Are these factors different for women and men? \_\_\_\_\_
- 3.8.2.1. How? \_\_\_\_\_
- 3.9. Do women or men in the affected group have specific types of financial or social vulnerability that may affect their ability to access and use immunisation services?
- 3.9.1. Is this vulnerability worsened by age, ethnic or religious affiliation, sex or other factors? \_\_\_\_\_

- 3.10. Are there any individual, indirect costs related to accessing immunisation services, such as transport or child care, that may affect women and men differently? \_\_\_\_\_
- 3.11. What are the opportunity costs (such as lost opportunities for income generation) for seeking and accessing immunisation ? \_\_\_\_\_
- 3.11.1. Are these different for women and men? \_\_\_\_\_
- 3.11.1.1. How? \_\_\_\_\_
- 3.12. What is your overall assessment of immunisation system in Nigeria/FCT with respect to gender?
- 3.12.1.  Gender-unequal
- 3.12.2.  Gender-blind
- 3.12.3.  Gender-sensitive
- 3.12.4.  Gender-specific
- 3.12.5.  Gender-transformative
- 3.12.6. Any explanation for your answer: \_\_\_\_\_
- 3.13. What do you think are the major barriers for immunisation? (rank them in order of importance):
- 3.13.1. Absence of immunisation services at health facility \_\_\_\_\_
- 3.13.2. Access of road/transport to go to health facility \_\_\_\_\_
- 3.13.3. Community/health service providers gender bias \_\_\_\_\_
- 3.13.4. Customs and cultural beliefs \_\_\_\_\_
- 3.13.5. Distance to health facility \_\_\_\_\_
- 3.13.6. Fear of social stigma \_\_\_\_\_
- 3.13.7. Gender discrimination \_\_\_\_\_
- 3.13.8. High cost of transport \_\_\_\_\_
- 3.13.9. Inconvenience of vaccination hours \_\_\_\_\_
- 3.13.10. Lack of information on health/immunisation \_\_\_\_\_
- 3.13.11. Lack of spouse approval \_\_\_\_\_
- 3.13.12. Language barrier at health facility \_\_\_\_\_
- 3.13.13. Long waiting hours at health facility \_\_\_\_\_
- 3.13.14. Misconception about vaccination \_\_\_\_\_
- 3.13.15. Multiple household responsibility of mothers \_\_\_\_\_

- 3.13.16. Political pressure \_\_\_\_\_
- 3.13.17. Religious reasons \_\_\_\_\_
- 3.13.18. Shortage of vaccine \_\_\_\_\_
- 3.13.19. Others \_\_\_\_\_

3.14. Are there any future plans to address socio-economic and gender determinants of immunisation in your organization in a more systematic and sustainable way?  
Please elaborate. \_\_\_\_\_

**4. Solutions/recommendations**

4.1. What should be done to address the socio-economic and gender barriers of immunisation in Nigeria in general and FCT in particular by:

- 4.1.1. Government \_\_\_\_\_
- 4.1.2. Development partners \_\_\_\_\_
- 4.1.3. Traditional/religious leaders \_\_\_\_\_
- 4.1.4. Academia \_\_\_\_\_
- 4.1.5. Community \_\_\_\_\_
- 4.1.6. Health Facility (specify) \_\_\_\_\_
- 4.1.7. Others (specify) \_\_\_\_\_

5. General remark, if any. \_\_\_\_\_

6. Do you have any questions? \_\_\_\_\_

**Thank you very much for your cooperation.**



## Appendix 9: Data assistant final report template

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Name of data collector: \_\_\_\_\_

Assigned area council: \_\_\_\_\_

Assigned Ward: \_\_\_\_\_

Duration of field work: Start date \_\_\_\_\_ Finish date \_\_\_\_\_

### A. Summary of household survey returns

Name of visited settlement	No. of HH survey questionnaires filled	No. of rejections from households	Reasons for the HH survey rejection

### B. Summary of health professional survey returns

Name of health facilities visited	No. of health professional surveys completed	No. of rejections	Reasons for the HP survey rejections

### C. Brief profile of the settlements visited

S/N	Assigned settlements (if changed from original plan, mention the reason for the change)	Based on your observation to the best of your knowledge, please provide general profile of the settlement (Accessibility, security, transportation means and cost, settlement pattern, distance from nearby town, major language spoken, availability of basic health facilities)	Major challenges encountered	Action taken to address challenges

### D. Justification for change of settlements, if any

S/N	Original settlement	Changed settlement	Reason(s) for the change

**E. Brief profile of the health facility visited**

S/N	Assigned health facility (if changed from original plan, mention the reason for the change)	Based on your observation to the best of your knowledge, please provide general profile of the health facility (Accessibility, security, transportation means and cost, distance from nearby town, availability of basic health services, equipment and supplies)	Major challenges encountered	Action taken to address challenges

**F. Justification for change of health facility, if any**

S/N	Original health facility	Changed health facility	Reason(s) for the change

General remarks: \_\_\_\_\_

## Appendix 10: Ethical clearance obtained from Federal Capital Territory, health research ethics committee, Abuja, Nigeria



### FEDERAL CAPITAL TERRITORY *Health Research Ethics Committee*

Research Unit, Room 10 Block A Annex, HHSS, FCTA Secretariat,  
No. 1 Kapital Street 11, Garki, Abuja-Abuja.

#### Notice of Research Approval

Approval Number: FHREC/2019/01/80/06-08-19

**Full Study Title: Gender and Social Economic determinants of Immunization Coverage in Nigeria. The Case Of Federal Capital Territory (FCT)**

**Principal Investigator:** Yared Gettu Yehualashet

**Address of Principal Investigator:** World Health Organization, UN House Nigeria

**Date of receipt of valid application:** 29/07/2019

The FCT Health Research Ethics Committee (FCT HREC) has approved the research described in the above stated protocol.

This approval is valid from **06/08/2019** to **05/08/2020**.

Note that no activity related to this research may be conducted outside of these dates. Only the FCT HREC approved informed consent forms may be used when written informed consent is required. They must carry FCT HREC assigned protocol approval number and duration of approval of the study. The FCT HREC reserves the right to conduct compliance visit to your research site without prior notification.

The National Code of Health Research Ethics requires the investigator to comply with all institutional guidelines, rules and regulations regarding the conduct of health research, and with the tenets of the code.

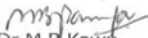
**Modifications:** Subsequent changes are not permitted in this research without prior approval by the FCT HREC.

**Problems:** All adverse events or unexpected side effects arising from this project must be reported promptly to FCT HREC.

**Renewal:** This approval is valid until the expiration date. If this project is to proceed beyond the expiration date, an annual report should be submitted to FCT HREC early in order to request for a renewal of this approval.

**Closure of Study:** At the end of the project, a copy of the final report of the research should be forwarded to FCT HREC for record purposes, and to enable us close the project.

For queries and further information contact FCT HREC office. I wish you best of luck with your research.

  
Dr M. B Kawu  
Chairman, FCT HREC  
August 06, 2019.



## **Appendix 11: Participant information and agreement form (for house-to-house survey)**

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Ethics clearance reference number: **2019-CHS-Depart-41891961**

Research permission reference number: **FHREC/2019/01/80/06-08-19**

Date: \_\_\_\_\_

Dear Prospective Participant,

My name is Yared Gettu Yehualashet, and I am doing research with Linda Cornwell, a Professor in the Department of Development Studies towards a Doctor of Philosophy at the University of South Africa. We are inviting you to participate in a study entitled Socio-economic and gender determinants of immunization coverage in the Federal Capital Territory, Nigeria.

I am conducting this research to find out what the socio-economic and gender determinants are that affect immunization coverage in the Federal Capital Territory. (Research permission reference number:

To this effect, I need to gather primary data from key immunization stakeholders which include households with vaccination eligible children, immunization service providers and key informants.

I chose you for this study among the 441 households that have children eligible for vaccination. Your household is chosen using established sampling methodologies practiced by World Health Organisation and the Federal Capital Territory.

The study involves administering survey questionnaires. You will be asked demographic, socio-economic, gender and vaccination related questions as it pertains to the study. On average, it is estimated that it will take 45-60 minutes of your time to answer to the questionnaire.

Participating in this study is voluntary and you are under no obligation to consent to participation. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a written consent form or give a verbal consent. You are free to withdraw at any time during the data gathering process without giving a reason. However, it will not be possible to withdraw once you have submitted the questionnaire. Participating in this study entails no remuneration.

The findings and recommendations of the research will contribute towards improving the immunization coverage by addressing identified socio-economic and gender

barriers that affect various components of vaccination activities in the Federal Capital Territory and beyond.

Your participation in the study poses no risk, harm or side-effects on you or others. Your name will not be recorded anywhere and no one will be able to connect you to the answers you give. Your answers will be given a code number or a pseudonym and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings.

I wish to inform you that your anonymous data may be used for other purposes, such as a research report, journal articles and/or conference proceedings.

Your answers will be stored electronically by the researcher for a minimum period of five years on a password protected computer.

This study has received written approval from the Department of Development Studies Research Ethics Review Committee, at the University of South Africa (Unisa). A copy of the approval letter can be obtained from the researcher if you so wish.

If you would like to be informed of the final research findings, please contact Yared Gettu Yehualashet on mobile phone number +2348034020828 or email [yagetye@gmail.com](mailto:yagetye@gmail.com). The findings are accessible as of June 2021.

Should you require any further information or want to contact the researcher about any aspect of this study, please contact me on Yared Gettu Yehualashet on mobile phone number +2348034020828 or email [yagetye@gmail.com](mailto:yagetye@gmail.com).

Should you have concerns about the way in which the research has been conducted, you may contact Professor Linda Cornwell, telephone number +2712429-8080, email [cornwl@unisa.ac.za](mailto:cornwl@unisa.ac.za). Contact the research ethics chairperson of the Department of Development Studies Research Ethics Review Committee, or the Chair of the Committee, Dr A Khan at [khana@unisa.ac.za](mailto:khana@unisa.ac.za), telephone number +2712429-6173 if you have any ethical concerns.

Thank you for taking time to read this information sheet and for participating in this study.

**Yared Gettu Yehualashet**

**ELECTRONIC CONSENT:** Please select your choice below.

Clicking on the "**agree**" button below indicates that:

- You have read the above information
- You voluntarily agree to participate
- You are at least 18 years of age

If you do not wish to participate in the research study, please decline participation by clicking on the "**disagree**" button.

Consent

Agreed

Disagreed

Thank you for your time

**Thank you for accepting to participate in this Survey. Please endorse here**

## **Appendix 12: Participant information and agreement form (for health professional survey)**

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Ethics clearance reference number: **2019-CHS-Depart-41891961**

Research permission reference number: **FHREC/2019/01/80/06-08-19**

Date: \_\_\_\_\_

Dear Prospective Participant,

My name is Yared Gettu Yehualashet, and I am doing research with Linda Cornwell, a Professor in the Department of Development Studies towards a Doctor of Philosophy at the University of South Africa. We are inviting you to participate in a study entitled Socio-economic and gender determinants of immunization coverage in the Federal Capital Territory, Nigeria.

I am conducting this research to find out what the socio-economic and gender determinants are that affect immunization coverage in the Federal Capital Territory. (Research permission reference number:

To this effect, I need to gather primary data from key immunization stakeholders which include households with vaccination eligible children, immunization service providers and key informants.

I chose you for this study among the 24 health care service providers. You have been chosen purposefully given your experience and responsibility in administering vaccination at the health facility by consulting the appropriate authorities.

The study involves administering survey questionnaires. You will be asked demographic, socio-economic, gender and vaccination related questions as it pertains to the study. On average it is estimated that it will take 60-90 minutes of your time to answer to the questionnaire.

Participating in this study is voluntary and you are under no obligation to consent to participation. If you do decide to take part, you will be asked to sign a written consent form electronically. You are free to withdraw at any time during the data gathering process without giving a reason. However, it will not be possible to withdraw once you have submitted the questionnaire. Participating in this study entails no remuneration.

The findings and recommendations of the research will contribute towards improving the immunization coverage by addressing identified socio-economic and gender

barriers that affect various components of vaccination activities in the Federal Capital Territory and beyond.

Your participation in the study poses no risk, harm or side-effects on you or others. Your name will not be recorded anywhere and no one will be able to connect you to the answers you give. Your answers will be given a code number or a pseudonym and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings.

I wish to inform you that your anonymous data may be used for other purposes, such as a research report, journal articles and/or conference proceedings.

Your answers will be stored electronically by the researcher for a minimum period of five years on a password protected computer.

This study has received written approval from the Department of Development Studies Research Ethics Review Committee, at the University of South Africa (Unisa). A copy of the approval letter can be obtained from the researcher if you so wish.

If you would like to be informed of the final research findings, please contact Yared Gettu Yehualashet on mobile phone number +2348034020828 or email [yagetye@gmail.com](mailto:yagetye@gmail.com). The findings are accessible as of June 2021.

Should you require any further information or want to contact the researcher about any aspect of this study, please contact me on Yared Gettu Yehualashet on mobile phone number +2348034020828 or email [yagetye@gmail.com](mailto:yagetye@gmail.com).

Should you have concerns about the way in which the research has been conducted, you may contact Professor Linda Cornwell, telephone number +2712429-8080, email [cornwl@unisa.ac.za](mailto:cornwl@unisa.ac.za). Contact the research ethics chairperson of the Department of Development Studies Research Ethics Review Committee, or the Chair of the Committee, Dr A Khan at [khana@unisa.ac.za](mailto:khana@unisa.ac.za), telephone number +2712429-6173 if you have any ethical concerns.

Thank you for taking time to read this information sheet and for participating in this study.



**Yared Gettu Yehualashet**

**ELECTRONIC CONSENT:** Please select your choice below.

Clicking on the "**agree**" button below indicates that:

- You have read the above information
- You voluntarily agree to participate
- You are at least 18 years of age

If you do not wish to participate in the research study, please decline participation by clicking on the "**disagree**" button.

Consent

Agreed

Disagreed

Thank you for your time

**Thank you for accepting to participate in this Survey. Please endorse here**

## **Appendix 13: Participant information and agreement form (key informant interview)**

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Ethics clearance reference number: **2019-CHS-Depart-41891961**

Research permission reference number: **FHREC/2019/01/80/06-08-19**

Date: \_\_\_\_\_

**Title: Socio-economic and gender determinants of immunization coverage in the Federal Capital Territory, Nigeria**

Dear Prospective Participant

My name is Yared Gettu Yehualashet, and I am doing research with Linda Cornwell, a Professor in the Department of Development Studies towards a Doctor of Philosophy at the University of South Africa. We are inviting you to participate in a study entitled Socio-economic and gender determinants of immunization coverage in the Federal Capital Territory, Nigeria.

I am conducting this research to find out what the socio-economic and gender determinants are that affect immunization coverage in the Federal Capital Territory. (Research permission reference number: (FHREC/2019/01/80/06-08-19)

To this effect, I need to gather primary data from key immunization stakeholders which include households with vaccination eligible children, immunization service providers and key informants.

I chose you for this study along with several other officials of government and partner agencies for key informant interview given your direct responsibility and experience in managing immunization activities in your organisation.

In the wake of the COVID-19 pandemic and to mitigate the risks associated with face-to-face meetings, the interview will be conducted in writing. If I need clarification on your answers, I will revert to you by email or phone call. You will be asked basic demographic, socio-economic, gender and vaccination related questions as it pertains to the study. On average, it is estimated that it will take 90-120 minutes of your time to answer to the questions.

Participating in this study is voluntary and you are under no obligation to consent to participation. You are free to withdraw at any time during the data gathering process without giving a reason.

The findings and recommendations of the research will contribute towards improving the immunization coverage by addressing identified socio-economic and gender barriers that affect various components of vaccination activities in the Federal Capital Territory and beyond.

Your participation in the study poses no risk, harm or side-effects on you or others. Your name will not be recorded anywhere and no one will be able to connect you to the answers you give. Your answers will be given a code number or a pseudonym and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings.

I wish to inform you that your anonymous data may be used for other purposes, such as a research report, journal articles and/or conference proceedings.

Electronic information will be stored on a password protected computer.

This study has received written approval from the Department of Development Studies Research Ethics Review Committee, at the University of South Africa (Unisa). A copy of the approval letter can be obtained from the researcher if you so wish.

If you would like to be informed of the final research findings, please contact Yared Gettu Yehualashet on mobile phone number +2348034020828 or email [yagetye@gmail.com](mailto:yagetye@gmail.com). The findings are accessible as of June 2021.

Should you require any further information or want to contact the researcher about any aspect of this study, please contact me on Yared Gettu Yehualashet on mobile phone number +2348034020828 or email [yagetye@gmail.com](mailto:yagetye@gmail.com).

Should you have concerns about the way in which the research has been conducted, you may contact Professor Linda Cornwell, telephone number +27+12+429-8080, email [cornwl@unisa.ac.za](mailto:cornwl@unisa.ac.za). Contact the research ethics chairperson of the Department of Development Studies Research Ethics Review Committee, or the Chair of the Committee, Dr A Khan at [khana@unisa.ac.za](mailto:khana@unisa.ac.za), telephone number +27+12+429-6173 if you have any ethical concerns.

Thank you for taking time to read this information sheet and for participating in this study.

Yared Gettu Yehualashet

**Appendix 14: 2x2 table Odds Ratio (OR) analysis result of the dichotomised socio-economic and gender variables in relation to immunisation coverage**

Exposure Variables (Dichotomized)	Intervention category	Control/ Reference/ category	Immunisation access (Penta-1)				Immunisation utilization (Penta-3)			
			OR	Lower CI	Upper CI	P Value	OR	Lower CI	Upper CI	P Value
Residence area	Urban	Rural	7.95	2.81	22.5	P=0.0001	6.8	3.4387	13.5176	P < 0.0001
Care for the child as	Married Couple	Single Mother	5.61	2.9459	10.7	P < 0.0001	5.0	2.8876	8.5534	P < 0.0001
Sex of participant	Female	Male	1.49	0.4442	5.0	P = 0.5171	1.9	0.7125	4.8564	P = 0.2049
Marital status	Married	Others	0.26	0.0351	2.0	P = 0.1921	1.1	0.4671	2.6123	P = 0.8207
Marriage type	Monogamy	Polygamy	1.69	0.8370	3.4141	P = 0.1432	1.4	0.7663	2.4131	P = 0.2935
Mother's age-range	>30	18 - 30	1.30	0.6412	2.6199	P = 0.4701	1.3	0.7496	2.1405	P = 0.3771
Father's age-range	>30	18 - 30	0.93	0.4028	2.2	P = 0.8739	1.5	0.8713	2.7551	P = 0.1360
Religion of participant	Christianity	Islam	1.65	0.9077	3.0	P = 0.1006	1.7	0.934	3.1024	P = 0.0824
Father's education level	Literate	Illiterate	5.39	2.8386	10.2	P < 0.0001	4.0	2.3614	6.9189	P < 0.0001
Mother's education level	Literate	Illiterate	8.42	4.4777	15.8	P < 0.0001	5.1	3.0399	8.4292	P < 0.0001
Sex of child	Male	Female	1.37	0.75	2.5	P = 0.3042	1.0	0.6434	1.5861	P = 0.9648
Birth place of first born child	HF/Other	Home	4.44	2.3411	8.4	P < 0.0001	2.5	1.6059	4.0141	P = 0.0001
Birth place of eligible child	HF/Other	Home	4.61	2.4502	8.7	P < 0.0001	2.7	1.6882	4.2313	P < 0.0001

Exposure Variables (Dichotomized)	Intervention category	Control/ Reference/ category	Immunisation access (Penta-1)				Immunisation utilization (Penta-3)			
			OR	Lower CI	Upper CI	P Value	OR	Lower CI	Upper CI	P Value
Knowing nearest health facility	Yes	No	2.14	0.45	10.2	P = 0.3383	1.7	0.4336	6.4065	P = 0.4571
Ever used health facility	Yes	No	2.55	0.99	6.6	P = 0.0535	1.3	0.5435	3.1204	P = 0.5535
Use of antenatal care	Yes	No	10.45	4.5006	24.3	P < 0.0001	5.8	2.6068	13.1197	P < 0.0001
Mother vaccinated against TT	Yes	No	1.70	0.92	3.2	P = 0.0927	1.1	0.6358	1.7383	P = 0.8454
Vaccination card possession	Yes	No	28.68	13.50	60.9	P < 0.0001	6.5	3.8855	10.7071	P < 0.0001
Knowledge on immunisation	Yes	No	11.52	6.04	22.0	P < 0.0001	7.1	4.1905	11.8865	P < 0.0001
Exposure to child health information	Yes	No	5.44	2.7941	10.6	P < 0.0001	2.8	1.7490	4.3883	P < 0.0001
Knowledge about vaccine preventable diseases	Yes	No	17.67	5.41	57.7	P < 0.0001	2.9	1.7729	4.7075	P < 0.0001
Source of household income	Others	Farming	5.93	2.94	11.9	P < 0.0001	2.9	1.8251	4.6168	P < 0.0001
Adequacy of income	Adequate	Inadequate	1.04	0.47	2.3	P = 0.9232	1.1	0.5959	2.0142	P = 0.7690
Self-assessment of	Medium & High	Low	7.06	3.6568	13.6	P < 0.0001	5.7	3.5239	9.1939	P < 0.0001

Exposure Variables (Dichotomized)	Intervention category	Control/ Reference/ category	Immunisation access (Penta-1)				Immunisation utilization (Penta-3)			
			OR	Lower CI	Upper CI	P Value	OR	Lower CI	Upper CI	P Value
socio-economic status										
Decision making on buying/selling small household items	Mother	Spouse	5.65	2.67	11.9	P < 0.0001	2.0	1.1478	3.4413	P = 0.0142
	Joint decision	Single parent/ guardian decision	1.74	0.87	3.5	P = 0.1196	1.3	0.8002	2.1675	P = 0.2788
Decision making on buying/selling major household items	Mother	Spouse	4.57	1.36	15.4	P = 0.0143	2.4	1.0484	5.2736	P = 0.0380
	Joint decision	Single parent/ guardian decision	<b>3.78</b>	<b>1.84</b>	<b>7.8</b>	<b>P = 0.0003</b>	<b>1.5</b>	<b>0.9372</b>	<b>2.3612</b>	<b>P = 0.0920</b>
Mother allowed to keep some money at her disposal	Yes	No	2.52	0.90	7.0	P = 0.0786	1.1	0.4027	3.0172	P = 0.8497
Husband consults wife on how to spend the household money on	Yes	No	1.87	0.88	4.0	P = 0.1035	2.2	1.2046	3.8588	P = 0.0097
Decides on seeking health services for a child	Mother	Spouse	2.65	1.01	7.0	P = 0.0478	1.4	0.6452	2.8864	P = 0.4159
	Joint decision	Single parent/	2.26	1.2367	4.1	P = 0.0081	1.8	1.1433	2.9265	P = 0.0118

Exposure Variables (Dichotomized)	Intervention category	Control/ Reference/ category	Immunisation access (Penta-1)				Immunisation utilization (Penta-3)			
			OR	Lower CI	Upper CI	P Value	OR	Lower CI	Upper CI	P Value
		guardian decision								
Wife need permission to leave the house	No	Yes	2.35	1.07	5.2	P = 0.0324	0.9	0.5617	1.4044	P = 0.6120
Husband assists with household chores	Yes	No	1.66	0.86	3.2	P = 0.1342	2.1	1.3004	3.5522	P = 0.0028
Mother decides on vaccinating a child	Yes	No	3.65	1.44	9.2	P = 0.0062	1.1	0.5008	2.3185	P = 0.8485
Who decides where the mother delivers a child	Mother	Spouse	0.67	0.25	1.8	P = 0.4297	0.6	0.2501	1.3195	P = 0.1914
Gender violence experience	No	Yes	2.81	1.37	5.8	P = 0.0048	1.6	0.8233	2.9229	P = 0.1743
Spouse beating Justified	No	Yes	5.58	2.35	13.2	P = 0.0001	3.9	1.7512	8.603	P = 0.0008

Key:

Statistically significant if OR >1 and P <0.05

Statistically not significant if OR < 1 and P >0.05

OR – Odds Ratio

CI – Confidence interval (at 95%)

P value – probability value

**Appendix 15: Ethical clearance obtained from college of human sciences, research ethics review committee, University of South Africa (UNISA)**



**COLLEGE OF HUMAN SCIENCES RESEARCH ETHICS REVIEW COMMITTEE**

20 August 2019

Dear Yared Gettu Yehualashet

NHREC Registration # :  
Rec-240816-052  
CREC Reference # : 2019-  
CHS-Depart-41891961

**Decision:**  
**Ethics Approval from 20 August**  
**2019 to 20 August 2022**

**Researcher(s): Yared Gettu Yehualashet**

**Supervisor(s) Prof L Cornwell**

[cornwl@unisa.ac.za](mailto:cornwl@unisa.ac.za)

Gender and socio-economic determinants of immunization coverage in Nigeria – the case of Federal Capital Territory (FCT)

**Qualifications Applied: PhD in Development Studies**

Thank you for the application for research ethics clearance by the Unisa Department of Developmental Studies, College of Human Science Ethics Committee. Ethics approval is granted for three years.

The **low risk application** was **reviewed and expedited** by the Department of Development Studies College of Human Sciences Research Ethics Committee, on 15 August 2019 in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.





2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the Department of Development Studies Ethics Review Committee.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data require additional ethics clearance.
7. No fieldwork activities may continue after the expiry date (20 August 2022). Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

The reference number **2019-CHS-Depart-41891961** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.

Yours sincerely,

Signature :

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