A COMPARATIVE ANALYSIS OF FACTORS ASSOCIATED WITH MODERN CONTRACEPTIVE USE AMONG YOUTH (15 – 24 YEARS) IN NORTHERN AND SOUTHERN NIGERIA

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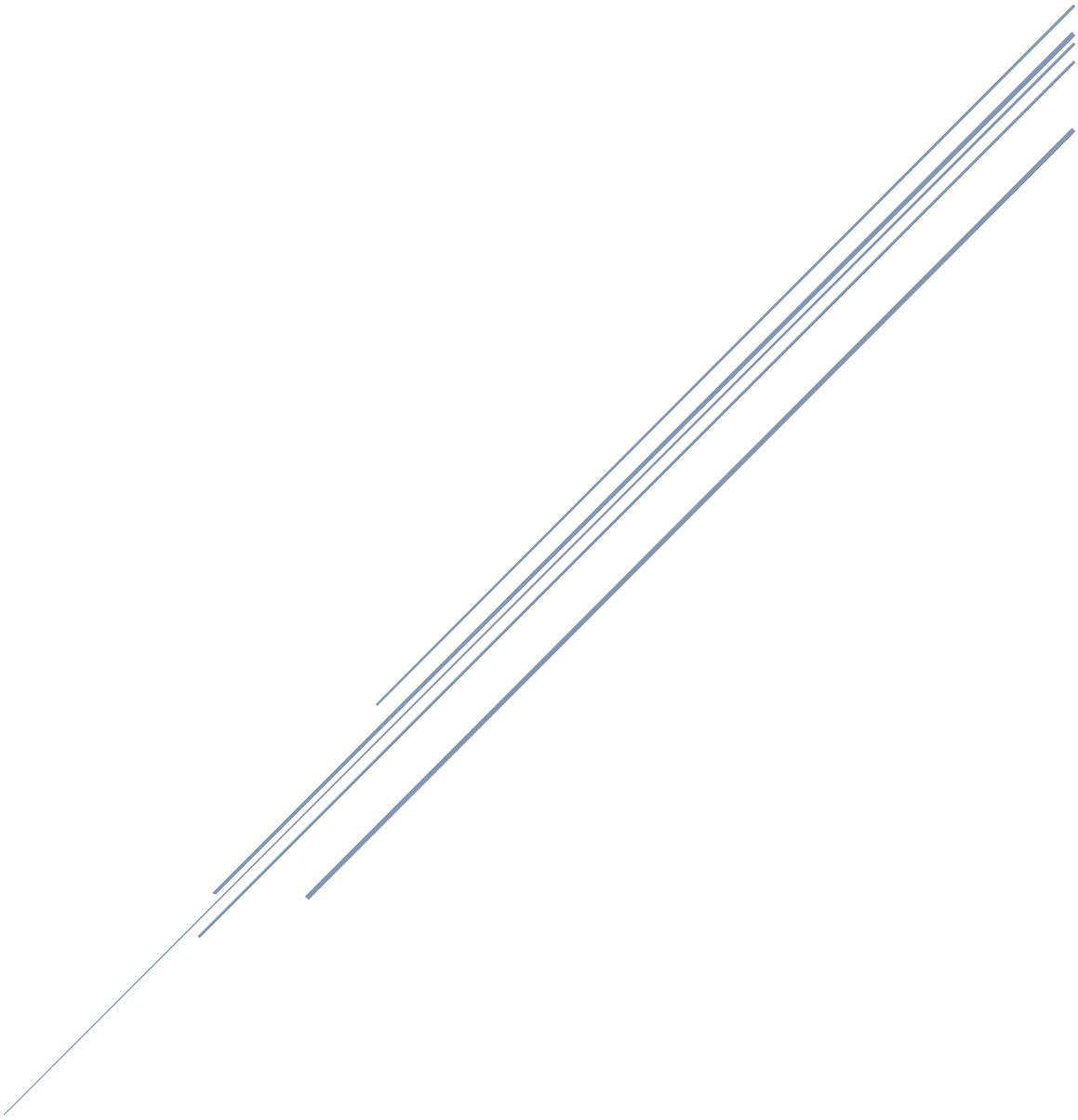

KIT Royal Tropical Institute
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A COMPARATIVE ANALYSIS OF FACTORS ASSOCIATED WITH MODERN CONTRACEPTIVE USE AMONG YOUTH (15-24 YEARS) IN NORTHERN AND SOUTHERN NIGERIA

A thesis submitted in partial fulfilment of the requirement for the degree of Master of Science in Public Health

by

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Declaration:

Where other people's work has been used (from either a printed source, internet, or any other source), this has been carefully acknowledged and referenced in accordance with departmental requirements.

The thesis, **A comparative analysis of factors associated with modern contraceptive use among Youth (15-24 years) in Northern and Southern Nigeria**, is my own work.

Signature: 

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LIST OF ABBREVIATIONS

NDHS: Nigerian Demographic Health Survey

WHO: World Health Organization

FP: Family Planning

BMGF: Bill &Melinda Gate Foundation

A360: Adolescent 360

NURHI 2: Nigeria Urban Reproductive Health Initiative 2

LPAY: Life Planning for Adolescent and Youth

LMICs: Low- and Middle-Income Countries

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DEFINITION OF TERMS

Family Planning: "Family planning allows people to attain their desired number of children, if any, and to determine the spacing of their pregnancies. It is achieved through the use of contraceptive methods and the treatment of infertility" (WHO, 2021b).

Modern Contraceptive Method: Modern methods of contraception include: oral contraceptive pills, implants, injectables, contraceptive patch and vaginal ring, intrauterine device (IDU), female and male condoms, female and male sterilization, vaginal barrier methods (including the diaphragm, cervical cap and spermicidal agents), lactational amenorrhea method (LAM), emergency contraception pills, standard days method (SDM), basal body temperature (BBT) method, TwoDay method and sympto-thermal method (WHO, 2021c).

Modern Contraceptive prevalence rate: is the percentage of women of reproductive age (15-49) who are currently using, or whose sexual partner is currently using, at least one modern method of contraception, regardless of the method used (NDHS, 2018).

Unmet need for family planning: The DHS program defines "the percentage of women who do not want to become pregnant but are not using contraception" (DHS, 2012).

Maternal Mortality: "Maternal mortality refers to deaths due to complications from pregnancy or childbirth" (UNICEF, 2019).

Youth: The United Nations, for statistical purposes, defines 'youth' as those persons between the ages of 15 and 24 years (United Nations, 2021)

Young women: females between the ages of 15 and 24 years

Young people: World Health Organization (WHO) defines 'Young People' as individuals in the age range of 10-24 years (WHO, 2021a)

Adolescents: WHO defines 'Adolescents' as individuals in the 10-19 years age group (WHO, 2021a)

Confounding: Confounding is often referred to as a "mixing of effects" wherein the effects of the exposure under study on a given outcome are mixed in with the effects of an additional factor (or set of factors), resulting in a distortion of the true relationship (Skelly, Dettori & Brodt, 2012).

Odds ratio: An odds ratio (OR) is a measure of association between an exposure and an outcome. The OR represents the odds that an outcome will occur given a particular exposure, compared to the odds of the outcome occurring in the absence of that exposure (Szumilas, 2010).

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ABSTRACT

Background

Unintended pregnancy among youth has severe implications on their health, education and social life. While 19% of adolescents 15-19 years have started childbearing, and 74.7% of youth aged 20-24 have started sexual activity by the age of 20 in Nigeria, contraceptive prevalence among this age group (15-24 years old) in Nigeria is still very low at 5.4%.

Objective

To understand the factors associated with the disparities in modern contraceptive use among youth (15-24 years) across the north-south divide in Nigeria and provide recommendations for program interventions.

Methodology

This study adopted a quantitative secondary data analysis of the 2018 Nigeria Demographic and Health Survey and a literature review of the evaluation reports of two youth-focused reproductive health initiative projects in Nigeria (2015-2020).

Results

Modern contraceptives prevalence among youth was 3.6% in the north and 8.6% in the south. Factors significantly associated with modern contraceptive use (MCU) in both regions were age, number of children and perceived risk of pregnancy. Factors significant in the north were socioeconomic status, education, religion, partner communication and exposure to family planning (FP) messages on newspaper/magazines, while family/living arrangement was significant only in the south. The A360 and NURHI 2 LPAY projects addressed religion, contraceptive awareness, partner communication and sociocultural beliefs.

Conclusion

This study revealed that there are disparities in the MCU and that different factors are associated with MCU among youth across the north-south divide in Nigeria. While FP programs have addressed some factors identified in this study, socioeconomic factors still need attention. Hence, FP programs targeting Nigerian youth should be better contextualized to the regions and local culture.

KEYWORDS: Contraceptive, Family Planning, Nigeria, Youth, Adolescents

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CHAPTER ONE

1.0 Introduction

Adolescent childbearing continues to be a significant public health issue, especially in Low- and Middle-Income Countries (LMICs), owing to high rates of unintended pregnancy (including closely spaced births) among young women (Amongin *et al.*, 2020; UNESCO, 2017; WHO, 2020). Despite developments in sexual and reproductive health and rights over the last two decades, young women's fertility remains high, especially in sub-Saharan Africa. While the birth rate among adolescent girls globally decreased from 56 births per 1000 women in the year 2000 to 44 births per 1000 women in 2018, sub-Saharan Africa yet had the highest regional adolescent birth rate of about 101 births per 1000 girls in 2018 (United Nations, 2018). These statistics are close to the 21 million girls aged 15–19 years in developing countries becoming pregnant, with 12 million giving birth every year (Benova *et al.*, 2018).

It is estimated that the non-use of a modern form of contraceptive is responsible for 90% of these annual unplanned pregnancies among teenage girls in Sub-Saharan Africa, Latin America and the Caribbean, and South Central and Southeast Asia (Darroch *et al.*, 2016b). This underpins the importance of providing access to contraceptives for every sexually active woman of reproductive age, including youth, to prevent unintended pregnancies and the associated risks such as maternal morbidity and mortality. In Nigeria, 40-41% of deaths among females aged 15-24 are maternal related deaths (NDHS, 2018). Despite evidence showing that contraceptive use can reduce maternal mortality and coupled with the fact that various contraceptive methods are available in Nigeria, many young people who want to prevent pregnancy and HIV/STIs are not using a contraceptive method. Contraceptive use among youth 15-24 years old is 5.2% and is lower compared to the national average (TRACK 20, 2021; Ezenwaka *et al.*, 2020). This had further led to a high unmet need for contraceptives among sexually active unmarried adolescents aged 15-19 years (23%) as well as sexually active unmarried young women aged 20-24 years old (18%) (NDHS, 2018). As a result of this low contraceptive use, Nigeria has one of the highest maternal mortality rates in Sub-Saharan Africa(WHO, 2015). It ranks second globally in maternal deaths, with illegal and unsafe abortions accounting for between 20% and 40% of Nigeria's approximately 60,000 maternal deaths each year (WHO, 2015)

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1.1 Background

1.1.1 Country Context: Demography, Ethnicity, Religion and Population Distribution of Nigeria

Nigeria is Africa's most populous country, with roughly 212 million people living in an area of 923,768 km2 (356,669 sq. mi), and the world's eighth-most populous country (Statista, 2020). Nigeria has a very young population as shown in figure 1, with half of its population less than 19 years, and this population has been estimated to double by 2050 (Statista, 2020).

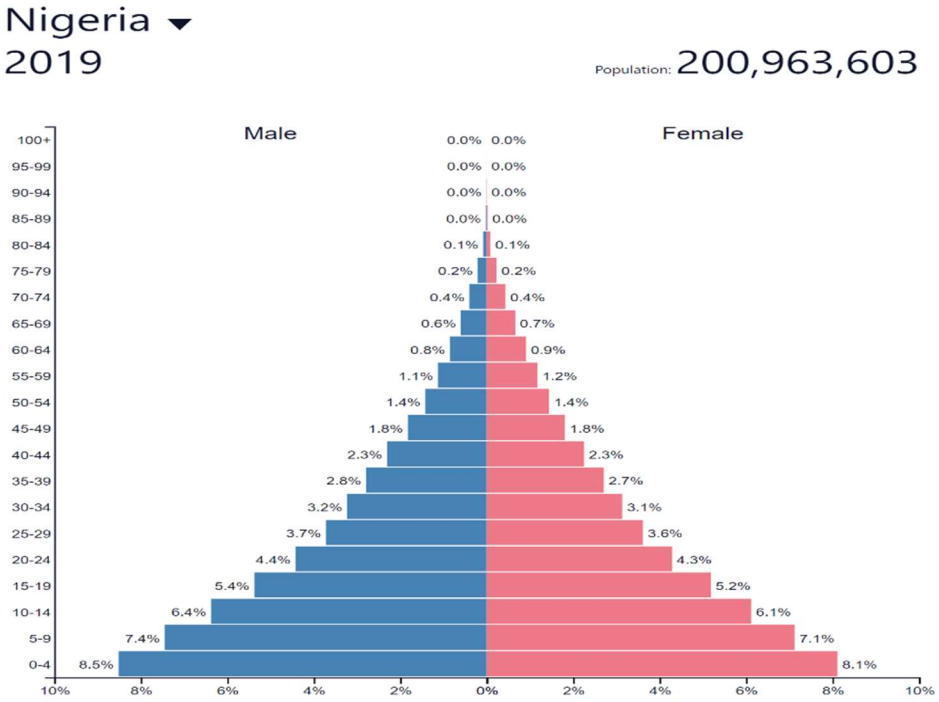

Figure 1:Pyramid showing the population distribution of Nigeria (Population Pyramid, 2019).

Approximately 50% of Nigerians live in urban areas, with an annual rate of urbanization estimated at 4.3% (World factbook, 2021). Nigeria comprises over 250 diverse ethnic groups, speaking more than 500 languages, and the variety of customs and traditions among them contributes to the country's tremendous cultural diversity (Carl Levan & Patrick Ukata, 2018). The North-East, North-West, North-Central, South-East, South-South, and South-West make up the six geopolitical zones in Nigeria. Nigeria is subdivided into 36 states and the federal capital territory (FCT), Abuja. The Hausa ethnic group from the north accounts for 27.4% of the population, followed by the Yorubas from the South-west at 21%, and the Igbos from the South-east constitute 18% (World factbook, 2021). Also, some other South-south ethnic groups include the Efik, Ibibio,

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Annang, and Ijaw, and Nigeria's Midwest comprises the Tiv, Urhobo-Isoko, Edo, and Itsekiri peoples (Carl Levan & Patrick Ukata, 2018).

Though the most generally spoken languages are Hausa, Igbo, and Yoruba, the country's lingua franca is English. In addition, Nigerian pidgin is widely used as an unofficial mode of communication, particularly in the Nigerian cities of Warri, Sapele, Ughelli, Benin, and Port Harcourt, where it is most prevalent (Osoba, 2015). An estimate in 2018 indicates that 53.5% are Muslims, 45.9% are Christians (10.6% are Roman Catholic and 35.3% other Christian), and 0.6% identify as other religious groups. (Statista, 2021a).

1.1.2 Socio-Economic Status of Nigeria

Nigeria is susceptible to the upheaval in the global economy induced by COVID-19, owing to the sharp decrease in oil prices and the subsequent surge in risk aversion in global capital markets (World Bank, 2020). Exports of oil represent more than 80% of total exports and half of the total government income. Non-oil sectors and services are also affected by oil prices, with extra pressure coming from overseas portfolio investors' evaluation of risks and local liquidity management (World Bank, 2020). The macroeconomic environment is more difficult now than in 2015-2016 when oil prices plummeted, and Nigeria entered its first recession in 25 years. The excess crude account is exhausted, foreign reserves heavily rely on short-term inflows, and investor confidence is harmed by uncertainty over policy direction (World Bank, 2020). The budget deficit of the general government was 4.4% of GDP in 2019, up from 1.8% in 2014 (World Bank, 2020).

Additionally, unemployment and underemployment are likely to rise, putting a strain on poor households and putting more of the population at risk of falling into poverty. In 2020, only agriculture was predicted to provide a positive contribution to GDP growth. (World Bank, 2020).

1.1.3 Nigeria Health Care System and Major Health Problems

Nigerian health care has suffered multiple setbacks, which may be attributed to the inadequate and underdeveloped healthcare system (Onwujekwe *et al.*, 2010). In Nigeria, particularly in rural areas, health facilities (health clinics, workers, and medical equipment) are insufficient (Welcome, 2011). While the Nigerian government has proposed numerous reforms to address the wide range of challenges plaguing the healthcare system, implementation at the state and local government levels

is very poor (Welcome, 2011). The country's health care system continues to be underdeveloped, as evidenced by a lack of coordination, fragmentation of services, a scarcity of resources, inadequate drugs and supplies, insufficient and decaying infrastructure, inequity in resource distribution, and access to care with poor quality (Welcome, 2011). Additionally, a lack of clarity regarding roles and responsibilities among the various levels of government had exacerbated the problem (Welcome, 2011). Nigeria's poor health care system has resulted in negative sexual and reproductive health outcomes, especially for girls and women in need of key services.

1.2 Sexual and Reproductive Health and Rights

Nigeria has some of the worst reproductive health outcomes in the world. With a median age of 18.3 years and the highest rate of extreme poverty globally, a large and growing number of women of reproductive age require contraception (NDHS, 2018). Even though global contraceptive use and tackling the unmet need for contraception have greatly improved since the inception of family

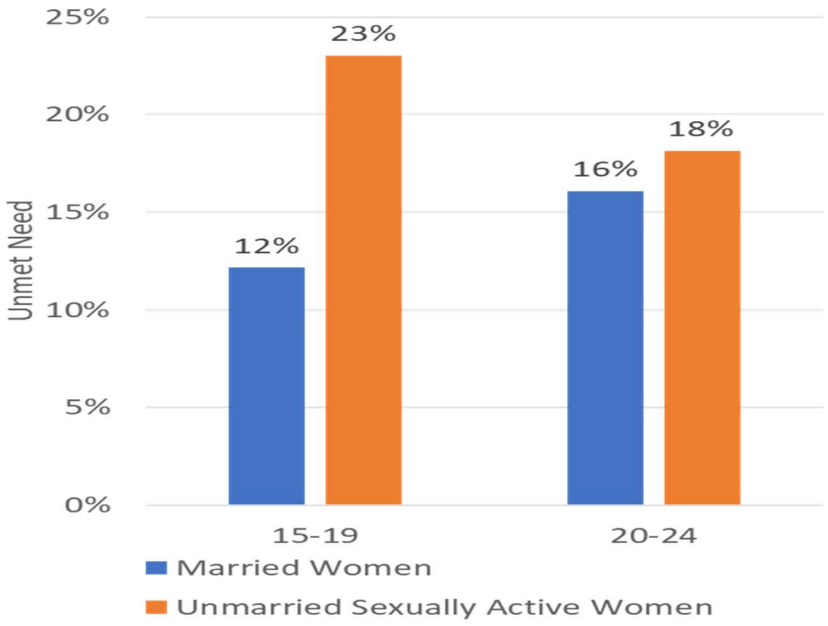

Figure 2: Unmet Need for Modern FP among women aged 15-24 years old (NDHS, 2018).

planning programs in Africa, Nigeria continues to lag considerably behind (Alkema *et al.*, 2013). The unmet need for modern contraception accounts for 84% of unintended pregnancies, with approximately 25% of such pregnancies ending in abortion (Bamgboye & Ajayi, 2016). In Nigeria, unsafe abortions continue to be a leading cause of maternal morbidity and mortality. Adolescents in Nigeria encounter various challenges in obtaining information and access to contraception and

may face additional barriers to contraception access. While the legal age of consent for sexual activity in Nigeria is eighteen, access to contraceptives is not officially restricted by age (SAT, 2018). However, many providers restrict access to contraception based on their age or parity restrictions; this is almost certainly an act of self-preservation in the face of ambiguous laws (Schwandt, Speizer & Corroon, 2017).

1.2.1 Pregnancies in Youth (15-24 years)

Young adulthood is a crucial phase in a young person's life, marked by many psychological, physical, and social changes (Brand & Kirov, 2011). At this stage of human development, young adults develop an increased interest in adult-related experiences and behaviours, such as initiating new relationships with the opposite sex, engaging in sexual activity, and engaging in other risky behaviours. (Kothari *et al.*, 2012). Most youths appear to expect freedom while still lacking the requisite knowledge and self-confidence to make an informed decision about their sexuality (Kar, Choudhury & Singh, 2015; Sanchez *et al.*, 2020; HealthThink Analytics, 2017). These risky sexual behaviours predispose them to a variety of sexual and reproductive health problems that disproportionately affect young adults, including unintended pregnancy sexually transmitted diseases (STDs) such as HIV/AIDS, unsafe abortions, and maternal mortality (Babalola & Oyenubi, 2018; Sanchez *et al.*, 2020; Ezenwaka *et al.*, 2020; HealthThink Analytics, 2017; Chandra-Mouli *et al.*, 2014).

Pregnancies in adolescence, both planned and unplanned, are a severe problem. Unplanned pregnancies are harmful to young people's health and obstruct their socioeconomic development, and their babies have an increased risk of poor health outcomes (Papri *et al.*, 2016). In unintended pregnancy cases, most adolescents face a greater risk of educational disruption, early marriage with more children at closer intervals, and future unemployment, resulting in low income and substandard living conditions (Women Deliver & The Population Council, 2019).

Each year, millions of youth (15-24 years) in Africa experience unwanted pregnancies, with approximately 60% of these pregnancies ending in unsafe abortions (Idowu *et al.*, 2017). Compared to other sub-regions in Sub-Saharan Africa, West Africa has the highest proportion of adolescent pregnancies (MacQuarrie, Mallick & Allen, 2017), and in Nigeria, 19% of adolescents 15-19 years have begun childbearing. Moreover, childbirth complications are more common in these young mothers due to immature body physiology to cope with the procedure (HealthThink

Analytics, 2017). Additionally, babies born to these young mothers are also at high risk of mortality within a few weeks of birth or suffer health risks such as low birth weight, which could have long-term consequences on them later in life (HealthThink Analytics, 2017).

1.2.2 Contraceptives Use among Youth (15-24) in Northern and Southern Nigeria

Despite considerable efforts by the Nigerian government in contraception, contemporary contraception usage remains low, particularly in northern Nigeria compared to southern Nigeria. (Adebayo *et al.*, 2013). According to NDHS 2018, only 6% of young adults in the Southwest and 9% in southeast started childbearing, while 29% of young adults in the Northwest had started (NDHS, 2018). Bauchi has the greater percentage of young adults who have started having children, while Lagos has the lowest (41% versus 1%) (NDHS, 2018). Young adults with more than a secondary education tend to start childbearing later than those with no education because of their poor knowledge of contraceptive use (NDHS, 2018).

According to the 2018 Nigerian Demographic and Health Survey, the prevalence of modern contraception was between 6.2 and 13.8% in the northern zones, compared to between 12.9 and 24.3% in the southern zones. Contextual factors in Nigeria may help explain the North-South disparity in contraceptive use (Ejembi, Dahiru & Aliyu, 2015). In predominantly Muslim northern Nigeria, pronatalist beliefs probably account for a sizable portion of the disparities in contraceptive method use observed between the north and south; Against this backdrop, many people believe that using contraception is against Islam's teachings (Babalola & Oyenubi, 2018). However, there is limited evidence on the relative importance of the various factors that explain the North-South gap in contraceptive use in Nigeria.

1.2.3 Factors affecting the use of contraceptives

Despite some investment by the Nigerian government and major international donors in providing family planning services in Nigeria, modern contraception use remains low, particularly in northern Nigeria (Adebayo *et al.*, 2013). Several studies have identified factors that contribute to Nigeria's low contraceptive prevalence. These factors are concerned with both demand and supply. Various supply-side factors have been shown to contribute to low contraceptive use in Nigeria, which includes the availability of varieties of contraceptive method options (method mix), provider's technical and interpersonal skills, provider bias, and inconsistent supply of contraceptives (FMOH, 2020; Schwandt, Speizer & Corroon, 2017). The demand-side factors

which are correlated with contraceptive use in Nigeria are socioeconomic and demographic characteristics, including age, parity (no of pregnancy/children by the woman), education, religion, urban residence, and household wealth (Okigbo *et al.*, 2017; Sekoni, O. and Oladoyin, 2016; Ejembi, Dahiru & Aliyu, 2015). It has been shown that religious prohibitions and community stigma have a detrimental effect on young adults' decisions to pursue contraceptive use (Calhoun *et al.*, 2013; Oluwasanu *et al.*, 2019; Chandra-Mouli *et al.*, 2014; Sedgh, Ashford & Hussain, 2016).

Discrimination by health practitioners: Unprofessionalism, inadequate communication skills, and discrimination by health care providers all contribute to the low quality of information and services available to contraceptive users in Nigeria (Monjok, 2010; Ndayizigiye, 2014). Minimum age bias, in which health care providers indicate they will not offer a contraceptive method to a client under a specified age (typically 15 years or younger), was discovered to be the most prevalent provider discrimination (Schwandt, Speizer & Corroon, 2017). Up to 51.7% believed that rather than providing contraceptives to young adults, they should be encouraged to abstain from sex until marriage (Ahanonu, 2014; Ajah *et al.*, 2015). Additionally, some providers demonstrated bias regarding the methods they believe are appropriate for various adolescent clients (Schwandt, Speizer & Corroon, 2017). For example, a study reviewed that providers frequently recommended condoms and the pill to unmarried clients and longer-acting methods to married clients out of concern for their fertility (Sieverding *et al.*, 2018). Furthermore, these providers frequently justify their recommended method appropriateness bias by claiming to be safeguarding unmarried women's fertility (Sieverding *et al.*, 2018).

Geographical location: Around 54% of Nigerians live in rural areas, many of which are inaccessible and have inadequate coverage for reproductive health services(NDHS, 2018). In rural and remote regions of Nigeria, health facilities are either non-existent, too expensive to access or have an inadequate number of skilled health workers, equipment, or a varied combination of modern contraceptive methods (MSION, 2021). Depending on the region, travelling to the clinic may be unsafe or time-consuming for youth, particularly during a crisis or natural disaster such as flooding. In Nigeria (UNFPA, 2021), a shortage of modern contraceptives is also a major concern (Auta & Banwat, 2011; MSION, 2021).

Direct and indirect costs of service: Modern contraceptives are officially free in the Nigerian public sector (FMOH, 2020). However, users must pay for them in the private sector, and the price in the private sector varies depending on the methods used and the type of provider (Monjok, 2010). In Nigeria, the high cost of modern contraceptives creates barriers to consumer access and choice (Riley *et al.*, 2018). Additionally, the average cost of an injectable dose is high in private clinics, where clients must pay for drug administration services in addition to the cost of the drugs (Onwujekwe *et al.*, 2013). Furthermore, even when service delivery points are free, the cost of transportation to the nearest family planning service delivery point represents a significant indirect cost to users (Ndayizigiye, 2014). A study conducted in Nigeria demonstrates a negative correlation between transportation costs and contraceptive utilization: as transportation costs increase, the number of people who use contraceptives decreases (Onwujekwe *et al.*, 2013).

Interpersonal factors: Interpersonal factors, such as a partner's perceived lack of support, may also restrict the social support needed to seek contraceptives uptake (Sedgh, Ashford & Hussain, 2016). On an individual basis, a Guttmacher study found that infrequent sex, possible side effects of contraceptives, and inadequate knowledge of the improper or incorrect use of contraceptives are the most common explanations for women not using a contraceptive method (Sedgh, Ashford & Hussain, 2016).

Misconceptions and fear of side effects: In Nigeria, the most frequently cited reason for not using modern contraceptives is fear of side effects (Moreira *et al.*, 2019; Nigeria Health Watch, 2019). family planning myths are pervasive in Nigeria, both on an individual and community level. This is motivated by rumours or misconceptions that modern contraception poses an immediate or future threat to women's health and is capable of causing harm to the womb as well (Nigeria Health Watch, 2019). The more a young person believes in myth, the less likely she will use modern contraception (Funke Fayehun, 2017; Gueye *et al.*, 2015). Some young adults believe that modern contraceptives would result in excessive bleeding, headaches, menstrual irregularities, and nausea (Ankomah *et al.*, 2013). Individuals spread this fear by informing their friends that contraceptives cause these side effects, even if they do not occur in every client (Skrzeczkowska *et al.*, 2015; Mbachu *et al.*, 2020). Even though health facilities provide free contraception, women may be hesitant to use them due to a lack of funds to treat potential side effects (Ndayizigiye, 2014).

Various misconception contributes to young adults' and young unmarried people's non-use of contraceptives. For example, the use of condoms is an effective method of preventing sexually transmitted disease infections, including HIV (Mbachu *et al.*, 2021). However, there are misconceptions about how condoms are used and their impact on fertility and sexual pleasure, contributing to condom use in sexual partnerships being inconsistent (Bogart *et al.*, 2011; Gueye *et al.*, 2015). Furthermore, young people also have misconceptions the hard drugs, laxatives, white chlorine, alcoholic beverages can be used as emergency contraceptives, hence limiting modern contraceptive use (Mbachu *et al.*, 2021).

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CHAPTER TWO

2.1 Problem Statement

Pregnancy is a life-changing event, particularly for adolescents, as it is a leading global cause of young adults dropping out of school and falling into poverty (Rosenberg *et al.*, 2015). Additionally, adolescent pregnancy increases the risk of difficulties and premature birth, which results in maternal morbidity and mortality among adolescents (Darroch *et al.*, 2016b). Worldwide, it is believed that half of all pregnancies in young adults occur unintentionally (Monjok, 2010), and evidence has shown that early pregnancy prevention strategies can be enhanced with increased availability and access to contraceptives (Fikree *et al.*, 2017; Chandra-Mouli *et al.*, 2013).

In Nigeria, 19% of adolescents 15-19 years have started childbearing, while 74.7% of youth aged 20-24 have started sexual activity by age 20 (NDHS, 2018). Nigeria has one of the highest maternal mortality rates globally at 512 per 100,000 live births (NDHS, 2018); it was estimated that 20% of global maternal deaths occur in Nigeria (WHO, 2019). While problems during childbirth such as obstetric fistula and maternal morbidities are prevalent in adolescents due to their underdeveloped body physiology, infants born by these adolescents are also at an increased risk of dying within a few weeks of delivery or develop negative health outcomes such as low birth weight, which may have long-term effects on their later life (WHO, 2020). In addition, pregnant adolescents suffer a slew of physical, academic, and social implications, including societal disapproval, which usually manifests as stigma, discrimination, and social rejection (WHO, 2020). Also, unintended pregnancies among young females lead to increased school dropout rates, poor educational achievements, and a halt in future growth (Women Deliver & The Population Council, 2019). Thus, a widespread practice of early birth reduces the possibilities of establishing gender equality in society. Therefore, it is imperative to uphold women's reproductive health rights, such as access to contraceptives, which is critical to expanding their potential contribution to economic growth (Women Deliver & The Population Council, 2019; Loaiza & Liang, 2013; UNFPA, 2015; WHO, 2011). Promoting women's reproductive health and rights aligns with the Program of Action of the 1994 International Conference on Population and Development (ICPD), which Nigeria is a signatory to (FMOH, 2017).

Despite these consequences associated with unintended pregnancies among young people (15-24 years), contraceptive prevalence among this age group in Nigeria is still very low at 5.4%, and the

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unmet need for contraceptives is high, which varied from 4% in Sokoto State in the North to 28% in the cross-river State in the south (NDHS, 2018).

Several studies have identified factors associated with and barriers to contraceptive usage in Nigeria among youth 15-24 years, which include: myths and misinformation, unsubstantiated information communicated via social networks, cost of services, availability of services, fear of side effects, culture and religious beliefs (Babalola & Oyenubi, 2018; Monjok, 2010) (Salami, Ayegboyin & Adedeji, 2014; Ndayizigiye, 2014) (Sanchez *et al.*, 2020; Ezenwaka *et al.*, 2020), however, there is limited information centred on young women aged 15-24 years in Nigeria as they are primarily included in studies covering women of reproductive age (15-49). Also, no known recent quantitative studies have been conducted to compare factors associated with contraceptive usage among youth 15-24 years vis-à-vis north and south comparison in Nigeria. Hence this study.

2.2 Justification

In 2019, around 300 million girls worldwide were between the ages of 15 and 19, and a substantial number of these adolescents are already engaging in sexual activities or will soon be (Kantorová *et al.*, 2021). Moreover, nearly 90% of them live in low- or middle-income countries (Kantorová *et al.*, 2021). Therefore, there have been calls to strengthen the database on adolescents' sexual and reproductive health status, to advise family planning (FP) strategies and programs to meet the 2030 Agenda for Sustainable Development's reporting criteria and to ensure transparency at the state, national, and global levels (Darroch *et al.*, 2016a; United Nations, 2015). Also, understanding the disparities in factors associated with contraceptives use among youth between north and south will contribute to designing targeted interventions, thus reducing the unmet need for contraception and mitigating poor health outcomes. In addition, this study will be filling the literature gap on north-south disparities, thereby contributing to the existing body of literature.

2.3 Research Objectives

The overall research objective of this study is to comparatively analyze contraceptive use among young women (15-24) in Nigeria, understand the differences in the factors associated with contraceptive use across the north-south divide, and provide recommendations for program interventions.

2.3.1 Specific objectives

1. To examine the pattern of modern contraceptive prevalence among young women (15-24) in northern and southern Nigeria.
2. To identify and compare factors associated with modern contraceptive use among young women (15-24) in northern and southern Nigeria.
3. To analyse how existing interventions, program evaluation and policies have addressed factors associated with modern contraceptive use among young women as found in the analysis of the 2018 NDHS.
4. To provide specific recommendations and focus for interventions to increase contraceptive use among youth in both regions.

2.3.2 Research questions

1. What is the prevalence of contraceptive use among young women (15-24 years) in Northern and Southern Nigeria?
2. What are the factors associated with modern contraceptive use among the northern and southern young women in Nigeria?
3. To what extent are the existing programs, interventions and policies set up to improve uptake of contraceptives among the young women in Nigeria addressing the identified factors associated with contraceptive use and what can be learnt from this?

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CHAPTER THREE

3.0 Methodology

This chapter describes the methodology and conceptual framework used to address this study's research questions.

3.1 Research Design

This study employed a quantitative research design by conducting a secondary analysis of 2018 Nigeria Demographic and Health Survey and a literature review of two project evaluation reports of adolescents and youth sexual and reproductive health programs in Nigeria.

Table 1: Coordination matrix between research questions and methods

Research Questions	Research Method	Data Source
Overall Objective: To comparatively analyze contraceptive use among young women (15-24) in Nigeria, understand the differences in the factors associated with contraceptive use across the north-south divide, and provide recommendations for the program.		
What is the prevalence of contraceptive use among young women (15-24 years) in Northern and Southern Nigeria?	Quantitative method	Secondary data analysis of 2018 NDHS dataset
What are the factors associated with modern contraceptive use among the northern and southern young women in Nigeria?	Quantitative method	Secondary data analysis of 2018 NDHS dataset
To what extent are the existing programs, interventions, and policies set up to improve uptake of contraceptives among the young adults in Nigeria addressing the identified factors associated with contraceptive use and what can be learnt from this?	Literature review method	Literature review of projects and evaluation reports of contraceptive interventions for youth (15-24) implemented in northern and southern Nigeria.

3.2 Data Source

For the quantitative aspect of the research, this study utilized the datasets from the most recent Nigeria Demographic and Health Surveys (NDHS) 2018. The NDHS is a national survey that provides information on demographic and health indicators at the national and subnational levels (NDHS, 2018). The NDHS is conducted every five years by the National Population Commission in collaboration with other partners (NDHS, 2018). Furthermore, the datasets were downloaded from the DHS electronic data management system https://dhsprogram.com/data/available-datasets.cfm on the 15th of June 2021, mainly for the purpose of this study.

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For the literature review, the Google search engine was used to retrieve projects and evaluation reports on contraceptive interventions in Nigeria from the websites of selected non-governmental organisations.

3.3 Study Area

The study area for this research is northern and southern Nigeria. For the quantitative part, the NDHS datasets included all the six geopolitical regions and were reclassified into northern and southern regions for this study. The literature review focused on interventions implemented in both regions.

3.4 The Study Population

The study population for this research included young women aged 15-24 in northern and southern parts of Nigeria.

3.5 The Study Sample Design/Size

The NDHS covers all women of reproductive age (15-49 years), and the information on the sampling procedure, instruments, data collection methods, ethical considerations, and other relevant aspects of the survey is provided in the original survey report available online at: www.dhsprogram.com. However, the relevant dataset for this research, the dataset for women of 15-24 years age group, was extracted from the overall female recoded datasets of the survey to arrive at the total sample size used in this study. The data set analysed included information on a total of 15,284 (North=9,880; South=5,404) young women.

3.6 Data Analysis

The study outcome of interest is contraceptive use among young women (15-24 years). The quantitative data analysis was done in three steps using Stata 16. In the first level, descriptive analysis was used to determine the distribution of all the outcome and explanatory variables. This was used to determine the modern contraceptive prevalence among young women in both regions, and this answered research question 1 of this study.

At the second level, univariate logistic regression was employed to determine the association (odds ratio) between the outcome variable and explanatory variables among the young women in Nigeria and the analysis was stratified by north and south. At the third level, multivariate logistics regression was employed to control confounding and establish the true strength of the associations

(adjusted odds ratio). Confounding can be described as "a **mixing of effects** wherein the effects of an explanatory variable under study on a given outcome are mixed in with the effects of an additional variable (or set of variables), resulting in a distortion of the true relationship between that explanatory variable and the outcome" (Skelly, Dettori & Brodt, 2012). The second and third level of analysis was used to answer research question 2 of this study to determine the factors associated with modern contraceptive use in both regions.

In the 2018 Demographic and health survey program, households were selected in clusters which served as the primary sampling units (PSU). To account for oversampling or under-sampling of some sections of the population in these clusters as the case may be, a weighting factor provided by measure DHS was applied in the data management and analysis of this study where necessary. All the estimates in this study were weighted.

The literature review involved content analysis of project evaluation reports of youth-specific family planning programs in Nigeria. The selection of the project evaluation report was based on projects specifically designed to reach youth and projects implemented both in the northern and southern regions. This was done to establish the extent to which the two projects addressed factors associated with contraceptive use among young people and distil recommendations for future programmes.

3.7 Ethical consideration

For literature review and secondary data analysis of existing national surveys datasets such as the NDHS, obtaining an ethical approval/waiver from the KIT Royal Tropical Institute Research Ethics Committee was not required. However, permission to use the NDHS dataset was obtained from the DHS program via their website www.dhsprogram.com. Furthermore, the detailed personal information of the respondents was not identified in the datasets; therefore, confidentiality and anonymity were maintained. Moreover, the survey protocol for the 2018 NDHS was reviewed and approved by the Nigerian National Health Research Ethics Committee (NHREC) and the Institutional Review Board (IRB).

3.8 Limitation of Study Design/Methodology

The data used in this research is a cross-sectional survey, which means that none of the relationships can be interpreted as causal. In addition, the unavailability of variables that addressed

supply-side issues relating to contraceptive use in the NDHS dataset stifled the ability to underpin the research with a well-established theoretical or conceptual framework.

3.9 Conceptual/Analytical framework

This study adopted the Conceptual framework for studying perceptions and barriers to contraceptive use as modified by Kinaro et al. (2015) from various other studies (Ajzen & Fishbein, 1980; Twa-Twa, 1997; Gage-Brandon & Meekers, 1993; Magnani *et al.*, 2001; Price & Hawkins, 2007). The conceptual framework as modified by Kinaro et al. (2015) in his study on Perceptions and Barriers to Contraceptive Use among adolescents in Kenya was used to analyse objective 2 of this study. The conceptual framework explained the interactions between background factors, intermediate factors, and the proximate intervening factors and the influence of these three main components on contraceptives use.

The framework conceptualized that the background factors of an individual act through the intermediate factors to inform the proximate intervening factors, which are the individual's perception and barriers to acting on a decision, in this case, contraceptive use or non-use (Kinaro *et al.*, 2015). This follows the theory of reasoned action that an individual's beliefs about the outcome of a particular action influence the individual's behaviour (Kinaro *et al.*, 2015).

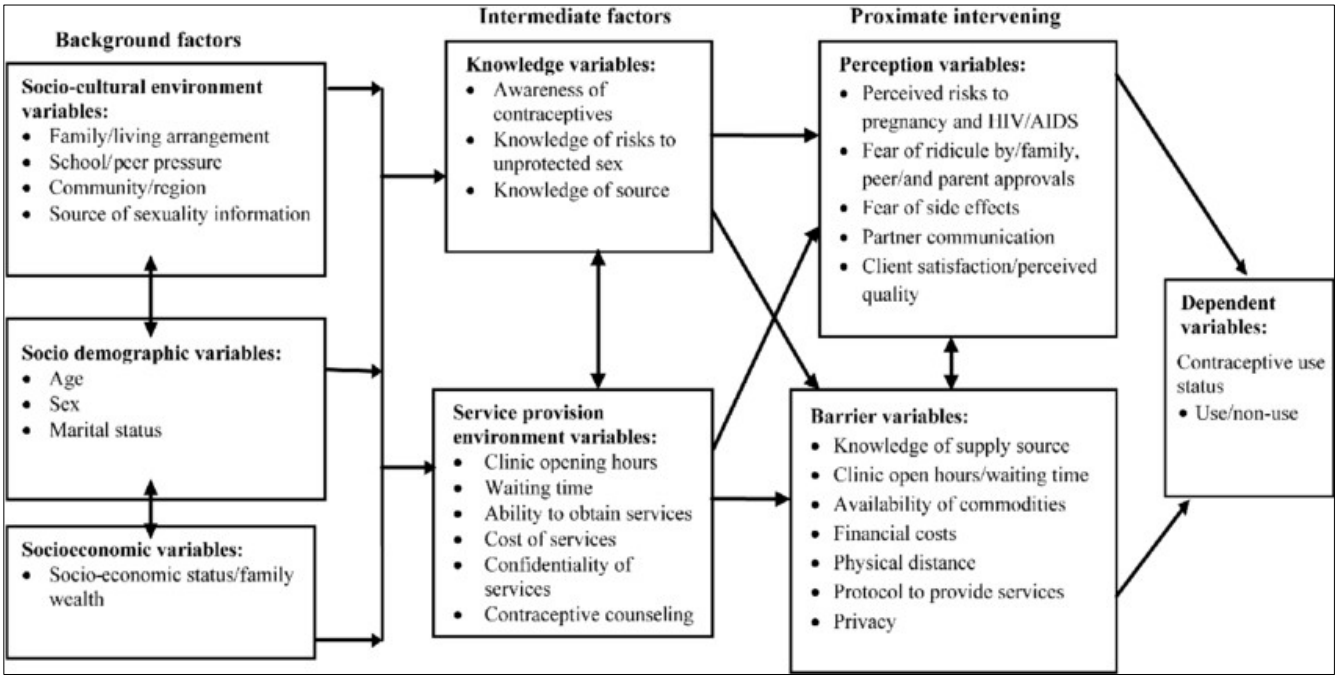

Figure 3: A modified conceptual framework for studying perceptions and barriers to contraceptive use (Kinaro et al., 2015)

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As shown in Figure 3 above, the background factors are sub-divided into three factors: (1) Socio-cultural environment variables (Family/living arrangement, school/peer pressure, community/religion, and source of sexual information). (2) Socio-demographic variables (age, sex, and marital status) (3) and socio-economic factors (social, economic status/family wealth).

The intermediate factors are subdivided into two variables: (1) Knowledge variables, including awareness of contraceptives, knowledge of risk to unprotected sex, and knowledge of the source. (2) Service provision environment factors include opening hours, waiting time, ability to obtain services, cost of services, and confidentiality of services.

The proximate intervening factors are also subdivided into two parts, including (1) perception variables (perceived risk to pregnancy and HIV/AIDS, fear of ridicule by family/ and parent approval, fear of side effect, partners communication, and client satisfaction/perceived quality) and (2) barrier's variables (knowledge of supply source, clinic opening hours/waiting hours, availability of commodities, financial cost, physical distance, protocol to provide services, privacy).

This study focused on the demand variables in the framework as the NDHS data set is a population-level survey and primarily investigates demand-side factors.

3.10 Operational Definition of Variables

The selection of the explanatory/independent and the dependent variables in the NDHS data set was guided by the established conceptual framework in this study. Table 2 below showed the variables used in the logistics regression model analysis. The demand side variables are majorly focused in this study as the NDHS 2018 is a population-level survey focused on family planning demand indicators. Some selected variables are not a direct measure of the factors in the conceptual framework but are used as proxy variables. A proxy variable is a measurable variable used instead of a variable of interest when the variable of interest cannot be measured directly (Oxford Reference, 2014). For example, the variable wealth index was used as a proxy for socioeconomic status; 'respondent can ask partner to use condoms' was used as a proxy for partner communication; knowledge of ovulation cycle was used as a proxy for perceived risk of pregnancy, and no of household members was used as a proxy for family/living arrangement. Variables such as religious affiliations, education, exposure to Family Planning messages and total children ever born are of interest to the study but not in the conceptual framework; hence they were added.

Table 2: Variable Definition and Recoding Table: Operationalization of Variables Used in this Study

Factors in the Conceptual Framework	Variable name	Variable Description	Operational Definition	Proxy
Background Factors				
Sociodemographic variables	Age		This study is among adolescents and youth within the age group 15-24	
	Current marital status	Currently married/cohabiting (1) Not currently married (2)	Self-reported marital/relationship status	
Sociocultural Environment variables	Number of household members	1-2 (1) 3-4 (2) 5 or more (3)	Number of the individual in the respondents household	Proxy for Family/living arrangement
	type of place of residence	Urban (1) Rural (2)	Urban/rural residence	
	region	North (1) South(2)	Nigeria has six geo-political regions viz; North central, North east, North west, South-south, southwest south-east. This was recategorized into North and South	
	religion	Catholic (0) Islam (1) Protestant/Traditionalist/others(3)	Respondents' religious affiliations	
	Total children ever born	0(0) 1-3(1) 4-7(2)	Self-reported total number of children ever born by respondent	
Socioeconomic variables	Wealth Index combined	Poorest(1) Poorer(2) middle(3) richer(4) richest(5)	This was measured based on the number and kinds of consumer goods they own and housing characteristics.	This will be used as a proxy to socioeconomic status
	highest educational level	no education(0) primary, secondary and higher Education was recoded as Educated (1)	self-reported level of highest level of education	
Intermediate Factors				
Knowledge variables	knowledge of any method	Knows no method (0) knows method (1)	self-reported method known that can be used to delay or avoid pregnancy	

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	heard family planning on radio last few months	Exposure to FP messages on radio no(1) yes(2)	Respondent heard family planning on radio last few months	
	heard family planning on tv last few months	Exposure to FP messages on TV no(1) yes(2)	Respondent heard family planning on tv last few months	
	heard family planning in newspaper/magazine last few months	Exposure to FP messages on newspaper/magazine no(1) yes(2)	Respondent heard family planning in newspaper/magazine last few months	
	heard family planning by text messages on mobile phone	Exposure to FP messages on SMS no(1) yes(2)	Respondent heard family planning by text messages on mobile phone	
Proximate intervening				
Perception variables	respondent can ask partner to use a condom	no(1) yes(2)	respondent can ask partner to use a condom	This will be used as a proxy for partner communication
	knowledge of ovulatory cycle	Know Ovulation cycle Yes (1) No(2)	The respondent self-reporting measures knowledge of ovulation cycle, knowing when she is on her period after the period ended, middle of the cycle before the period begins or at any time. This was recategorized into have knowledge of ovulation cycle(1) and do not have knowledge (2)	proxy for perceived risk of pregnancy
Barrier variables	source known for any method	Knows source (1) don't know(2)	Knowledge of source where contraceptives method can be obtained	
Outcome Variable				
Dependent Variable	Current contraceptive use by method	not using modern method (0) using modern method(1)	Self-reported method currently being used to delay or avoid pregnancy. modern method for this study is categorized in line with the WHO classification of modern contraceptive methods	

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CHAPTER FOUR

4.0 Results

This section comprises the findings of the study. The quantitative analysis results are divided into two parts, and each part is presented in the tables below. The first part describes the socioeconomic and demographic characteristics of the study respondents, as shown in table 3, and the second part in table 4 shows the univariate and multivariate analyses of the predictors of contraceptive use among young women aged 15-24 in northern and southern parts of Nigeria. The third part of this section in table 5 presents the literature review of project evaluation reports implemented in northern and southern Nigeria.

4.1 Socioeconomic and demographic characteristics of the study respondents

Table 3 below showed the socioeconomic and demographic characteristics of young women of reproductive age in Northern and Southern Nigeria. The modern contraceptives use was found to be low among youth from both regions, as over 90% were not using any form of contraceptive. However, the southern respondents recorded a higher rate of contraceptive use (8.56%) than the north (3.62%). Adolescents (15-19 years) constituted more than half of the respondents in both South and North (56.09% vs 54.83%). The majority of the respondents from the north were poor (poorest - 24.91% and poor – 27.51%), whereas most respondents from the south had better wealth indices (richer - 32.35% and richest - 36.96%). Rural respondents were preponderant in the north (68.74%), compared with predominant urban dwellers in the south (67.53%). Educated young adults accounted for 56.62% and 98.21% in the north and south, respectively. Regarding religious affiliation, most of the respondents from the north (79.47%) were Muslim, while southern respondents were predominantly protestants/traditionalists/others (63.30%). About three out of every five young women from the north (63.64%) and the south (56.66%) had five or more household members.

With respect to their knowledge about contraceptives, northern and southern respondents with good knowledge of contraceptives were high in both regions (North - 84.02% and South - 93.70%). However, most were unaware of the source of their knowledge about contraceptives in the North (96.38%) and South (91.44%). More respondents in the North discussed using condoms with their partners (37.16%) than respondents in the south (12.44%), with 47.82% and 79.03% respondents from the north and south not in a union. Northern and southern respondents also reported a

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substantial knowledge of their ovulation cycle at 89.34% and 80.11%, respectively. Southern respondents were shown to have been more exposed to family planning messages on the radio in the last few months (34.47%) than northern respondents (18.65%). Also, the south recorded a higher exposure to family planning messages via TV in the last few months (25.17%) than respondents in the north (7.53%). Exposure to family planning information through newspapers/magazines in the previous few months was insignificant in the north and south (1.26% and 6.30%). Also, many respondents in the north and south were not exposed to family planning messages via SMS on mobile phones (98.62% and 94.86%).

Table 3: Distribution of respondents' socioeconomic and demographic characteristics, other explanatory variables, and Outcome variables in Northern and Southern Nigeria among young women 15-24 years old

	Northern Nigeria (N=9,880)		**Southern Nigeria (N=5,404)**	
Variables	**Freq.**	**Percentage**	**Freq.**	**Percentage**
Modern Contraceptive Use				
Not using modern contraceptive	9,523	96.38	4,941	91.44
Currently using modern contraceptive	357	3.62	463	8.56
Age of respondents				
15-19	5,417	54.83	3,031	56.09
20-24	4,463	45.17	2,372	43.91
Wealth Index/Status				
Poorest	2,462	24.91	167	3.08
Poorer	2,718	27.51	456	8.44
Middle	2,103	21.29	1,036	19.16
Richer	1,581	16.00	1,748	32.35
Richest	1,016	10.28	1,997	36.96
Type of place of residence				
Urban	3,088	31.26	3,649	67.53
Rural	6,792	68.74	1,755	32.47
Educational Status				
No Education	4,286	43.38	97	1.79
Educated	5,594	56.62	5,307	98.21
Religious Affiliation				
Catholic	522	5.28	988	18.28
Islam	7,852	79.47	995	18.42
Protestant/Traditionalist/Others	1,506	15.25	3,421	63.30
Relationship Status				
Not married	4,724	47.82	4,271	79.03
Married/cohabiting	5,156	52.18	1,133	20.97
Number of Household Members				
1-2	1,016	10.28	585	10.82
3-4	2,577	26.08	1.757	32.52
5 or more	6,287	63.64	3,062	56.66
Number of Children				

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0	5,625	56.93	4,134	76.50
1-3	3,943	39.90	1,231	22.78
4-7	313	3.17	39	0.72
Contraceptive Knowledge				
Knows no method	1,579	15.98	340	6.30
Knows method	8,301	84.02	5,063	93.70
Source Known for any Contraceptive method				
Knows source	357	3.62	463	8.56
Don't know source	9,523	96.38	4,941	91.44
Discuss condom use with partner				
No	3,672	37.16	461	8.53
Yes	1,484	15.02	672	12.44
Not in union	4,724	47.82	4,270	79.03
Knowledge of Ovulation cycle				
Yes	8,827	89.34	4,329	80.11
No	1,053	10.66	1,075	19.89
Exposure to FP Messages on Radio in the last few months				
No	8,037	81.35	3,541	65.53
Yes	1,843	18.65	1,863	34.47
Exposure to FP Messages on TV in the last few months				
No	9,136	92.47	4,043	74.83
Yes	744	7.53	1,360	25.17
Exposure to FP Messages on Newspaper/Magazine in the last few months				
No	9,755	98.74	5, 063	93.70
Yes	125	1.26	340	6.30
Exposure to FP Messages by SMS on mobile phone in the last few months				
No	9,743	98.62	5,126	94.86
Yes	137	1.38	278	5.14

4.2 Factors associated with modern contraceptive use among young women in Northern and Southern Nigeria

Table 4 presents the result of the univariate and multivariate regression analysis of factors predicting modern contraceptives use among young women (15-24 years) in Nigeria's northern and southern regions. After adjusting for cofounding in the multivariate analysis, the factors found to be significantly associated with modern contraceptive use in both northern and southern regions are age, number of children ever born by the woman and perceived risk of pregnancy. Factors significant only in the north are socioeconomic status, educational status, religious affiliation, partner communication and exposure to FP messages on newspaper/magazines, while family/living arrangements predict modern contraceptive use only in the south.

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4.2.1 Background Factors

Socio-demographic factors: Age was found to be significantly associated with modern contraceptives use among respondents in both north and south. At the multivariate level, the odds of using modern contraceptives among young women aged 20-24 in the north was 2.21 times higher [aOR= 2.21; 95%CI:1.59-3.08; p<0.0001] compared to those of the young women aged 15-19. In addition, young women in the south had 2.92 higher odds of using modern contraceptives [aOR=2.92; 95% CI: 2.16-3.94; p<0.0001] compared to young women 15-19 years old.

Marital status was significantly associated with modern contraceptive use at the univariate level for both north and south, as it was found that the odds of using modern contraceptives was 1.74 times higher in young women who are married/cohabiting [OR=1.74; 95% CI:1.31-2.31; p<0.0001] compared to young women who are not married in the north, while the odds of using modern contraceptives was 2.40 times higher among southern married/cohabiting young women [OR=2.40; 95% CI:1.86-3.11; p<0.0001] compared to young women who are not married. However, marital status became insignificant for modern contraceptive use in both regions after adjusting for confounders at the multivariate level.

Socio-economic factors: At both univariate and multivariate levels, socioeconomic status was significantly associated with modern contraceptive use in the north but insignificant in the south. In the north, the richest young women had 2.98 higher odds of using modern contraceptives [aOR=2.98; 95%CI:1.62-5.49; p<0.0001], followed by the richer young women who had 2.51 higher odds of using modern contraceptives [aOR=2.51; 95%CI:1.60-3.94; p<0.0001], then the middle class young women who had 1.82 higher odds of using modern contraceptives [aOR=1.82; 95% CI:1.23-2.71; p<0.003] compared to the poorest young women.

Education was also found to have a significant association with modern contraceptive use in the north but insignificant in the south. The odds of using modern contraceptives was 2.42 times higher among educated young women in the north [aOR=2.42; 95%CI:1.62-3.62; p<0.0001] compared to the young women who are not educated.

Socio-cultural environment factors: Analyses showed that the young women's residence (rural/urban) was not significantly associated with modern contraceptive use in both northern and southern Nigeria. For religious affiliations, the odds of using modern contraceptives is 56% lower among the Muslims in the north [aOR=0.44; 95%CI:0.28-0.70; p<0.0001] compared to Catholics.

In contrast, the odds of using modern contraceptives among the protestant/other/traditionalist is 1.62 times higher [aOR=1.62; 95%CI:0.99-2.63; p<0.054], but it is not statistically significant. However, religious affiliation was found to be insignificant for modern contraceptive use in the south.

Family/living arrangement was found to have a significant association with modern contraceptive use among young women in the south; however, this was insignificant in the North. The odds of using modern contraceptives is 33% lower among southern young women who live in a house with five or more household members [aOR=0.67; 95%CI:0.47-0.97; p<0.033] compared to southern young women who live in a household of 1 to 2 members.

At the univariate and multivariate levels, the number of children ever born by the woman was significantly associated with modern contraceptive use both in the north and south. In the north, the odd of using modern contraceptives is 3.48 times higher among young women with 1-3 children [aOR=3.48; 95%CI:2.25-5.40; p<0.0001] followed by 2.81 higher odds among young with 4-7 children [aOR=2.81; 95%CI:1.27-6.19; p<0.011] compared to those without children. While in the south, the odd of using modern contraceptives was 1.56 times higher among young women with 1-3 children [aOR=1.56; 95%CI:1.11-2.19; p<0.011] compared to those without children. Also, young women with 4-7 children had 1.68 higher odds [aOR= 1.68; 95%CI:0.74-3.81; p<0.212] compared to those without children but was statistically not significant.

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Table 4: Logistic regression of the relationship between selected young women (15-24 years old) characteristics and modern contraceptive use in Northern and Southern Nigeria.

	Northern Nigeria				Southern Nigeria			
Variables	**UNIVARIATE (Crude)**		**MULTIVARIATE (Adjusted)**		**UNIVARIATE (Crude)**		**MULTIVARIATE (Adjusted)**	
	OR (95%CI)	**P-value**	**aOR (95%CI)**	**P-value**	**OR (95%CI)**	**P-value**	**aOR (95%CI)**	**P-value**
Age of respondents (15-19)								
20-24	**4.32 (3.28-5.70)	<0.0001	**2.21 (1.59-3.08)	<0.0001	**4.17 (3.27-5.31)	<0.0001	**2.92 (2.16-3.94)	<0.0001
Wealth Index/Status (Poorest)								
Poorer	**1.55 (1.01-2.38)	<0.044	1.17 (0.76-1.79)	<0.467	0.69 (0.29-1.65)	<0.407	0.68 (0.27-1.70)	<0.410
Middle	**2.70 (1.86-3.93)	<0.0001	**1.82 (1.23-2.71)	<0.003	1.38 (0.68-2.79)	<0.371	1.38 (0.66-2.88)	<0.396
Richer	**3.44 (2.25-5.26)	<0.0001	**2.51 (1.60-3.94)	<0.0001	1.26 (0.58-2.43)	<0.555	1.29 (0.59-2.84)	<0.512
Richest	**3.47 (2.15-5-59)	<0.0001	**2.98 (1.62-5.49)	<0.0001	1.12 (0.52-2.43)	<0.767	1.33 (0.60-2.95)	<0.474
Type of place of residence (Urban)								
Rural	0.78 (0.58-1.04)	<0.091	1.12 (0.78-1.61)	<0.549	1.29 (0.99-1.67)	<0.055	1.27 (0.97-1.65)	<0.077
Educational Status (No Education)								
Educated	**3.66 (2.58-5.20)	<0.0001	**2.42 (1.62-3.62)	<0.0001	1.01 (0.41-2.47)	<0.983	1.29 (0.51-3.32)	<0.586
Religious Affiliation (Catholic)								
Islam	**0.33 (0.21-0.52)	<0.0001	**0.44 (0.28-0.70)	<0.001	0.85 (0.48-1.52)	<0.590	0.82 (0.49-1.37)	<0.445
Protestant/Traditionalist/Others	1.40 (0.89-2.21)	<0.146	1.62 (0.99-2.63)	<0.054	1.17 (0.85-1.62)	<0.330	1.02 (0.73-1.43)	<0.895
Relationship Status (Not married)								
Married/cohabiting	**1.74 (1.31-2.31)	<0.0001	0.76 (0.48-1.19)	<0.225	**2.40 (1.86-3.11)	<0.0001	0.76 (0.50-1.16)	<0.203
Number of Household Members (1-2)								
3-4	**1.81 (1.15-2.85)	<0.010	0.83 (0.47-1.46)	<0.519	0.86 (0.61-1.21)	<0.380	0.79 (0.56-1.13)	<0.204
5 or more	0.96 (0.60-1.54)	<0.867	0.76 (0.43-1.33)	<0.339	**0.55 (0.39-0.79)	<0.001	**0.67 (0.47-0.97)	<0.033
Number of Children (0)								
1-3	**2.93 (2.23-3.87)	<0.0001	**3.48 (2.25-5.40)	<0.0001	**2.61 (2.04-3.35)	<0.0001	**1.56 (1.11-2.19)	<0.011
4-7	**2.09 (1.11-3.91)	<0.021	**2.81 (1.27-6.19)	<0.011	**2.77 (1.29-5.94)	<0.009	1.68 (0.74-3.81)	<0.212
Discuss condom use with partner (No)								
Yes	**3.41 (2.49-4.67)	<0.0001	**1.81 (1.28-2.55)	<0.001	**1.51 (1.03-2.20)	<0.033	1.42 (0.95-2.12)	<0.083
Knowledge of Ovulation cycle (Yes)								
No	**0.14 (0.07-0.30)	<0.0001	**0.30 (0.14-0.64)	<0.002	**0.24 (0.16-0.37)	<0.0001	**0.41 (0.26-0.64)	<0.0001

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Exposure to FP Messages on Radio in the last few months (No)								
Yes	**1.71 (1.30-2.25)	<0.0001	1.22 (0.88-1.70)	<0.234	**1.28 (1.02-1.59)	<0.029	1.07 (0.83-1.38)	<0.593
Exposure to FP Messages on TV in the last few months (No)								
Yes	**2.25 (1.54-3.28)	<0.0001	0.92 (0.56-1.52)	<0.756	1.13 (0.89-1.45)	<0.318	0.82 (0.59-1.14)	<0.237
Exposure to FP Messages on Newspaper/Magazine in the last few months (No)								
Yes	**5.27 (3.12-8.89)	<0.0001	**2.47 (1.36-4.50)	<0.003	**1.67 (1.16-2.41)	<0.006	1.54 (0.93-2.54)	<0.092
Exposure to FP Messages by SMS on mobile phone in the last few months (No)								
Yes	**3.00 (1.60-5.64)	<0.001	1.19 (0.58-2.43)	<0.629	1.56 (0.99-2.46)	<0.056	1.06 (0.59-1.91)	<0.844

****=P<0.05; OR= Odds Ratio; aOR= Adjusted Odds Ratio; CI=Confidence Interval**

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4.2.2 *Intermediate and Proximate Factors*

Knowledge factors: At the univariate level, exposure to family planning messages on the radio is significantly associated with modern contraceptive use in northern and southern Nigeria. Northern young women exposed to FP messages on radio had 1.71 higher odds of using modern contraceptives [OR=1.71; 95%CI:1.30-2.25; p<0.0001] compared to those not exposed to radio, while in the south, young women exposed to FP messages through radio had 1.28 higher odds of using modern contraceptives [OR=1.28; 95%CI:1.02-1.59; p<0.029] compared to those not exposed to FP messages on radio. However, exposure to FP messages through radio became insignificant at the multivariate level in the north and south.

At the univariate level, exposure to FP messages through TV is significantly associated with modern contraceptive use in northern Nigeria but conversely insignificant in the south. Northern young women exposed to FP messages through TV had 2.25 higher odds of using modern contraceptives [OR=2,25; 95%CI:1.54-3.28; p<0.0001] compared to those not exposed through TV. However, after controlling for confounding at the multivariate level, it became insignificant in the north also.

At the univariate level, exposure to family planning messages through newspaper/magazines was significantly associated with modern contraceptive use in northern and southern Nigeria. Northern young women exposed to FP messages through newspaper/magazines had 5.27 higher odds of using modern contraceptives [OR=5.27; 95%CI:3.12-8.89; p<0.0001] compared to those not exposed through Newspaper/Magazine, while in the south, young women exposed to FP messages through Newspaper/Magazine had 1.67 higher odds of using modern contraceptives [OR=1.67; 95%CI:1.16-2.41; p<0.006] compared to those not exposed through newspaper/magazine. However, after adjusting for confounders at the multivariate level, this became insignificant in the south but remained significant in the North as northern young women exposed to FP messages through newspaper/magazine had 2.47 higher odds of using modern contraceptives [aOR=2.47; 95%CI:1.36-4.50; p<0.003] compared to those not exposed through newspaper/magazine.

At the univariate level, exposure to FP messages through SMS on mobile phones is significantly associated with modern contraceptive use in northern Nigeria but conversely insignificant in the south. Northern young women exposed to FP messages through SMS on mobile phones had 3.00 higher odds of using modern contraceptives [OR=3.00; 95%CI:1.60-5.64; p<0.001] compared to

those not exposed through SMS on mobile phones. However, after adjusting for confounders at the multivariate level, it became insignificant in the north also.

Finally, knowledge of contraceptive methods dropped from the regression model because of collinearity. Collinearity is a term in the STATA software used to describe a situation in which a variable is omitted from the regression model due to a perfect linear relationship with another variable(s).

4.2.3 Proximate intervening Factors

Perception factors: At the univariate level, partner communication was found to be significantly associated with modern contraceptive use in both north and south. Northern young women who discussed condom use with their partners had 3.41 higher odds of using modern contraceptives [OR=3.41; 95%CI:1.03-2.20; p<0.033] compared to those who did not, while southern young women who discussed condom use with their partners had 1.51 higher odds of using modern contraceptives [OR=1.51; 95%CI:1.03-2.20; p<0.033] compared to those who did not. However, when adjusted for confounders at the multivariate level, partner communication was found to be insignificant in the south while it remained significant in the north as northern young women who discussed condom use with their partner had 1.81 higher odds of using modern contraceptives [aOR=1.81; 95%CI:1.28-2.55; p<0.001] compared to those who did not discuss condom use with their partners.

At the univariate and multivariate levels, perceived risk of pregnancy was found to be significantly associated with modern contraceptive use in both north and south. In the north, young women who did not know their ovulation cycles had 70% lower odds of using modern contraceptives [aOR=0.30; 95% CI:0.14-0.64; p<0.002] compared to those who knew their ovulation cycles. While in the south, young women who did not know their ovulation cycle had 59% lower odds of using modern contraceptives [aOR=0.41; 95% CI:0.26-0.64; p<0.0001] compared to those who are aware of their ovulation cycle.

Barrier factors: The variable "knowledge of supply source of contraceptives" was dropped from the regression analysis model. Further analysis of the variable revealed insufficient variation in the data to fit the logistics regression model as it was a perfect predictor of contraceptive use.

4.3 Analysis of Youth-specific (15-24 years) Family planning Interventions in Nigeria

Table 5 showed the result of the literature review of evaluation reports of youth-specific family planning projects in Nigeria.

4.3.1 The Adolescent 360 Project Midterm Evaluation (Newport et al., 2019)

The Adolescent 360 (A360) project was implemented both in southern and northern Nigeria and was funded by Bill & Melinda Gates Foundation (BMGF) and the Children's Investment Fund Foundation (CIFF). As shown in table 5 below, the project ran from 2016 to 2020, with the primary objective of increasing adolescent girls' access to and demand for modern contraceptives in Nigeria. The A360 intervention program was committed to achieving this objective by fostering an environment conducive for accessing services, positioning contraception as relevant and valuable, building trust and credibility of contraception, increasing availability of services and ensuring sustained use. The A360 project was able to improve contraceptive knowledge among girls through interactive counselling sessions with youth-friendly providers. The A360 project was able to help girls access contraceptives in safe spaces without community stigmatization by conducting sessions with mothers and husbands of adolescent girls and tailoring their activities towards well-being rather than contraceptive specific and linking contraceptive messages to aspirations, values and livelihood skills. However, this approach limited the project to actively address the entrenched community myths, misconceptions, and stigma around contraceptives. In terms of numbers, 12,438 girls adopted contraceptives methods in the south and 1,575 in northern Nigeria. Nonetheless, the project achieved good knowledge of contraceptives among girls but highlighted factors such as provider bias, unavailability of commodities and limited capacity of service providers as significant barriers to contraceptives' uptake.

4.3.2 The NURHI2 Life Planning for Adolescent and Youth (LPAY) Program

The Nigerian Urban Reproductive Health Initiative (NURHI 2) was focused on life planning for adolescents and youth (LPAY), which was also funded by BMGF and TJ Mather Foundation from 2017 to 2020 as shown in table 5 below. The program was implemented in northern (Kaduna state) and southern (Lagos and Oyo state) Nigeria. The overarching objective was to expand the access of young people (15-24 years) to reproductive health (including contraceptive) information and services(NURHI2, 2020a). NURHI 2 used the demand generation, service delivery and youth development approaches to address its objective.

NURHI 2 expanded work with religious leaders, community leaders and parents, through intergenerational dialogues to address sociocultural barriers affecting young people's access to family planning; these advocacy efforts led to increased public statements supporting family planning (NURHI2, 2020b; FP CAPE, 2020).

NURHI 2 LPAY Project also focused on providing accurate modern contraceptive messages integrated with life planning skills through social mobilization, mass media (radio and TV) and social media. Evaluation report for the NURHI 2 project showed that these channels could reach young people with information, and demand for FP among youth increased in the community (NURHI 2, 2020; FP CAPE, 2020). Overall, the NURHI 2 project improved awareness of contraceptives among youth, community/religious leaders' acceptance and support for family planning, improved access to quality FP services for women. However, despite NURHI 2's effort, there are still some persisting challenges such as taboos against using FP, including lack of support from spouse and family for modern contraceptive use (FP CAPE, 2020).

Word Count: 12,205

Table 5: Summary of the analysis of selected evaluation reports of existing youth family planning interventions in Nigeria

Program	Period	Objective	Efforts/innovations	Results	Challenges/limitations	Remark
Adolescent 360 Project Evaluation. The A360 project was implemented both in southern and northern Nigeria and was funded by Bill & Melinda Gates Foundation (BMGF) and The Children's Investment Fund Foundation (CIFF)	2016-2020	To increase adolescent girls' (15-19 years) access to and demand for modern contraceptives in Nigeria	1. Creating a supportive environment for accessing services through engagement activities with mothers and husbands of adolescent girls. 2. Positioning contraception as relevant and valuable by integrating contraception messages with aspirational messages about dreams, values, self-worth, livelihood skills etc. 3. Building trust and credibility of contraception through one-on-one	1. In southern Nigeria, 12,438 girls adopted contraceptive methods. In northern Nigeria, 1,575 adopted contraceptives methods. 2. Improved knowledge of contraceptives among girls	1.Limited in actively addressing entrenched community myths, misconceptions and stigma around contraception for girls because contraceptive engagement with mothers and husbands of the girls were framed as "well-being" engagements 2.Difficult to identify, train and retain enough youth-friendly service providers. 3.Maintaining the quality of skills training for scale-up is challenging because it is capital intensive, and	The project reported good knowledge of contraceptives but highlighted factors such as provider bias, unavailability of commodities and limited capacity of service providers as significant barriers to contraceptives' uptake.

Word Count: 12,205

			counselling with youth-friendly services providers		girls often have high expectations that one-off sessions will provide a gateway to employment.	
NURHI 2 Life Planning for Adolescent and Youth Project was funded by BMGF and TJ Mather Foundation and implemented in Northern (Kaduna state) and Southern (Lagos and Oyo state) Nigeria.	2015-2020	to expand the access of young people (15-24 years) to reproductive health (including contraceptive) information and services	1. Advocacy: NURHI 2 expanded work with religious leaders, community leaders and parents, through intergenerational dialogues to address sociocultural barriers 2. Demand generation: provided accurate modern contraceptive messages integrated with life planning skills through social mobilization, mass media (radio and TV) and social media.	1. Increased support from stakeholders for family planning (FP) at all levels. 2. Increased demand for FP information and services, particularly among youth. 3. Improved access to quality of FP services for women.	1. Taboos against FP users. 2. Lack of support from spouse and family for contraception use.	Overall, NURHI 2 project was able to achieve an improvement in awareness of contraceptives among youth, community/religious leaders' acceptance and support for family planning, improved access to quality of FP services for women

Word Count: 12,205

CHAPTER FIVE

5.0 Discussion

This section presents the discussion of the findings of this study based on the research objectives considering existing literature.

5.1 Prevalence of modern contraceptives use among adolescents and young adults in Northern and Southern Nigeria

In Nigeria, young people are increasingly engaging in sexual activities as 19% of adolescents aged 15-19 years have already begun childbearing (NDHS, 2018) and contraceptive uptake remains low (Bankole & Malarcher, 2010; NDHS, 2018). This study revealed low modern contraceptives prevalence among young women (15-24 years) in northern and southern Nigeria as shown in figure 4 below. Although the south recorded a higher modern contraceptive prevalence (8.6%) compared to the north (3.6%), both percentages are relatively low and below the national modern contraceptive prevalence rate of 10.5% among all women of reproductive age (15-49 years). In addition, this corroborates the reports of several previous studies in Nigeria (Babalola & Oyenubi, 2018; Funke Fayehun, 2017; Sanchez *et al.*, 2020; Ezenwaka *et al.*, 2020).

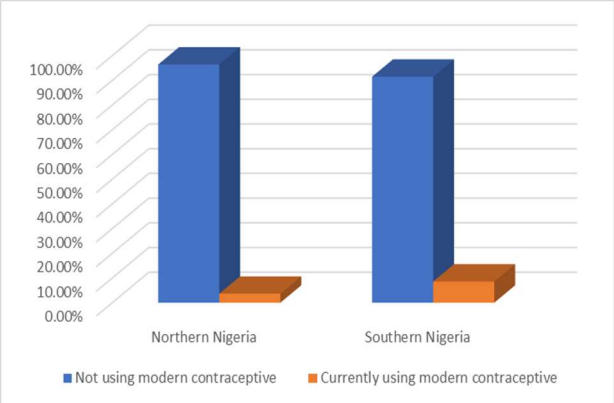

Figure 4: Percentage distribution of young women (15-24 years) by modern contraceptive use

The low contraceptive use among young women in both regions could be due to some reasons. A possible explanation could be the lack of access to modern contraceptive information and services. Parents and guardians often avoid sex talks with their children, mostly due to misconceptions of adolescents being innocent and not engaging in sexual activities. Nevertheless, evidence shows that about 28% of Nigerian adolescents are sexually active (Nnebue *et al.*, 2016). This misconception has created an unconducive environment for young adults to access modern contraceptives, particularly girls, who are viewed as wayward by the community. In addition, some must travel long distances to purchase contraceptives to avoid familiar faces and being reported to parents (Ezenwaka *et al.*, 2020). Acts like this may discourage these young people from using contraceptives as they may feel their privacy is being invaded. Ezenwaka et al. (2020) supported this explanation and

highlighted that poor parental communication and societal factors play a vital role in limiting young adults' access to contraceptives. Avidime et al. (2010) also reported affordability and personal preference as significant influencers in contraceptives uptake among young adults. Adolescents may not consider contraceptives methods affordable, and male condoms are believed to limit sexual pleasure, leading to low contraceptive use among this group. A qualitative study in southeast Nigeria also explained how different misconceptions about contraceptives such as using "hard drugs, laxatives, white chlorine and boiled alcoholic beverage" as the emergency contraceptive method could be spread among young people (primarily through social media), thereby limiting the use of modern contraceptives (Mbachu *et al.*, 2021). Another qualitative study in Malawi also centred the low use of contraceptives among young adults on misinformation, negative attitudes of parents and guardians towards sexual topics, and lack of sexual education in schools (Dombola, Chipeta & Manda, 2021). With the advancement in technology and social media fast becoming the leading source of information in Nigeria, peer pressure, and parents' negligence, young people might continue to get misinformed on the use of modern contraceptives.

5.2 Factors associated with modern contraceptives use among youth (15-24) in northern and southern Nigeria

The second objective of this study was to identify and compare factors associated with modern contraceptive use in both northern and southern regions of Nigeria. This study identified factors such as age, number of children ever born by the woman, and perceived risk of pregnancy to be significantly associated with modern contraceptive use in Nigeria's northern and southern region. While factors such as socioeconomic status, educational status, religious affiliation, partner communication, and exposure to FP messages on newspaper/magazines are significantly associated with modern contraceptive use only in the north, factors such as family/living arrangement are significantly associated with modern contraceptive use only in the south.

5.2.1 Background factors

Sociodemographic factors: This study found that young women aged 20-24 have higher odds of modern contraceptive use compared to young women aged 15-19 in both northern and southern Nigeria. This finding reiterates the disproportionate exposure to and knowledge about the benefits of contraceptives among adolescents (Mbachu *et al.*, 2021). Youth aged 20-24 are no longer adolescents; they are more exposed, and sexuality may have become more accepted among them as well as making their own responsible decisions than adolescents who are still ignorant and

whose decisions are more influenced by peer pressure and parents. Mbachu et al. (2021) supported this explanation by attributing the low use of contraceptives among adolescents in Nigeria to beliefs and misconceptions. A mixed-method study in Kenya also related the low contraceptive use among adolescents to inaccurate information (misconceptions), family, and societal influences (Kinaro *et al.*, 2015) . Adolescents seek information from their family, school, or friends. As a result, when the parents and schools did not provide information about modern contraceptives, they are left with information from peers, which may be inaccurate, hence can influence poor use. A qualitative study in Malawi also reported the high use of contraceptives among women aged 20-24 and considered them more knowledgeable about the possible outcomes of engaging in sex without a contraceptive (Mandiwa *et al.*, 2018). Seutlwadi et al. (2012) explained in a population-based quantitative study conducted in 4 provinces in South Africa that the low use of contraceptives among adolescents (15-19 years) might be due to inadequate knowledge and inaccessibility due to young age and stigma (Seutlwadi *et al.*, 2012). In relation, youth aged 20-24 are usually considered independent and free to make their own choices, influencing their access to contraceptives. Youth aged 20-24 are not likely to be judged and questioned as adolescents, which increases their access to various contraceptives compared to adolescents. A systematic review that assessed contraception for adolescents in low and middle-income countries stated the reluctance and refusal of health workers to provide modern contraceptives to adolescents and limit their access to only condoms (Chandra-Mouli *et al.*, 2014). This finding might not be the case for young adults, as they are sometimes regarded as more mature.

Socio-cultural environmental factors: This study found that the number of children ever born by the woman was significantly associated with contraceptive use in Nigeria's northern and southern regions. Young women with one to three children have higher odds of using modern contraceptives than those without children. This result might also be a possible explanation for the general low use of modern contraceptives in Nigeria. There are misconceptions that modern contraceptive use among young adults (15-24years) may have long-term side effects, such as infertility. Contraceptive pills are believed to damage the womb and cause problems for female adults in the future when they decide to have children. A qualitative study in the south-eastern part of Nigeria reported this misconception among adolescents, relating the infertility of some women to previously taken contraceptives and considered the use of condoms by males to losing a lot of spermatozoa, which might make them incapable of impregnating a woman later in future (Mbachu

et al., 2021). With beliefs like this circulating, young women yet to have children, especially unmarried ones, may tend to avoid using modern contraceptives until they have children. Furthermore, a cross-sectional survey in Uganda also documented health worker's refusal to provide modern contraceptives to women without children, believing that some modern contraceptives would be detrimental to the fertility of young women in the future (Nalwadda *et al.*, 2011).

Religious affiliation was found in this study to be significantly associated with modern contraceptive use in the northern region only. Muslim respondents have lower odds of using modern contraceptives compared to Christians (Catholic). An important reason for this may be their beliefs and doctrines, and the northern region is predominantly affiliated with the Islamic religion. Some Islamic doctrines have been shown to restrict western cultures, which include contraceptive use. Izugbara et al. (2010) reported pronatalist beliefs in the north contributing significantly to the differences in contraceptive use in the south. Compared to Christians and Catholics, many Muslims in Nigeria believe that polygamy and having a large family is a way of preserving their religious duty even if they cannot cater for them. Islamic beliefs also limit women's autonomy; Muslim women are less likely to make their own decisions. With the purdah system and prevalence of early/child marriage in the north, decisions like contraceptives uptake are highly dependent on the man. A mixed-method study in a northeastern state in Nigeria reported that married Muslim men have a negative attitude towards family planning (Aji & Omotara, 2018). Also, contraceptive use is frequently believed to conflict with Islamic teachings. This ideology has deprived young women access to adequate information on the implication of and risks associated with teenage and unplanned pregnancies, in addition to serving as a barrier to access family planning services as their presence in pharmacy stores and sometimes health facilities to request contraceptives may be questioned by religious leaders and fellow Muslims who are adherent to this ideology. Avidime et al. (2010) regarded contraceptive decisions as issues that often require religious and philosophical convictions in the north. Whereas, this is not the case in the southern region. Religious doctrines

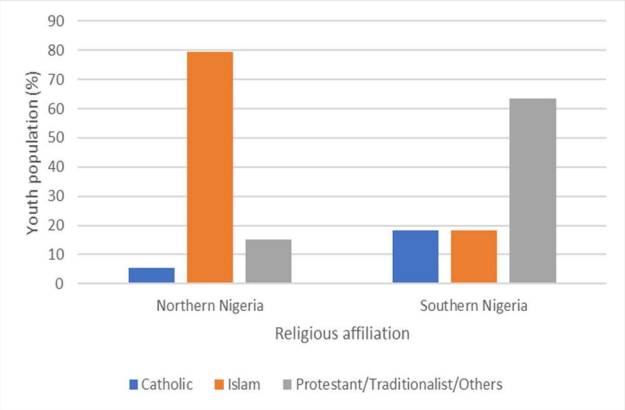

Figure 5: Percentage distribution of young women (15-24 years) by religious affiliation

are more lenient towards women in the south than in the north. They might get judged by the community but not condemned as the Sharia law promotes in the north.

In the south, family/living arrangement was significantly associated with modern contraceptive use but was insignificant in the north. This finding may be related to education and socioeconomic status exposure, as southerners may be exposed enough to recognize when they cannot support more wives and five or more children, depending on their income level. Whereas in the north, large families are encouraged, and the number of households may continue to grow despite financial incapacity. (Avidime et al., (2010) reported how, in rural areas of northern Nigeria, women are expected to bear many children, an expectation that the Hausa-Fulani strongly internalizes. Given the high poverty rate in most northern regions, the number of household members is still not considered, but southerners are more aware of the burden that a large household may bring, which may have influenced contraceptive use.

Socioeconomic factors: This study established socioeconomic status as another important significant factor in the north but insignificant in the south. In 2019, the three northern zones were reported as the regions with the highest number of people below the poverty line in the country (Statista, 2021b). The poverty rate in the north is high compared to the south as seen in figure 6, which may be one of the reasons why socioeconomic status is a significant factor for modern contraceptive use among young women in the region. Youths in the middle and high socioeconomic class are more likely to get an education, and with education comes knowledge, exposure and a higher chance of financial independence. With these three factors at play, they are capable of accessing healthcare services, including contraceptive services. Mutumba et al. (2018) supported this explanation, stating the relevance of secondary education attainment and at least a high wealth quintile playing a significant role in contraceptive use.

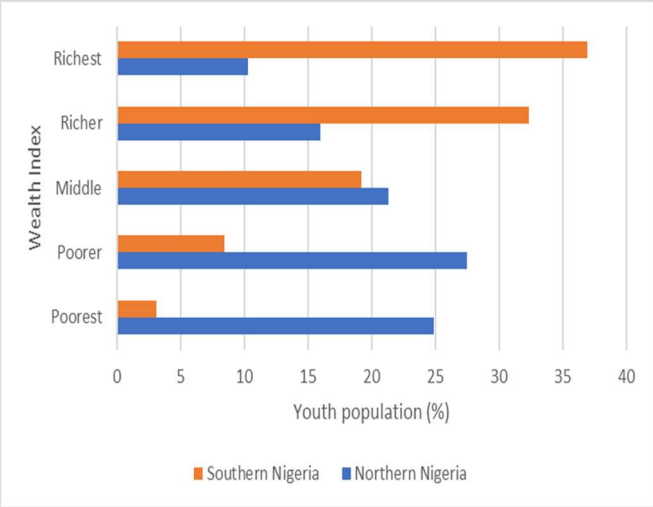

Figure 6: Percentage distribution of young women (15-24 years) by wealth index

Although education was significantly associated with modern contraceptive use among young women in the north, this was not so in the south. A possible reason for the insignificance in the south might be because almost all the southern youths are educated compared to the north, where almost half were not educated; hence the contraceptive behaviour of both the educated and few non-educated in the south is expected to be very similar. The high level of education among southerners can be traced back to the advent of European missionaries when southerners embraced education, but the northerner did not. Southerners have always embraced the western culture, but northerners have not; some are even against western education, as seen in the issue of Boko Haram insurgents killing people due to the acceptance of western education. A qualitative study conducted in the northern and southern parts of Nigeria also supported this finding by acknowledging the education attainment gap in both regions (Babalola & Oyenubi, 2018).

Moreover, several studies have also linked education to enhanced positive and informed decision-making (Oppong *et al.*, 2021; Pazol *et al.*, 2018). With education comes literacy and exposure, which may further influence their decision about modern contraceptive use because educated people tend to be informed about the implications of engaging in sexual activities without contraceptives. Mutumba et al. (2018) also linked education to exposure to mass media, enlightenment programs, and knowledge about contraceptives' benefits. A qualitative study conducted in three northern regions of Nigeria reported education as a motivator for contraceptive use among adolescents (Sanchez *et al.*, 2020). Adolescents were reported to use contraceptives as protection to their educational attainment in avoiding pregnancy. Most southern regions consist of urban cities, making them more exposed and informed even without attaining higher educational levels.

5.2.2 Intermediate Factors and Proximate Intervening

Knowledge Factors: Respondents were exposed to FP messages through television, radio, SMS messages, and newspapers/magazines, with only newspapers/magazines being particularly influential in exposing respondents to FP messages in the north and none in the south at the multivariate level. This result could be due to the media outlets being more accessible, newspapers/magazines do not require electricity, which is a problem in Nigeria due to the country's inadequate power supply. Electricity is poor in Nigeria, with only 40% having access, and this is even more pervasive in rural areas (Uzoma & Amadi, 2019). Most youths in the north reside in

rural areas; hence, this source is usually readily available and requires lesser cost or effort to use as a source of information in the north.

Perception Factors: Perceived risk of pregnancy was another important factor found to be significant for modern contraceptive use in Nigeria's northern and southern regions. This study showed that young women who did not know their ovulation cycle had lower odds of using modern contraceptives than those who knew their ovulation cycle. A possible reason for this finding may be that young women aware of their ovulation cycle are more conscious of avoiding/delaying pregnancy and are more likely to use numerous available options, such as 'the calendar or rhythm method, condoms and pills' during their unsafe periods than those that are not aware. Nyarko (2015), in a quantitative study in Ghana, also reported this outcome and further explained how the female's knowledge of her ovulation cycle significantly influences the use of contraceptives. A qualitative study in Malawi also demonstrated that women with knowledge about their ovulatory cycle are more likely to use contraceptives as protection from pregnancy than women with no knowledge (Mandiwa *et al.*, 2018).

This study also established partner communication as a significant factor for modern contraceptive use in the Northern region. Young women who discussed condom use with their partners have higher odds of using modern contraceptives compared to those who did not. This is a similar finding to the study conducted by Islam (2018). If contraceptive use is discussed with partners, it influences joint decision-making, influencing contraceptive uptake. Furthermore, a possible explanation for this result may be the higher percentage of married/cohabiting young women in the north than in the south, where most young women are single. Married women in the north need their husbands' consent to access health services, including contraceptives, due to the more prevalent patriarchal system influenced by culture/religious beliefs in the north than in the south. These gender relation issues transcend every aspect of women's lives, including financial autonomy, education. Hence, the influence on contraceptive use (Odok, 2019; Yaya *et al.*, 2019).

5.3 How existing interventions and program evaluation have addressed the factors associated with modern contraceptive use among young women aged 15-24, as found in the analysis of the 2018 NDHS

This study assessed two existing programs, A360 and the NURHI 2 intervention program, addressing the use of modern contraceptives among adolescents and youth. These two programs'

objectives were centred around improving the use of contraceptives and eliminating barriers to contraceptive use among adolescents and youth. Both projects recorded increased awareness of contraceptives, intention to use contraceptives, and contraceptive uptake and increase vary across northern and southern Nigeria. However, the quantitative analysis in this study revealed that contraceptive prevalence among youth is still very low and even lower in the North. This implies that efforts still need to be intensified to ensure that contraceptive prevalence increase among this group.

The A360 project made young girls see the importance of contraceptives through community and peer mobilizers, one-on-one counselling sessions with youth-friendly service providers, youth-friendly brands, youth-friendly service providers. However, these innovations have a higher contraceptive uptake impact in the south compared to the north. Also, as part of the A360 project's efforts to create a supportive environment for adolescents to access contraceptives, the project engaged with mothers and husbands of adolescents through events tagged "well-being" events and because of this framing, they have difficulties discussing key issues such as partner communication/support for contraceptive use, harmful religious beliefs, misconception about contraceptives for girls. Thereby limiting the girls' access to contraceptives, especially in the North; these issues were also identified in the quantitative analysis part of this research as factors that are strongly associated with modern contraceptive use in the North.

On the other hand, NURHI 2 used a combination of social mobilization (which includes sharing FP information leaflets/magazines), mass media (TV and radio) and social media to reach youth with FP messages at the household, community and national level, respectively. The FP messages included information that provides accurate contraceptive knowledge and information that dispels myths and misconceptions around youth's contraceptive use. This approach was able to improve contraceptive knowledge and intention to use FP among youth in both regions. Exposure to FP messages via newspapers/magazines was one of the factors identified in the quantitative analysis part of this research to be strongly associated with modern contraceptive use in the north. NURHI 2, using this factor in combination with other approaches, was probably responsible for the similar impacts achieved in both regions. In addition, the NURHI 2 intervention addressed factors like religious beliefs, socio-cultural barriers, and the influence of the male in FP decision-making through intergenerational dialogues with parents, religious leaders, community leaders and youth (male and female). These factors were also found to be significant in the quantitative analysis part

of this research, particularly in the north. Probably the broad stakeholders NURHI 2 engaged within both regions contributed to the impacts they made in achieving a positive shift in beliefs and norms around FP for young people.

Despite the great efforts and impacts made, none of the two projects addressed education and socioeconomic status factors, which had a strong association with contraceptive use, particularly in the North.

5.4 Strength and limitations of this study

The major strength of the study is the use of existing nationally representative data instead of collecting new data for comparative analysis of contraceptive use among young women (15-24 years) who represent an important population in Nigeria. Hence, giving more value to data and making this study generalizable to every part of Nigeria. However, the data used in this research is a cross-sectional survey, which means that none of the relationships can be interpreted as causal. In addition, the unavailability of some variables in the data stifled the ability to underpin the research with a well-established theoretical or conceptual framework.

This study also leveraged triangulation of data from different sources, including quantitative nationally representative data from NDHS and qualitative information from reviewing literature and the evaluation reports of major youth family planning projects in Nigeria. However, the methodological differences made it challenging to synthesize. Moreover, it was challenging to determine the direct impact of the NURHI LPAY project intervention on the youth group as the evaluation report covered the entire NURHI 2 Family Planning project evaluation for all men and women of reproductive age with the LPAY project integrated into it.

CHAPTER SIX

6.1 Conclusions

This section presents the conclusion of this study based on the research questions the study set out to answer, which are:

1. What is the prevalence of contraceptive use among young women (15-24 years) in Northern and Southern Nigeria?
2. What are the factors associated with modern contraceptive use among the northern and southern young women in Nigeria?
3. To what extent are the existing programs, interventions, and policies set up to improve contraceptives among young women in Nigeria addressing the identified factors associated with contraceptive use?

The overall modern contraceptive prevalence was low among adolescents and young women aged 15-24 in Nigeria, regardless of the region. This issue requires the attention of policymakers and all stakeholders in the healthcare sector and youth development sector. The low uptake of modern contraceptives among youth reflects the actual situation of Nigeria and many other sub-Saharan African countries, and this issue is not limited to young people but is a common challenge among women of reproductive age.

It can be concluded that the slightly higher modern contraceptive prevalence among young women from the southern part of Nigeria is strongly associated with several factors, including age, number of children, and perceived risk of pregnancy. In contrast, age, socioeconomic status, education, religious affiliations, number of children, partner communication, perceived risk of pregnancy, and exposure to FP messages through newspaper/magazines are strongly associated with the modern contraceptive uptake in the northern part of the country. These factors were also found to be interrelated at the various levels of the conceptual framework. For instance, education has a way of influencing the socioeconomic status of an individual, which tends to influence the channels to which the individuals are exposed to contraceptive information and services. This was also reflected in the findings of this research in both regions.

More than 98% were educated in the southwest compared to slightly over half of northern youth, and education was a predictor of modern contraceptives in the north. Exposure to information through academic learning is still a significant area that needs improvement in the north. However,

the youth and the entire society in Nigeria need to be more aware of the benefits of contraceptives for youth. Over 50% of the respondents from the north were poor compared to 11.5% in the south. Even if they are willing to use contraceptives, the inability to afford the indirect cost in public health facilities and the cost of contraceptives services in private facilities/pharmacy could hamper their decision.

This study found that respondents' age is strongly associated with the uptake of modern contraceptives in both regions and concludes that the higher use of contraceptives among young women (20-24 years) maybe because they are more exposed and are traditionally considered more 'mature' than adolescents. Also, young women (20-24 years) have better chances of making decisions than adolescents (15-19 years) because most young women aged 20-24 are either married or live apart from their parents. So, the parents have less control over their freedom and decisions. Also, the higher contraceptive use found among youth who have had children may be due to understanding the benefits of birth spacing. Perceived risk of pregnancy had a strong association with contraceptive uptake in both regions. It is pertinent to point out the relevance of the knowledge of ovulation cycle for girls as this will help them know when they are in their safe or unsafe period. This could influence their decision to either abstain during their unsafe period or use a modern contraceptive to avoid pregnancy if not ready. Furthermore, there are substantial disparities in how youth' religious affiliations and family/living arrangements affect modern contraceptive use in Nigeria's northern and southern regions.

In that light, the study also assessed two existing programs, A360 and the NURHI 2 intervention program addressing modern contraceptives use among adolescents and youth. These two programs have addressed some of the factors identified to be associated with contraceptive use among youth (15-24 years) in Nigeria. These interventions had promising approaches such as social mobilizations, media campaigns, one-one counselling sessions with youth-friendly service providers that worked well in improving contraceptive knowledge and intention to use contraceptives among youth. The intergenerational dialogue of NURHI 2, which engaged a broader stakeholder, also worked well in addressing sociocultural myths and religious beliefs that resulted in religious/community leaders speaking positively about FP for young people. On the other hand, the A360 wellbeing engagement meetings with parents and husbands of adolescents would have recorded greater achievement if the focus of the meetings was narrowed down to addressing issues affecting contraceptive use only.

In conclusion, this study establishes the disparities influenced by inequities between northern and southern Nigeria on how the interactions between sociocultural factors (religion, family/living arrangement, no of children), sociodemographic factors (age), and socioeconomic factors (socioeconomic status, education influences both knowledge factors (exposure to FP messages) which then influence perception factors (perceived risk of pregnancy, partner communication) in view of contraceptive use.

6.2 Recommendations

In line with the findings of this study, the following are recommended towards improving the uptake of modern contraceptives among youth (15-24 years) in both the northern and southern parts of Nigeria.

Recommendation to Government, Donor/Implementing Agencies and Civil Society Organizations

1. This study has established that the contraceptive prevalence and the factors associated with contraceptive use among youth vary across Nigeria's northern and southern regions. Therefore, it is recommended that programs/interventions for this group should address these factors in a holistic approach and be contextualized to each region. Youth in each region should be engaged as stakeholders to co-design interventions for their respective regions to achieve this.
2. This study also revealed that young people's inadequate knowledge, myths, and misconceptions about modern contraceptive use are deeply rooted in Nigeria's socio-cultural and religious beliefs. Changing these beliefs and behaviours takes time. It is recommended that existing programs such as the A360 and NURHI 2 projects be strengthened, scaled-up, and sustained for a longer time to achieve desired results. To achieve this, the government of Nigeria and donor organizations should allocate funds to implement the proven to work innovations of these programs such as the intergenerational dialogues, social mobilization, media engagements to reach young people and broader stakeholders with accurate contraceptive information. Innovations such as using social media influencers to provide accurate contraceptive information should also be explored.

3. This study revealed that most youths in the north are poor and socioeconomic factors are strongly associated with modern contraceptive use in the north. Hence, it is recommended that in the north, the government should encourage contraceptives uptake by financing or supporting programs that will reduce both direct and indirect costs of contraceptive services to zero. Also, projects/interventions should include financial empowerment programs as a component of contraceptive-focused interventions to improve the youth's socioeconomic status. Moreover, this might further help reduce low-income families' rate of marrying their girls off at a very young age.
4. This study revealed that most young women in the north did not discuss contraceptive use with their partners, and partner communication is strongly associated with modern contraceptive use in the north. Therefore, it is recommended that projects/interventions with the aim to increase contraceptive use in the north use gender-based approaches to transform gender norms around gender relations. To achieve these programs should have a component on male involvement and engage male youth as family planning clients.

Recommendations for future studies

1. Healthcare provider bias was linked as a possible reason for the disparities in how age influences contraceptive use. Healthcare providers are usually reluctant to provide adolescents with contraceptives services due to young age or perceived side effects, which may continue to reduce contraceptive use among young adults. Therefore, qualitative research needs to be carried out to explore the underlying issues influencing provider bias, behaviour and attitude towards contraceptive use among young people in both regions.
2. This study focused mainly on the demand factors that influence contraceptive use among youth in northern and southern Nigeria; however, some health system issues such as indirect cost of contraceptive services in public facilities and cost of services in private facilities were linked as possible reasons. Hence further research is required to understand the impact of the Nigerian health system on contraceptive use among youth in northern and southern Nigeria.
3. The NDHS should consider including questions that address service delivery indicators for contraceptive use in subsequent National surveys.

Recommendation for modification of the conceptual Framework

1. This study established that religious affiliations, education, exposure to FP messages and the number of children are strongly associated with modern contraceptive use in the north and the number of children in both regions. Therefore, it is recommended that this conceptual framework be modified to include these factors, especially for studies in countries with multi-cultural/religious diversity like Nigeria.

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