
UNIVERSITY *of the*
WESTERN CAPE

# THE DYNAMICS OF MODERN METHOD CONTRACEPTION AMONG SEXUALLY ACTIVE UNMARRIED ADOLESCENTS IN NIGERIA.

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***DECLARATION***

I, Olaide Olawumi Ojoniyi proclaim that this thesis is unique in itself. This thesis is being submitted for a Doctoral degree in Population Studies at the University of the Western Cape, Cape Town. To the best of my knowledge, this project has not been submitted for any type of degree or examination or to any other university.

***DEDICATION***

I dedicate this work to God Almighty, the Giver of Life and Wisdom. And to my parents, as well as Reverend Mrs. Titi Bamidele of blessed memory.

***ACKNOWLEDGEMENTS***

Foremost on this list of acknowledgements, is to give all the glory to the Almighty God, my Rock, for the successful completion of this degree. This achievement can only be attributed to His grace alone. I would specially like to appreciate my parents, Pastor and Mrs. Ojoniyi, for their unwavering support, love, and belief in me. And to my siblings, Oladoyin, Damola, Ololade, and Victor, for your love and encouragement.

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To my friends, thank you for the encouragement and advice throughout the years of my scholarly journey.

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## *LIST OF ABBREVIATIONS*

ICPD-International Conference of Population and Development

FLHE -Family Life and HIV/AIDS Education

LGA-Local Government Area

FP-Family Planning

CPR- Contraceptive Prevalence Rate

mCPR- Modern Contraceptive Prevalence Rate

EA-Enumeration Area

HBM- Health Belief Model

TPB- Theory of Planned Behaviour

TRA-Theory of Reasoned Action

SAU- Sexually active unmarried

ASRH- Adolescent sexual and reproductive health

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*ABSTRACT*

**Background:** It is just stating the obvious to aver that young people in all regions are reaching puberty earlier and are habitually engaging in sexual activity at a younger age, and thereafter, marrying later. As a result, they are sexually exposed for a longer time before marriage than has historically been the case, and as such, are at higher risk of unintended pregnancy and sexually transmitted infections. Needless to say, nonmarital sexual activity is increasing among adolescents. However, less than half of those who want to avoid pregnancy are using a modern method of contraception.

It is also worthy of mention that adolescents' contraceptive use is of high importance globally. And therefore, an effective intervention to reduce early and unintended pregnancy which is related to undesirable health, educational, social, and economic outcomes. Unarguably, it is estimated that 21 million pregnancies occur annually among adolescent girls aged 15-19 years in developing countries, half of which are unintended.

**Problem/Need for study:** The impact of adolescent pregnancy, given the above, includes risks of maternal death, morbidities such as obstetric fistula, health risks to infants, and complications of unsafe abortion. In developing countries for instance, pregnancy and childbirth complications are the second leading cause of death among adolescent girls between the ages of 15-19 years. In Nigeria, the geographical distribution of adolescent pregnancy reaches 66.7% for both married and unmarried adolescent girls. Stalling adolescent fertility through effective contraception can influence demographic dividends. This occurs when birth rates decline, and the working-age group proportion increase relative to the non-working age group.

Understanding adolescent girls' modern contraceptive behaviour and the factors associated with it will reveal their exposure to the consequences of non-use of effective methods. The knowledge may pinpoint the best suitable intervention programs to reduce the consequences of the non-use of modern contraceptives among adolescents who are not ready to have a child but are having sex. Hence, this study aims to understand modern contraceptive behaviour among unmarried adolescents in Nigeria thus contributing to the existing literature on the subject matter. The study objectives are (1) to examine the factors predictive of modern contraceptive initiation among sexually active unmarried adolescent girls aged 15-19 years in Nigeria; (2) to examine socio-economic factors associated with modern contraceptive use and intention; (3) to examine the association between perceived susceptibility to pregnancy and modern contraceptive behaviour among sexually active unmarried adolescent girls aged 15-19 years in Nigeria; and (4) to examine rates of discontinuation and reasons for discontinuation among adolescent girls.

**Methods**: The study uses data from the 2018 Nigeria Demographic and Health Survey. The study population comprise of 1,014 never married adolescent girls aged 15-19 years who have ever had sexual intercourse. The dependent variables are (i) modern contraceptive initiation-defined as the time of first use of modern contraceptive after first sex; (ii) modern contraceptive use and intention-defined as the current practice of contraception such as use, non-use with the intention to use later and, non-use without intention to use; (iii) current modern contraceptive use; (iv) discontinuation of use. Guided by prior studies and the theoretical framework, relevant independent variables were selected. Three levels of analysis- univariate, bivariate, and

multivariate were carried out. At the multivariate level, Cox proportional hazards regression, due to its suitability for analyzing time to event data was modeled to examine the factors associated with the time to initiation of modern contraceptives after first sex. Multinomial logistic regression was modeled for factors associated with use and intention to use. Binomial logistic for current use and non-use of modern contraceptives. Data were analyzed using Stata software version 14.

**Results:** Findings show that the average time to the first use of modern contraceptives after sexual initiation is two years. Having first sex at age 15 or later, belonging to a female-headed household, not living with the parent, coerced first sex, and having tertiary education are associated with early initiation of modern contraceptives.

Only 15.8% of sexually active unmarried adolescents in Nigeria use modern contraceptives. About half (49%) of the adolescents are not using contraceptives but plan to do so in the future. Results also indicated that current age [ARR=1.267, CI 1.049-1.529], having completed secondary education [ARR=3.301, CI 1.105-9.865], living in the North-east [ARR=2.559, CI 1.132-5.784], having multiple sexual partners [ARR=11.284, CI 3.610-35.272] and internet use [ARR=1.919, CI 1.099-3.125] were all positively related to modern contraceptive use.

There is no significant association between perceived susceptibility and modern contraceptive use. However, adolescents who make use of the internet (AOR= 1.659, CI 1.046-2.630), and those who had a sexual partner (AOR= 4.051, CI 1.960-8.639), more than one partner in the last 12 months (AOR= 6.037, CI 2.292-15.902) were more likely to use modern contraceptive.

**Conclusion:** The study's findings showed that adolescent girls in Nigeria do not initiate contraceptives early and very few currently use a modern method of contraceptive. The most prevalent type of contraceptive reported is the male condom. Adolescent girls discontinue use due to infrequent sex. Results indicate a deferred initiation of modern contraceptives after a first sexual encounter. It has become imperative for tailored interventions to improve the time of initiation of contraceptives to reduce the associated burdens and consequences. Adolescent girls in Nigeria needs to be sensitized about reproductive health and the importance of the use of contraceptive.

Health intervention programs targeted at early education of adolescents about the importance of contraception are warranted especially among adolescent girls who are not educated and do not have access to the internet.

# *1.0 CHAPTER ONE: INTRODUCTION*

## ***1.1** Background*

There is no disputing that maternal and child health is a global public health concern. However, good progress was made in improving maternal and child health between 2000 and 2015 (Vogel et al., 2015). Consequent upon the foregoing, new grand goals are now in motion to further improve maternal and child health. Goal 3 of the 17 Sustainable and Development Goals (SDGs) is "to ensure healthy lives and promote well-being for all at all ages", and goal 5 is "to achieve gender equality and empower all women and girls"(United, 2014). These goals aim to virtually end avoidable maternal, newborn, and child deaths and to improve access to sexual and reproductive health.

Accordingly, adolescents' sexual and reproductive health take precedence in achieving these goals. This is because they are at higher risk of maternal and infant health issues. Pregnancy among adolescents is more associated with a range of undesirable outcomes compared with pregnancy among adult women (Neal et al., 2018, Nove et al., 2014). There is a higher incidence of threatened abortion, pre-eclampsia, preterm delivery, and the need for newborn intensive care among adolescent pregnancies compared to pregnancies among 25-30 years old (Karataşlı et al., 2019). Similarly, half of all pregnancies among teen girls aged 15 to 19 are thought to be unplanned. (Darroch et al., 2016b). This shows their need for effective contraceptives.



However, contraception use among young women in the developing countries of the world is lower than among relatively older women, whether married or single. In the developing region, 14% of adolescents aged 15-19 who are having sex do not intend to have a child in the next two years, more than half of this population (57%), need a modern contraceptive method (Darroch et al., 2018). Over 39.5% of young unmarried women in developing countries have an unmet for modern contraception (MacQuarrie, 2014).

For example, in Africa and Asia, almost two-thirds (62% and 64%, respectively) of adolescents having sex experience unmet needs for contraception while in Latin and the Caribbean, it is 38% (Darroch et al., 2016a). In Sub-Saharan Africa, 62% of sexually active adolescents are not using a modern method, of those who are not using a modern method, 87% are using no method at all and, the remaining 13% use a traditional method; as, a result 59% of sexually active unmarried adolescents aged 15-19 in the region have an unmet need for contraception

(Darroch et al., 2016a). Approximately half of the adolescent pregnancies in Sub-Saharan Africa are unplanned, 50% of which end in abortion majority of which are unsafe (Chae et al., 2017, Sully et al., 2018).

On the other hand, non-use of modern contraceptives has been consistently high among young people in Nigeria, 53.3% in 2013 and 55.2% in 2018 (Adedini et al., 2021). Nigeria has a high-burden of adolescent and youth health problems with Sexual and Reproductive Health (SRH) as a significant contributing factor (Patton et al., 2016). Nigerian adolescents face specific barriers to modern contraception. Many service providers, restrict access to contraception based on age and parity of their choice (Enuameh et al., 2015). As a result, adolescents have limited access to contraceptive information and services in the country.

Also, when adolescents initiate contraceptive, continuation over an uninterrupted period is not certain, and discontinuation occurs for a variety of reasons, including method failure, side effects, ease of usage, as well as a change in need. Adolescents and young women are particularly open to discontinuation because they are more likely than older people to have limited access to family planning services, as well as more random and irregular sexual activity, and are likely to lack understanding of how to use contraceptive techniques effectively (Gilda et al., 2016). In developing countries, for whatever reason, a higher proportion of teens than their older counterparts stopped using the method after a year. Adolescent contraceptive use is characterized by shorter periods of consistent use, greater contraceptive failure, and discontinuation for other motives than adult contraceptive use (Blanc et al., 2009).

Regrettably, young individuals are approaching puberty earlier than ever before, participating in sexual activity at a younger age, and marrying later in all regions (Blanc et al., 2009). As a result, they are sexually mature for a longer period before marriage than in the past, and they are more susceptible to unwanted pregnancy and sexually transmitted illnesses. Nonmarital sexual activity is increasing however, fewer than half of adolescent girls who want to avert pregnancy use a modern method of contraception (Darroch et al., 2016a). As they transit into adulthood, young individuals commonly participate in adventurous behaviours, including sexual practices, to help them determine their own identity (Avery and Lazdane, 2010). The initiation of sexual activity is a social and personal milestone that also has significant health ramifications (Hawes et al., 2010). A big number of young individuals are involved in sexual activity during adolescence (Inchley and Currie, 2016). At this time, patterns of behaviour, sexual activity, and practices are established.

It is apt to argue that adolescence is a unique era of passage from childhood to adulthood, and it is a critical time for shaping behaviour and norms, as well as the development of constructive habits for future health and well-being (Patton et al., 2016). Young women's reproductive decisions have a significant impact on their health, education, employment prospects, and their general transition to adulthood. Adolescent reproductive decisions are especially important since early motherhood can affect their health and limit their opportunities to contribute productively to society.

Subsequently, adolescence is the time between the ages of ten and nineteen when young people shift from childhood to adulthood. (WHO, 2015a). The world population is expected to reach 8.5 billion in 2030, 9.7 billion in 2050, and 11.2 billion by 2100 (UN, 2015). The majority of population increase occurs in the world's least developed regions, which include Sub-Saharan Africa and Asia. Between 2015 and 2050, an additional 2.4 billion people are predicted to be added to the global population; 1.3 billion will be added in Africa (UN, 2015). Young people are at an all-time high over the world. While the number has been falling in more developed regions since 1980, it has been rising in less developed regions and is predicted to continue to rise in the next decades (UN, 2015). Nigeria has a population of about 190 million people, with 22.3 percent of them being adolescents (UNICEF, 2013). Five percent of these adolescents contract sexually transmitted infections each year, and young individuals account for around 40% of new HIV infections (UNICEF, 2017). This could be because of early sexual initiation and unprotected sex which increase adolescents' HIV risk. The median age of first sexual intercourse for women and men is 17.6 and 21.1 years, respectively, whereas the median age of first marriage for women and men is 18.1 and 27.2 years, respectively (NPoC&ICF, 2014).

Even though Nigerian abortion law and policy prohibit access to abortion services, around 1.25 million women are induced into abortions each year by unqualified practitioners, with many suffering major complications due to a lack of post-abortion care (Ipas, 2015). Effective contraception is one of the most important ways to avoid unwanted pregnancies and the hazards that come with them. This is one of the most significant medical breakthroughs of the twentieth century. Its use provides a wide range of benefits for individuals, couples, households, communities, and society as a whole, including pregnancy postponement, improved maternal and child health, educational advancements, poverty reduction, and women's empowerment (Bongaarts, Cleland, Townsend, Bertrand & Gupta, 2012). Despite these advantages and

ongoing attempts to increase access, contraceptive use is still low in developing countries, and the unmet need for contraception remains substantial.

### *1.2 Statement of the Problem*

Whereas, unmet need for modern contraception is higher among Nigerian adolescent girls compared to older women and modern contraceptive use is lower as, 13.2% among this age group compared to older age groups which range from 17.9-21.1% (Alo et al., 2020, Fagbamigbe et al., 2018).

Despite the low uptake of contraceptive methods among adolescents and the associated complications, some adolescent girls still find reasons to discontinue the methods (Streifel, 2021).

However, non-use of contraceptives put adolescents at risk of unintended pregnancies, unsafe abortions, high fertility, sexual health-related, and social risks (Thijssen et al., 2014, Hampton and Mazza, 2015). It could also impair the girl's future educational and employment prospects (Nove et al., 2014).

More so, unintended pregnancy poses a significant public health risk, increasing the risk of obstetric fistula, anemia, eclampsia, postpartum hemorrhage, and puerperal endometritis in younger moms (Haldre, Rahu, Karro, & Rahu, 2007; Michaud & Ambresin, 2014). Adolescent pregnancy puts both the adolescent mother and her child at risk (Nove et al., 2014).



Pregnancy and delivery complications are the most common cause of death among girls aged 15 to 19 (Lopez et al., 2015).

When an unwanted pregnancy happens, Nigerian women often turn to abortion to avoid unwanted births (Sedgh, Bankole, Adewole, Singh &Hussain, 2006). Considering abortion is prohibited in Nigeria unless it is medically necessary to save the mother's life, many abortions are performed in a dangerous atmosphere. (Abiodun and Balogun, 2009). In Nigeria, 43% of women seeking abortions did so because they were not married, were too young, or were still in school (Sedgh, Bankole, Adewole, Singh &Hussain, 2006). These illegal abortions have serious and sometimes life-threatening effects, frequently resulting in maternal death (Orji, Jeremiah&Kasso, 2009; Oye-adeniran, Adewole, Umoh, et.al, 2004). Sadly, adolescents account for up to 74% of all induced abortions in Nigeria, and almost 60% of all gynecological hospital hospitalizations (WHO, 2007). In Nigeria, abortion is responsible for 20 percent to 40 percent of maternal mortality (Orji, Jeremiah&Kasso, 2009; Oye-adeniran, Adewole, Umoh, et. al, 2004). In Sub-Saharan Africa, Nigeria has one of the highest maternal deaths, with 576

deaths per 100,000 live births (NPoC&ICF, 2014). Maternal health continues to be a major source of illness burden for adolescent girls, with maternal causes ranking second among causes of mortality for girls aged 15 to 19 (WHO, 2015a).

Adolescents between 15 and 19 years old are twice as likely as women over 20 years of age to die during pregnancy or childbirth. Evidence from Nigerian sexual and reproductive health trends emphasizes the importance of focusing on the health of adolescents. This is because pregnancy and childbirth are responsible for more than 30% of mortality among adolescent girls aged 15 to 19 (NPC and ICF, 2014).

Aside from maternal complications, adolescent newborns also are exposed to certain risks. They have a 50% higher risk of stillbirths and neonatal fatalities, as well as a higher risk of premature labor, low birth weight, and asphyxia (Haldre et al., 2007). A nationally representative study in Nigeria shows that the odds (AOR1.27, CI-0.91–1.78) and rate of perinatal deaths (62/1000 live births) were higher among mothers below age 20 compared to older mothers between 2008 and 2013 (Ezeh, Uche-Nwachi, Abada, & Agho, 2019).

Unfortunately, in the Nigerian culture, having sex before marriage and having a child as a result of that intercourse is considered a violation of moral norms, resulting in various types of marginalization from individuals and members of the community. It reduces girls' prospects and put them at risk of abuse and stigma. Unmarried adolescent pregnancy is often associated with a social stigma that could extend to their friends, families, and communities. Unmarried pregnant adolescents are frequently ostracized by family and friends, dismissed from schools, homes, and churches, and suffer from loneliness, unhappiness, and melancholy as a result (Hall et al., 2018). Any member of an adolescent's social network (but most typically parents) could perpetrate verbal, psychological, and physical maltreatment, including being screamed at and even beaten, and contribute to greater public shame and disgrace (Hall et al., 2018).

Early childbearing often prevents girls from schooling and continues the cycle of poverty (Michaud & Ambresin, 2014). For an adolescent in school, unintended pregnancy raises the risk of dismissal from school. And this is often said to be a precaution to prevent influencing other students to do the same. Pregnant students are either suspended or expelled from high school when discovered or the pregnant student withdraws herself before the school finds out. The majority of these withdrawals are not recalled to continue their education especially, in Government schools while in private schools the student may be recalled to continue or they may register in a different school after delivery (Onyeka et al., 2011). Dropping out of school

will initiate a cycle of illiteracy, unemployment, and poverty for the affected student. She may be unable to provide for her baby due to little or no income-earning capacities and will be in danger of poverty-induced recurrent pregnancy.

Furthermore, Nigeria is one of the countries with a high adolescent fertility rate. In 2013, the adolescent fertility rate was 118 births per 1,000 women aged 15–19, compared to 106 births in the region. Based on Nigeria's Demographic and Health Survey report of 2013, close to one quarter (23%) of adolescent girls aged 15-19 years are already mothers. Even though adolescent fertility is dropping across the region, Nigeria's rate of decline is lower than the regional average. This is because of regional disparity in adolescent fertility in the country, especially in the North-Western States of Nigeria, where it is 171 births per 1000 adolescent girls (Rafael et al., 2016b).

Young motherhood is more in the northwest zone (NPoC & ICF, 2014). The majority of young women aged 15 to 20 years in the region have at least one child, 35% already have three or more children with 13% reporting having six children (Lane, Jeng-Joof, Hassan & Pryor, 2010). According to estimates, over 900000 babies are born to adolescents annually and two out of every 10 women who gave birth in Nigeria are below the age of 19 (Aigbe & Zannu, 2012). Deferring adolescent births will significantly lower population growth rates, potentially resulting in broad economic and social benefits, as well as improving the health of adolescents (Aigbe and Zannu, 2012).



In the short and long run, adolescent fertility has a negative impact on Nigeria's economic growth. This shows that adolescent fertility has major implications for Nigerian economic growth, as it has a negative impact on it (Aigheyisi and Oligbi, 2019).

As a result, adolescent fertility can lower an economy's potential human capital, and that is a critical prerequisite for growth as proposed by endogenous growth models, specifically the human capital enhanced Solow growth model in an economy. McQuestion, Silverman, and Glassman (2012, abstract) argued that "adolescent fertility in low- and middle- income countries present a severe impediment and can lead to school dropout, lost productivity, and intergenerational transmission of poverty".

Early pregnancy among adolescent women has a negative impact on their employability, resulting in lifetime economic dependency. Younger moms work in lower-wage jobs. Many also experience domestic violence and have a higher percentage of deceased children due to

lack of education to provide the best childcare. In the long run, a combination of all of these could harm economic growth (Deshpande, 2005; Urdinola and Ospino, 2015).

### *1.3 Significance of Study*

The majority of the adverse reproductive health and social outcomes are preventable by effective modern contraception. The high levels of unmet need highlight the significance of determining what variables encourage or discourage adolescents from using modern contraception.

Following the International Conference on Population and Development (ICPD) 1994 in Cairo, in 2005, the Nigerian government created a reproductive health framework for adolescents as well as a broader framework for adolescent health and development. However, in 2007 a more comprehensive policy aimed to improve the health and development of Nigerian adolescents and young people was developed. The National Policy on Health and Development of Adolescents and Young people in Nigeria stressed the significance of access to information and youth-friendly services, as well as reproductive health and social matters. The policy defined the role and responsibilities of the departments concerned. This policy corroborates the Family Life and HIV Education program (FLHE) which is the cornerstone of the Nigerian government's endeavor to improve adolescent sexual and reproductive health outcomes. The FLHE was introduced in 2003 to focus on in-school adolescents between ages 10 and 17 years, through the Federal and State Ministries of education and Local Government Authorities (LGA). The program is incorporated into the curricula and spans topics on puberty, personal skills, sexual health, relationships, and sexual behaviour. Nevertheless, the program does not promote contraception but focuses only on abstinence as means of preventing unwanted pregnancies and reducing the risk of HIV/AIDS (Rafael et al., 2016b).



Conversely, the World Health Organization (WHO) 2011, released guidelines on averting early conception and poor reproductive consequences in adolescents from developing countries of which increasing contraception is a crucial aspect (WHO,2011). In 2012 the landmark Family Planning Summit took place in London, to raise awareness of women who are having sex but do not need a child and to gain financial and political commitment to solve the problem (Singh and Darroch, 2012). The meeting gathered together international powerhouses such as national governments, non-governmental organizations, and private sector businesses to break down contraception barriers. The meeting allowed the Nigerian government, as well as those from Ethiopia and Senegal, to show their commitment to family planning (Smith and Belizan, 2012).

The Nigerian government at the summit by 2020, commits to increasing CPR by 2% each year and achieving a modern contraceptive prevalence rate of 27% amongst women (FP, 2017). One of the ways stated to achieve this is to collaborate with the Ministry of Youth and the Ministry of Education to see that young people receive age-appropriate instruction on sexual and reproductive health.

Meeting all women's needs for modern contraception to avoid unwanted pregnancies and reduce high adolescent birth rates in the world's poorest countries is a priority for two major projects, Family Planning 2020 and the UN's Global Strategy for Women's, Children's, and Adolescents' Health(FP, 2020; WHO, 2015b). These activities also contribute to the UN-led Sustainable Development Goals, a worldwide agenda aimed at eradicating poverty and improving living standards by 2030 (UN, n.d.). Three of the 17 Sustainable Development Goals—goals 3, 4, and 5, which call for improved health and education as well as gender equality—are heavily reliant on improvements in the lives and health of teenage girls and women (Barot et al., 2015).

Meeting the contraceptive needs of adolescents has been considered pivotal in achieving all the goals stated above. Addressing the contraceptive needs of young women is an important part of any strategy to improve their health and potential. Policymakers and program planners should use findings and recommendations from research about adolescents' contraceptive behaviour to develop these strategies.

Hence, this study is imperative since: -

(1). To draft operational programs, decision-makers require timely research on age-specific contraceptive use and associated factors. They may, for example, want information on the proportion of unmarried adolescent girls using modern contraceptives, as well as the associated factors, to keep track of progress on global efforts including FP2020, the Global Strategy for Women's, Children's, and Adolescents' Health, and the Sustainable Development Goals.
Such programs require research on key groups such as those aged 15–19. Despite the governmental consensus on its importance, few studies on adolescent contraception use, and even fewer on unmarried sexually active adolescents, have been conducted until recently.
(2). Decreasing adolescent fertility through effective contraceptives can drive demographic dividend(Canning et al., 2015). Which is the economic boost that happens when birth rates

decline, and the proportion of the working-age group is more than the non-working age group. Smaller families may allow both families and governments to invest more in child's health and education, as well as more women to enter the workforce. If governments enact policies that promote growth and this big group of people finds well-paying jobs, they will reap a dividend as their productive labour enhances family and national income.

(3). Similarly, adolescent girls in developing countries require access to effective contraception and reproductive health services to receive further education, gain useful work experience before motherhood, and build preparation for parenthood.

Satisfying unmarried adolescent girls' contraceptive needs would reduce the burden of unwanted pregnancies (particularly those that end in unsafe abortion), resulting in fewer maternal deaths and illnesses.

(4). This will enable girls who are physically or emotionally immature to postpone their first pregnancy so that they can have a full childhood before becoming mothers (Smith & Belizán, 2012). With 31.5% of teenage mothers (15-19 years who have had children or are currently pregnant) reported in Nigeria in 2015, this study is imperative at this time (WHO, 2015a). This study, therefore, seeks to examine adolescents' modern methods of contraception and their underlying forces in Nigeria. The suggestions of this study would improve the sexual and reproductive health of adolescent girls in Nigeria, allowing them to contribute more to the country's social and economic growth.



(5). Lastly, using a nationally representative dataset, relevant theory, and statistical test and restricting the study to an often-overlooked group this research aims to add to the body of knowledge and provide insight into actual forces that explains adolescents' modern contraceptive behaviour in Nigeria which may also apply to other countries, especially in sub-Saharan Africa.

## *1.4 Research Question*

What are the modern contraceptive behaviour dynamics among sexually active unmarried adolescents aged 15-19 years in Nigeria?

### *1.4.1 Sub-questions*

1. How soon do sexually active unmarried adolescents in Nigeria initiate contraceptives?
2. What are the factors associated with modern contraceptive use and intention among sexually active unmarried adolescent girls aged 15-19 years in Nigeria?

3. What is the association between perceived susceptibility to pregnancy and modern contraceptive use among sexually active unmarried adolescents in Nigeria?
4. What is the prevalence of and reasons for modern contraceptive discontinuation among adolescents in Nigeria?

## *1.5 Research Objectives*

### *1.5.2 Specific objectives*

1. To identify factors associated with the timing of modern contraceptive initiation among sexually active unmarried adolescent girls in Nigeria.
2. To investigate factors associated with modern contraceptive use and intention simultaneously among sexually active unmarried adolescent girls in Nigeria.
3. To examine the association between perceived susceptibility to pregnancy and modern contraceptive use among sexually active unmarried adolescent girls in Nigeria.
4. To assess the prevalence of modern contraceptive discontinuation and reasons for discontinuation among adolescent girls in Nigeria.

*1.6 Definition of terms*

- Modern Contraceptive behavior: activities involved in the process of identifying and using a modern contraceptive method to prevent pregnancy and can include specific actions such as current use or non-use, intention to use, continuation or discontinuation (to maintain or stop the use of a contraceptive method).
- Modern contraceptive methods: contraceptive methods include spermicides, female condoms male condoms, standard days/cycle beads, pills, injectable contraceptives, lactational amenorrhea (LAM), implants, and IUD.
- IUD; Intra-Uterine Device
- Unmarried: The proportion of current 15-19year old who report never been in a marital union.
- Sexually active: The proportion of current 15-19year old who report ever having sexual intercourse.
- Adolescents: current 15-19year old
- mCPR: Modern contraceptive prevalence rate
- SAU: Sexually active unmarried
- ASRH: Adolescent sexual and reproductive health
- Sexual debut: first sexual experience
- Sexarche: The age at which someone first engages in sexual intercourse.
- Coitarche: The first sexual intercourse.
- Ovulation: is a period during the menstrual cycle when a woman is most likely to get pregnant if she had unprotected sex.
- Menstrual cycle: this is the hormonal process a woman's body goes through each month to prepare for a possible pregnancy.
- Susceptibility: The state or fact of being likely or liable to be affected by something
- Fecund: Physiological potential to get pregnant
- Infecund
- Fecundity: Ability to become pregnant and give birth
- Infecundability: Inability to become pregnant.
- Postpartum amenorrheic: Temporary after-birth infertility that occurs when a woman is not having her monthly flow.

Table 1: Content of the Thesis

| **CHAPTER** | **CONTENT** |
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| CHAPTER ONE | BACKGROUND TO THE STUDY |
| CHAPTER TWO | THEORETICAL AND CONCEPTUAL FRAMEWORK |
| CHAPTER THREE | STUDY OBJECTIVE ONE |
| CHAPTER FOUR | STUDY OBJECTIVE TWO |
| CHAPTER FIVE | STUDY OBJECTIVE THREE |
| CHAPTER SIX | CONCLUSION AND RECOMMENDATION |

## *2.0 CHAPTER TWO: Theoretical Framework and Conceptual Design*

### *2.1 Theories and models of health behaviour*

It is demonstrated here that one theoretical lens is inadequate to foreground this study on. As such, multiple theories and models are adopted in this thesis. Concerning health behaviour such as contraception, theories and models commonly utilized are grounded on a social cognition approach (Conner M and Norman P, 2005). These include the Health Belief Model, theory of reasoned action, social cognitive theory, and the theory of planned behaviour. Fundamental to most of the social cognitive models is an expectancy-value theory, which posits those subjective valuations of expectancy and value are blended logically for decision-making.

The Theory of Reasoned Action (TRA) advocates that human actions are governed by their intention to perform the behaviour which is an operation of their subjective norms and attitude to the behaviour (Fishbein & Ajzen, 1975). It assumes a rational approach to involving new behaviours. It stresses recognizing attitudes toward the new health behaviour rather than attitude toward the outcome (illness) and focuses on the behavioural intention for predicting behaviour.

Intention predicts behaviour. The belief that a certain behaviour will result in the desired outcome is influenced by the perspective on the specific behaviour, the subjective norms, as well as the perception of behavioural control. The more intense these three, the stronger the person's intention to perform the behaviour



Similarly, the theory of planned behaviour also assumes a rational approach to engaging in new behaviours. It can be thought of as an annex to the theory of reasoned action. It assumes that humans are rational performers who process information and that principal reasons influence motivation to perform a behaviour. These reasons, which are composed of a person's behavioural normative, and control beliefs, shape his attitudes, subjective norms, and sense of control, regardless of whether or not such views are rational or correct by some objective standard (Montaño D.E. and D., 2002).

The social cognitive theory is a cognitive design of social learning theory. According to this theory, current behaviours, ideas and emotions, and the environment all interact to influence new behaviour (Baranowski T et al., 2002). This theory gave rise to the concept of self-efficacy, which is the belief in one's ability to perform a specific action and have a reasonable expectation that the action will lead to the desired outcome. This has been incorporated into several theories and is sometimes used on its own. A basic premise of social cognitive theory is that people learn from their own experiences, also from watching others' behaviour and the consequences of those acts (Glanz and Rimer, 1995).

### *2.2 Health Belief Model*

The Health Belief Model is another widely used model for health behaviour. It tries to explain health-related behaviour as a product of certain belief patterns. An individual rationale for taking on a health behaviour can be categorized into individual perceptions, modifying factors, and the likelihood of action.

Though also based on a rational approach, the model assumes that a person will act to prevent an undesired outcome if the individual believes he is vulnerable, the aftermaths of the outcome are severe, and if the benefit of action outweighs the cost (Janz N.K. et al., 2002). While the first two theories buttress attitude toward action rather than the attitude toward the outcome. The use of modern contraceptives is a deliberate act to prevent pregnancy.

The population and situation determine the best-suited theory. The most appropriate theory should be chosen after identifying the problem, aim, and practice units, not after picking a theoretical framework because it is interesting or familiar (Glanz and Rimer, 1995). This study aims to understand modern contraceptive behaviour among sexually active unmarried adolescents in Nigeria to reduce the problems (unwanted pregnancy, STIs, stigma, etc.) associated with low or non-practice of the behaviour. The effects of sexually active unmarried teens not using modern contraception are more grievous than other women because of their age and marital status. A perception of exposure to an undesirable outcome may motivate an individual to take on behaviour to prevent the condition. While other theories consider individual attitudes environmental factors and individual perceived control or self-efficacy, the health belief model differs in considering the outcome of the behaviour.

The health belief model has offered a valuable framework for studying health behaviours and establishing key health beliefs. It has been extensively used and has predicted a range of health behaviours (Janz and Becker, 1984, Harrison et al., 1992). The advantage of the model lies in the fact that it was developed by health behaviour researchers and so many of the postulations have face validity (Hochbaum, 1958, Rosenstock, 1966). The model's appeal is due in part to the model's common sense operationalization of a variety of cognitive characteristics related to the performance of health behaviour. (Norman and Conner, 2017). Furthermore, HBM is unique because the way the model's variables interact to produce behaviour is not rigorously defined. (Rosenstock et al., 1988). As a result, the six constructs in the model are usually tested independently to predict behaviour (Norman and Conner, 2017).

### *2.3 Theoretical Framework*

This study uses the Health Belief Model (HBM) as applied to contraceptive behaviour. There is a cognitive, interpersonal paradigm that pictures humans as rational creatures who make complex decisions about whether or not to engage in certain health behaviours. (Rosenstock, 1974). The model has been widely used to evaluate health-related beliefs in respect of protective behaviors. If one regards pregnancy as an outcome to prevent, the concept can be applied to contraceptive behaviour. The model attempt to identify the patterns of health behaviour and it applies to intricate precautionary and sick-role health habits such as contraceptive behavior (Katasky, 1977; Rosenstock,1974; Nathanson&Becker,1983). Its components are developed from a classic collection of social psychology theories and mainly focus on goal-oriented cognitive variables (i.e motivation to prevent pregnancy) (Nathanson&Becker, 1983). Its constructs emphasize, adjustable factors over fixed variables, allowing for realistic actions to address public health issues (i.e unintended pregnancy and sequelae) (Katasky, 1977).

Women differ in the steadfastness of their will to avoid becoming pregnant and in their judgment of contraception's costs and advantages (Condeli, 1986). Perceived susceptibility or risk of experiencing an outcome, perceived threats or severity of an outcome, perceived benefits resulting from a health behaviour, perceived barriers deterring a health behaviour, the personality's inclusive inspiration for health, and finally, the confidence in adjusting to a health behaviour are all factors that influence performing a health behaviour (Rosenstock,1966).

Subsequently, numerous other researchers, including the first proponents of this model, admit that for the HBM to be predictive and explanatory, a health status does not necessarily need to be an unpleasant condition to avoid. (Herold, 1983; Hester& Macrina,1985; Rosenstock,1974; Lin&Hingson,1974). They assert that the model is suitable for family planning study because of its uniqueness as health behaviour. Precepts of this argument, with a theoretical foundation by Lin and Hingson with a comprehensive, improved application by Nathanson and Becker as explained by Hall 2013, are as follows.

1. There may be uncertainty that pregnancy is undesirable and should be prevented, likened to a negative disease. The model can control for this uncertainty in the perceived severity construct, using more specific measurements of pregnancy intentions and attitudes (i.e. “I intend/desire to become pregnant in the next year,” rather than, “I think it is likely I will become pregnant”) (Herold,1983).

2. Contraceptive behavior may be influenced by certain factors which directly affect the behaviour (Lin&Hingson, 1974). Condom use, for example, may be affected by a spouse who has a strong desire to avoid pregnancy. By thoroughly analyzing modifying elements inside the HBM, this influence on contraceptive behaviour can be adequately accounted for. (Nathanson&Becker,1983).

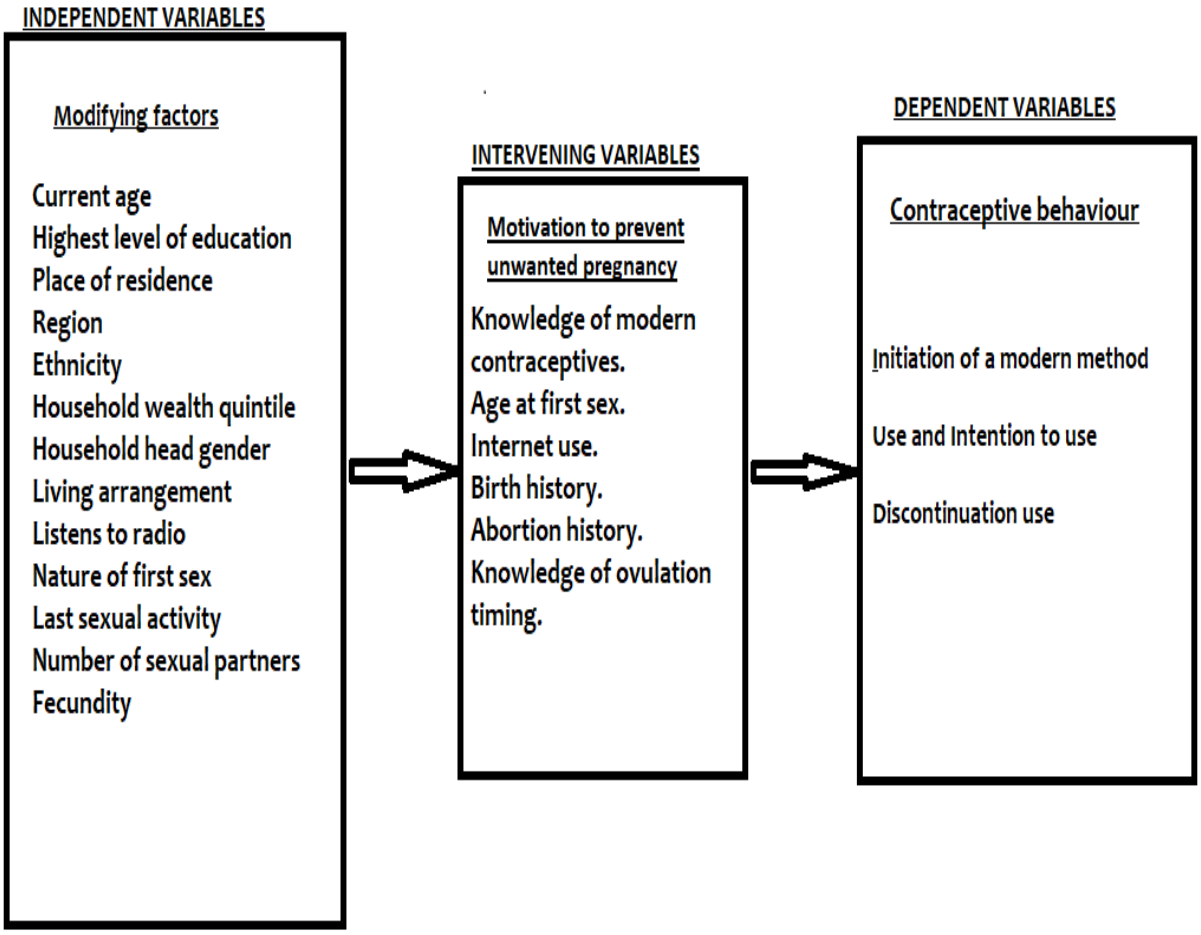
3. Because there are no consistently recognized good consequences of using contraception, there may be a lack of further reason to continue the practice. The HBM, on the other hand, suggests that a variety of different kinds of motivation (e.g., internal and external cues, perceived benefits, and perceived threats) would increase the chance of continuous use (Herold,1983; Nathanson&Becker,1983).

4. Contraceptive behavior is more multifaceted in terms of action (i.e start and continuation) and types compared to other health behaviors (Lin&Hingson,1974). Oral contraceptives and IUDs, for example, have varied costs, initiation procedures, and non-contraceptive benefits, all of which might affect the perceived benefits and barriers of each technique, influencing contraceptive behaviour in different ways. However, with a well-defined, specific contraceptive behaviour or method, the HBM adequately addresses these concerns. (Herold,1983; Nathanson&Becker,1983)

In conclusion, HBM should be applied to high-risk groups like vulnerable women and adolescents affected by the burden of unwanted pregnancy who required theory-based strategies to improve their contraceptive use (Herold,1983; Walsemann&Perez,2006; Thomas& Shields,2007).

*2.4 Conceptual Design*

*Figure 1: CONCEPTUAL FRAMEWORK FOR THE DYNAMICS OF MODERN METHOD CONTRACEPTION AMONG SEXUALLY ACTIVE UNMARRIED ADOLESCENTS (15-19YEARS OLD) IN NIGERIA.*




**Health Belief Model Constructs and their Relationships**

The model has several primary constructs that predict the reason people act to prevent a condition; these include perceived susceptibility, severity, benefits, and barriers to behaviour, health motivation, and cues to action. However, this study examines sexually active unmarried adolescents' perception of the seriousness of not practicing the modern method of contraception/ severity of unwanted pregnancy, her susceptibility to unwanted pregnancy, and her confidence in her ability to practice contraception as her motivation to prevent an unwanted pregnancy.

Perceived susceptibility in this study refers to the perceived chance of getting pregnant. A sexually active adolescent must know about fertility and be aware of the possibility of getting pregnant for her to be interested in practicing modern contraception. Perceived consequences (severity) of unintended pregnancy such as unsafe abortion or unwanted childbirth may affect adolescents' contraceptive behaviour. The combination of susceptibility and severity is labeled a perceived threat. According to the findings from the analysis of data from the National Longitudinal Study of Adolescent Health, nearly one-fifth of youth who expressed ambivalent opinions regarding the risk and importance of being pregnant had a lower likelihood of taking contraception regularly (Brucker, Martin, & Bearman, 2004). Psychological factors such as self-efficacy are important in the initiation and maintenance of behavioural change (Bandura, 1997). Adolescents must be convinced that they can execute a behaviour in other to avoid an undesired outcome (unintended pregnancy).

Even if an adolescent perceives personal susceptibility to unintended pregnancy if this will lead to behavioural change will be determined by her self-efficacy. Psychological factors such as self-efficacy are important in the beginning and continuation of behavioural change (Bandura, 1997). Adolescents must be convinced that they are capable of ac act in other to avoid an undesired outcome (unintended pregnancy). Cues to action will affect contraceptive use in instances where perceived threat and benefits are high and perceived self-efficacy is low. Seeking health counsel, or mass media communication can influence contraceptive behaviour. Modifying and Enabling factors such as demographic, socioeconomic, and reproductive variables may influence perceptions which in turn influence contraceptive behaviour indirectly. For example, socioeconomic characteristics, particularly educational achievement, are thought to influence behaviour indirectly by changing perceptions of vulnerability, severity, benefits, and barriers. Due to hurdles such as restricted access, expense, and misconceptions about the effects of contraceptives, a study to highlight the trajectory of contraceptive use among Ghanaian adolescents found a rising unmet need for modern contraception (Abdul-Rahman et al., 2011).

As depicted in figure1, arrows show expected relationships between constructs. Independent variables (modifying factors) influence the dependent variables (of contraception and its immediate consequence) as do intervening variables. The combination these variables affects contraceptive behaviour.

## *3.0 CHAPTER THREE:* ***Factors associated with the timing of modern contraceptive initiation among sexually active adolescent girls in Nigeria.***

Each year, approximately 12 million girls aged 15-19 years in developing regions give birth, and not less than 10 million unintended pregnancies happen in the same population; this happens in the context of low contraceptive use (Darroch et al., 2016).

In Sub-Saharan Africa, fifteen percent of unmarried adolescent girls are having sex and want to prevent pregnancy. Among these girls, 17% are using traditional methods while 42% use no method at all (Singh et al., 2009).

It is also estimated that half of the pregnancies among this population are unwanted, with 3.9 million girls undergoing unsafe abortions each year as a result (Bearak et al., 2018). According to the World Health Organization, providing adolescents with contemporary contraception would cut unintended pregnancies by 6.0 million per year, resulting in 2.1 million fewer unplanned births, 3.2 million fewer abortions, and 5600 fewer maternal deaths (WHO, 2020). Nigerian adolescent girls between the ages of 15 and 19 have a larger proportion of unmet contraceptive needs than those between the ages of 20 and 24 (17.4% and 16.5% respectively) (Oginni et al., 2015).

Adolescents who wish to avoid pregnancy may be unable to do so due to gaps in their knowledge and misconceptions about where to obtain contraceptive methods and how to use them (WHO, 2011). Adolescents' inability to get contraception due to laws and rules based on age or marital status, health provider bias and/or refusal to accept teenagers' sexual health requirements and adolescents' personal inability to acquire contraception are all obstacles that adolescents face in accessing contraception. Adolescents may also lack the agency or know-how to ensure that a contraceptive method is used correctly and consistently (Darroch et al., 2016). Contraceptive behaviour among adolescents in developing countries is characterized by experimentation and inconsistent use; there is a higher level of method failure and discontinuation while still in need among this population than in the older population (Blanc et al., 2009). Unmarried adolescents in developing countries face hurdles in getting contraception and utilizing it properly and consistently. Some of these barriers are common to adults while some are specific to adolescents. Even when contraceptive techniques are available, laws and practices hinder unmarried teens from accessing them. (Bankole and Malarcher, 2010). And where there are no legal restrictions, Service providers seldom give unmarried adolescents adequate information and contraception services because they are against premarital sexual behavior (Bankole and Malarcher, 2010). When they do, they usually limit their options to

condoms, erroneously believing that long-acting hormonal treatments and intrauterine devices are inappropriate for nulliparous women. A study in Nigeria on understanding and use of modern methods among physically disabled Adolescents in school in a state in the country revealed that the male condom was the most reported used method among adolescents (Olajide et al., 2014).

Adolescence is a significant point in the life course. This period of life is typified by intense social awareness and accelerated physical growth. It marks the onset of puberty and biological maturity, and many significant social, economic, and demographic events occur that shape adulthood. It is the most decisive time in a person's life, and if it is not managed appropriately, it can have terrible implications later in life, especially for women. Young women's reproductive choices will have a significant impression on their health, education, and occupation prospects, as well as their overall shift to adulthood. Based on the literature, sexually active unmarried teens do not seek to become pregnant**.**

As of 2016, there is an estimated 252 million young girls aged 15–19 living in developing regions. Africa's population is younger than that of other areas, and adolescent girls account for roughly one-sixth of all women of reproductive age (15–49) in the developing world; they account for 20% of reproductive-age women in Africa (Darroch et al., 2016).

Early sexual initiation opens up young people to numerous sexual and reproductive health problems. A young person who begins sexual activity early is may be exposed to many sexual partners and improper or inconsistent condom use. Hence, sexually transmitted infections (STIs), such as HIV/AIDS, unwanted pregnancy, unsafe abortion, early childbirth, and psychological issues, are all more common in young people. These issues are the most serious hazards to adolescent girls' health and well-being (Taylor-Seehafer and Rew, 2000, Mensch et al., 2006).

Using a modern contraceptive method is the most efficient strategy for sexually active unmarried girls to avoid unplanned pregnancy.

Due to its importance in deciding the trajectory of young people's lives, several worldwide health and development efforts are focusing on adolescence. Despite global efforts to increase access to sexual and reproductive health (SRH) services, adolescent use of SRH services in Nigeria is low. Adolescents' sexual and reproductive health is ensured through the availability and accessibility of high-quality, low-cost SRH services (Enwereji and Enwereji, 2013).

In 2017, the Adolescent fertility rate for Nigeria is 107 births per 1000 women aged 15-19 (World Bank, 2019). The effects of adolescent childbearing are numerous. Fertility among

teens may have enormous social, economic, and health effects, in addition to being a major factor in big family size and rapid population expansion. Very early childbearing is an issue because it is closely related to child marriage, a separate indicator within Goal 5, considered significant to attaining the Sustainable Development Goals. Nigeria has high estimated fertility levels for young girls and also has elevated levels of early marriage. Fifteen percent of 15-year-old girls were found to have ever been married in Nigeria (UNDESA, 2019).

Findings and recommendations from this study will allow policymakers, and program managers, to establish the beneficial next step in ASRH policies and programming, guide on effective intervention critical to achieving the Sustainable Development Goals (SDGs); improving the health and welfare of adolescents, and strengthening the health of families and communities.

### *3.2.0 LITERATURE REVIEW*

This study is established on the theoretical postulation that adolescent modern contraceptive behaviour is a function of perception of pregnancy and modifying factors which are demographic and socio-economic factors. As a function of contraceptive behaviour, modifying and enabling factors can affect contraceptive behaviour indirectly through the perception of unwanted pregnancy or affect contraceptive behaviour directly.



Modifying and Enabling factors such as demographic, socioeconomic, psychological, reproductive, and structural variables may affect attitudes and beliefs and thus, indirectly influence contraceptive behavior. For example, socioeconomic factors, most importantly educational attainment is thought to influence behavior indirectly by changing perceptions of vulnerability, severity, benefits, and barriers. Due to hurdles such as restricted access, expense, and misconceptions about the outcomes of contraceptives, a study to highlight the trajectory of contraceptive use among Ghanaian adolescents found a rising unmet need for modern contraception. (Abdul-Rahman et al., 2011).

Also, a study to determine emphasis on pregnancy prevention at a Federal clinic in the US centered on comparing participant demographics to contraceptive use reasons. The study established that the convenience of use is the most significant for contraception as participants' education levels increase. As household income increased, perceived potential side effects were reduced. Participants with private insurance rated ease of use most frequently (Brown et al.,

2011). Hence, this study examined the modifying and enabling factors has factors associated with contraceptive initiation among sexually active unmarried adolescents in Nigeria.

### 3.2.2 Empirical

Factors affecting modern contraceptive behaviour among adolescents are numerous and may vary between populations. Literature on determinants of contraceptive use is stated as being a global concern in the 21st century. It spans from developing countries to less developed countries most importantly in sub-Saharan Africa where the modern method of contraception is vital considering the fertility level in the region. Several studies suggest that socio-economic, demographic factors, knowledge, and beliefs are strongly associated with contraceptive use among women both at the micro-level and macro level. This section appraises previous studies on contraceptive use among adolescents in developing countries.

### GLOBAL CORRELATES OF ADOLESCENTS' MODERN CONTRACEPTIVE INITIATION.



Considering factors influencing adolescents' contraceptive initiation, a report in the U.S using data from the National Survey of Family Growth from 2002 to 2017 provided trends and national estimates of sexual activity and contraceptive use among teenagers and established the importance of age at first sexual experience on initiation of contraceptive. The study established that a higher fraction of young girls who had their first sexual experience at ages 15-19 used a method of contraception at first sex compared to those who were 14 years and under at first sexual encounter (Martinez and Abma, 2020). Also emphasizing the importance of age at first sex, a review aimed at assessing the impact of age at the time of first sexual encounter on the health of adolescent girls found that girls who had their first sex when they are 14 years old or before are less likely to use contraceptive at the event, and defer in subsequent sexual relations (Lara and Abdo, 2016).

Apart from age at first sex effect on the time of contraceptive first use, a cross-sectional study on demographic and behavioural characteristics related to contraceptive use at first sexual encounter using the National Survey of Family Growth database from 2006 to 2010 found that race significantly affects the use of contraceptive at first sex (Lee et al., 2015).

In Low and Medium-Income countries of the world, community-level factors influence modern contraception among adolescents, a study on the impact of factors affecting modern

contraception use at the community level in 52 low- and middle-income countries (LMICs) established a positive community-level education influence, but gender and fertility-related norms have a negative control on young women's contraception use. Also acknowledged by this study is the positive effect of increased exposure to mass media on young women's uptake of modern contraceptive methods (Mutumba, Wekesa, & Stephenson, 2018). Findings from this study established the influence of social context on young women's contraceptive decision-making. However, this study combined adolescents and young adults 15-24 in its analysis. Community-level factors may operate differently among these age groups (15-19 and 20-24). Similarly, an examination of previously published and unpublished articles, adopting a socio-ecological model investigate the Factors impacting adolescent contraception use in Nepal. The findings showed that adolescents' use of contraception is consistently low.

A prospective cohort study was designed in America to find out what factors influence adolescent and young woman's decision to use implants or IUDs. The study enrolled English-speaking contraceptive initiators aged 14-24 years going to a Title X-supported youth-focused clinic. Using a multivariable regression model, it was ascertained that the high pre-visit personal acceptability of the method is associated with initiating method (Cohen et al., 2017). A pilot randomized controlled trial was conducted among sexually active females aged 14-19 to assess text messaging's viability and acceptance in increasing contraception among adolescents. The participants received 3 months of theory-based, one-way instructional and motivational text providing reproductive health information. The pregnancy prevention text was acceptable by the adolescent girls in the emergency department setting and a little above one-tenth of the intervention group-initiated contraception. However, study participants were recruited from the adolescent emergency department targeting females with reproductive problems based on Sentinel Event Model. And there was no test for association (Chernick et al., 2017).

Also, a decline in union with older partners has been identified as one of the influencers of increased contraceptive use among adolescents in the US (Manlove et al., 2009). A national longitudinal study in America examined the pattern of contraceptive use among adolescents and found that adolescents in more homogamous unions were more likely to use contraceptives compared with adolescents in less homogamous relationships (Manlove et al., 2007). Similarly, a population-based study among Scandinavian women aged 18-26 years old in Denmark, Norway, and Sweden. In examining the factors linked to contraceptive non-usage and the use of emergency contraceptive pills found that the age of the partner and the difference in age

difference was strongly associated with the non-use of contraceptives. The risk of non-use increases with a growing age gap between the partner and the woman during her first sexual encounter (Guleria et al., 2017).

## PREDICTORS OF ADOLESCENTS' MODERN CONTRACEPTIVE BEHAVIOUR IN SUB-SAHARAN AFRICA

A community-level study in Zimbabwe revealed that adolescents aged 15-19 years who lived in communities with a higher average number of children born or a higher average number of years of schooling were less likely to use contraceptives (Ngome and Odimegwu, 2014).

Essiben et al (2017) showed that apart from the impact of environmental factors on adolescent modern contraceptive use in Cameroon, sexual lifestyles and knowledge of contraceptives limit the uptake of modern contraceptives method among adolescents. Adolescents living with both parents, not living with their mother, with vague pregnancy desires, not discussing contraception with partners, and not discussing sexuality with friends, not knowing injectables contraceptive methods were less likely to use it.

However, a descriptive and analytic study in Ghana using a cross-sectional design collected data randomly from a sample of 200 adolescents aged 16-19 years. Ninety-five percent of those polled said they knew about contraceptives, but that knowledge did not transfer into use. Other than this, marital status, staying with both parents, and perceived side effects of contraceptives were found to be associated with contraceptive use (Agyemang et al., 2019). The study was carried out in one region, Ashanti in the country hence, the sample is not nationally representative, and findings cannot be generalized to the whole country.

According to a cross-sectional analysis of the Adolescent 360 evaluation baseline survey, the use of modern contraceptives among unmarried sexually active adolescents increases with age, level of education, being in education, hearing about modern contraception from interpersonal sources or media in the previous 12 months, receiving partner and or friends support for contraception use and higher knowledge and self-efficacy for contraception. (Nsanya et al., 2019). However, the study setting comprises Urban and semi-urban in a district of a region in Tanzania. Hence findings may not represent behaviours in rural areas and other regions in the country.

Similarly, a study on the pattern and trends of modern contraceptive use in three countries in Sub-Saharan Africa- Ethiopia, Burkina Faso, and Nigeria. There are variations in contraceptive use by age, education, residence, and wealth quintile (Hounton et al., 2015).

Likewise, between July 2016 and August 2017, a cross-sectional population-based survey was performed in North and South Kivu program regions utilizing two-stage cluster sampling in six health zones. The findings from the data analysis of 1,022 women aged 15–24 who reported ever having intercourse were presented, with 31.7 percent of them having been moved at least once in the previous five years. Over 90% of respondents could name at least one current contraceptive method, indicating that they were well-versed in contraception. Modern contraceptive use was linked to age, earlier sexual initiation, having some secondary education, being unmarried, and having started childbearing. The study is limited in the representativeness of the data, and the definition of sexually active women as those who have ever had sex. Even in protracted crisis settings (Casey et al., 2020).

A Ghanaian study to examine the prevalence and correlates of adolescent contraceptive use, using data from the 2008 Ghana Demographic and Health survey. It was found that age, education, work status, awareness of the ovulatory cycle, visit to a health facility, and marital status all had a substantial impact on female adolescent contraception use (Nyarko, 2015).

Correspondingly, a quantitative descriptive study to assess secondary school girls' contraceptive knowledge, attitudes, and behaviours in Thulamela Municipality, Limpopo Province, South Africa. A convenience sample of 273 secondary school girls in Grades 10–12 was drawn from a population of secondary school females. Data was gathered using a self-administered questionnaire and analyzed using the Statistical Package for Social Sciences (SPSS) to process frequencies and percentages. The results revealed that respondents are aware of several contraceptive methods for preventing pregnancy. Most people were unaware of emergency contraception, intrauterine devices, and female condoms. The primary causes of inefficient contraceptive use and non-use were pressure from male partners, fear of the parental reaction to contraceptive usage, unwillingness to use contraceptives, poor contraceptive education, and lack of counseling. The sample for this study does not include uneducated adolescents (Ramathuba et al., 2012).

A survey of randomly selected 260 unmarried adolescent girls on risky sexual behaviours and modern contraceptive use in Ghana showed that not feeling pressured to have unprotected sex, being aged 17-19, of never had sex when drunk, and knowing where to get contraceptives were all associated with contraceptive use (Adam et al., 2021). This study was done in an urban municipality in Ghana and may not represent the behaviour of other female adolescents.

A case-control study sought to ascertain the factors of adolescent opposition to contemporary contraception in Yaoundé and was conducted in schools over 5 months from January to May 2016. All teenagers having sex who did not use contraception were compared to sexually active

teenagers who used current contraceptive techniques. The data from 270 teenagers aged 15 to 19 years (135 cases and 135 control individuals) was analyzed. After univariate analysis, living with both parents, not living with one's mother, being unable to discuss sexuality with one's peers, having anal sex, and not knowing injectable contraceptives all prevent the use (Essiben et al., 2018). Guemchek et al., (2015) also observed that most adolescents in Cameroon who claimed to have a single partner were less likely to use contraception. Similarly, the use of condoms was very scarce among adolescents who had sex periodically (Foumane et al., 2013).

Adolescent contraception use is influenced by the media. The trends and predictors of contraceptive use (both contemporary and traditional) among female teenagers in Ghana were studied retrospectively. The Ghana Demographic and Health Surveys from 2003, 2008, and 2014 were used. For each round of the study, sexually active female adolescents aged 15–19 were included, resulting in a sample size of 426 in 2003, 389 in 2008, and 726 in 2014. Contraception was used by 22.1 percent of women in 2003 and 20.4 percent of women in 2014. When likened to adolescents who did not read newspapers at all, those who read them at least once a week were more probable to use modern contraception. Those who watched television at least once a week were also more inclined to do so (Appiah et al., 2020).

Similarly, a study in Ethiopia on individual and community-level factors associated with modern contraceptive use among adolescent girls and young women. The result from the multilevel analysis revealed that having television exposure, being married, having work, living in an Urban area, and being in a rich wealth quintile were positively associated with modern contraceptive use (Hailegebreal et al., 2021). However, the study examined ever use and does not involve time to first use.

## PREDICTORS OF ADOLESCENTS' MODERN CONTRACEPTIVE BEHAVIOUR IN NIGERIA

A study among physically challenged adolescents in Osun state Nigeria revealed that more than half (51.4%) of disabled adolescents who have ever had sex were not aware of any modern contraceptive methods. The male condom is the most known and spermicide the least known method among those who were aware. Highest reported source of information was television and radio. However, about two-thirds of these adolescents who have ever had sex had never used a modern contraceptive (Olajide et al., 2014).

A survey of 600 female students aged 15 to 24 years old attending higher institutions in Ilorin, Nigeria, was undertaken to assess their sexual behavior and contraception use. The reasons mentioned for not taking contraceptives by women who have had sexual intercourse but never used contraception were fear of side effects, not thinking of using contraceptives, objection from their partner, not knowing they would have intercourse, and discord with their religious beliefs (Abiodun and Balogun, 2009).

A cross-sectional study was conducted among high school students aged 10-19 years of Ogbomoso - a semi-urban settlement. The study examined sexuality and contraception among adolescents. 56.8% of respondents had a strong understanding of sexuality and contraception, while 57.5 percent had a positive attitude about contraception. Age and father's education were linked to contraception knowledge, while mothers' occupation and education, as well as fathers' occupation and education, were linked to a positive attitude toward contraception. This study found that a large percentage of the adolescents surveyed had inadequate understanding and attitudes about contraception and that many sexually active respondents had false information about how to use contraception and where to get it.(Tchokossa and Adeyemi, 2018).

DETERMINANTS OF MODERN CONTRACEPTIVE INITIATION AMONG SEXUALLY ACTIVE UNMARRIED ADOLESCENTS.

Studies have shown different interrelated factors which include individual; family, and societal factors as what influence young women's use of contraception.

Martinez and Abma (2020) wrote that younger age at sexual debut is a significant determinant of contraceptive initiation with a significantly higher percentage of use among those below age 15 at first sexual experience. Also, Lara and Abdo (2016) in a review supported the fact that teenagers who begin sex at the age of 14 or younger are less likely to utilize a method at their first sex. And they take more time before they initiate its uses in subsequent sexual relations. But in contrast, Casey et al (2020) observed that for each year increase in women’s age at sexual debut there is a 10% less chance of using a modern contraceptive.

Several studies have examined the effect of knowledge on modern contraceptive use and found that it significantly influences use.

However, Casey et al (2020) established that lack of knowledge is not significantly associated with the non-use of modern contraceptives among young women. Also, Agyemang et al 2019 found high knowledge of contraceptives among adolescent girls in Ghana but the knowledge does not translate to use.

As earlier pointed out, Essibien et al (2019) noted that ignorance regarding injectable contraceptive methods limits the request for modern contraception among adolescents.

Again, Cheedalla et al (2020) pointed out the importance of knowledge on contraceptive use and acceptance. There is a higher likelihood of use at first sex but not related to current use. Nsanya and others (2019) support this argument that higher knowledge of contraceptives increases use and that increasing level of education also promotes a higher likelihood of contraceptive use. Hounton et al (2015) in Ethiopia, Burkina Faso, and Nigeria throw weight behind this argument by establishing that there is significant inequality in adolescents' contraceptive use by education. Participating in the discussion on educational level and contraceptive use, Chola and others (2020) analysis of data from 1996 to 2014 for Zambia and found that contraceptive use is significantly associated with the level of education.

In a study by Agyemang et al (2019) evidence from 200 female adolescents aged 16-19 years in a district in Ghana showed that living arrangement is associated with contraceptive use. Adolescents who are staying with both parents were more likely to use contraceptives. While in Cameroun, Essiben (2018) found that living with one or both parents prevent adolescents from using a contraceptive. In contrast, a study by Olajide and others found that living arrangement is related to contraceptive use among disabled adolescents in Osun state, Nigeria.

Nevertheless, the literature on contraceptive use among adolescents in poor countries has numerous shortcomings. To begin with, the vast majority of studies that contribute to our knowledge of contraceptive use among young women included young adults and focused on married young women. In a few cases where the studies include unmarried adolescents, the studies usually address current use or ever use of contraceptives and may not be nationally representative.

There is limited understanding of the initiation of modern methods among sexually active unmarried 15-19 years old. The objective of this study is to contribute to a greater knowledge of unmarried adolescents' usage of modern contraception aged 15-19 years in Nigeria by examining how soon they initiate modern contraceptives and the risk factors. The study focused on unmarried adolescent women between the ages of 15 and 19, a group that is frequently left out or underrepresented in most studies on contemporary contraception. The dataset permits the findings of this study to be applied to a larger sample of adolescent women aged 15 to 19.

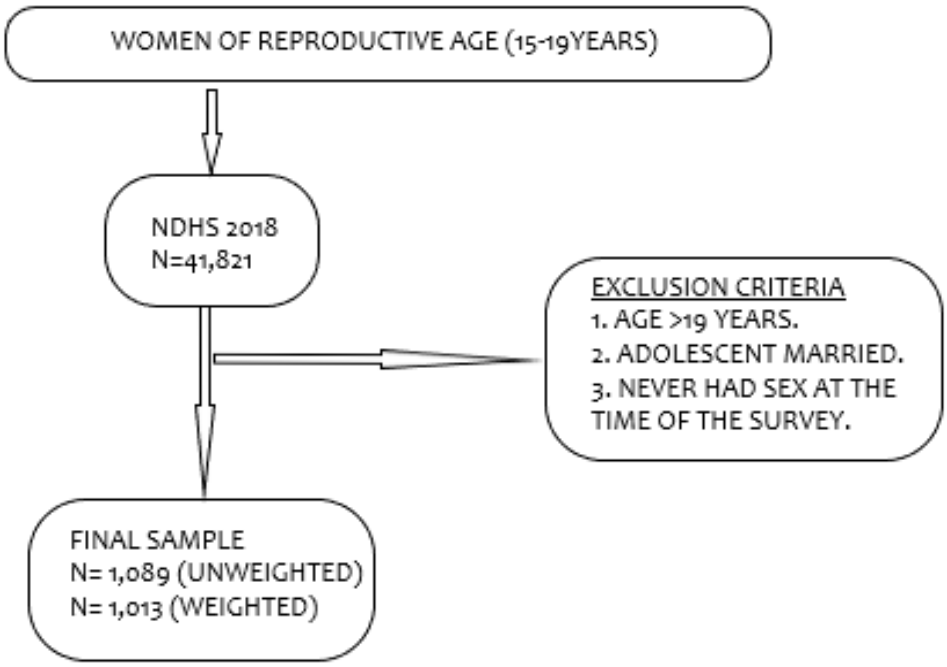
### *3.3 METHOD*

The data for this study came from the Nigeria Demographic and Health Survey of 2018 (NDHS) conducted from August 2018 to December 2018 across the country. Demographic and Health Surveys (DHS) is a five-year survey created by USAID with the help of other international sponsors. It is carried out throughout Africa, Latin America, the Caribbean, Asia, Eastern Europe, and the Middle East, among other developing countries. The survey is a population-based cross-sectional study. NDHS is nationally representative, and it is the sixth conducted in Nigeria. The ICF Macro International provides technical support to the Nation Population Commission (NPC) to collect data on fertility, contraception, Maternal and Child Health, Gender-based violence, Immunization, Nutrition, Breastfeeding, and Other Sustainable Development Goals Indicators

The sampling method for the survey was stratified and done in two stages. Each of the 36 states and the Federal Capital Territory (FCT) was divided into urban and rural areas to achieve this. In the first stage, a total of 1,400 clusters with eleven clusters dropped due to security challenges in the areas that were randomly selected proportional to the Enumeration size. In the second stage, equal probability systematic sampling was used to select a fixed number of 30 households in each cluster totaling 42000 households. Data were gathered from 40567 women aged 15-49 years and 12056 men aged 15-59 years in all selected households. Sample weights were calculated due to differences in probability selection of the sample in each state, as well as any potential disparities in response rates. For each sampling stage and cluster, sampling weights were determined individually based on sampling probabilities and were added to the data file.

3.3.1 SAMPLE SIZE: For this study, data for only 1,013(weighted) female adolescents between ages 15-19 who were not married but had ever had sex was used.

*Figure 2: The flow chart of exclusion procedures to identify the final sample size in NDHS 2018.*






3.3.2 STUDY VARIABLES

**Outcome Variable**

The primary outcome of this study is the timing of modern contraceptive initiation among unmarried adolescents aged 15-19 years who have ever had sex. This is measured in years and assessed by the difference between age at first sex and age at first use of a modern method and may only be censored by never use at the time of the survey.

To assess the timing of the initiation, a status variable was first created as initiation of whether an adolescent had ever used a modern method or not. Combining information on the age at first sex and year of first use, adolescents who have never used a modern method at the time of the survey were coded '0' adolescents who have ever used a modern method were coded '1'.

**Explanatory Variable**

These variables include key socio-demographic characteristics such as adolescent's age at first sex, current age, place of residence, region of residence, nature of first sex, educational attainment, and internet use.

Table 3.0 1: Explanatory variables

| VARIABLE | OPERATIONAL DEFINITION |
|---|---|
| Age at first sex | Before age 15<br>Age 15 or later |
| Current age | Numeric variable in years |
| Education | Educational attainment<br>At most primary (0)<br>At least secondary (1) |
| Nature of first sex | Coerced. No (0), Yes (1) |
| Internet use | Never (0), Ever (1) |
| Frequency of listening to the radio | Not at all (0)<br>At least once a week (1)<br>More than once a week (2) |
| Living arrangement | With parent (1)<br>With others (2) |
| Household head gender | Male (1)<br>Female (2) |
| Household wealth quintile | Poorest (1)<br>Poorer (2)<br>Middle (3)<br>Richer (4)<br>Richest (5) |
| Religion | Catholic (1)<br>Other Christians (2)<br>Islam and others (3) |
| Residence | Urban (1)<br>Rural (2) |
| Geopolitical zone | North-Central<br>North-East |

### 3.3.3 DATA MANAGEMENT AND ANALYSIS

Data analysis was done using the statistical package STATA version 14. Frequency and percentage distributions are used to describe the key socio-demographic characteristics of the adolescents.

Kaplan Meiers curve was used to compare the survival function of modern contraceptive methods across certain characteristics. Log-rank test was used to evaluate whether or not the Kaplan-Meiers curves for the groups are statistically equivalent. Variables that were significant with the log-rank test were included in the final model (Cox proportional model). The cumulative proportion of adolescents who reported ever use of the method by single years of age was calculated using the life-table analysis.

Cox proportional model was used to estimate the rate of initiating modern contraceptives and associated key socio-demographic characteristics (risk factors). Time variable covariates were checked and a posthoc test, sthplot was plotted to test the proportionality of the hazard model. The interpretation of the result was made using a hazard ratio and 95% confidence interval.

Inverse weight was included in the analysis to control for sampling errors. The following STATA command was used before analysis to allow for the correct use of significance testing in complex survey designs such as the Nigerian Demographic and Health Survey.

*gen weight=v005/1000000* (Pitblado, 2009; NDHS, 2013)



The survey gathered detailed contraception histories. Respondents were asked if they had used a contraceptive technique during each of the five months leading up to the poll, and if so, which method they had used (Croft et al., 2018).

Using the information from the contraceptive histories (calender), this study examined the rate at which sexually active unmarried adolescents initiated modern contraceptives. The cumulative proportion who had ever used a modern method was calculated by single years of age starting from the earliest age reported. Life table rates of modern contraceptive adoption were calculated from the contraceptive histories.

Model Description

The Cox proportional hazard model is a regression model for investigating the association between time to an event and one or more predictor variables. It measures effect as hazard rate which is the risk or probability of experiencing the event of interest. The Cox model is

expressed by the hazard function denoted by h(t). it can be interpreted as the risk of an event (use of modern contraception) at time t. it is estimated as -:

$h(t)=h0(t)\times exp\ (b1x1+b2x2+...+bnxn)$

where,

- *t* represents the survival time (time to the first use of modern contraception)
- *h*(*t*)is the hazard function determined by a set of predictors (*x*1, *x*2, ..., *xn*)
- the coefficients (*b*1, *b*2, ..., *bn*) measure the impact (i.e., the effect size) of predictors.
- the term *h*0 is called the baseline hazard. It corresponds to the value of the hazard if all the *xi* are equal to zero (the quantity exp(0) equals 1). The 't' in h(t) reminds us that the hazard may vary over time.

*exp*(*bi*) is the hazard ratio (HR). A value of *bi* greater than zero, or equivalently a hazard ratio greater than one, indicates that as the value of the *ith* predictor increases, the event (modern contraception) hazard increases, and thus the length of survival (time to first use) decreases.

Put another way, a hazard ratio above 1 indicates a predictor that is positively associated with the event (modern contraception) probability, and thus negatively associated with the length of survival (time to first use).

In summary,

- HR = 1: No effect
- HR < 1: Reduction in the hazard
- HR > 1: Increase in Hazard…….(DR, 1972)



**Ethical Consideration:** Data for this study were de-identified and are accessible online **https://dhsprogram.com**. Permission and access to the dataset was granted after an online application via the website. The National Health and Research Ethics Committee of Nigeria (NHREC) and the ICF Institutional Review Board reviewed and approved the survey protocol. Informed consent was granted by the study participants before data collection.

### *3.4.0 RESULTS*

Analysis was done in three stages, univariate, bivariate, and multivariate.

At the univariate stage, frequency and percentage distributions were used to describe the studied characteristics of the adolescents. The cumulative proportion of adolescents who reported ever use of the method by single years of age was calculated using the life-table analysis. At the bivariate stage, the Kaplan Myers curve was used to compare the survival function of time to modern contraceptive initiation across selected characteristics. Also, the Log-rank test was used to investigate the association between contraceptive initiation timing and the individual independent variables included. Variables that were significant at $p<0.05$ were included in the Cox proportional model. Cox proportional model was thereafter conducted at both bivariate and multivariate stages to identify determinants of timing of modern contraceptive initiation. Meanwhile, the proportional hazard test was investigated graphically. The unadjusted/adjusted hazard ratios and their respective 95% confidence interval were provided.



3.4.1 Description of the Respondents.

The mean age of the study respondents is 17.6 years. On average, they had their first sex at the age of 15.7 years old but first use modern contraceptives at the age of 18.2 years. Very few of them reported their first sexual experience as coerced (3.1%).

At the time of the survey, the majority of the respondents (79.5%) has secondary education while 5.3% has no formal education at all.

About a quarter of the respondents are from the South-south region of the country and are almost equally distributed from the Urban and Rural places of residence.

More than two-fifths (43.6%) of the respondents do not listen to the radio.

More than a quarter (28.4%) of the respondents are from household in the Richer quintile, 67.6% live with their parents while 67.1% belongs to a male-headed household.

Most of the respondents are Christians (60.9%). Table 3.21 below depicts more about the respondents' characteristics.

**Table** 3.2 1**: Frequency and percentage distribution of Respondents' characteristics**

| VARIABLE | FREQUENCY N=1,014 | PERCENTAGE % |
|---|---|---|
| CURRENT AGE | Mean=17.6, SD=1.2 | |
| AGE AT FIRST SEX | Mean=15.7, SD=1.6 | |
| AGE AT FIRST USE | Mean=18.2, SD=1.3 | |
| EDUCATION | | |
| No Education | 54 | 5.3 |
| Primary Education | 95 | 9.3 |
| Secondary Education | 807 | 79.5 |
| Tertiary | 58 | 5.8 |
| FREQUENCY OF LISTENING TO RADIO | | |
| Not at all | 442 | 43.6 |
| At least once a week | 313 | 30.9 |
| More than once a week | 259 | 25.6 |
| PLACE OF RESIDENCE | | |
| Urban | 518 | 51.0 |
| Rural | 495 | 49.0 |
| REGION | | |
| North Central | 224 | 22.1 |
| North-East | 99 | 9.8 |
| North-West | 36 | 3.6 |
| South-East | 165 | 16.3 |
| South-South | 262 | 25.8 |
| South-West | 227 | 22.4 |
| RELIGION | | |
| Catholic | 187 | 18.4 |
| Other Christians | 617 | 60.9 |
| Islam &Others | 210 | 20.7 |
| HOUSEHOLD HEAD GENDER | | |
| Male | 680 | 67.1 |
| Female | 334 | 32.9 |
| LIVING ARRANGEMENT | | |
| With parent | 685 | 67.6 |
| With others | 329 | 32.4 |
| HOUSEHOLD WEALTH | | |
| Poorest | 74 | 7.3 |
| Poorer | 159 | 15.7 |
| Middle | 263 | 25.9 |
| Richer | 288 | 28.4 |
| Richest | 231 | 22.8 |
| NATURE OF FIRST SEX | | |
| Forced | 31 | 3.1 |
| Not forced | 982 | 96.9 |

Figure 3: Percentage of ever use and never use of modern contraceptives.

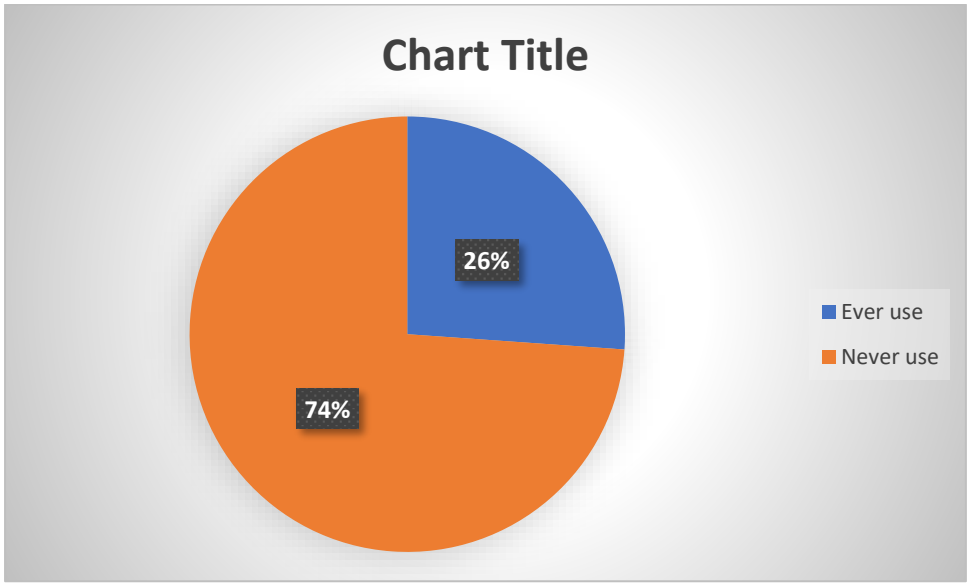
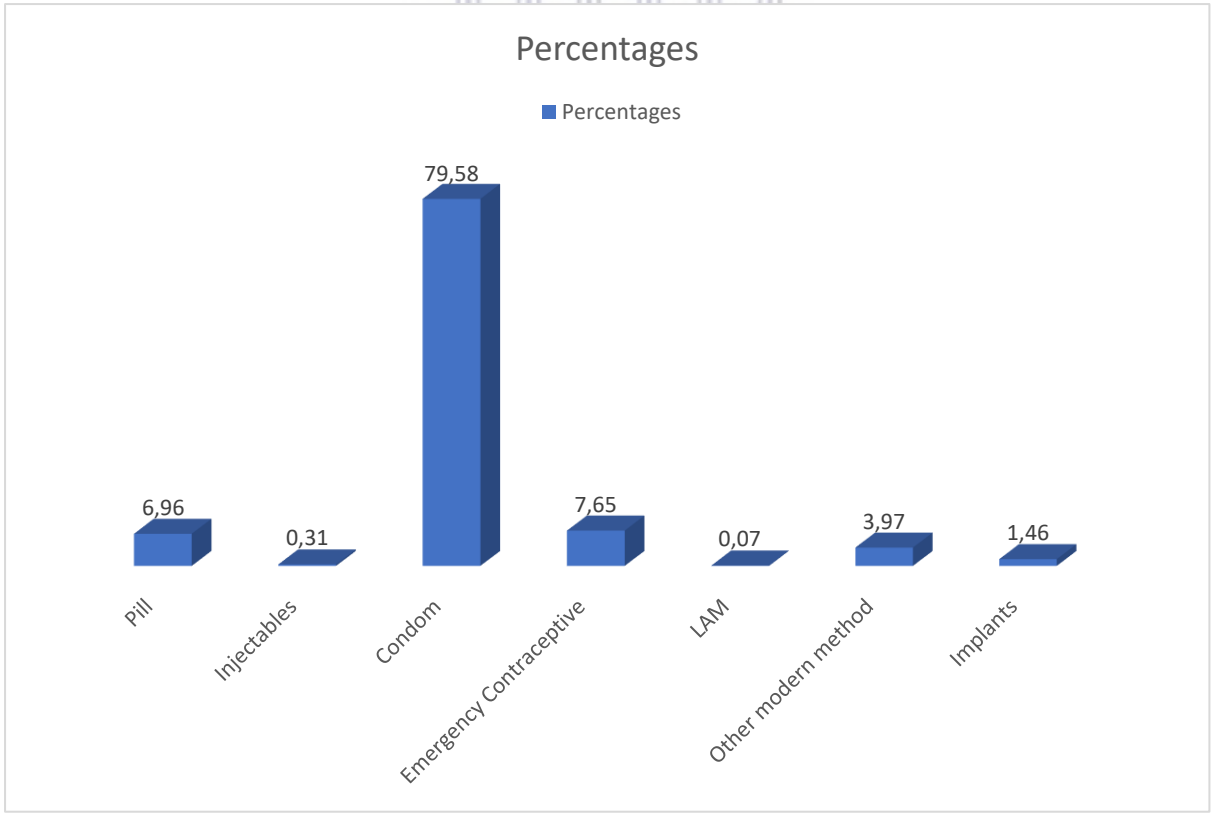



*Figure 4: Rates of modern contraceptive uptake by type*




The condom has the highest rate of use.

### 3.4.2 Rate of Modern Contraceptive Initiation Across Groups Of Adolescents In Nigeria.

Table 3.2 2: life table analysis of the rate of modern contraceptive uptake in single years

| Age | $_nM_x$ per 1000 | $q_x$ | $p_x$ |
|---|---|---|---|
| **10** | 0.00000 | 0.00000 | 1.00000 |
| **11** | 0.00000 | 0.00000 | 1.00000 |
| **12** | 0.30000 | 0.00030 | 0.99970 |
| **13** | 1.11000 | 0.00111 | 0.99889 |
| **14** | 1.53000 | 0.00153 | 0.99847 |
| **15** | 2.38000 | 0.00238 | 0.99762 |
| **16** | 4.48000 | 0.00447 | 0.99553 |
| **17** | 6.55000 | 0.00653 | 0.99347 |
| **18** | 12.88000 | 0.01280 | 0.98720 |
| **19** | 16.1100 | 0.01598 | 0.98402 |
| **20** | 23.84000 | 0.02356 | 0.97644 |
| **Total** | 5.07000 | | |



Where:

$_nM_x$- age-specific modern contraceptive rate

$q_x$- the probability of modern contraceptive use between exact age x and x+n

$p_x$- the probability of not using modern contraceptives between exact age x and x+n

From table 3.2.4 above,

The rate of modern contraceptives among sexually active unmarried adolescents is 5.07.

First use was reported before age 12. The rate of uptake between ages 11 and 12 is 0.300/1000.

The rate of incidence of modern contraceptive use between the ages of 18 and 19 is 16 .11/1000.

The probability of initiating modern contraceptives between the ages of 18 and 19 is 0.016

### 4.3 Kaplan Meier Survival function for modern contraceptive uptake across socio-demographic characteristics of respondents

The survival curves are estimated for each category of the variables separately using the Kaplan Meier method while the Log-rank test is for the statistical comparison.

Figure 5: Kaplan-Meier Survival curve of the probability of modern contraceptive initiation among unmarried adolescents by place of residence

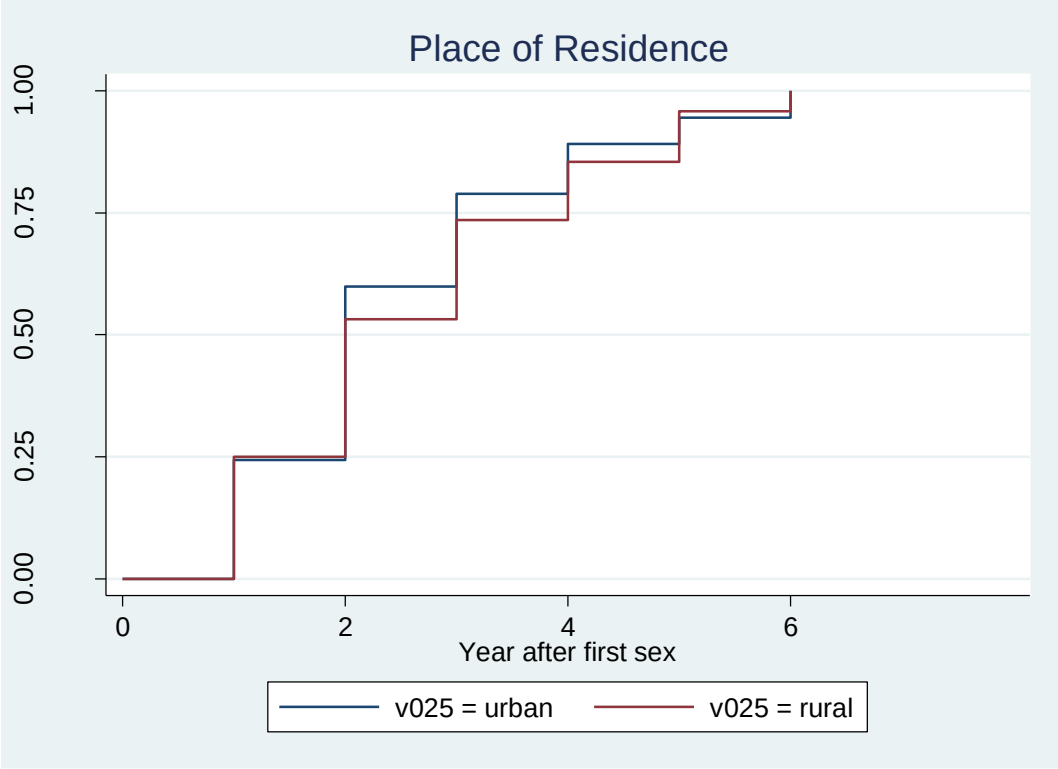



*Table 3.2 3: Log-rank test for equality of survivor functions for place of residence*

| Place of Residence | Event observed | Event expected |
|---|---|---|
| Urban | 1629.02 | 1585.66 |
| Rural | 1276.54 | 1319.90 |
| Total | 2905.56 | 2905.56 |

Chi2(1) =4.62 Pr>chi2=0.03

From fig 5 above, the survival curves are not all that parallel there are times when the curves are close. However, the log-rank test of equality across the category shows that the survival functions for the categories (Urban and Rural) of the place of residence are different (p-value=0.03) i.e time to initiate modern contraceptives among adolescents in the urban areas is

different from the time for adolescents in rural areas. Adolescents in rural areas initiate modern contraceptives sooner than adolescents in urban areas.

Figure 6: Kaplan-Meier Survival curve for Probability of modern contraceptive initiation among unmarried adolescents by region of residence

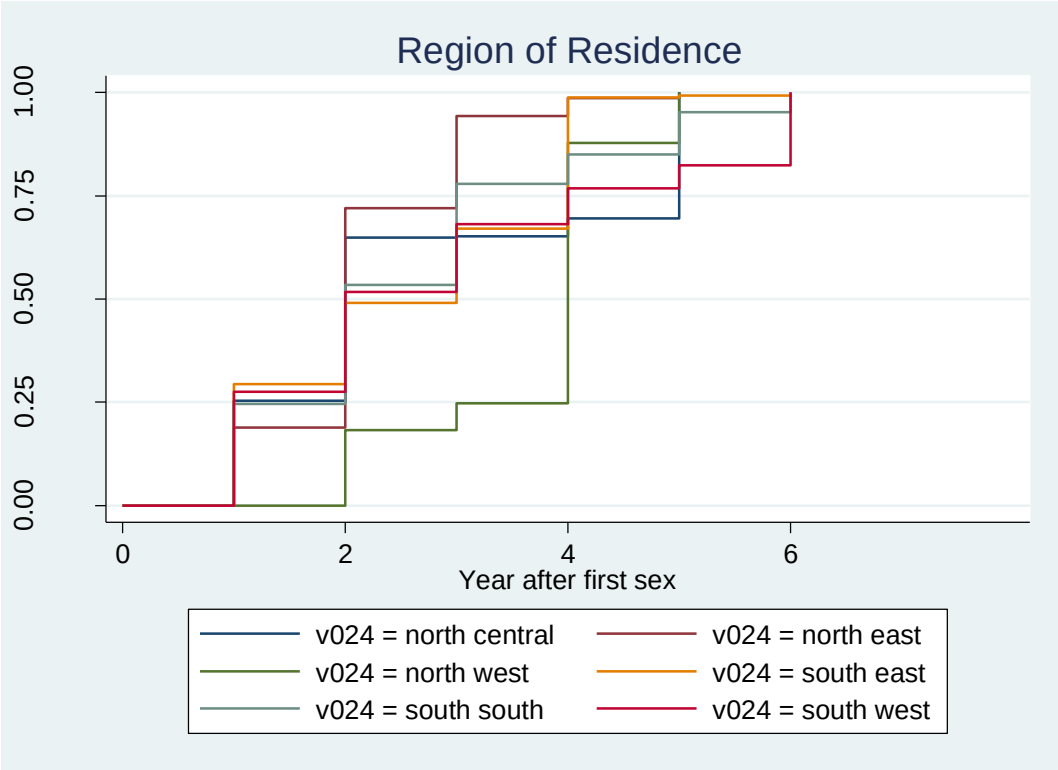





*Table 3.2 4; Log-rank test for equality of survivor functions for the region*

| Region | Events observed | Events expected |
|---|---|---|
| Northcentral | 225.55 | 242.23 |
| Northeast | 598.18 | 452.13 |
| Northwest | 16.99 | 25.03 |
| Southeast | 482.74 | 458.21 |
| South-south | 1094.08 | 1121.11 |
| Southwest | 488.01 | 606.86 |
| Total | 2905.56 | 2905.56 |

Chi2(5) = 136.89 Pr>chi2=0.000

The figure and table above show that the survivor functions for the regions are statistically different at a p-value >0.05. Adolescents in the regions initiate modern contraception at different times. Adolescents in the Southwest initiate modern contraceptive earlier than other adolescents while adolescents in the northwest initiate at a later age.

*Figure 7: Kaplan-Meier survival curve for the probability of initiating modern contraceptives by age at first sex*

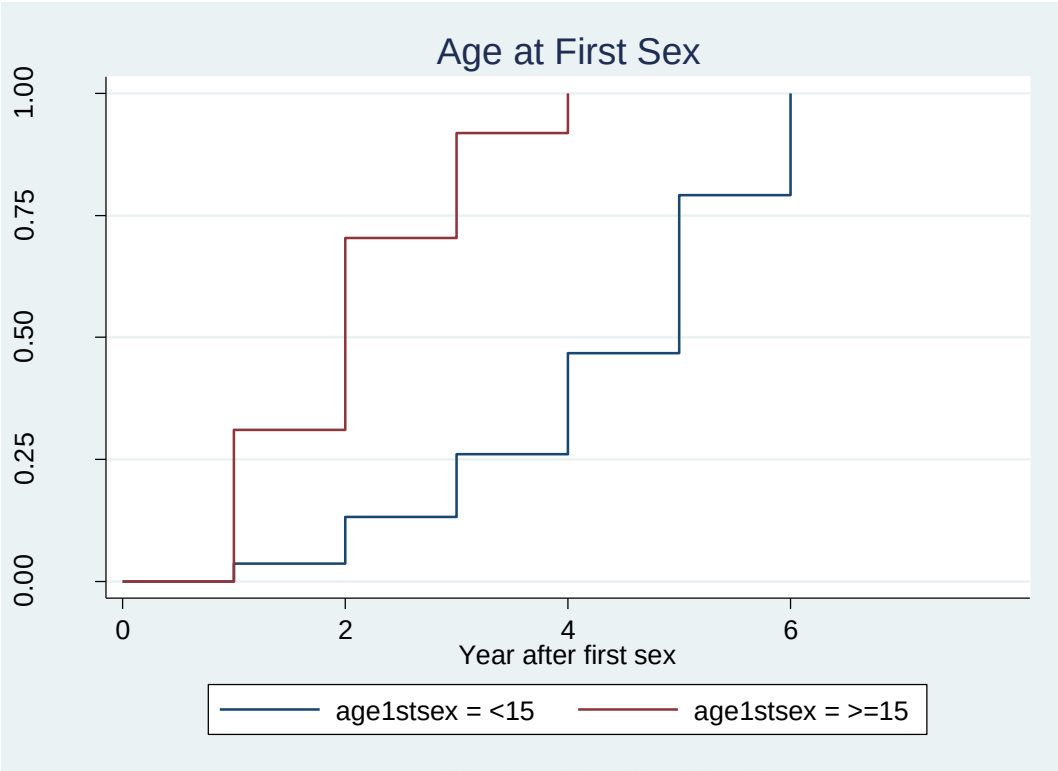



*Table 3.2 5: Log-rank test for equality of survivor functions*

| Age at first sex | Events observed | Events expected |
|---|---|---|
| Less than 15 years old | 681.64 | 1317.06 |
| 15 years old or above | 2223.92 | 1588.50 |
| Total | 2905.56 | 2905.56 |

Chi2(1) = 1261.95, Pr >chi2=0.000

From the figure and table above, the time to initiate modern contraceptives is statistically different between the two groups at a p-value of less than 0.05. Adolescents who initiate sex at age 15 or later initiate modern contraceptives earlier than those who initiate sex before age 15.

*Figure 8: Kaplan-Meier Survival curve for the probability of modern contraceptive initiation among unmarried adolescents by the level of education*

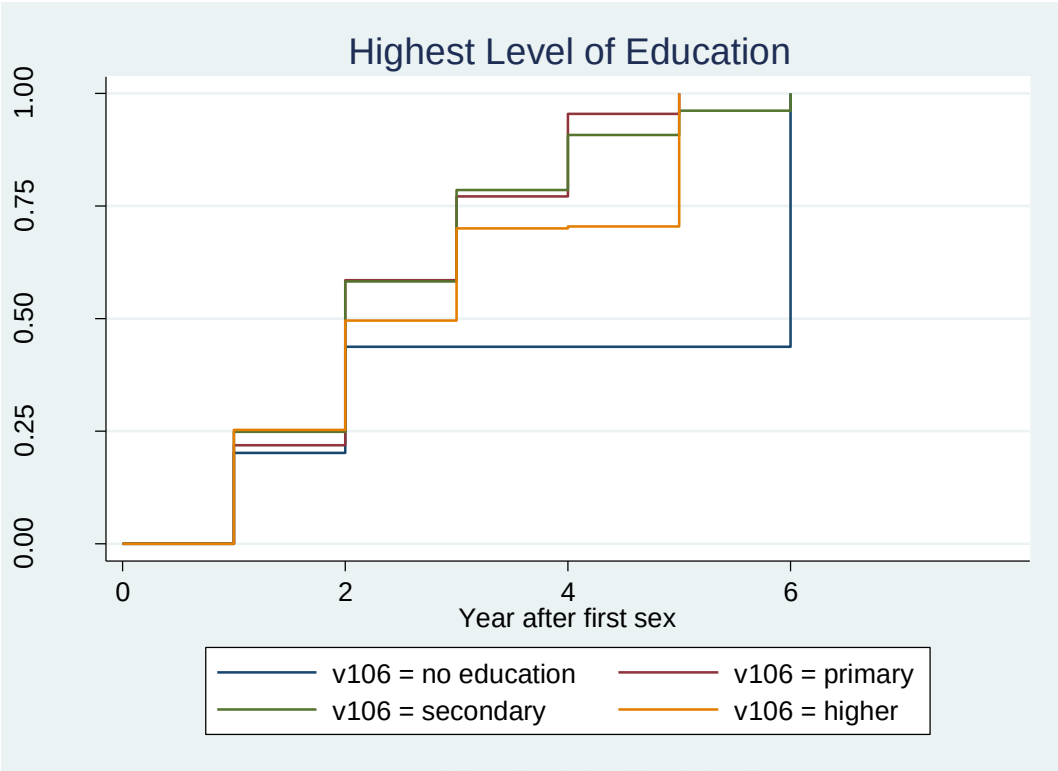





*Table 3.2 6: Log-rank test for equality of survivor functions*

| Level of education | Events observed | Events expected |
|---|---|---|
| No education | 93.90 | 189.04 |
| Primary education | 177.11 | 160.10 |
| Secondary education | 2350.58 | 2239.63 |
| Tertiary education | 283.96 | 316.79 |
| Total | 2905.56 | 2905.56 |

***Chi2(3) =143.07 Pr>0.000***

The table and figure above depict the differences in the time of modern contraceptive initiation across the level of education. Adolescents with higher education initiate modern contraceptives earlier than other adolescents.

Figure 9: Kaplan-Meier survival curve for the Probability of modern contraceptive initiation among unmarried adolescents by religion

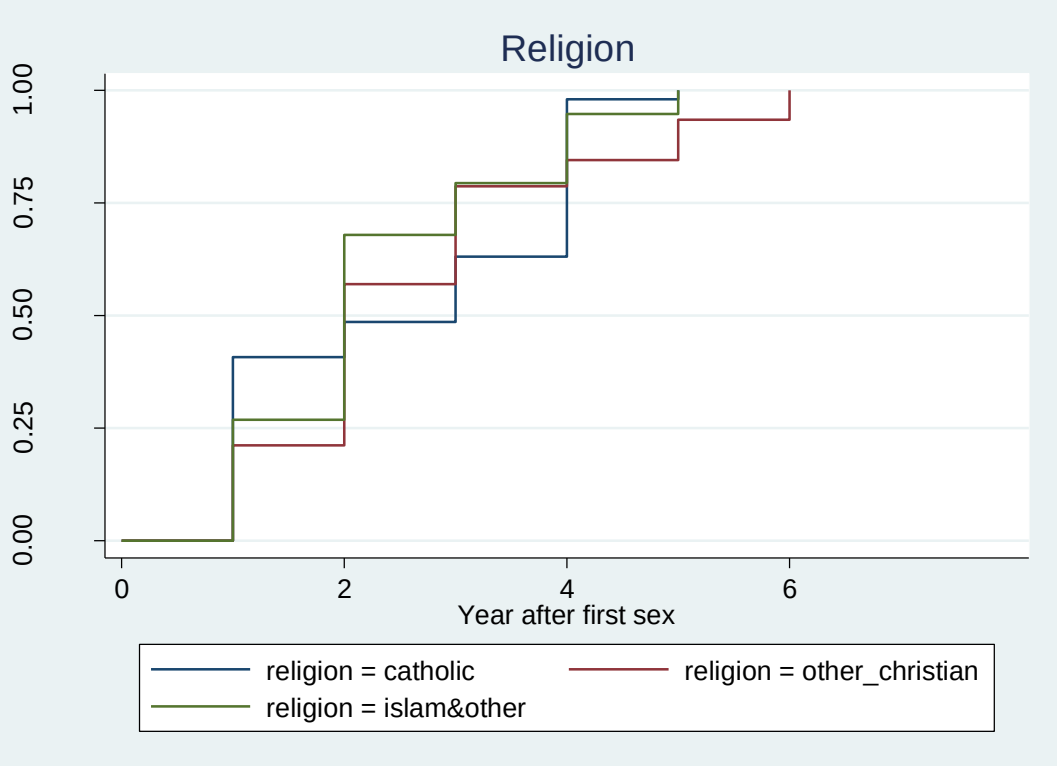





*Table 3.2 7: Log-rank test for equality of survivor function of modern contraception by religion*

| Religion | Events observed | Events observed |
|---|---|---|
| Catholic | 420.01 | 385.98 |
| Other Christians | 2183.03 | 2267.33 |
| Islam and others | 302.51 | 252 |
| Total | 2905.56 | 2905.56 |

chi2(2) = 27.29 Pr>chi2 = 0.0000

The survivor curves and the log-rank test above reveal that there is a statistical difference in the function across the groups of religion at a p-value<0.05.

Figure 10: Probability of modern contraceptive initiation among unmarried adolescents by nature of first sexual experience

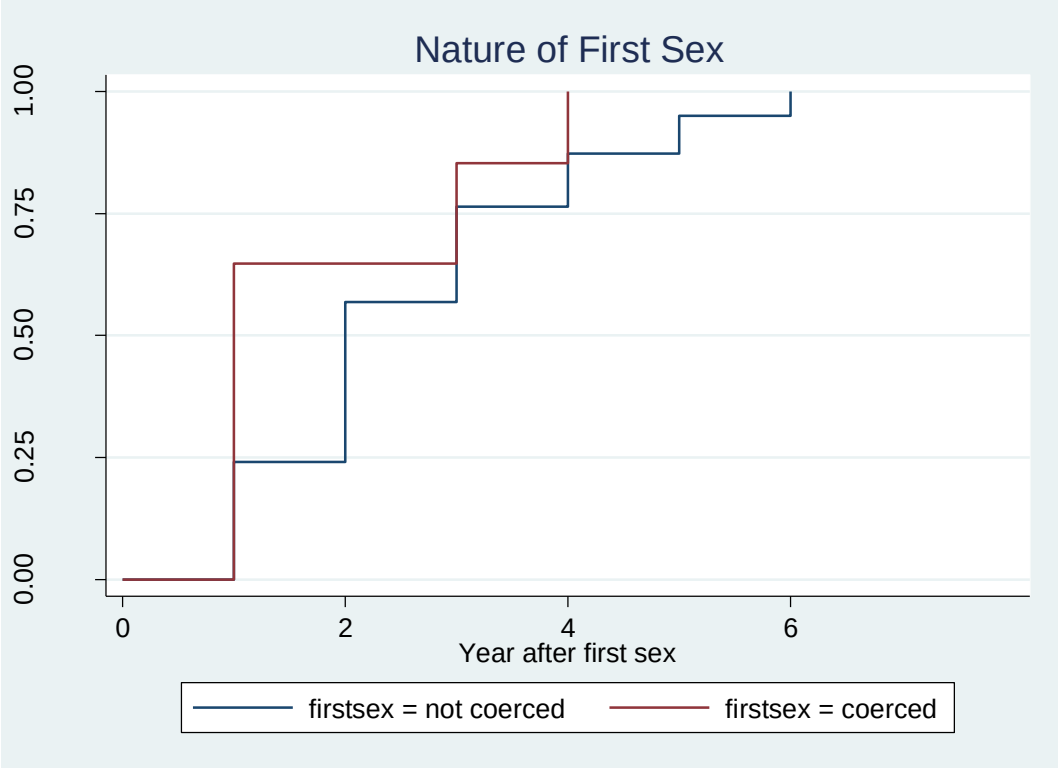





*Table 3.2 8: Log-rank test for equality of survivor functions for first sexual experience*

| First Sex coerced | Event observed | Events expected |
|---|---|---|
| No | 2245 | 2242 |
| Yes | 29 | 32 |
| Total | 2275 | 2275 |

Chi2(1) =14.15 Pr>chi2=0.000

The survivor curves and the log-rank test above reveal that there is a statistical difference in the function across the groups of first sexual experience at a p-value<0.05. Adolescents who experienced coerced first sex initiate modern contraceptives earlier than those who did not.

Figure 11: Probability of modern contraceptive initiation among unmarried adolescents by household wealth quintile

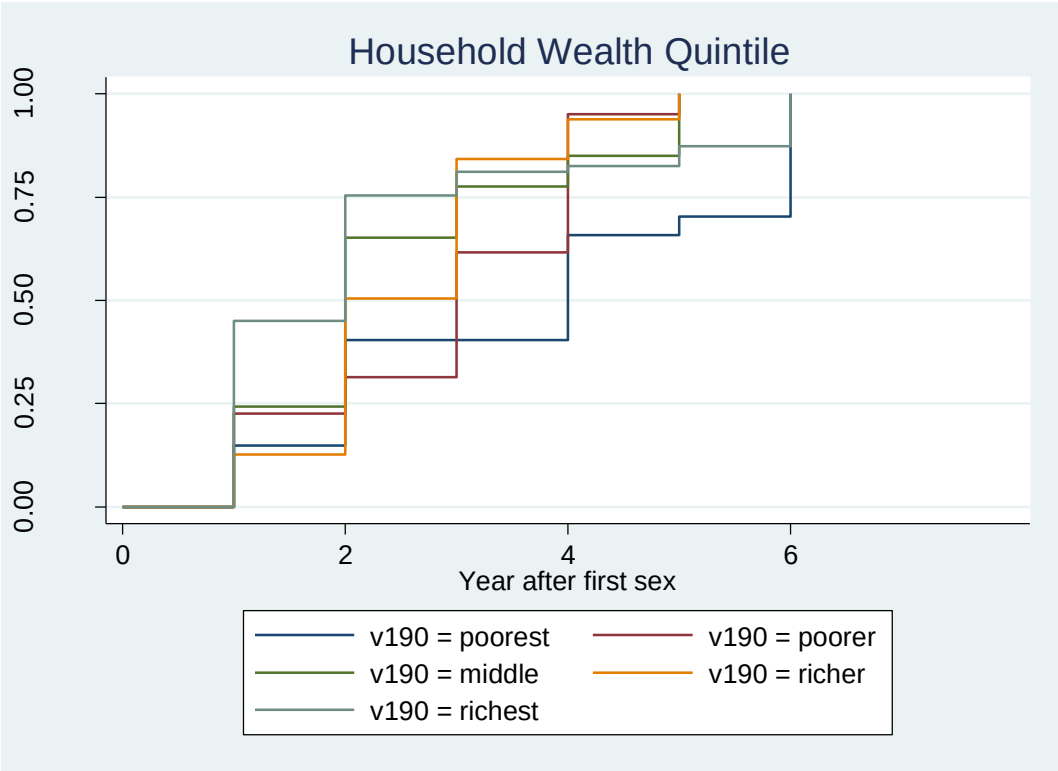





*Table 3.2 9: Log-rank test for equality of survivor functions across groups of wealth quintile*

| Wealth quintile | Events observed | Events expected |
|---|---|---|
| Poorest | 178.17 | 296.81 |
| Poorer | 359.48 | 395.38 |
| Middle | 667.59 | 617.30 |
| Richer | 993.39 | 950.30 |
| Richest | 706.93 | 645.77 |
| Total | 2905.56 | 2905.56 |

chi2(4) = 131.25, Pr>chi2 = 0.000

The survivor curves and the log-rank test above reveal that there is a statistical difference in the function across the groups of wealth quintile at a p-value<0.05. Adolescents from households in the richest wealth quintile initiate modern contraceptives earlier than those in other wealth quintiles.

*Figure 12: Probability of modern contraceptive initiation among unmarried adolescents by internet use*

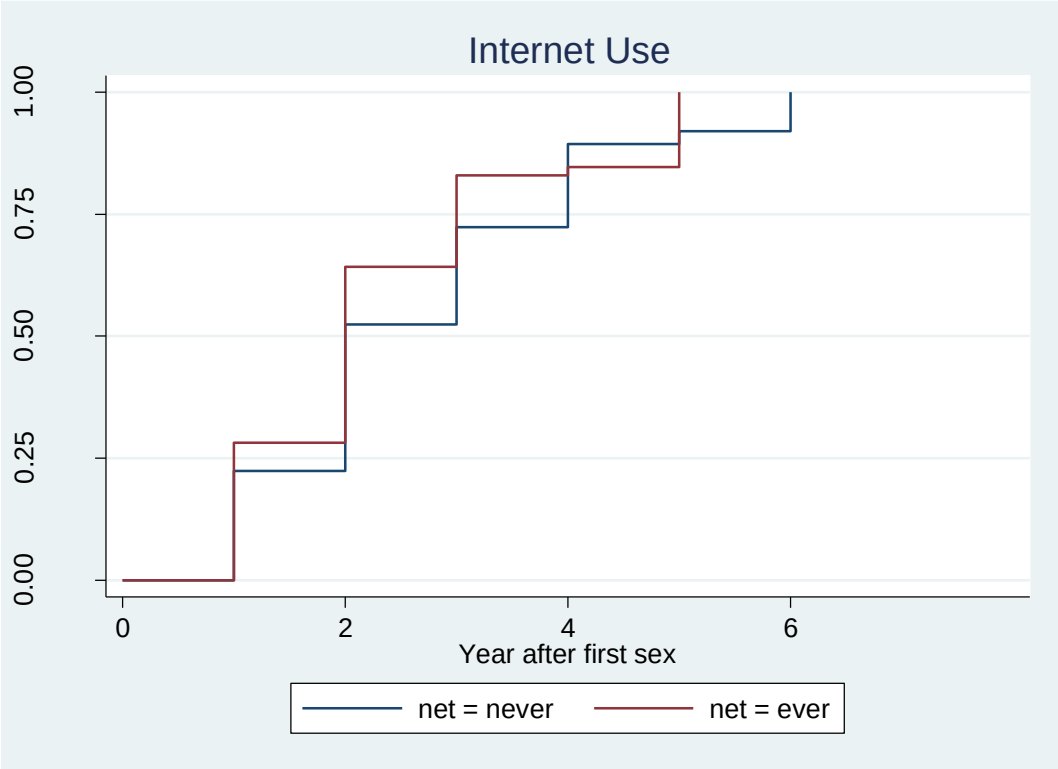





*Table 3.2 10: Log-rank test for equality of survivor functions across internet use groups*

| Internet | Events observed | Events expected |
|---|---|---|
| Never | 1778.14 | 1901.42 |
| Ever | 1127.41 | 1004.14 |
| Total | 2905.56 | 2905.56 |

chi2(1) =40.29, Pr>chi2 = 0.0000

The survivor curves and the log-rank test above reveal that there is a statistical difference in the function across the groups of internet use at a p-value<0.05. Those who have ever used the internet initiate modern contraceptives earlier than those who have never used the internet.

Figure 13: Probability of modern contraceptive initiation among unmarried adolescents by sex of household head

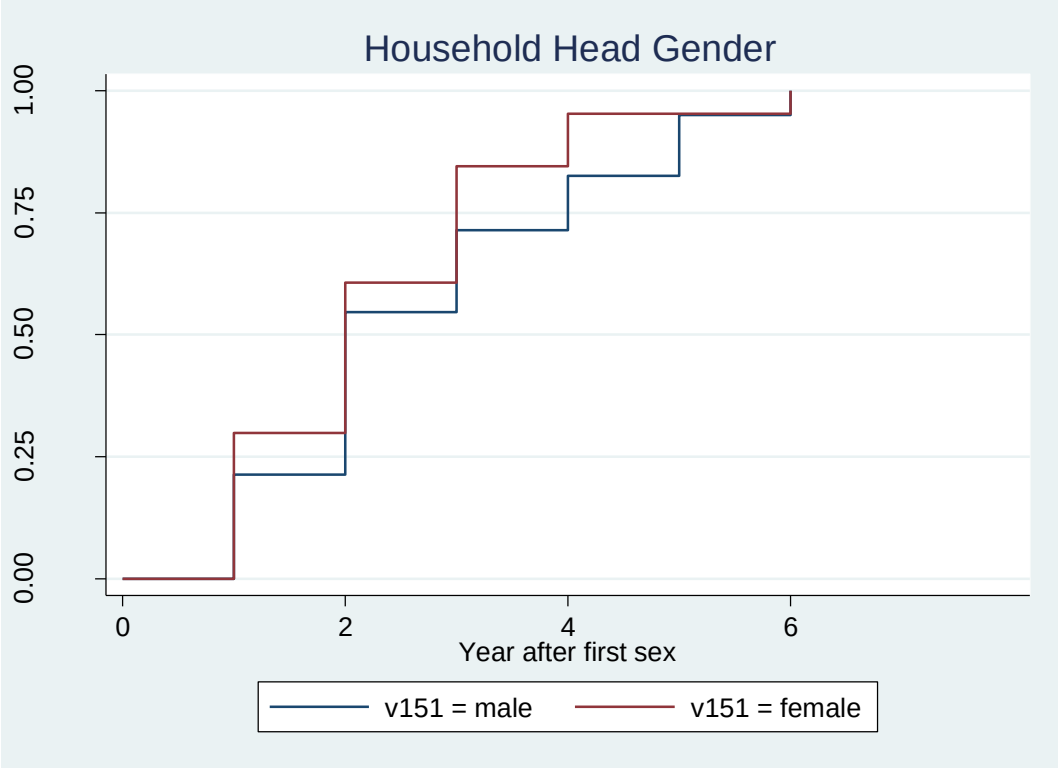





*Table 3.2 111: Log-rank test for equality of survivor functions across internet use groups*

| Sex of household head | Events observed | Events expected |
|---|---|---|
| Male | 1782.32 | 1924.26 |
| Female | 1123.23 | 981.30 |
| Total | 2905.56 | 2905.56 |

Chi2(1) =55.12, Pr>chi2=0.000

Adolescents living in female-headed households initiate modern contraceptives earlier than those in male-headed households. The difference in the timing of initiation of modern contraceptives is statistically different.

**Figure 14:** Probability of modern contraceptive initiation among unmarried adolescents by birth history


*Table 3.2 22: Log-rank test for equality of survivor functions across internet use groups*

| Birth History | Events observed | Events expected |
|---|---|---|
| No | 2670.25 | 2518.80 |
| Yes | 235.30 | 386.76 |
| Total | 2905.56 | 2905.56 |

chi2(4) = 141.87, Pr>chi2 = 0.000

Adolescents who had never given birth initiate modern contraceptives earlier than those who have a history of childbirth. This difference is statistically significant.

**Figure 15:** Probability of modern contraceptive initiation among unmarried adolescents by living arrangement

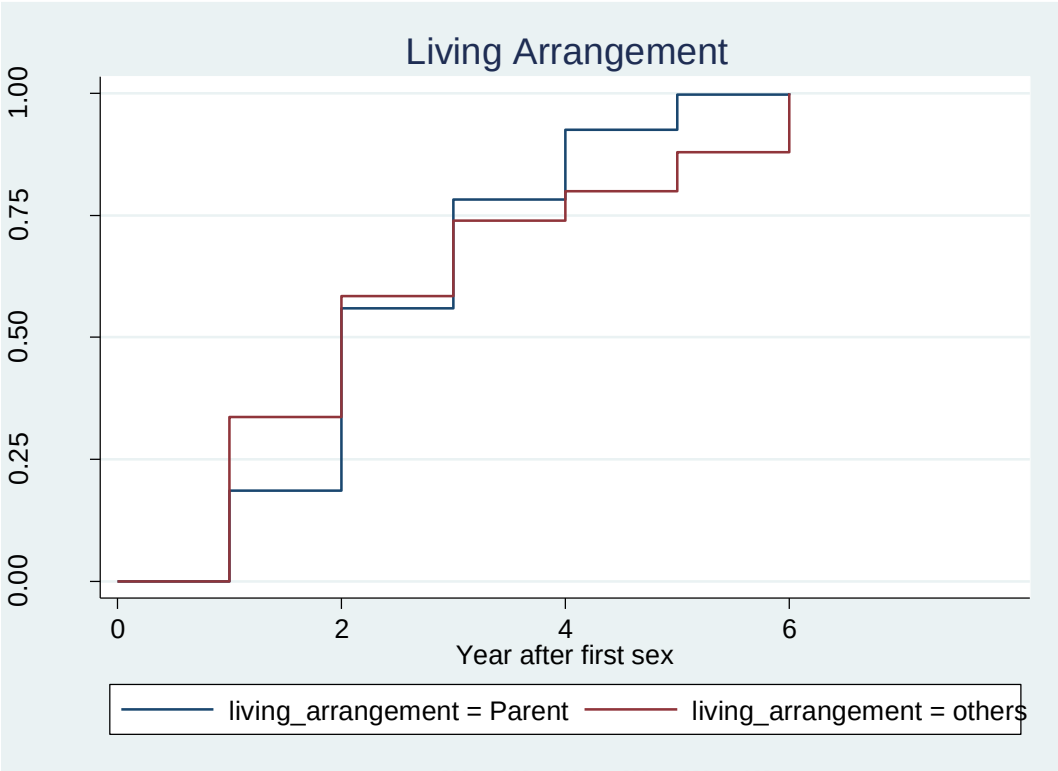



*Table 3.2 23: Log-rank test for equality of survivor functions across internet use groups*

| Living arrangement | Events observed | Events expected |
|---|---|---|
| With Parent | 1749.14 | 1652.56 |
| Not with parent | 1156.41 | 1253.00 |
| Total | 2905.56 | 2905.56 |

***chi2(1) = 24.12, Pr>chi2 = 0.000***

There is a statistically significant difference in the timing of modern contraceptive initiation between adolescents who live with their parents and those who do not live with their parents.

Incidence rate and risk factors of modern contraceptive uptake among sexually active unmarried adolescents aged 15-19 years in Nigeria.

Table: Incidence Rate and cumulative survival time of modern contraception

| | | | | Survival Time | | |
|---|---|---|---|---|---|---|
| Using MC | Time @ Risk | Incidence Rate | No. of Subjects | 25% | 50% | 75% |
| | 7535.39 | 0.3855 | 2905.56 | 2 | 2 | 3 |
| Total | 7535.39 | 0.3855 | 2905.56 | 2 | 2 | 3 |

The incidence rate of modern contraception among sexually active unmarried adolescents aged 15-19 years is 0.3855 per year. The probability of initiating a modern method of contraceptive after first sex within a year is 0.3855. In the second year after sexual initiation, only 25% of Sexually Active Unmarried adolescents who had ever used a modern method had initiated use. In year two after first sex, half of the adolescents who had ever used a modern method of contraceptive had initiated use. In year three after the first sex, 75% had already initiated.

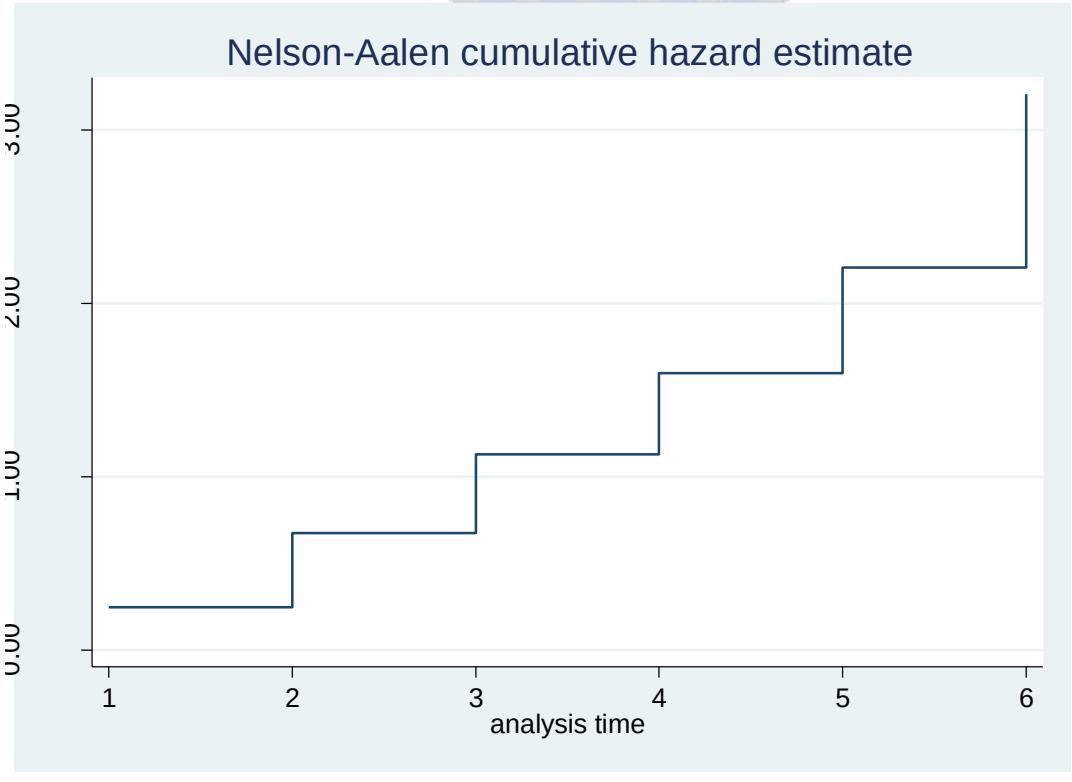


*Table 3.2 12: Hazard ratio and 95% confidence intervals of incidence of modern contraception by socio-demographic characteristics*

| VARIABLES | HAZARD RATIO (95%CI) | ADJUSTED HAZARD RATIO (95% CI) |
|---|---|---|
| AGE AT FIRST SEX | | |
| Less than 15 years old | RC | RC |
| 15 years old or older | 4.963*(4.390-5.610) | 10.739*(9.136-12.622) |
| CURRENT AGE | 0.727*(0.699-0.756) | 0.732*(0.714-0.751) |
| REGION | | |
| North Central | RC | |
| Northeast | 1.462*(1.251-1.709) | 1.184*(1.105-1.270) |
| Northwest | 0.733(0.447-1.201) | 0.798*(0.687-0.926) |
| Southeast | 1.149(0.979-1.349) | 0.833*(0.772-0.898) |
| South-South | 1.051(0.910-1.214) | 1.065*(1.005-1.129) |
| Southwest | 0.848*(0.722-0.996) | 1.037(0.971-1.107) |
| PLACE OF RESIDENCE | | |
| Urban | RC | |
| Rural | 0.941(0.874-1.012) | 1.048(1.008-1.090) |
| LEVEL OF EDUCATION | | |
| No Education | RC | |
| Primary Education | 2.394*(1.851-3.097) | 1.162*(1.051-1.283) |
| Secondary Education | 2.246*(1.816-2.778) | 1.055(0.971-1.147) |
| Tertiary | 1.915*(1.507-2.435) | 1.192*(1.076-1.320) |
| RELIGION | | |
| Catholic | RC | |
| Other Christians | 0.879*(0.791-0.978) | 0.561*(0.488-0.643) |
| Islam and others | 1.100(0.948-1.276) | 0.485*(0.391-0.601) |
| EVER GIVEN BIRTH | | |
| No | RC | |
| Yes | 0.560*(0.489-0.641) | 1.079(0.906-1.286) |
| SEX OF HOUSEHOLD HEAD | | |
| Male | RC | RC |
| Female | 1.241*(1.151-1.339) | 1.205*(1.087-1.335) |
| HOUSEHOLD WEALTH QUINTILE | | |
| Poorest | RC | |
| Poorer | 1.551*(1.290-1.864) | 0.787(0.594-1.044) |
| Middle | 1.850*(1.562-2.192) | 1.839*(1.419-2.382) |
| Richer | 1.793*(1.520-2.114) | 1.399*(1.060-1.846) |
| Richest | 1.843*(1.562-2.173) | 1.638*(1.248-2.149) |
| LIVING ARRANGEMENT | | |
| Living with parent | RC | |
| Living with others | 0.860*(0.796-0.930) | 1.145*(1.039-1.261) |
| INTERNET USE | | |
| Never | RC | |
| Ever | 1.210*(1.121-1.306) | 0.991(0.894-1.098) |
| LISTEN OF RADIO | | |
| No | RC | RC |
| Less than once a week | 0.734*(0.671-0.804) | 1.130*(1.016-1.256) |
| At least once a week | 0.975(0.888-1.072) | 1.070(0.947-1.209) |
| FIRST SEXUAL EXPERIENCE | | |
| Not Coerced | RC | |
| Coerced | 1.607*(1.174-2.200) | 2.633*(1.872-3.705) |
| ***Note: *significant at p>0.05, RC reference category*** | | |

Adolescents who had first sex at age of 15 or later are more likely to initiate modern contraceptives than those who had first sex before age 15[HR=4.963, 95% CI 4.390-5.610]. Controlling for other variables in the model, adolescents who initiate sex at the age of 15 years or older are ten times as likely as those who had first sex under the of age 15 to initiate modern contraceptives [aHR=10.739, 95%CI 9.136-12.622].

For a unit increase in the current age, the incidence of initiating modern contraceptives decreases even after other variables in the model have been taken into account [HR=0.727, 95 CI 0.699-0.756, aHR =0.732, 95% CI 0.714-0 .751].

Adolescents in the Northeast are 46% more likely to uptake modern when compared to adolescents in the Northcentral [HR=1.462, 95% CI 1.251-1.709]. Controlling for other variables, they are 18% more likely [aHR= 1.184, 95% CI 1.105-1.270]. Adjusting for other variables in the model, adolescents in the Northwest and Southeast are less likely to initiate modern contraceptives compared to adolescents in Northcentral [aHR=0.798, 95% CI 0.687-0.926, aHR=0.833, 95% CI 0.772-0.898 respectively]. The incidence of modern contraceptive initiation is higher among adolescents in the South-south is higher compared to those in the northcentral.

The incidence of modern contraceptive initiation is higher among adolescents in female-headed households than adolescents in male-headed households [aHR = 1.205, 95% CI 1.087-1.335].

The incidence of modern contraceptive initiation is 84% higher for adolescents in the richest household quintile compared to adolescents from the Poorest household [HR= 1.843, 95% CI 1.562-2.173]. Controlling for other covariates adolescents in the middle, richer, and richest household wealth quintile has a higher incidence rate compared to adolescents in the poorest wealth quintile [aHR=1.839, 95% CI 1.419-2.382, aHR=1.399, 95% CI 1.060-1.846, aHR=1.638, 95% CI 1.248-2.149].

The incidence of modern contraception initiation is 13% higher for adolescents who listen to the radio less than once a week compared to those who do not listen to the radio. [aHR=1.130, 95% CI 1.063-1.256].

Adolescents who experience coerced first sex are 61% more likely to initiate modern contraceptives compared to adolescents who did not experience coerced first sex [aHR=1.607, 95% CI 1.174 2.200]. Adjusting for other covariates, adolescents who experience coerced first sex are twice as likely as adolescents to initiate modern contraceptives compared to adolescents who did not experience coerced first sex [aHR=2.633, 95% CI1.872 3.705].

### *3.5.0 Discussion*

Effective and efficient modern contraception is key to averting unintended pregnancies, sexually transmitted infections, and, other health and social consequences (Fagbamigbe et al., 2018). The level of modern contraceptive use reflects the chances of unintended pregnancy and risky sexual behaviour. The timing of the use of modern contraceptives is important in understanding modern contraceptive use. This study examined how soon unmarried adolescents aged 15-19 years in Nigeria start modern contraception after their sexual debut and the socio-economic factors associated with it. It is one of the very few studies to examine modern contraceptive initiation among sexually active unmarried adolescents aged 15 -19 years in Nigeria. An attempt to predict the rate of modern contraception among this population has not been identified. This study used five years contraceptive calendar (retrospectively) to calculate the rate and probabilities of initiating modern contraceptives from the first age at which use was reported (11.9apr 12years) to the current age of the respondents at the time of the survey. Also, socioeconomic risk factors for modern contraceptive uptake among sexually active unmarried adolescents aged 15-19 years in Nigeria were identified. Factors such as age at first sex, current age, household wealth quintile, region of residence, and ever use of the internet are related to the timing of the first use of modern contraceptives.

The mean age of the respondents is 17.6 years. On average, unmarried adolescents initiate sex after the age of 15 but report the first use of modern contraceptives at age 18.2 years. The average time unmarried adolescents initiate the use of modern contraceptives is two years after their first sex. The probability of initiating a method of modern contraceptive decreases with age. This is in contrast with the result in Tanzania where age increases with the probability of use among adolescents aged 15-19 years (Nsanya, et. al., 2019). It could be that the older cohort initiates sex earlier than the younger cohort. As result also shows that age at first sex is related to modern contraceptive initiation.

The male condom is the most widely used method. Similar studies in and outside the country among the same population have shown the same result (Duru et. al., 2015; Nsanya, et.al., 2019). This is because male condoms are more readily available than other options. Also, Male condoms have a dual purpose in preventing unwanted pregnancies and sexually transmitted illnesses.

Regional variation exists in contraceptive initiation. Adolescents in Northwest and Southeast are significantly less likely to initiate modern contraceptives early compared to those in Northcentral. Low contraceptive use has been reported in the Northwest among all women in

the reproductive age group (Wang and Cao, 2019, Johnson, 2017). This may be due to differences in socio-demographic indices in the regions.

Age at first sex is associated with modern contraceptive initiation. Adolescents who initiated sex at age 15 or later initiate use sooner after the first sex than those who initiate after sex before age 15. This is in line with several findings where first sex before the age of 15 years is be associated with several findings where first sex before age 15 years is associated with sexual risk behaviours including unprotected sex and taking longer to begin using contraception (Finer and Philbin, 2013, Cavazos-Rehg et al., 2010).

There is an association between wealth quintile and modern contraceptive uptake among sexually active unmarried adolescents aged 15-19 years in Nigeria. The wealth quintile is associated with modern contraceptive uptake and the likelihood of use increase along the wealth quintile. It was found that the incidence of modern contraceptive uptake is highest among adolescents from households in the richest wealth quintile compared to the poorest households. This is similar to what was found among all women in Nigeria (Johnson, 2017). It could be that adolescents from these households can afford to buy a modern contraceptive while those from poor households could not. Affordability could be one of the barriers to the early initiation of modern contraceptives among unmarried adolescents in Nigeria.

Listening to the radio is associated with the uptake of modern contraceptives. Adolescents who listen to the radio at least once a week initiate modern contraceptives earlier than those who do not. This is in line with the result of a study on family planning among women of reproductive age in Nigeria. Listening to radio messages increases the likelihood of modern contraceptive use (Ajaero et al., 2016). It may be that listening to the radio exposes them to information on modern contraceptives and reproductive health which triggers prompt use.

Education is a predictor of modern contraceptive initiation among adolescents in Nigeria. The likelihood of initiation of contraceptives after first sex increases with the level of education. This is similar to several studies (Ajaero et al., 2016, Fagbamigbe, 2021, Crawford et al., 2021). Education enhances a better understanding of printed and audio health information. Also educated people are more likely to be better informed of the importance of contraceptives and may not want to interrupt their educational pursuit with childbearing.

This study shows that household head gender is associated with the uptake of contraceptives. Adolescents from female-headed households are more likely to initiate modern contraceptives compared to those from male-headed households. This is contrary to what was found in a study in Bangladesh where household head gender does not influence contraceptive use (Hossain et al., 2018). Also, a study among all women in Nigeria shows no relationship between household

head gender and modern contraceptive use. It could be that when the household head is female and probably single they may bond well with the adolescent girls in the household and be more open to discussion on reproductive health.

Adolescents who experienced coerced first sex show more likelihood of initiating modern contraceptives than those who did not. This could be that trauma from the experience prompts protective behaviour against the consequences such as unwanted pregnancy with an unloved spouse.

Findings from this study show that modern contraceptive initiation is not early in adolescent girls, there are differences in time of initiation by age at first sex, current age, region, household wealth quintile, education, sex of household head, and listening to the radio in Nigeria. Adolescents who experience sexual debut before age 15 do not initiate contraceptives early. This indicates that young people should be encouraged to delay sexual initiation and informed about the benefits of modern contraceptives. This would allow them, to recognize the need for modern contraception, and would, thus, increase the chances of early initiation of use. Also, radio programs will be very effective in educating young women on sexual and reproductive health. Program managers and health care providers should target older adolescents as well as those residing in the male-headed household, in Northwestern Nigeria; and consider the use of mass media to reach adolescents for contraceptive and sexual and reproductive health programs. The study shows a framework for effective intervention critical to attaining the Sustainable Development Goals (SDGs); improving the health and well-being of adolescents; and strengthening the health of families and communities.

## *4.0 CHAPTER FOUR:* ***Susceptibility to pregnancy and factors associated with modern contraceptive use and intention among sexually active unmarried adolescents in Nigeria.***

Marginally developed regions of the world, particularly Sub-Saharan Africa, account for a large portion of global population growth (WHO, 2015). Adolescents account for about 20% of the global population, with growth predicted to continue over the next 15 years, with Sub-Saharan Africa experiencing the fastest rise (Das Gupta et al., 2014). Nigeria's population is expected to exceed 400 million by 2050, placing it among the world's top five most populous countries (UN, 2017). High birth rates, limited contraception use, and early marriages are all factors that contribute to rapid population increase (Yaya et al., 2019).

The desire to increase the use of modern contraceptives in most nations in Sub-Saharan Africa is shaky, and projects have been financed across the continent to address high levels of unmet contraceptive needs. Despite these efforts, contraception use in Africa has remained relatively low (Rafael et al., 2016a). Nonetheless, in underdeveloped countries, there remain high rates of unmet contraceptive needs and unwanted births among teenagers aged 15 to 19. About half of pregnancies among this age group are unintentional (Darroch et al., 2016b). In Latin America and the Caribbean, half of the adolescents under the age of 20 who became pregnant did so unintentionally, whereas, in certain regions of Sub-Saharan Africa, it is over 40% (Gilda et al., 2016). Unmet contraceptive needs among adolescents in underdeveloped countries range from 34% to 67% among those who are not married (Chandra-Mouli et al., 2015). This may be an indication of contraceptive service bias against the nonmarital unions. Nigeria, with one of Africa's largest populations, serves as a focal point for encouraging contraception use.

Adolescents in Nigeria contribute significantly to fertility. The fertility rate at this age group is 118 births per 1000 girls aged 15-19 years (NPC and ICF, 2014). In Nigeria, 35.3 percent of adolescent contraceptive needs are unmet, which is higher than the rate for older women. (Alayande et al., 2019). Many studies on adolescent reproductive health and contraception are more likely to overlook the importance of understanding the fertile window in preventing unwanted pregnancy using contraception. Fertility awareness is the capacity to recognize when you are susceptibility to pregnancy during your menstrual cycle (Hampton and Mazza, 2015). This knowledge method has been recommended as a possible means of family planning (Pallone and Bergus, 2009). The lack of knowledge of this period could lead to unprotected sex with diverse health and social outcomes among sexually active unmarried adolescents. If adolescents are unfamiliar with the structure of the reproductive system, they may be unable to predict when they will become pregnant and may not use contraception.

Therefore, a possible approach to increase contraception among adolescents may be to understand their knowledge on the risk of conception. Studies has suggested a connection between young people's reproductive health apprehension and outcomes in developing countries (Chung et al., 2018, Sarkar et al., 2015). The prevention of poor reproductive health outcomes in this population therefore may necessitate adequate information about fertility awareness among sexually active unmarried adolescents in Nigeria. Adequate knowledge of the ovulatory period may assist in increasing modern contraceptive use which in turn will affect sexual and reproductive health outcomes among adolescents in Nigeria. This article presumes that modern contraceptive use may be associated with knowledge of ovulation days as proxy for perceived susceptibility to pregnancy among adolescents aged 15-19 years in Nigeria. Hence this study seeks:

1. To examine the level and factors associated with modern contraceptive use and intention.
2. To examine the association between perceived susceptibility to pregnancy and modern contraceptive use among sexually active unmarried adolescent aged 15-19 years in Nigeria.



***4.1** LITERATURE REVIEW*

Theoretical

This study is guided by the health belief model. From this model, pregnancy perception is regarded as potential antecedents of contraceptive behaviour. It posits that individual perception of an outcome can guide preventive measures against it. Though this perception is modified by some characteristics of the individual. According to the model, perceived susceptibility is individual's awareness and belief of risk of pregnant. A study in the US among women aged 20-45 years revealed a lower probability of using contraceptives at last sex among women who thought they can't get pregnant compared to women, who thought they are at risk of getting pregnant (Britton et al., 2019). However, another study carried out among low-income women aged 16-24 years in the U.S showed that perceived susceptibility to pregnancy is not associated with use of contraceptive or the practice of safer sex (Rahman et al., 2013). A sexually active adolescent who do not want to get pregnant may not use contraceptive if she considers herself less likely to get pregnant. The objective of this study is to assess the

relationship between perceived susceptibility and current contraceptive use among adolescents at risk of pregnancy.

Empirical

Numerous studies have been conducted to explain young peoples' modern contraceptive uptake in all regions of the world.

Predictors of Modern Contraceptive Use in the Globe

A cross-sectional study was conducted in a Government College in Gangtok, a town in north-east India among year one college students to examine the knowledge, attitude, and practice of contraception among 156 students. Majority of the students knew about contraceptives. Reasons cited for not using contraceptive was that it was against their religious belief, it could interfere with sexual pleasure, can cause weakness or obesity (Renjhen, Kumar, Pattanshetty, Sagir&Samarasinghe, 2010). The analysis was only at the descriptive level and sampling was purposively restricted to students hence, findings cannot represent the whole population.

Similarly, knowledge about methods of contraception, effectiveness of methods and sexual behaviours of adolescents and young adults was evaluated in Wroclaw. Data was collected from 219 students of three secondary schools between ages 17-21 years old. The mean age of respondents was 18.1 years. Two-fifth of the respondents always use contraceptives and believe that the choice and of method depend on its effectiveness, availability, and ease of use. They regarded their knowledge on contraceptive as very extensive but their answers to detail questions show that it is superficial(Skrzeczkowska et al., 2015).

In Slovakia, a quantitative cross-sectional study was conducted to examine adolescents' sexual behaviour, use of contraceptives, and STIs. The study participants consist of 381 adolescents aged 15-21 years old attending a secondary school their average age was 17.75 years. The major reasons for contraceptive use were to prevent pregnancy, non-contraceptive health benefits and to prevent STIs while barriers to use were personal reasons, having sexual intercourse rarely and lack of money for contraceptives (Kelčíková, S., Pydová, M., Malinovská, N., 2020). The sampling of respondents for this study was purposive hence, conclusion can only be generalised for the referred population.

Also, in Russia a total of 716 adolescents from nine high schools in two cities and a village of participated in a cross-sectional study. The purpose of this study was to investigate sexual

behaviour and contraceptive awareness among the study participants. Participants were recruited into the study through convenience sampling. Sixty percent of the participants other than condoms, lack information on modern contraceptive methods. Less than half of the participants in a sub-sample who had engaged in sexual intercourse endorsed one or more items on an indicator of condom non-use. Hard drug usage and being of a different ethnicity than Russians (e.g., mixed, Bashkir, Tartar) were linked to non-use of condom (Bolshakova et al., 2020). Since only a convenience sample of adolescents was examined, the results of the study are only representative of other 15–18 years Bashkortostan adolescents. Furthermore, because only one rural school was contacted, no rural-urban disparities could be determined.

The association between body admiration and barrier and hormonal contraception use among college women was studied in a study. The research was conducted as part of a bigger investigation into body image and sexual health. The women in the study were between the ages of 18 and 25, not pregnant, and in a monogamous sexual relationship with a man. Three hundred and ninety-nine women were recruited from community colleges and four-year universities in a Midwest urban area to participate in the study. According to the findings, male condom use, as well as the use of both male condoms and a hormonal contraception, was substantially associated with body appreciation. However, the sample was homogeneous in terms of race/ethnicity, age, body size, and sexual orientation, making it difficult to gain a comprehensive picture of the relationships.(Ramseyer Winter and Ruhr, 2017).



Predictors of Modern Contraceptive in Sub-Saharan Africa

A quantitative cross-sectional study examined the link between young women's understanding of ovulation, contraception, and unintended pregnancy in 29 African countries. Data for women between age 15-24 years from the Demographic and Health Survey for the 29 countries were analysed. Besides the main objective of the study, the association of knowledge of ovulation and contraception was examined. Although incorrect knowledge of ovulation was common among both contraceptive users and non-users, and women who knew when they were ovulating were more likely to use contraception than those who didn't. (Iyanda et al., 2020). However, the study was not originally conducted to examine contraception and the study population extends beyond adolescent group. Also, the effect of different ethnic groupings in the countries, which could affect contraceptive use, was not taken into account.

An exploratory, qualitative study in Uganda among young people male and female age 15-24 years. A total of 16 Focus group discussions were done in the local language to collect data

with 6-12 persons in each group. The unmarried young people aged 15-19 reported misconceptions, fear of side effect, fear of partner and parental reaction, marriage wantedness, and stigmatization as barriers to contraceptive use (Nalwadda et al., 2010).

A cross-sectional study was carried out to measure contraceptive knowledge, views, and use among senior high school students in Ghana's central region. Participants were recruited from five schools conveniently chosen from a cosmopolitan city in the Central Region of Ghana. Data was collected from 300 students using self-administered questionnaire. Data analysis was descriptive, and the results show that 60% and 30% of the study participants received knowledge from the media and friends and only one-fifth of those with knowledge were users. Majority use contraceptive to prevent only pregnancies, almost half of the participants perceived the process of acquiring contraceptives as often embarrassing (Hagan and Buxton, 2012). However, data analysis is not inferential, and method of sampling may not allow for generalisation to the wider population. Similarly, in the same country a descriptive and analytical study on the magnitude and predictors of adolescent girls' contraceptive use was carried out. Study used data for 200 sexually active adolescent girls aged 16-19 years randomly selected in a district. The findings show that knowledge of contraceptive is high but do not translate to use. However, marital status and staying with both parents are associated with use (Agyemang et al., 2019). Though the finding is not generalisable to the whole population.

In another district of the Eastern Region of Ghana, there is higher percentage of adolescents who have heard about contraceptive compared to those who are using. Factors reported to be associated with use were age and religion (Akomaning et al., 2022). However, in Benin, knowing a greater number of modern methods is associated with use among young women aged 15-24 (Ahissou et al., 2022). Other factors associated with use were married status, literacy, and experiencing barriers in access to health service

In Kenya a cross sectional study was carried out at a Youth Friendly Centre of a provincial General Hospital. Data were collected from persons aged 15-24 years using systematic random sampling, to find out how common condom use is among Kenyan teenagers and what factors influence it. Participants who responded affirmatively to ever use condom, use within the last three months, and condom use during the last sexual encounter were classified as consistent condom users. Findings from the study reveals, talking with parent about condom, attaining college level education and having multiple sexual partners were positively associated with consistent condom use (Anyangu, 2010).

A cross-sectional study was done in South Africa to investigate the socio-demographic and behavioural factors related with contraceptive use. Data for 1406 South African young women aged 15-24 years was collected from the 2012 national population-based household survey. Logistic regression was modelled to examine the associations with contraceptive use. The result shows that secondary education, a sexual partner within 5 years age gap, first sex at age 15 years and older are more likely to use contraceptive. While use decrease with nulliparity and rural settlement (Makola et al., 2019).

A mixed method study among 15-19 in Kenya to understand the role of perception and barriers on contraceptive use. Quantitative data was collected from 1119 adolescents while qualitative data was collected from adolescents, adolescents' parents, and adolescents' schoolteachers. In general, unfavourable perceptions among adolescents, parents and teachers contributed to low contraceptive use. This played a greater role than barriers such as sexual partner communication (Kinaro et al., 2015).

FACTORS ASSOCIATED WITH MODERN CONTRACEPTIVE USE IN NIGERIA.

In Nigeria awareness and knowledge of contraceptive is high but do not translate to use.

Findings from a study conducted to examine undergraduates' sexual behaviour, contraceptive awareness, and use in two tertiary institutions in Imo state show that there is a high awareness about contraception but only less than half of respondents who reported awareness had good knowledge about contraceptives. Nonetheless, the mean age of the respondents was 22.3 and they are all tertiary students may not represent the behaviour of adolescents aged 15-19 with low or no education (Duru, et.al., 2015).

Also, a study in a rural town in Western Nigeria where 225 pregnant adolescents attending a primary health care were recruited as participants shows that about half of the teenager with unwanted pregnancy didn't know how to use a condom properly to avoid pregnancy (Amoran, 2012). Result from this study may not be applicable to the other part of the country especially in Urban areas.

Similarly, in another part of the country, a cross-sectional study to examine Adolescents' knowledge, attitude and use of emergency contraceptive pills was done in Niger Delta Region. A sample of 220 adolescents was purposively selected from the target population, data was collected using self-structured questionnaire. Results from the data analysis show that most of the respondents were well-informed and had a good outlook. However, there was a low level of use. Other people and parental attitude, accessibility and availability of method and peer

influence militated against use. However, knowledge and attitude were not significantly associated with use (Onasoga, Afolayan, Asamabiriowei, Jibril, & Imam, 2016).

However, in a qualitative investigation carried out in six communities in Ebonyi state, one of the variables that limited contraception access at the individual level among adolescent was poor knowledge and lack of awareness. Using socio-ecological model, an in-depth exploration of perceived barriers to adolescents' contraceptive service use was done using 81 in-depth interviews and six focus group talks were conducted. Respondents were policymakers, community leaders, health-care providers, and adolescents' parents. At individual level, factors that affect use was inadequate knowledge, deficient awareness, fear of side effect, low self-esteem, and its cost. Family-related barriers were parent-child communication on sexual and reproductive health issues is inadequate, and parents have a negative attitude toward sex education. Health system factors were confidentiality, stock-out, judgemental attitude of health workers, insufficient skilled staff (Ezenwaka et al., 2020).

Single women's knowledge, attitude and practice of modern contraception was examined in a rural and urban area in Southeast Nigeria. Contraceptive awareness was higher among urban than rural respondents in a cross-sectional study of 279 and 295 single women in Nwgo and Enugu, respectively. Also, current use of modern contraception among sexually active respondents were higher among Urban than rural dwellers (59.7% and 32.5% respectively). Poor contraceptive information, judgemental behaviour of service providers' attitudes about unmarried women seeking contraception and male spouses' attitudes were reported as barriers to contraceptive practice (Ozumba, Obi & Ijioma 2005). The mean age of respondent was 21.3years. Also, a cross-sectional study on married girls aged 15-19 years in Ogun state in the southwestern part of the country showed that living in an urban area is positively associated with modern contraceptive use (Crawford et al., 2021). The study used a clustered sampling design. However, the sample is not nationally representative.

A nationally representative study in the country on the trend of sexual and reproductive behaviour of young people for a ten-year period found that aside age, wealth quintile, education and region of residence, rural-urban residence is significantly associated with inconsistency in condom use (Adedini et al., 2021). Nevertheless, the study considered only the use of male condom. This may not be the same for other types of modern contraceptives.

A similar study was done in Ekiti state where youth and their contraceptive usage was investigated. The sample of 200 youths was selected from both urban and rural areas of 16 local governments in the state. Findings from the study show a positive relationship between

education and contraceptive use but location (Urban/Rural) has no relationship with contraceptive use among this population (Osakinle et al., 2013).

## DETERMINANTS OF MODERN CONTRACEPTIVE BEHAVIOUR

Factors influencing contraceptive behaviour vary substantially from one geographical region to another. Different factors like individual perceptions, behaviour, and environments have been found to be factors that limit adolescents to seek and use contraceptive.

Nalwadda et al (2010) opined misconceptions and fear of contraception are obstacles to contraception. Young people believes that contraceptives interfere with fertility and are frightened to use something that hinder them from giving birth later in life. Also, Kinaro and Colleagues' (2015) study among adolescents in Kenya support this finding by establishing that unfavourable perception among adolescents contribute to low contraceptive use. Similarly, Renjhen et al (2010) found that adolescents perceive contraceptive to cause weakness and that it may also lead to obesity.

Aside misconceptions, Nawadda et al (2010) also found that the fear of stigmatisation prevent adolescents from using contraceptives. Contraceptives are perceived to be for married couple who wants to stop childbearing. Communities link use of contraceptive to promiscuity and prostitution as a result, young women are ashamed to buy or carry contraceptive. Hagan and Buxton (2012) provided the evidence that adolescents are embarrassed to acquire contraceptive. Adolescents feel that acquiring contraceptives will make them subjects of mockery and gossip.

Makola and others 2019 wrote that area of residence is a significant determinant of contraceptive use. Rural settlement is associated with low use. Crawford and others (2021) also found the same thing. In contrast, Osakinle t al (2013) argued that place of residence has no effect on contraceptive use.

Number of sexual partners is another factor found to be related to contraceptive use. Essiben found that having only one partner is associated with non-use of contraceptives likewise, Anyangu (2010) in a study among people aged 15-24 years in Kenya argued that consistent condom use is associated with having multiple sexual partners. Founmane et al (2013) in Cameroun also found that lower rate of use is found where there is infrequent sexual activity. Kelcikova threw weight to this argument having found that one of the reasons for not using contraceptive is having sex rarely.

Contributing to the debate on partner's characteristics and contraceptive use, Makola et al 2019 study among adolescents and young women in South Africa reveals that using some form of

contraceptive is associated with having a sexual partner within 5 years of their age. The Authors found that young women who had older sexual partners were much less likely to utilize contraceptives. Supporting this argument, Guleria 2017 also found that having a sexual partner 20 years or older is associated with non-use of contraceptive.

As earlier pointed out unravelling the determinants of modern contraceptive use among unmarried adolescents in the developing countries is a high priority among policymakers and the public because of its implications. Though many studies have identified various determinant of adolescents' contraceptive use, yet the determinants driving the phenomenon has not been fully explored. As a result, the search for a pathway through which diverse variables of contraceptive use interact has remained a never-ending quest. Furthermore, scientific research on the factors of modern contraception among never married adolescents in Nigeria is sparse. As a result, this research contributes to the global discussion on the factors that influence adolescents' contraceptive use with focus on (1) socio-demographic factors associated with modern contraceptive use and intention (2) the association between perceived susceptibility to pregnancy and modern contraceptive use among sexually active unmarried adolescent aged 15-19 years in Nigeria.



### *4.3 METHOD*

This study uses a quantitative method. Data was collected from a cross-sectional survey, the 2018 Nigeria Demographic and Health Survey (NDHS) dataset to answer the research questions and better explain the results. The study population comprises of sexually active unmarried adolescent aged 15-19 years.

The 2018 Nigeria Demographic and Health Survey (NDHS) is nationally representative, and it is the sixth conducted in Nigeria. Five previous surveys were conducted in 1990, 1999, 2003, 2008 and 2013. It is a five-year periodic worldwide survey programme designed by USAID with support from other international donors. It is also carried out in several countries in the developing regions of the world. The ICF Macro International provides technical support with the host country to collect high quality data on fertility levels and preference, contraception, maternal and child health, violence against women, gender, immunization, nutrition, breastfeeding HIV/AIDS awareness and other indicators relevant for the sustainable Development Goals. The survey used the same sampling frame as the 2006 census of population and housing. The Enumeration Areas (EAs) from the 2006 EA census frame were

used to define the primary sampling unit (PSU), which was treated as a cluster. The 2018 NDHS covers 1389 clusters with eleven clusters dropped due to security challenges, among other factors (NPopC, 2019). A nationally representative sample of 42000 households (DHS, 2019) was randomly selected from all 36 states and the FCT to receive questionnaires. Data was collected from 40567 women aged 15 to 49 in all of the selected houses, as well as 12056 men aged 15 to 59 who were randomly picked from the households. (DHS, 2019).

**SAMPLE POPULATION**: For this study, data for only 983 adolescents (weighted) between ages 15-19 years who were not married, not pregnant but had experience sexual intercourse at the time of the survey was used.

**STUDY VARIABLES**

**Outcome Variables**

The outcome variable for this study is modern contraceptive use and intention. This is measured using a nominal variable with four categories, the actual current practice at the time of survey. The variable 'contraceptive intention and use' from the NDHS dataset categorised as 'using modern method', 'using traditional method', 'not using any method and does not intend to use later' and 'not using any method but intends to use later'

Evidence from literature also suggests as much. Monjok et al (2010) as well as (Nyarko, 2015) , measured contraceptive use using current use.

Use of modern method is the outcome variable for the second study objective, measured as a dichotomous variable. During the survey women were asked the method they were using with the options were *"No method, Folkloric method, Traditional, and Modern method"*. For this study, the responses were categorized into two- *not using and using a modern method*.



**Predicting Variables**

The predictor variables (modifying and enabling factors) in the study are outlined in Table 1. These include the background characteristics of the respondents, and which have been found to influence contraceptive use directly or indirectly in the literature and part of HBM. These variables are current age in single years, education, place of residence, religion, region, age at first sex, number of sexual partners, number of children ever born and previous abortion.

The primary explanatory variable of interest is perceived susceptibility to pregnancy measured as knowledge of ovulation. Study Participants were asked question on knowledge which has seven responses. 1 = During her period, 2 = After the period ended, 3 = middle of the cycle, 4 =Before period begins, 5 = at any time, 6 = others, 8 = Don't know. Responses "1,2,4,5,6, and

8” which indicate incorrect knowledge was recoded as “0” while “3” which is correct knowledge was recoded as “1”.

All these variable definitions were collected form the 7th DHS women Recode questionnaire used for the 2018 Nigerian Demographic and Health Survey and are presented in Table 1 below

*Table 4.0 1 : Study variables and their definitions*

| VARIABLE | OPERATIONAL DEFINITION |
|---|---|
| **OUTCOME VARIABLES** | |
| Modern contraceptive use and intention | Not using any modern method currently and not intending to use (0)<br>Not using modern method but intend to use a method later (1)<br>Currently using a modern method (2) |
| Modern contraceptive use | Not using a modern method (0)<br>Using a modern method (1) |
| <u>Reproduction factors</u> | |
| Age at first sex | Numeric variable in years |
| Number of partners | Total number of sexual partners in the last 12 months |
| Frequency of intercourse | Recent sexual activity<br>active in last 4 weeks (1)<br>not active in last 4 weeks: postpartum (2)<br>not active in last 4 weeks: not postpartum (3) |
| birth history | Children ever born |
| Nature of first sex | No (0), Yes (1) |
| Previous abortion | Coerced. No (0), Yes (1) |
| **Demographic** | |
| Education | ➢ Educational attainment<br>No education (0)<br>Incomplete Primary (1)<br>Completed primary (2)<br>Incomplete secondary (3)<br>Completed secondary (4)<br>Higher (5) |
| Ethnicity | ➢ Ethnic affiliation<br>Hausa (1)<br>Yoruba (2)<br>Igbo (3)<br>Others |
| Residence | ➢ Place of residence<br>Urban (1) |

| | |
|---|---|
| Social<br>Religion | Catholic (1)<br>Other Christians (2)<br>Islam and others (3) |
| Geopolitical zone | North Central<br>North East<br>North West<br>South East<br>South South<br>South West |

Source: DHS7 women questionnaire

**Data Management and Analysis**

The research questions for this study were answered using quantitative method. Data analysis was done both descriptive and inferential. STATA version 14 was used for the data analysis. Frequency distributions was used to describe the profile of the study sample. The outcome variable was tabulated against the predictors variables to assess prevalence of use and intention to use in the sample. Multinomial logistic regression was performed to determine the significant predictors of modern contraceptive use, and intention to use and also to estimate the relative risk ratios and 95% confidence intervals (CIs) for the association. All possible confounders were included in the model. The choice of the variables in the multivariate model are based on the results of bivariate analysis, and only the significant variables in the bivariate analyses were subsequently used in the multivariate logistic regression analysis. For all statistical analyses, a *P*-value of $p<0.05$ was considered significance.



svy-weight was applied to the data to control for sampling errors and to make the sample a good representative of the entire population. The following STATA command was used before analysis to allow for correct use of significant testing in complex survey design such as the Nigerian Demographic and Health Survey. STATA will thus take the sample design into account when calculating standard error.

*gen weight=v005/1000000*
*svyset[pw=weight],psu(v001)strata(v022)*
*Where pweight is a sampling weight,*
*psu (primary sampling unit) v001 is the cluster number*

*V022 is sample strata for sampling error number*. (Pitblado, 2009; NDHS, 2013)

**ADDRESSING THE STUDY OBJECTIVE**

**Objective:**

To examine the levels and factors associated with modern contraceptive behaviour among sexually active unmarried adolescent aged 15-19 years in Nigeria.

This was achieved using quantitative research methods. This objective is further divided into two specific objectives.

**(a) To examine the socio-economic and demographic factors associated with modern contraceptive use and intention**

This is accomplished quantitatively using Nominal logistic regression model.

Multinominal logistic regression is appropriate when the outcome is a nominal variable with three or more categories that do not have an order. In this case "currently using", "non-user does not intend to use", and "intends to use later". Nominal logistic regression tests the probability of independent variable(s) being statistically significant in a specific category, compared to the baseline outcome category of a nominal outcome variable. The analysis begins with logit transformation of the outcome variable through utilization of maximum likelihood estimation. This is done using relative risk ratio which is the likelihood of selecting one of the outcome categories above the probability of selecting the baseline category. This can be obtained by exponentiating the linear equations below.



Model description:

$$In\left(\frac{pr(intend\ to\ use\ later)}{pr(not\ using\ and\ does\ not\ intend\ to\ use)}\right) = a + \beta 1\ x1 + \beta 2\ x2 + \ldots\ldots\ldots(1)$$

$$In\left(\frac{pr(using\ modern\ method)}{pr(not\ usingand\ does\ not\ intend\ to\ use)}\right) = a + + \beta 1\ x1 + \beta 2\ x2 + \cdots \ldots\ldots(2)$$

Where,

not using and does not intend to use is the base category for the outcome variable

Pr is the probability

a = coefficient for intercept

$\beta_{1=}$ coefficient for predictor 1

$X_1$= predictor 1

X2= predictor 2

One-unit increase in the variable $X_1$ (if $X_1$ is a numerical variable) is associated with a $\beta_1$ change in the relative log odds of intending to use later vs. currently using.

The relative log odds of does not intend to use vs. currently using will change by b2 if moving from one category of $x_2$ (if $x_2$ is a categorical variable) ($x_2$==2) to the next category of $x_2$ ($x_2$==3).

This test is used when there is no assumption of normality, linearity or homoscedacity (Healy, 2006).

**Objective (1b)** To examine the association between perceived susceptibility to pregnancy and modern contraceptive use among sexually active unmarried adolescent aged 15-19 years in Nigeria.

This is accomplished using binomial logistic regression model. Logistic regression is appropriate when the predicted outcome is binary in this case- use and non-use of modern contraceptive. Binomial logistic regression tests the probability of independent variable(s) being statistically significant in a specific category, compared to the baseline outcome category of a binary outcome variable. The analysis begins with logit transformation of the outcome variable through utilization of maximum likelihood estimation. This is done using odds ratio which is the probability of the event outcome/1- probability of the event outcome.

The odds ratio can be described as

$Odds_i = [P_x / 1-P_x]$

$\text{Log [odds ratio]} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \ldots + \beta_n x_n$

$Odds_i = [P_x / 1-P_x] = e^{\beta 0 + \beta 1\, x1 + \beta 2\, x2 + \beta 3\, x3 + \ldots + \beta n\, xn}$

Where

Px is the probability of use

1-Px is the probability of non-use

$\beta_0$ = coefficient for intercept

$\beta_{1=}$ coefficient for predictor 1

$X_1$= predictor 1

When there is no assumption of normality, linearity, or homoscedacity, this test is used. (Healy, 2006).

**Ethical Consideration:** Data for this study were de-identified and is accessible online https://dhsprogram.com. Permission and access to the dataset was granted after an online application via the website. The National Health and Research Ethics Committee of Nigeria (NHREC) and the ICF Institutional Review Board reviewed and approved the survey protocol(NPC and ICF, 2019). Informed consent was granted by the study participants before data collection.

### ***4.4.0*** *RESULTS*

The first part of this section presents the distribution of the respondents by demographic, socio-economic characteristics, and reproductive characteristics; as well as their knowledge, contraceptive behaviour. An awareness of the background characteristics of the study population will enhance a clear understanding of the findings in the latter part of this study.

Respondents' background characteristics are presented using descriptive analysis. The descriptive analysis is divided into three sub-sections: demographic and socio-economic characteristics, reproductive characteristics, and knowledge and contraceptive behaviour. This is done using frequency and percentage distribution tables and pictorial chart as shown below.

Table 4.0.2, 4.0.3 and 4.0.4 depict the frequency and percentage distributions of respondents' characteristics, while table 4.0.5, 4.0.6, and 4.0.7 show the cross tabulations of the independent variables with the dependent variable. The latter part of the section contains table 4.0.8 shows the unadjusted and adjusted relative risk ratio of the relationship between respondents' characteristics and modern contraceptive use and intention; and table 8, which shows method type discontinued by respondents by reasons of discontinuation.

4.1 Description of Respondents' Characteristics, Modern Contraceptive Use and Intention.

*Table 4.0 2: Demographic and Socio-economic characteristics of Respondents*

| VARIABLE | FREQUENCY N=983 | PERCENTAGE % |
|---|---|---|
| AGE | Mean=17.62 | SD=1.22 |
| 15 | 63 | 6.4 |
| 16 | 121 | 12.3 |
| 17 | 185 | 18.8 |
| 18 | 326 | 33.1 |
| 19 | 289 | 29.4 |
| PLACE OF RESIDENCE | | |
| Urban | 498 | 50.6 |
| Rural | 486 | 49.4 |
| EDUCATIONAL ATTAINMENT | | |
| No Education | 54 | 5.5 |
| Incomplete Primary | 25 | 2.5 |
| Complete Primary | 65 | 6.6 |
| Incomplete Secondary | 434 | 44.1 |
| Complete secondary | 348 | 35.4 |
| Higher | 59 | 6.0 |
| REGION OF RESIDENCE | | |
| North Central | 221 | 22.5 |
| North East | 98 | 9.9 |
| North West | 35 | 3.6 |
| South East | 160 | 16.3 |
| South South | 252 | 25.6 |
| South West | 218 | 22.2 |
| RELIGION | | |
| Catholic | 181 | 18.5 |
| Other Christians | 601 | 61.1 |
| Islamic &Others | 201 | 20.4 |
| ETHNICITY | | |
| Hausa | 68 | 6.9 |
| Yoruba | 201 | 20.5 |
| Igbo | 198 | 20.1 |
| Others | 516 | 52.5 |
| HOUSEHOLD WEALTH | | |
| Poorest | 72 | 7.4 |
| Poorer | 154 | 15.7 |
| Middle | 254 | 25.8 |
| Richer | 280 | 28.5 |
| Richest | 223 | 22.6 |
| USE OF INTERNET | | |
| Never | 698 | 71.0 |
| Yes, last 12 months | 244 | 24.8 |
| Yes, before last 12 months | 41 | 4.2 |

WEIGHTED FREQUENCIES AND PERCENTAGES SOURCE: NDHS2018

Table 4.0.2 above shows the weighted frequencies and percentages of the respondents' demographic and socio-economic characteristics. The mean age of respondents is 17.6±1.2 years. Forty-four percent of the respondents did not complete secondary school education while 5.5% have no formal education. One-quarter of the respondents (25.6%) are residents in the South-south region, while 22.5% reside in the North central region, 22.2% are in the South-west, 16.3% reside in the South-east, 9.9% North-eastern region, and 3.6% in the North-west. Respondents are almost evenly split between the two areas 50.6% in Urban areas and 49.4% in Rural areas. Most of the respondents are Christians (61.1%) and 18.5% are Catholics. More than half of the respondents (52.5%) belong to other ethnic groups apart from Hausa, Igbo, and Yoruba. More than one-quarter of the sample are from the richer household (28.5%) while, 7.4% are from the poorest household. Of the whole sample ,71% have never use internet only about 2.8% used internet in the last 12 months before the survey.

*Table 4.0 3: Frequency and percentage distribution of respondents' reproductive characteristics.*

| VARIABLE | FREQUENCY N=983 | PERCENTAGE % |
|---|---|---|
| AGE AT FIRST SEX | | |
| Less than 15years | 194 | 18.3 |
| Age 15 and above | 866 | 81.7 |
| NATURE OF FIRST SEX | | |
| Forced | 32 | 3.2 |
| Not forced | 952 | 96.8 |
| NUMBER OF SEX PARTNERS LAST 12 MONTHS | | |
| None | 219 | 22.3 |
| One | 708 | 72.0 |
| More than one | 56 | 5.7 |
| LAST SEXUAL ACTIVITY | | |
| Active in last 4 weeks | 293 | 29.8 |
| Not active-Postpartum | 49 | 4.9 |
| Not active -not postpartum | 642 | 65.3 |
| BIRTH HISTORY | | |
| None | 888 | 90.4 |
| Yes | 95 | 9.7 |
| ABORTION HISTORY | | |
| None | 963 | 98.0 |
| Yes | 20 | 2.1 |

SOURCE: NDHS 2018

Most of the respondents 81.7% had their first sex at age 15 and after, 96.8% report their first sex to be consensual, 72% report having only one sexual partner in the last 12 months preceding the survey. More than one-quarter of the respondents (29.8%) reported having sex in the last four weeks before the survey. Most of the respondents (90.4%) has never given birth, 2.1% reported ever committed abortion.

*Table 4.0 4: Frequency and Percentage distribution of Respondents' Knowledge, Use and Intention.*

| VARIABLE | FREQUENCY N=983 | PERCENTAGE % |
|---|---|---|
| KNOWLEDGE OF ANY METHOD | | |
| Knows no method | 40 | 4.1 |
| Knows modern method | 943 | 95.9 |
| CONTRACEPTIVE USE AND INTENTION | | |
| Modern Method | 155 | 15.8 |
| Traditional Method | 31 | 3.2 |
| Non-user, intends to use later | 482 | 49.0 |
| Does not intend to use | 315 | 32.0 |

SOURCE: NDHS 2018

Most of the respondents know at least one modern method of contraception (95.9%) whereas 84.2% does not know where to get modern contraceptive. Almost half (49%) of the respondents are not currently using any method of contraception but intend to use later, 32% are not using and do not intend to use, 3.2% are using traditional method and 15.8% are using a modern method of contraception.

*Figure 13: Modern contraceptive use among sexually active unmarried adolescents in Nigeria.*

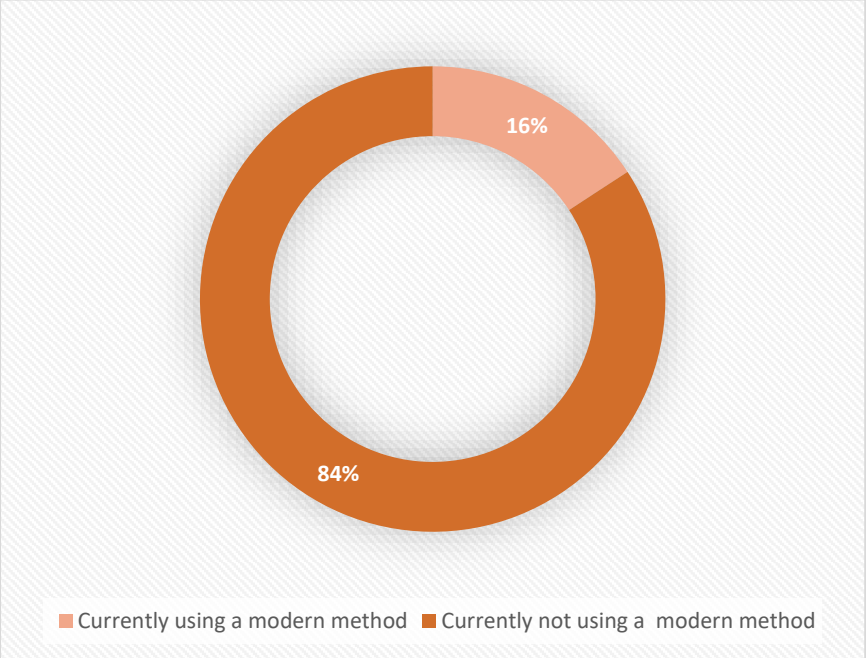
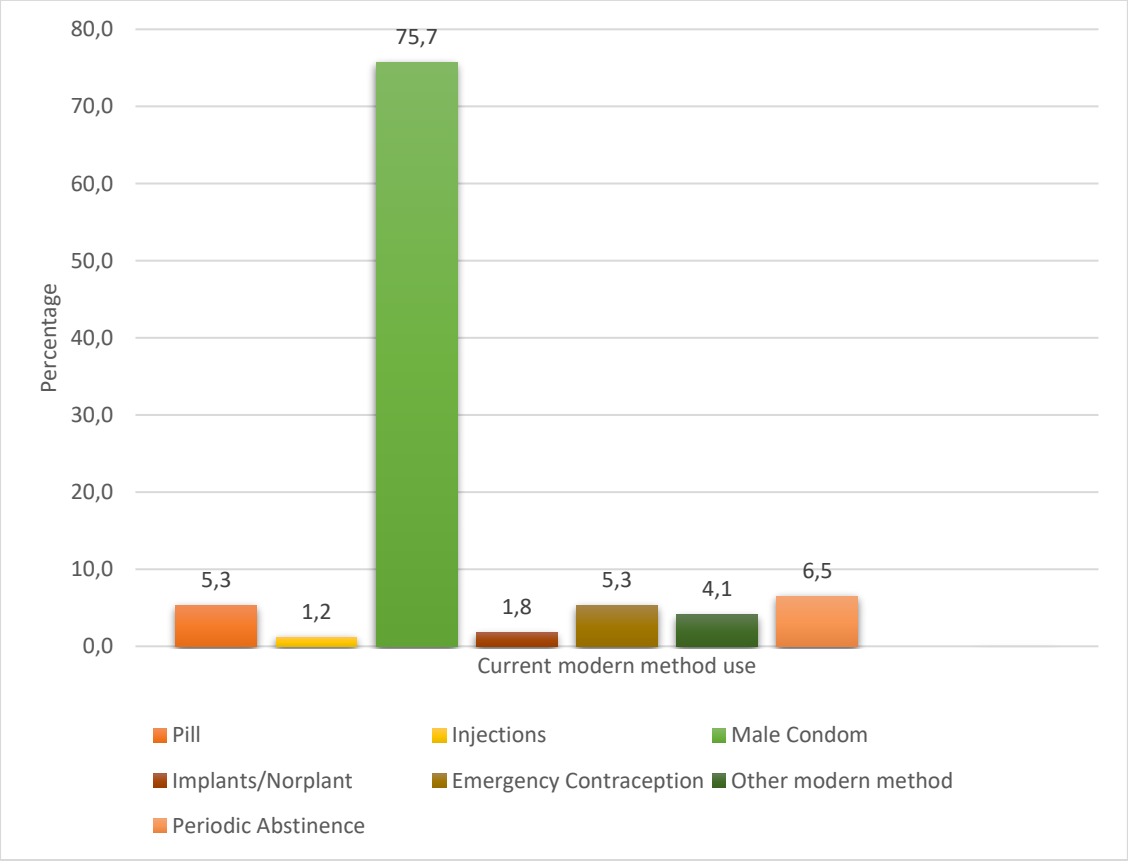
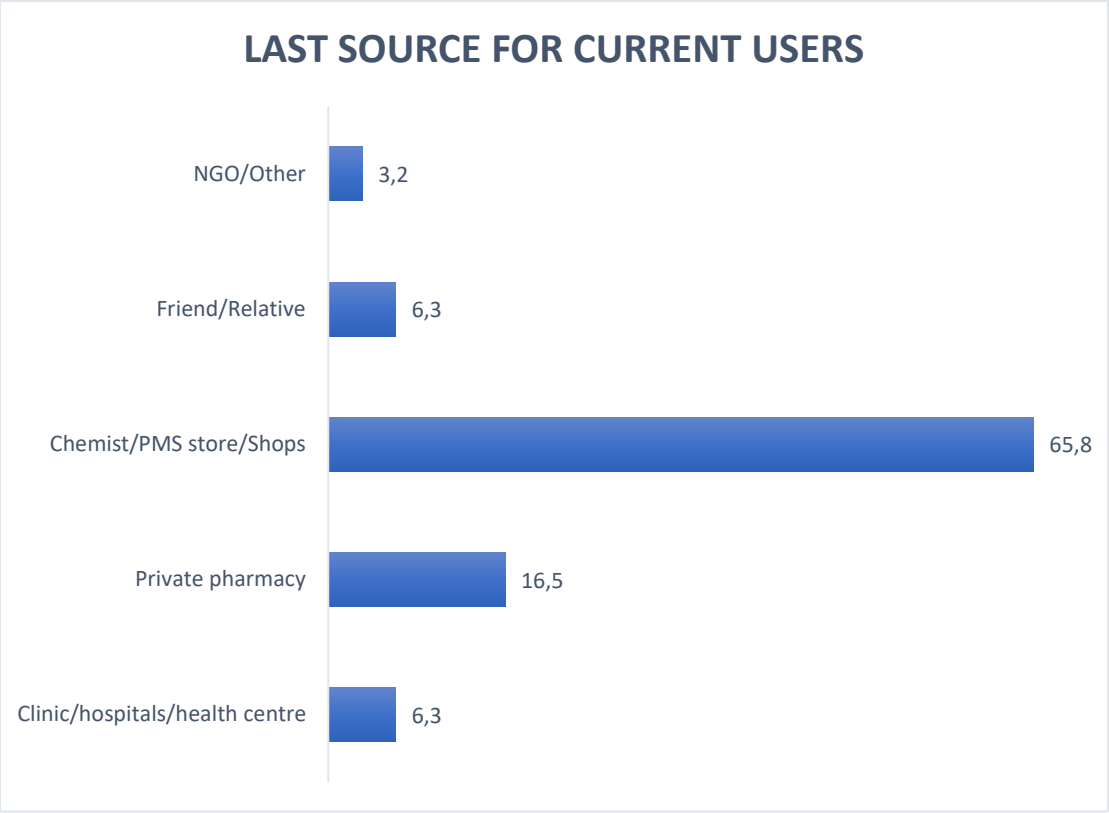



*Figure 14: Type of modern contraceptive use by sexually active unmarried adolescents (15-19 years) in Nigeria.*



Majority of the respondents who are currently using a modern method of contraception, use male condom (75.7%), while long-acting methods (Implants/Norplants and Injections) are least common.

*Figure 15: Percentage distribution of source of modern contraceptives for current users*




From the figure above, Private chemists/Patent Medicine store /Shops are the major source of modern contraceptive for sexually active unmarried adolescents in Nigeria.

**OBJECTIVE ONE: The socio-economic and demographic factors associated with modern contraceptive use and intention.**

4.2.1 Description of Modern Contraceptive Use and Intention by Respondents' Characteristics

***Table** 4.0 5: Percentage distribution of respondent demographic and socio-economic characteristics by modern contraceptive use and Intention.*

| | NOT USING& DOES NOT INTEND TO USE=31.99% | | USING MODERN METHOD=15.76 | | USING TRADITIONAL METHOD=3.2% | | INTEND TO USE LATER=49.05% | |
|---|---|---|---|---|---|---|---|---|
| VARIABLE | FREQUENCY | PERCENTAGE | FREQUENCY | PERCENTAGE | FREQUENCY | PERCENTAGE | FREQUENCY | PERCENTAGE |
| AGE | | | | | | | | |
| 15 | 25 | 40.6 | 4 | 6.9 | 1 | 0.8 | 32 | 51.6 |
| 16 | 42 | 34.6 | 16 | 13.0 | 4 | 3.0 | 60 | 49.4 |
| 17 | 53 | 28.9 | 15 | 8.1 | 7 | 4.1 | 109 | 58.9 |
| 18 | 101 | 30.9 | 65 | 19.9 | 9 | 2.8 | 151 | 46.4 |
| 19 | 93 | 32.3 | 55 | 19.1 | 11 | 3.7 | 130 | 45.0 |
| Mean Age | 17.54 | SD=1.29 | 17.88 | SD=1.10 | 17.59 | SD=1.16 | 17.61 | SD=1.19 |
| PLACE OF RESIDENCE | | | | | | | | |
| Urban | 154 | 30.9 | 79 | 16.0 | 16 | 3.3 | 248 | 49.9 |
| Rural | 161 | 33.1 | 76 | 15.6 | 15 | 3.1 | 234 | 48.2 |
| EDUCATIONAL ATTAINMENT | | | | | | | | |
| No Education | 31 | 58.2 | 7 | 12.1 | 0 | 0 | 16 | 29.6 |
| Incomplete Primary | 9 | 37.9 | 3 | 10.4 | 0 | 0 | 13 | 51.6 |
| Complete Primary | 21 | 32.0 | 6 | 10.0 | 2 | 2.7 | 36 | 55.3 |
| Incomplete Secondary | 127 | 29.4 | 58 | 13.3 | 13 | 3.0 | 235 | 54.3 |
| complete secondary | 109 | 31.3 | 69 | 19.8 | 17 | 4.8 | 153 | 44.1 |
| Higher | 9 | 37.9 | 13 | 21.9 | 0 | 0 | 29 | 49.7 |
| REGION | | | | | | | | |
| North Central | 73 | 33.1 | 23 | 10.2 | 3 | 1.5 | 122 | 55.2 |
| North East | 30 | 30.4 | 27 | 28.1 | 0 | 0.0 | 40 | 41.5 |
| North West | 3 | 8.5 | 4 | 11.4 | 0 | 0.0 | 28 | 80.1 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| South East | 51 | 31.9 | 26 | 16.5 | 8 | 5.3 | 74 | 46.4 |
| South South | 93 | 36.8 | 50 | 19.8 | 15 | 6.0 | 94 | 37.4 |
| South West | 65 | 29.9 | 25 | 11.3 | 5 | 2.2 | 123 | 56.6 |
| RELIGION | | | | | | | | |
| Catholic | 49 | 27.3 | 25 | 13.9 | 12 | 6.7 | 95 | 52.1 |
| Other Christian | 192 | 32.0 | 106 | 17.6 | 16 | 2.7 | 286 | 47.7 |
| Islam & others | 73 | 36.2 | 24 | 11.8 | 3 | 1.5 | 101 | 50.5 |
| ETHINICITY | | | | | | | | |
| Hausa | 17 | 24.5 | 11 | 15.8 | 0 | 0.0 | 40 | 59.7 |
| Yoruba | 63 | 31.4 | 26 | 12.7 | 6 | 2.8 | 107 | 53.1 |
| Igbo | 61 | 30.9 | 36 | 18.1 | 8 | 4.2 | 93 | 46.8 |
| Others | 174 | 33.6 | 83 | 16.1 | 17 | 3.4 | 242 | 46.9 |
| WEALTH INDEX | | | | | | | | |
| Poorest | 27 | 37.2 | 5 | 6.4 | 0 | 0.0 | 41 | 56.3 |
| Poorer | 47 | 30.7 | 29 | 18.8 | 5 | 2.9 | 73 | 47.5 |
| Middle | 79 | 30.9 | 41 | 16.3 | 7 | 2.8 | 127 | 50.0 |
| Richer | 81 | 28.8 | 43 | 15.4 | 13 | 4.7 | 143 | 51.1 |
| Richest | 81 | 36.5 | 37 | 16.5 | 7 | 3.0 | 98 | 44.1 |
| INTERNET USE | | | | | | | | |
| Never | 240 | 34.4 | 96 | 13.7 | 12 | 1.8 | 350 | 50.2 |
| Yes, last 12 months | 59 | 24.0 | 50 | 20.3 | 16 | 6.5 | 120 | 49.3 |
| Yes, before last 12 months | 16 | 39.6 | 10 | 23.8 | 3 | 8.0 | 12 | 28.6 |

Source: NDHS2018

One-fifth of respondents who are 18 years old are currently using a modern method while only 6.9% of respondents who are 15 years old are using. 58.9% of respondents who are 17 years old and 45% of those aged 19 intend to use later. The prevalence of use in the two areas of place of residence are almost the same. The prevalence of modern method of contraception increases with educational attainment 12.1% for no education

to 21.9% in Tertiary education.55.3% of those who only complete primary education and 29.6% of those with no education intend to use a method later.

One-tenth of respondents in North Central are using a modern method, 28.1% of respondents in North-East are using while 55.2% and 41.5% respectively are not using but intend to use a method later. 11.8% of Islamist and others are using a modern method while half of the same group intend to use later 18.1% of Igbo respondents are using a modern method while 12.7% of the Yoruba respondents are using; 46.8% and 53.1% respectively intends to use a method later. 6.4% of respondent from poorest household are using a modern method while 56.3% intends to use a method later. 20.3% of respondents who use internet in the last 12 months of the survey are using a modern method while 49.3% are not using but intends to use a method later.

Table 4.0 6: Percentage distribution of respondents' reproductive characteristics by modern contraceptive use and Intention

| | NOT USING& DOES NOT INTEND TO USE=32% | | USING MODERN METHOD=15.8% | | USING TRADITIONAL METHOD=3.2% | | INTEND TO USE LATER=49.1% | |
|---|---|---|---|---|---|---|---|---|
| VARIABLE | FREQUENCY | PERCENTAGE | FREQUENCY | PERCENTAGE | FREQUENCY | PERCENTAGE | FREQUENCY | PERCENTAGE |
| AGE AT FIRST SEX | | | | | | | | |
| Less than 15 years old | 64 | 37.2 | 27 | 15.5 | 2 | 1.1 | 80 | 46.2 |
| 15 years old and above | 251 | 30.9 | 128 | 15.8 | 30 | 3.7 | 403 | 49.7 |
| NATURE OF FIRST SEX | | | | | | | | |
| Not Coerced | 299 | 31.4 | 151 | 15.8 | 31 | 3.3 | 471 | 49.5 |
| Coerced | 16 | 49.3 | 4 | 13.7 | 0 | 0.0 | 12 | 37.0 |
| NUMBER OF SEX PARTNERS IN THE LAST 12 MONTHS | | | | | | | | |
| None | 87 | 39.7 | 10 | 4.5 | 1 | 0.3 | 122 | 55.6 |
| One | 219 | 30.9 | 126 | 17.8 | 26 | 3.7 | 337 | 47.6 |
| More than one | 9 | 15.8 | 19 | 33.8 | 5 | 9.1 | 23 | 41.3 |
| LAST SEXUAL ACTIVITY | | | | | | | | |
| Active in last 4 weeks | 82 | 27.9 | 66 | 22.6 | 19 | 6.4 | 126 | 43.1 |
| Not active-Postpartum | 17 | 34.4 | 1 | 1.1 | 0 | 0.0 | 31 | 64.5 |
| Not active -not postpartum | 216 | 33.7 | 88 | 13.8 | 13 | 2.0 | 325 | 50.6 |
| BIRTH HISTORY | | | | | | | | |
| None | 283 | 31.8 | 145 | 16.3 | 30 | 3.4 | 431 | 48.5 |
| Yes | 32 | 33.7 | 10 | 11.0 | 1 | 1.2 | 51 | 54.2 |
| ABORTION HISTORY | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| None | 309 | 32.1 | 149 | 15.5 | 30 | 3.1 | 475 | 49.3 |
| Yes | 6 | 29.1 | 6 | 28.4 | 1 | 6.7 | 7 | 35.8 |

SOURCE: NDHS 2018

Out of sexually active unmarried adolescents aged 15-19 years in Nigeria, 15.8% are using modern method of contraception while 49.1% intends to use any method later. Of those who had their first sex at age 15 and above, 15.8% are using a modern method while 49.7% of the same group intends to use a method later.

A little above one-tenth of respondents who experienced coerced first sex are currently using a modern method (13.7%) while 37% intends to use later.

A third of respondents with more than one sexual partner in the last 12 months before the survey are using a modern method (33.8%) while only 17.8% of those with only one sexual partner within the same period uses a modern method; 41.3% and 47.6% of the same group respectively intend to use later.

Approximately one-fifth of those who had sex in the last four weeks before the survey are currently using a modern method (22.6%) and 43.1% are not using but intends to use a method later11% of those who has given birth are using a modern method while 54.2% intends to use later

More than one-quarter of those who has history of abortion are using a modern method of contraception while 35.8% of the same people intends to use later.

*Table 4.0 7: Percentage distribution of Respondents' Contraceptive Knowledge by modern contraceptive use and Intention*

| | NOT USING& DOES NOT INTEND TO USE=32.0% | | USING MODERN METHOD=15.8 | | USING TRADITIONAL METHOD=3.2% | | INTEND TO USE LATER=49.1% | |
|---|---|---|---|---|---|---|---|---|
| VARIABLE | FREQUENCY | PERCENTAGE | FREQUENCY | PERCENTAGE | FREQUENCY | PERCENTAGE | FREQUENCY | PERCENTAGE |
| KNOWLEDGE OF ANY METHOD | | | | | | | | |
| Knows no method | 22 | 54.9 | 0 | 0 | 0 | 0 | 18 | 45.1 |
| Knows modern method | 292 | 31.0 | 155 | 16.4 | 32 | 3.3 | 464 | 49.2 |

SOURCE: NDHS 2018

16.4% of those who knows at least a modern method are currently using a method while 49.2% intends to use later.

*Table 4.0 8: Demographic and Socio-economic risk factors of contraceptive behaviour (use and intention) among sexually active unmarried adolescents in Nigeria.*

| | **UNADJUSTED RELATIVE RISK RATIO** | | **ADJUSTED RELATIVE RISK RATIO** | |
|---|---|---|---|---|
| **VARIABLE** | **MODERN METHOD** | **NOT USING BUT INTEND TO USE LATER** | **MODERN METHOD** | **NOT USING BUT INTEND TO USE LATER** |
| AGE | | | | |
| 15 | | | | |
| 16 | 2.192[0.679-7.076] | 1.124[0.585-2.158] | 2.373[0.672-8.371] | 1.041[0.509-2.127] |
| 17 | 1.649[0.513-5.301] | 1.603[0.867-2.963] | 1.793[0.504-6.378] | 1.248[0.619-2.515] |
| 18 | 3.778*[ 1.303-10.957] | 1.184[0.665-2.110] | 3.725*[1.130-12.281] | 0.999[0.506-1.975] |
| 19 | 3.464*[ 0.062-0.472] | 1.099[0.613-1.970] | 3.522*[ 1.043-11.896] | 0.933[0.463-1.880] |
| RESIDENCE | | | | |
| Urban | | | | |
| Rural | 0.908[0.618-1.335] | 0.900[0.678-1.196] | 1.006[0.618-1.638] | 0.937[0.656- 1.338] |
| EDUCATIONAL ATTAINMENT | | | | |
| No education | | | | |

| | | | | |
|---|---|---|---|---|
| Incomplete primary | 1.316[0.262-6.615] | 2.672[0.949-7.524] | 2.413[0.415-14.041] | 3.030*[1.036-8.862] |
| Complete primary | 1.501[0.443-5.083] | 3.385*[1.506-7.608] | 2.808[0.715-11.031] | 3.650*[1.537-8.665] |
| Incomplete secondary | 2.171[1.239-7.405] | 3.624*[ 1.912- 6.867] | 2.856[0.985-8.283] | 4.071*[2.005-8.264] |
| Complete secondary | 3.029*[ 1.239-7.405] | 2.766*[1.444-5.297] | 3.301*[1.105-9.865] | 3.136*[1.479-6.646] |
| Higher | 3.698*[1.216-11.247] | 3.442*[1.469-8.061] | 2.454[0.640-9.415] | 3.005*[1.115-8.099] |
| REGION | | | | |
| North-central | | | | |
| North-east | 2.991*[1.483-6.031] | 0.816[0.469-1.423] | 2.559*[1.132-5.784] | 0.885[0.476-1.646] |
| North-west | 4.343[0.904-20.865] | 5.662*[.661-19.300] | 4.130[0.809-21.082] | 6.436*[1.822-22.723] |
| South-east | 1.672[0.859-3.255] | 0.872[0.551-1.381] | 1.536[0.734-3.214] | 0.755[0.456-1.251] |
| South-south | 1.743[0.972-3.126] | 0.608*[0.404-0.914] | 1.336[0.705-2.531] | 0.562*[0.361-0.873] |
| South-west | 1.225[0.632-2.373] | 1.133[0.746-1.720] | 0.908[0.432-1.909] | 1.090[0.682-1.740] |
| ETHNICITY | | | | |
| Hausa | | | | |
| Yoruba | 0.631[0.258-1.546] | 0.694[0.362-1.329] | | |
| Igbo | 0.911[0.381-2.180] | 0.623[0.323-1.201] | | |
| Others | 0.744[0.330-1.676] | 0.576[0.313-1.047] | | |
| WEALTH INDEX | | | | |
| Poorest | | | | |
| Poorer | 3.549*[1.197-10.519] | 1.024[0.557-1.883] | 4.329*[1.32-14.176] | 0.968[0.502-1.867] |
| Middle | 3.039*[1.060-8.712] | 1.068[0.609-1.874] | 3.226*[1.006-10.345] | 0.879[0.471- 1.641] |
| Richer | 3.104*[1.085-8.875] | 1.176[0.673-2.055] | 2.979[0.894-9.928] | 0.930[0.485-1.783] |
| Richest | 2.617[0.908-7.536] | 0.799[0.452-1.411] | 2.390[0.680-8.398] | 0.644[0.319- 1.302] |
| INTERNET USE | | | | |
| Never | | | | |
| Yes, last 12 months | 2.123*[1.358-3.317] | 1.408[0.989-2004] | 1.919*[1.099-3.353] | 1.609*[1.044- 2.481] |
| Before last 12 months | 1.503[0.656-3.445] | 0.495[0.229-1.068] | 1.379[0.535-3.550] | 0.571[0.250-1.308] |
| AGE AT FIRST SEX | | | | |
| Less than 15 years old | | | | |
| 15 years and above | 1.227[0.745-2.021] | 1.294[0.898-1.864] | 0.655[0.359-3.353] | 1.293[0.831-2.012] |

| | | | | |
|---|---|---|---|---|
| NATURE OF FIRST SEX | | | | |
| Not coerced | | | | |
| Coerced | 0.550[0.187-1.620] | 0.477[0.221-1.030] | | |
| NUMBER OF SEXUAL PARTNER IN THE LAST 12 MONTHS | | | | |
| None | | | | |
| One | 5.064*[2.533-10.125] | 1.101[0.797-1.521] | 4.085*[1.940-8.598] | 1.053[0.726-1.527] |
| More than one | 18.747*[6.664-52.736] | 1.863[0.818-4.240] | 11.284*[3.610-35.272] | 2.153[0.875-5.297] |
| LAST SEXUAL ACTIVITY | | | | |
| Active in last 4 weeks | | | | |
| Not active in last 4 weeks-postpartum abstinence | 0.038*[0.002-0.619] | 1.216[0.63-2.343] | 0.071[0.004-1.204] | 1.470[0.703-3.076] |
| Not active in last 4 weeks-non postpartum abstinence | 0.505*[0.336- 0.759] | 0.974[0.702-1.350] | 0.765[0.477-1.228] | 1.061[0.727-1.548] |
| BIRTH HISTORY | | | | |
| None | | | | |
| Yes | 0.637[0.308-1.318] | 1.053[0.661-1.679] | | |
| ABORTION HISTORY | | | | |
| None | | | | |
| Yes | 2.020[0.629-6.487] | 0.800[0.267-3.397] | | |
| KNOWLEDGE OF MODERN METHOD | | | | |
| No | | | | |
| Yes | # | 1.932*[1.022-3.650] | # | 1.346[0.664-2.727] |

NOTE: T*he probability of choosing all possible outcome categories equal 1 with traditional category not presented.* *SOURCE: NDHS2018*

**significant at p-value<0.05, 95% confidence interval in parenthesis, # infinity value. Convergence was not reached for variable 'knowledge of source' hence, it was excluded from analysis.*

The relative risk ratio of currently using modern method vs not using and not intending to use is 3.778*[1.303-10.957] for respondents who are 18years. Controlling for other variables in the model, adolescent who are 18 years are more likely to be currently using modern contraceptive,

rather than not using and not intending to use compared the 15 years olds (ARRR=3.725, CI=1.130-12.281). It is most likely for an adolescent to be using modern contraceptive rather than not using and intending to use if she is 19 years old (RRR=3.464, CI= 0.062-0.472). after controlling for other variables in the model the risk of currently using modern method as opposed not using and not intending to use is higher for adolescents who are 19 years old than those who are 15 years old (ARRR= 3.522, CI= 1.043-11.896).

There is no association between age and intention to use contraceptive later vs not using and not intending to use at p-value <0.05.

Adolescents who completed secondary school are three times more likely to be currently using modern contraceptive vs not using and not intending to use as those who have no education at p-value <0.05 (RRR=3.029, CI=1.239-7.405). Adjusting for other variables in the model, those completed secondary education are more likely to be using a modern method (RRR=3.301, CI=1.105-9.865).

Those with higher education are more likely to be using modern contraceptive compared to those with no education (RRR=3.698, CI=1.216-11.247).

Adolescent who completed primary education, with secondary education or higher education are more likely to not use but intend to use later compared to adolescents with no education at all (RRR=3.385, CI=1.506-7.608; RRR=3.624, CI=1.912- 6.867; RRR=2.766, CI=1.444-5.297; RRR=3.442, CI=1.469-8.061 respectively). After controlling for other variables, the risk of intending to use a method later is more for adolescents.

With education compared to those with no education (ARRR=3.030, CI=1.036-8.862; ARRR=3.650, CI=1.537-8.665; ARRR=4.071, CI=2.005-8.264; ARRR=3.136, CI=1.479-6.646; ARRR=3.005, CI=1.115-8.099).

Adolescents in North-east Nigeria are more likely to be using modern contraceptive rather than not using and not intending to use later compared to adolescents in North-central Nigeria (RRR=2.991, CI=1.483-6.031).

Controlling for other variables in the model, the risk of using modern contraceptive is higher for adolescents in North-east Nigeria compared to those in North-Central part of the country (ARRR=2.559, CI=1.132-5.784). Adolescents in the south south are less likely to intend to use a method later compared to those in North central Nigeria, even after controlling for other variables in the model (RRR=0.608, CI=0.404-0.914; ARRR=0.562, CI=0.361-0.873).

Adolescents in poorer household are more likely to be using modern contraceptive than not using and not intending to use compared to adolescents in poorest household at p-value<0.05

even after controlling for other variables in the model (RRR=3.549, CI=1.197-10.519; ARRR=4.329, CI=1.32-14.176).

Adolescents in middle wealth household and those in richer household are more likely to be using a modern method than not using and not intending to use compared to the adolescents in poorest household at p-value<0.05 (RRR=3.039, CI=1.060-8.712, RRR=3.104, CI=1.085-8.875 respectively). Controlling for other variables, adolescent in middle wealth household are more likely to be using modern contraceptive (ARRR=3.226, CI=1.006-10.345).

Adolescents who used internet within the last 12 months before the survey are more likely to be using a modern method than not using and not intending to use compared to adolescents who has never used internet (RRR=2.123, CI=1.358-3.317), adjusting for other variables adolescent who uses internet are more likely to be using a modern method of contraceptive than not using and not intending to use compared to those who never used internet (ARRR=1.919, Cl=1.099-3.353).

After adjusting for other variables, adolescents who used internet in the last 12 months before the survey are more likely to intend to use a modern contraceptive than not intending to use compared to those who has never used the internet (ARRR=1.609, CI=1.044- 2.481).

Adolescents who had a sexual partner in the last 12 months preceding the survey are more likely to be using a modern method than not using and not intending to use compared to adolescent who had no sexual partner in the last 12 months before the survey at p-value<0.05 (RRR=5.064, CI=2.533-10.125).Controlling for other variables adolescents had a sexual partner within the last 12 months before the survey are more likely to be using a modern method than not using and not intending to use at p-value <0.05 compared to adolescents who had no sexual partner at the same period (ARRR=4.085, CI=1.940-8.598).

Adolescents who had more than one sexual partner are more likely to be using a modern method than not using and not intending to use compared to adolescents with no sexual partner in the last 12 months before the survey (RRR=18.747, CI=6.664-52.736). Controlling for other variables adolescents who had more than one sexual partner are more likely to be using a modern method than not using and not intending to use compared to adolescents with no sexual partner in the last 12 months before the survey (ARRR=11.284, CI=3.610-35.272).

Adolescents who did not had sex in the last 4 weeks due to postpartum abstinence before the survey are less likely to be using a modern method than not using and not intending to use compared to adolescents who had sex in the last 4 weeks before the survey (RRR=0.038, CI=0.002-0.619).

Adolescents non postpartum who did not had sex in the last 4 weeks before the survey are less likely to be using a modern method than not using and not intending to use compared to adolescents who had sex in the last 4 weeks before the survey (RRR=0.505, CI=0.336- 0.759). Adolescents who know at least a modern method are more likely to intend to use a method later than not intending to use later compared to those who do not know any modern method (RRR=1.932, CI= 1.022-3.650).

**Sub-objective two**: The association between perceived susceptibility to pregnancy and modern contraceptive use among sexually active unmarried adolescent aged 15-19 years in Nigeria.

*Description of Respondents*

*Table 4.0 9:* Frequency and percentage distribution of respondents by perceived susceptibility and mass media.

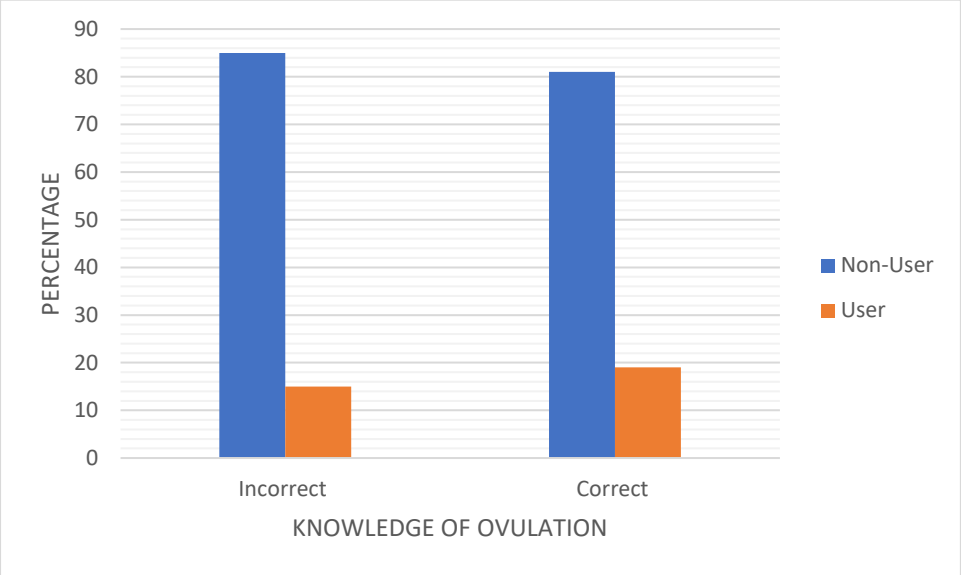
| VARIABLE | FREQUENCY | PERCENTAGE |
|---|---|---|
| KNOWLEDGE OF OVULATION | | |
| Incorrect | 792 | 81.0 |
| Correct | 191 | 19.0 |
| FECUNDITY | | |
| Fecund | 945 | 96.1 |
| Infecund | 39 | 3.9 |
| HEARD OF FAMILY PLANNING MESSAGE ON MASSMEDIA | | |
| No | 696 | 70.8 |
| Yes | 287 | 29.2 |
| Total | 983 | 100.0 |

*Source: NDHS 2018*

From the table above, less than one-fifth of the respondents have correct knowledge of ovulation. Very few reported infecundability (menopausal (14), postpartum amenorrheic(41)).

***Prevalence of modern contraceptive use***

Figure 16*: Graphical representation of knowledge of Ovulation and current use of Modern contraceptive.*




The prevalence of modern contraceptive use is higher among adolescents who have correct knowledge of ovulation.

***Table** 4.0 10:* Prevalence of modern contraceptive use by perceived susceptibility and mass media.

| VARIABLE | Non-User | User |
|---|---|---|
| **Knowledge of ovulation** | | |
| Incorrect | **673(85%)** | **119(15%)** |
| Correct | **155(81%)** | **36(19%)** |
| **Fecundity** | | |
| Fecund | **790 (83.6%)** | **154(16.3%)** |
| Infecund | **38 (98.6%)** | **0.5(1.4%)** |
| **Heard of family planning message on mass media** | | |
| No | **593(85.2%)** | **103(14.8%)** |

| | | |
|---|---|---|
| Yes | **235(82.0%)** | **52(18.0%)** |
| **Total** | **828(84%)** | **155(16%)** |

The prevalence of modern contraceptive use is higher among adolescents who reported fecundity (16.3%). 18% of adolescents who listens/read family planning message on the mass media use modern contraceptive.

***Table** 4.0 11*: Odds ratio of perceived susceptibility and mass media association with modern contraceptive use.

| | **UNADJUSTED** | | **ADJUSTED** | |
|---|---|---|---|---|
| **VARIABLE** | **ODD-RATIO** | **95% CONFIDENCE INTERVAL** | **ODD-RATIO** | **95% CONFIDENCE INTERVAL** |
| **KNOWLEDGE OF OVULATION** | | | | |
| INCORRECT | *RC* | | | |
| CORRECT | **1.235** | **0.825-1.848** | | |
| **FECUNDITY** | | | | |
| FECUND | *RC* | | | |
| INFECUND | **0.1000*** | **0.137-0.728** | **0.106*** | **0.014-0.780** |
| **HEARD ABOUT FAMILY PLANNING MESSAGE ON MASSMEDIA** | | | | |
| NO | *RC* | | | |
| YES | **1.198*** | **1.008-1.425** | **1.136** | **0.945-1.365** |

NOTE: Adjusted for age, education, wealth index, region. * significant at p<0.05. RC reference category.

There is no significant association between knowledge of ovulation and current use of modern contraceptive at 0.05 level of significance.

Respondents who reported being infecund are 90% less likely to use modern contraceptive compared to those who reported to be fecund [OR=0.100, CI 0.137-0.728]. Adjusting for other variables in the model, adolescents who reported being infecund are 89% less likely to use modern contraceptive compared to those who reported to be fecund [OR=0.106, CI 0.014-0.780].

Exposure to family planning messages on mass media is independently associated with current use of modern contraceptive. Adolescents exposed to messages are 20% more likely to use modern contraceptive compared to adolescents who do not read/listen to family planning messages on mass media [OR=1.198, CI 1.008-1.425].

### *4.5 DISCUSSION*

This study has tackled two specific objectives. First, it examined the levels and factors associated with of modern contraceptive use and intention among sexually active unmarried adolescents (15-19 years old) in Nigeria. Then, it examined the association between perceived susceptibility to pregnancy and modern contraceptive use among sexually active unmarried adolescent aged 15-19 years in Nigeria. In this study, the average age of sexually active unmarried adolescent in Nigeria is 17.6 years most of which have not completed secondary school. Most of them had their first sex at age 15 or later, had one sexual partner and had limited sexual activity. This reflects the level of exposure and frequency of sexual intercourse among unmarried adolescent in Nigeria. One-tenth of these adolescents are already mothers. Half of sexually active unmarried adolescents in Nigeria reported non-use with intention to use in the future. Living in the Northwestern part of the country, use of internet, and education are positive associated with postponing contraceptive use. By contrast living in the South-south is negatively associated with postponing use. Level of education has always been shown as a strong influence on the acceptance of contraceptive.

Although awareness of at least one modern method of contraceptive is high, the proportion of user is far lower than the knowledge. This corresponds with other studies in the country (Duru et al., 2015, Onasoga et al., 2016, Amoran, 2012). Generally, in sub-Saharan Africa, despite rising awareness and knowledge ,modern contraception has remained low(Blackstone et al., 2017). This study found that 15.8% of sexually active unmarried adolescents between ages 15 and 19 currently use a modern method of contraceptive. This is low compared to the overall average in the continent; 30.5% in West and Central Africa, 34.6% in Eastern and Southern Africa and to be specific 48.7% in Tanzania(de Vargas Nunes Coll et al., 2019, Nsanya et al., 2019), despite these, Ghana a close country recorded only 6% among the same population(Appiah et al., 2020). The most prevalent type of modern method among these adolescents is male condom, this result is consistent with a study conducted among adolescents in Kenya which discovered that condom is the predominantly used type (Agyemang et al., 2019). A population based study in South Africa also found that condom is the most preferred method among young people (Seutlwadi et al., 2012). Same as the findings in Imo state Nigeria, condom was the most reported type used (Duru et al., 2015). Several other studies have reported similar findings (Renjhen et al., 2010, Kelčíková et al., 2020). This could be because of easier access without medical prescription to condom as majority of users get method from chemists. This may also because of multimedia condom campaigns over the years. This may also reflect

the level of exposure and frequency of sexual intercourse which may not require a long-term contraception method and more importantly the dual protection against unintended pregnancy and sexually transmitted infections including HIV provided by male condom.

Majority of the respondents currently using a modern method get them from chemist, patent medicine shops (pms) and shops this is in contrast with some studies where it was found that health facilities is the major source(Abubakari et al., 2015, Agyemang et al., 2019). This could be because of the attitude of healthcare providers towards providing contraceptives to unmarried adolescents in Nigeria. Majority of healthcare providers perceives provision of contraceptives for unmarried adolescents as promoting sexual promiscuity(Ahanonu, 2014).

Predictably, age has a positive influence on modern contraception among unmarried adolescents in Nigeria. This is comparable with other studies (Ahinkorah et al., 2020).The use of contraceptives increases with age. It is expected that older adolescents may have a better access to methods also may have higher education which enables them to better understand the benefits of contraception. Younger adolescents can face several obstacles to access and use modern contraceptives such as providers bias because sexual activity is unacceptable among young girls in many settings including Nigeria.

In addition to these, adolescents who are highly educated are more likely to be using a modern method. Adolescents with secondary and higher education tend to use a modern method. Evidence from other studies also support this that higher education has the power to shape perceptions and attitudes towards contraception and dissolve every contrary belief about modern contraception also they may need to practice contraception to ensure that their educational pursuit are not cut-short by child bearing (Ajaero et al., 2016, Nsanya et al., 2019). Additionally, higher education has a potential to dissolve misconceptions against modern contraception.

The present study revealed that adolescents in North-eastern part of the country are more likely to use modern contraceptives compared with those in the North central.

Also, adolescents from the poorer household use modern contraceptive compared to adolescents in the poorest household in Nigeria. A good explanation could be to ensure a continued better quality of life. This supports findings from some studies that higher socioeconomic status of household is associated with higher uptake of contraceptives in the

country (Ajaero et al., 2016, Ahinkorah et al., 2020). It could also be that adolescents in the poorer household engage more in sexual activity for socio-economic support and as a result needs to protect themselves. Studies have shown that use is higher among those with multiple sexual partner (Essiben et al., 2018, Anyangu, 2010).

Remarkably, this study also found that exposure to internet is significantly associated with modern contraception. Precisely, adolescents who use internet use modern contraceptives as opposed those who has never used the internet. The use of internet will expose an adolescent to information on different topics, contraception inclusive. It could be that adolescents now resolve to the internet to get more information about their sexual and reproductive health since there are limited information in schools and homes. It has been argued that access to family planning messages is operational in altering negative attitude towards contraception (Ajaero et al., 2016). Having a sexual partner and more importantly multiple sexual partners is associated with use. This corresponds with findings among sexually active adolescents in Cameroun. It was found that having only one partner hinders modern contraceptive use (Essiben et al., 2018). It could be that frequency of sex is what determines use among these adolescents. Evidence from this study shows that frequency of sexual intercourse determines modern contraceptive use. This shows that sexual activity and mode of sexual relations among unmarried adolescents are not frequent.

The element of unmarried adolescent modern contraception in the developing countries is of high importance to policymakers and the public because of its implications. Therefore, it cannot be over-emphasized especially when the problem persists. Hence, this study contributes to the global debate on the determinants of adolescents' contraceptive use with focus on susceptibility to pregnancy and the socio-demographic circumstances related to modern contraceptive use and intention among sexually active unmarried adolescents aged 15-19 years in Nigeria. Age, education, and sexual activity are factors that positively influence modern contraceptive use. There is a need for dynamic propagation of orientation on adolescent reproductive health and contraception among adolescents in Nigeria particularly at the younger age and among the uneducated.

## *5.0 Chapter 5: Prevalence of and reasons for discontinuation of modern methods contraceptives among sexually active unmarried adolescent girls.*

The event of contraceptive discontinuation when a woman is not ready to get pregnant hampers her reproductive plans, causes unintended pregnancy, unsafe abortion which put her at risk of maternal morbidity and mortality. Seasonal or intermittent use of contraceptives in a growing population has effect on the population structure and has been found attributable to 35% of unwanted pregnancy in developing countries (Jain and Winfrey, 2017).

Young women are more likely than older women to stop using contraception and are even more likely to become pregnant while using especially adolescents who contribute additional 25 percent to contraceptive failure rate (Blanc et al., 2009). Young people discontinuation of contraceptives has serious implication especially for countries with young population as Nigeria, adolescents pregnancy can deter education and employment opportunities (Askew and Castle, 2015)

Nigerian population increases by at least 2.54% every year (O'Neill, 2021). Adolescents contribute significantly to new births annually. It is estimated that fifty percent of pregnancy among adolescents are unintended. In Nigeria where abortion is forbidden legally, abortions are often performed in unsafe environment by unskilled practioners resulting in serious complications this means that contraceptive discontinuation put Nigerian women at risk of maternal morbidity and mortality.

Contaception has high impact on maternal and child health outcomes with additional benefits for young people such as keeping them in school, employment potential and preventing early motherhood. Inspite of the benefits and efforts at all levels globally to encourage contraceptive use, over 200 million women of childbearing age in developing countries including adolescent girls are not ready to get pregnant but are not using contraceptives (Sully et al., 2020). It has also been reported that 38 percent of these women were formerly using contraceptive but discontinued for reasons other than getting pregnant (Jain et al., 2013).

Despite the knowledge on the need for contraceptives discontinuation is becoming more common among users who are still at risk of an unintended pregnancy. in Nigeria (Mobolaji et al., 2017). Comprehending contraceptive discontinuation is important because of its effect on women life course, most importantly for young women with self-motivated contraceptive behaviour (Manlove et al., 2011).

As efforts are been made to make sure women and couples can decide when to have babies. It's critical to look at the contributing variables to contraceptive discontinuation that can hinder young people from meeting their reproductive needs.

Several factors have been found to be associated with contraceptive discontinuation. Nigerian women of reproductive ages who experience intimate partner violence are more likely to discontinue use of contraceptive (Kupoluyi, 2020). Also, variation in ethnic group and other socio-economic characteristics are associated with contraceptive discontinuation (Mobolaji et al., 2017, Mekonnen and Wubneh, 2020). Lack of counselling on family planning from a health care provider and who made decision about the method to use also contribute to discontinuation (Mekonnen and Wubneh, 2020, Yifru et al., 2020).

Although, studies have established association between socio-economic characteristics of women and contraceptive discontinuation among all women. Little is known about unmarried adolescents who discontinues the use of contraceptives and the reasons behind it in Nigeria.

## *5.2 LITERATURE REVIEW*

DETERMINANTS OF CONTRACEPTIVE DISCONTINUATION

Globally it has been revealed that young women seldom use long-acting reversible contraceptive which is the most effective method. In few cases of use they are discontinued due to side effects.

In the US, a retrospective review of medical record was done on adolescents and young women who had long-acting contraceptive (LARC) device placed at an Adolescent special care clinic. Follow-up patterns and continuation rates during the first 6 months after initiation were examined. Patients who had an intrauterine device (IUD) or subdermal implants inserted within 24-48 hours were routinely called to ask how they are doing, they were further invited for follow-up clinical assessment at 2weeks, 6 months, and 12 months. Out of 180 patients who had a device inserted, 86% had clinical encounters at least once during the 6 months, 8% discontinued use with the majority among IUD users. The reasons for discontinuation reported were IUD expulsion, irregular bleeding, pain or cramping, interference with sex and behavioural changes (Jones et al., 2019).

Similarly in a western state in country, a study looked at the rates of discontinuation of intrauterine devices (IUDs) and contraceptive implants among adolescent and young women, as well as the extent to which baseline characteristics can predict discontinuation, the reasons

for discontinuation, and future contraceptive use. Study participants were English-speaking women between the ages of 13 and 24 from a family planning clinic which offers contraception to people below age 25. Between 2011 and 2013, 775 young women completed surveys and began using an IUD or implant. Before and after their contraceptive starting visits, participants filled out surveys. Medical data was checked and people who had started using an IUD or a contraceptive implant were contacted to see if they had stopped using it before 30 months. Data were gathered on the duration of usage, the reasons for termination, and the replacement technique chosen. Multivariable regression model was used to find factors linked to method discontinuation. Out of the participants, 633 women's 30-month discontinuation status was established. Among those with a known outcome, fewer IUDs than implant initiators had stopped using them. Participants who said it was "extremely important" to avoid pregnancy at the start of the study were approximately half as likely to stop using it. Pain (IUD) and bleeding were the most common reasons for cessation (implant) (Cohen et al., 2019).

A Qualitative study interviewed sixteen young women between the ages of 14 and 24 who visited outpatient adolescent, family medicine, and obstetrics and gynaecology clinics for the removal of their contraceptive implant within 6 months of its insertion were interviewed. To construct a thematic framework, transcripts were coded and analysed to find themes. How people make decisions about implant placement and removal, as well as the disparities between expected and actual adverse effects and counselling suggestions were examined. The report shows that the individuals experienced severe adverse effects that necessitated their removal, the most common of which were frequent or heavy bleeding and mood swings. Despite being warned about probable side effects, these healthy young women were completely unprepared for these symptoms. Instead of using broad phrases like irregular bleeding or mood swings, participants requested more specific instances of possible side effects and personal accounts from people who had experienced them. Few people talked to their providers about their issues; instead, they trusted the Internet or friends to help them determine when to take out the implant. Despite expressing a persistent intention to avoid pregnancy, nearly half of the individuals did not start using new contraception after being removed. Fewer IUDs had been abandoned than implant initiators among individuals with known outcomes. Participants who reported at the outset that avoiding pregnancy was "very important" were about half as likely to stop using. Pain (IUD) and bleeding were the most common reasons for stopping use (implant). Following the discontinuation of their original technique, the majority of individuals began using an additional method of contraception (Lunde et al., 2017).

Aside method-related issues and side effects, socio-economic and demographics factors also influence the discontinuation of modern contraceptives.

Common contraceptives method among reproductive-aged Thai women were studied for discontinuation rate and reasons. From the Chulalongkorn Hospital's Family Planning Clinic in Bangkok, 1880 women aged 18–45 years were recruited. Three, six, and twelve-month follow-ups were performed. The risks of stopping contraception were calculated using a Cox proportional hazards model. Menstrual irregularities were the most common reason for discontinuation for women who had stopped using COCs or DMPA but not the copper IUD. Higher parity, lower income, and history of miscarriage or abortion all predicted discontinuation of contraception in a multivariate model(Jaisamrarn et al., 2021).

A quantitative study was done to find out why Iranian women stop using Low Dose contraceptives. The study ran from 2003 to 2006. 462 women from Tabriz, a city in northwest Iran, were sampled from 13 randomly chosen health centres. Data analysis used inferential statistical tests. The most common reasons for withdrawal were anger, nausea, and pregnancy trend. Continued use of OCPs as first method, strong information source, method satisfaction, husbands' job, and literacy level were predictors of continuation. (Kamalifard et al., 2014).

In Brazil, a study investigates the prevalence and associated causes of contraceptive discontinuation among university students in Brazil. A probability sample of 1679 undergraduates from So Paulo University participated in this retrospective cohort research. A contraceptive calendar was used to collect data online. Using Generalized Estimating Equation models, factors associated to the monthly suspension of oral tablets and male condoms was investigated. In all, 19% of oral pill users and 48% of male condom users stopped using them after 12 months for method-related reasons. Women in casual relationships had a higher risk of discontinuing the oral pill and male condom, as well as switching from the oral pill to a less effective or no method. Other factors that were connected with the method were specific to them. Women with a lower socioeconomic status or who had several lifetime partners were more probable to stop using the oral pill, whereas women with more sexual experience were less likely to stop using the male condom (do Nascimento Chofakian et al., 2019).

**SUB-SAHARAN**

The purpose of all family planning and contraception programmes is to address the unmet need for modern contraception. Contraceptive withdrawal among those in need of a method

obstructs women's ability to achieve their reproductive goals, perhaps leading to unexpected pregnancies.

In Africa, high contraceptive dropout thwarts aim for good birth spacing or childbearing. There was a secondary examination of data from the Mali (2012–2013), Burkina Faso (2010), and Niger Demographic and Health Surveys (2012) to determine the extent to which baseline characteristics can predict discontinuation, the reasons for discontinuation, and future contraceptive use, as well as the factors that contribute to it. The time it took to stop using contraceptive techniques was the dependent variable. Socio-demographic, socioeconomic, and cultural aspects were included as independent variables. The predictors were discovered using proportional risks from mixed-effects survival analysis. This study included a total of 2,264 adolescents and young women between the ages of 15 and 24, with 1,100 from Burkina Faso, 491 from Mali, and 673 from Niger. The overall contraceptive discontinuation rate was 68.7% during the last five years (50.1 percent in Burkina Faso, 59.6 percent in Mali, and 96.8 percent in Niger). In Burkina Faso, occupation, marital status, the number of living children, and region were all linked to contraceptive discontinuance at the individual level. The same as observed in Mali, but for education and marital status. In Niger, woman's education level, and partner's education level were both linked to abandonment. The region of origin was linked to the abandonment of contraceptive methods at the communal level (Ouedraogo et al., 2021).

Also, a cross sectional study to evaluate and determine the factors that influence modern contraception and discontinuation in Dire Dawa City Ethiopia. The study included 811 women who had used modern contraceptive methods for a year. The study participants were chosen by stratified random sampling. The study found that 634 (78.20%) of respondents used the same method after a year. 177 women (21.80%) stopped using the method before a year. Current age, number of children, who chose the method, method type, and counselling were found to influence discontinuation. Young women, those with no or few children, and non-decision makers were more likely to stop. Women who did not receive counselling are less likely to stop. Women who use pills or injectables are more likely to stop than women who use implants(Yifru et al., 2020).

However, a study in Arusha, Tanzania looked at the reasons for contraceptive cessation, its reproductive aftermaths, and the drivers of contraceptive discontinuation. Using data from an Arusha household survey from January to May 2018, the survey used a monthly calendar to track contraceptive use for 31 months. The overall and cause-specific discontinuation of contraceptive was calculated using life tables. Over a year, 44.6 percent of women stopped using contraception. Male condoms had the greatest discontinuation rate, with adverse

symptoms being the most common reason. More than half of women who quit did not convert to another technique after 3 months, and some became pregnant. Longer distance to health facility relates to increased discontinuation of hormonal techniques such as injectables but not non-hormonal options such as condoms. Other than the method utilised, most of the women's backgrounds do not explain their discontinuation owing to side effects. (Sato et al., 2020).

An analysis of the Demographic and Health Surveys on reasons why young women with an unexpected pregnancy stopped using their last contraceptive method was done. Thirty-five low- and middle-income countries make up the setting. The analysis involves data for 2173 girls aged 15-19 years with a current unplanned pregnancy. Among the girls who had previously utilised a traditional approach, 111/150 (74.0%) had stopped due to failure. 7/11 (63.6 percent) of girls stopped a long-acting modern technique stopped due to health concerns and negative effects (Bellizzi et al., 2020).

In two rural counties in Kenya, qualitative data was collected from women with unmet contraception needs who were former users. Some of their partners were interviewed provided additional information. In-depth interviews and focus group discussions investigated previous contraceptive use, reasons for discontinuing, and future intentions. Following data gathering, digitally recorded data was verbatim transcribed, translated, and coded using an inductive method to thematic analysis. Side effects, technique failure, peer pressure, gender-based violence as a result of clandestine contraceptive usage, and health-care system failure were all reasons for discontinuing use (Ontiri et al., 2021).

**NIGERIA**

Contraception cessation is on the rise among users who are still at risk of undesired pregnancy despite knowing that it is necessary. There are numerous studies to show why some women choose to stop using contraceptives despite low uptake in Nigeria. A study at a University Teaching Hospital, Shika-Zaria was done to determine why clients, stop using contraception and the related obstetric and medical complications. From January to June 2013, clients of Zaria's Ahmadu Bello University Teaching Hospital's reproductive health center were studied. Consenting clients were given structured questionnaires. Sociodemographic data, gynaecological history, contraception history, and reasons for abandoning a contraceptive technique were acquired. Minitab 15 was used to examine data. Majority of respondents were

multiparous, aged 20-29, tertiary educated, and civil servants. More than half have previously used a contraceptive technique, usually injectables. Two-fifth of those who used their preferred methods had stopped using them, yielding a discontinuation rate of 37.9%. Majority quit because they want to conceive, while others quit due to method issues (mostly menstrual problems),Unknown causes, uninterested (Umar and Umar, 2018).

A study examined the underlying causes and variances among Nigeria's major ethnic groups. Using the Nigeria Demographic and Health Survey 2008, this study looked at ethnic differences in contraceptive discontinuance among married women of reproductive age (15–49 years) (n=5,992). Pearson Chi-Square and Binary Logistic Regression were used to investigate factors linked to contraceptive discontinuation. Contraception discontinuation was higher among Hausa/Fulani (40.2%) and minority ethnic groups (37.8%), than Igbos (35.6%) and Yorubas (33.6%). Infrequent sex (18.9%), menopause or hysterectomy (17.8%), and fear of adverse effects were the most common causes for discontinuance (17.5%). Age, place of residence, education, wealth level, number of living children, experience of child loss, age at first marriage and birth, and desire for more children were the key characteristics related with contraceptive discontinuation in Nigeria (Mobolaji et al., 2017).

Another study used data from the 2013 Nigeria Demographic and Health Survey for the same population (all women in a union). The women's discontinuation of contraception was predicted using binomial logistic regression. Among the 29,990 women in the study, 4,080 reported discontinuing contraception, a 13.6% rate. The diaphragm method was the least discontinued (18.53%). The most common reason for discontinuation was pregnancy (49.58%), followed by method failure. Age, education, residence (urban/rural), marital status, number of children, length of marriage, women's and men's occupations, and wealth index were all predictors of contraception discontinuation. Understanding the predictors of contraception discontinuation will help plan interventions to reduce discontinuation while increasing uptake and decreasing unmet need. We recommend more research on the predictors of contraception discontinuation (Azuike et al., 2017).

A retrospective analysis was done to Understand Oral contraceptive pill (OCP) discontinuation rate, adverse effects, and reasons at Rivers State University Teaching Hospital (RSUTH). Data for Oral contraceptive pill acceptors at RSUTH's family planning section from January 1, 2015 to December 31, 2019 was analysed using IBM SPSS 25.0. Oral contraceptive pills (OCPs) were accepted and utilised by 6.1 percent of 874 contraceptive acceptors over the study period. The modal age group was 25-29 years. The age range was 19-41 years with modal parity 1. All participants had formal education, were married, and were multipara. The causes for

discontinuation were pill burden, bloating, headache, rashes, and weight gain. The research found no unplanned pregnancies and has low prevalence and dropout rates for OCP. The most prevalent reason for discontinuing this safe and effective method of contraception was pill burden (Nonye-Enyidah and Horsfall, 2021).

Similarly, findings from the University of Nigeria Teaching Hospital in Enugu, Nigeria, on Implanon discontinuation rates and reasons for cessation revealed that the most typical cause for stopping Implanon was side effects. The study included 63 women who had their Implanon implants removed out of 295 who had them implanted between 2006 and 2008. The major metric was Implanon withdrawal.63 (21.4%) of women who had Implanon implants throughout this period stopped using them. The dropout rate was 3.0% after six months, 8.1 percent after a year, and 19.3 percent after two years. Some 36 people (12.2%) stopped using Implanon due to adverse effects, whereas 27 (9.2%) stopped due to pregnancy desire. 15 (41.7%) of 36 women who quit due to side effects experienced menstrual irregularities. Non-menstrual grounds for cessation include headache and dizziness (38.1%). No pregnancy was recorded (Ezegwui et al., 2011).

Aside socio-demographic characteristics and side effects it was also found that Women who have been the victims of intimate partner violence (IPV) are prone to discontinue contraceptive use. Using a year's worth of data on women's reproductive calendars and domestic violence from the Nigeria Demographic and Health Survey to explore IPV and contraceptive cessation. The study used frequency tables and charts, Pearson's chi-square test, and a binary logistic regression model to evaluate a sample of 1341 women who experienced IPV, are using any contraception, and have not been sterilised in the past 12 months. Those who had any type of IPV were more likely to stop using contraception even when they were still at risk of pregnancy than women who had not. The study found that IPV survivors' education, occupation, marital status and number of living children also influenced their decision to stop using contraception (Kupoluyi, 2020).

From the literature, it has been revealed that marital status number of living children, education and side effects are determinants for discontinuation among all women of reproductive ages nothing or little is known about discontinuation among unmarried adolescents aged 15-19 years in Nigeria.

### *5.3 METHOD*

Data for this study comes from the 2018 Nigerian Demographic and Health (NDHS) survey. The cross-sectional survey is nationally representative and covers a range of topics including contraceptives. The survey used the sample frame from the 2006 Population census of the Country. Sampling for the survey was stratified in two stages. The states were divided into rural and urban areas and households were selected through probability sampling. Data were collected from women aged 15-49 years for the women's recode. However, this study only use data for 324 unmarried adolescents aged 15-19 years who had ever use contraceptive.

This study analysis centers on unmarried adolescents who has ever used any method of cotraceptive. The variable of interest is contraceptive discontinuation. It is measured as 'ever discontinued a method in the last five years'. During the survey the respondents were asked if they have ever stopped using a method in the last five years, the method they discontinued and the reasons for discontinuation. The background characteristics used in this study includes age, highest level of education, religion, place of residence, region of residence, listen to radio, household head gender, and household wealth quintile.

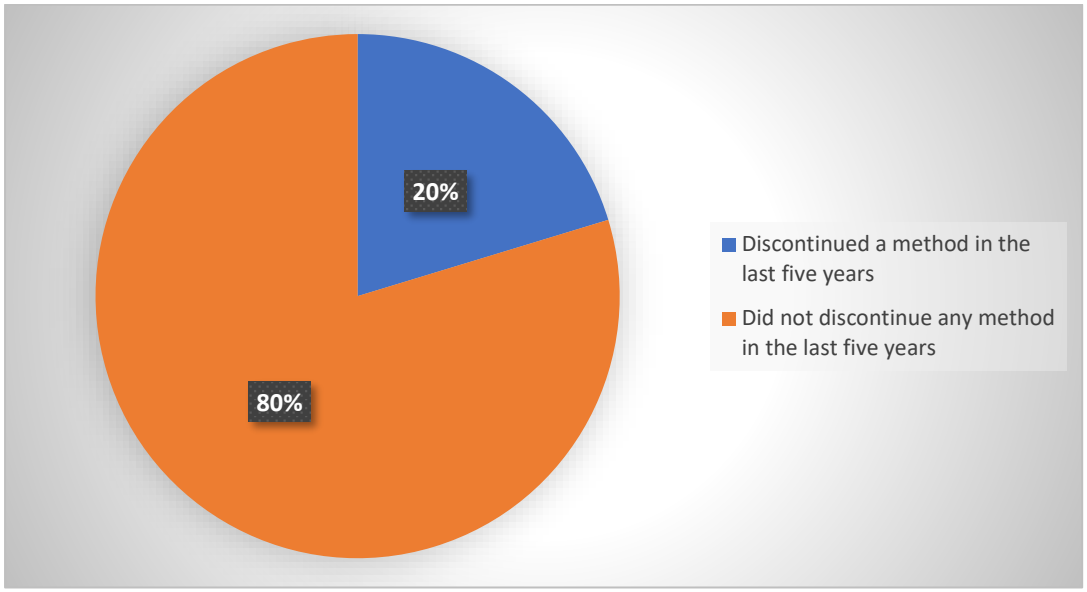
Frequency and percentage distribution were used to describe the background characteristics of the study sample. Chi-square test was used to examine the association between the social-economic characteristics of the respondents and discontinuation status at p-value 0.05. Pie and bar charts were used to present the prevalence of ever discontinue and never discontinue. Socio-economic characteristics of respondents who reported ever discontinued a method in the last five years was assessed . Also reasons for discontinuation was check against method discontinued. Analysis were weighted to control for sampling error. The staistical package STATA version 14 was used to perform data management and analysis.

Ethics: Data for this study was extracted from a de-identified open source hence, it is exempted from ethical review by the Ethics committee of the University of the Western Cape, South Africa. The data for is accessible online https://dhsprogram.com. Permission and access to the dataset was granted after an online application via the website. The National Health and Research Ethics Committee of Nigeria (NHREC) and the ICF Institutional Review Board reviewed and approved the survey protocol(NPC and ICF, 2019). Informed consent was granted by the study participants before data collection.

### *5.4 RESULT*

This section presents the prevalence of contraceptive discontinuation among unmarried adolescents aged 15-19 years within the last five years in Nigeria (figure 18). Table 1 shows the socio-economic characteristics of adolescents aged 15-19 years who discontinued use of any method of contraceptive within the last five years before the survey and the prevalence of discontinuation. Figure 19 depicts the percentage distribution of reported reasons for contraceptive discontinuation among the respondents while table 5.0 presents the percentage distribution of method discontinuation by reason among unmarried adolescents in Nigeria.

*Figure 18: Discontinuation of any modern method in the last five years among adolescents who have ever used modern contraceptive.*




One-fifth (20%) of adolescents who have ever used contraceptive discontinued a method in the last five years.

Table 5.0 2*: Background characteristics of study and prevalence of ever discontinued use of any method of contraceptive across groups.*

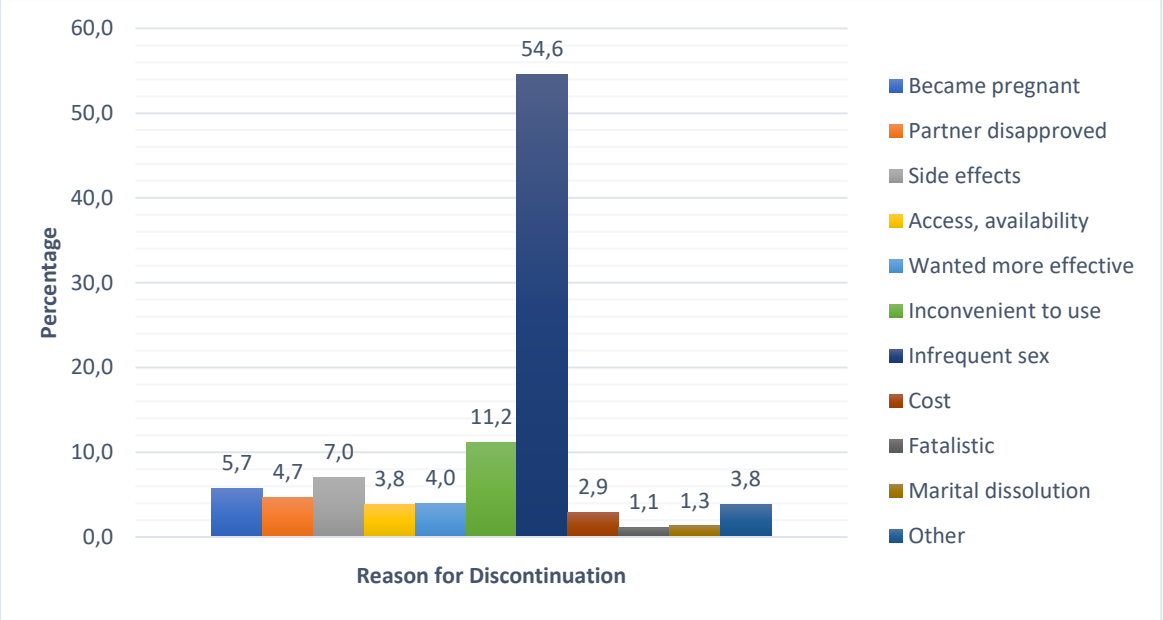
| VARIABLE | FREQUENCY | PERCENTAGE | DISCONTINUATION PREVALENCE |
|---|---|---|---|
| AGE | Mean=17.8, SD=1.11 | | MEAN=17.9 SD=1.02 |
| 15 | 10 | 3.0 | ***p-value=0.666*** 4.6 |
| 16 | 40 | 12.2 | 17.2 |
| 17 | 63 | 19.5 | 21.5 |
| 18 | 105 | 32.5 | 20.5 |
| 19 | 106 | 32.8 | 22.1 |
| RESIDENCE | | | ***p-value=0.118*** |
| Urban | 176 | 54.2 | 22.7 |
| Rural | 148 | 45.8 | 17.5 |
| EDUCATION | | | ***p-value=0.535*** |
| No education | 8 | 2.6 | 0 |
| Primary | 20 | 6.2 | 28.3 |
| Secondary | 273 | 84.2 | 20.1 |
| Higher | 23 | 7.0 | 14.4 |
| REGION | | | ***p-value=0.073*** |
| North central | 46 | 14.3 | 24.3 |
| North-east | 30 | 9.3 | 21.9 |
| North-west | 15 | 4.5 | 14.1 |
| South-east | 68 | 20.9 | 27.1 |
| South-south | 89 | 27.5 | 15.4 |
| South-west | 76 | 23.5 | 18.3 |
| RELIGION | | | ***p-value=0.067*** |
| Catholic | 63 | 19 | 23.1 |
| other Christians | 192 | 59.3 | 19.0 |
| Islam & others | 69 | 21.3 | 21.4 |
| AGE AT FIRST SEX | | | ***p-value=0.052*** |
| Below 15 years old | 44 | 13.5 | 27.9 |
| Age 15 or above | 280 | 86.5 | 19.1 |
| LISTENS TO RADIO | | | **p-value=0.265** |
| Not at all | 123 | 38.0 | 21.6 |
| Less than once a week | 117 | 36.1 | 16.3 |
| At least once a week | 84 | 25.9 | 24.1 |
| SEX OF HOUSEHOLD HEAD | | | ***p-value=0.609*** |
| Male | 211 | 65.2 | 20.6 |
| Female | 112 | 34.8 | 19.8 |
| HOUSEHOLD WEALTH QUINTILE | | | ***p-value=0.566*** |
| Poorest | 11 | 3.5 | 41.7 |
| Poorer | 49 | 15.3 | 14.4 |
| Middle | 80 | 24.8 | 21.5 |
| Richer | 107 | 33.1 | 19.8 |
| Richest | 75 | 23.2 | 20.4 |

Note: weighted frequencies and percentages. Percentages may not add up to 100 due to rounding.

The Respondents' background characteristics and the prevalence of ever discontinue use are shown in table 1. The mean age of respondents who had ever use contraceptive is 17.8 years old. More than half of the respondents are from Urban areas (54.2%); majority have secondary education (84.2%), are from SouthSouth (27%), are Christians other from Catholic (59.3%). Most of the respondent had first sex at age 15 or later (86.5%), do not listen to radio at all (38%), from male headed household, and are from the richer household quintile.

There is no significnat difference in the prevalence of ever discontinue a method across the groups of the background characteristics. However, the mean age of respondents who ever discontinue a method is 17.9 years. The highest prevalence is among those who live in Urban areas (22.7), have just primary education (28.3%), from Southeast (27.1%), are Catholics (23.1%), had first sex before age 15 (27.9%), listens to radio atleast once a week, are from male headed households and are from the poorest household wealth quintile (41.7%).

*Figure 19: Percentage distribution of reasons for contraceptive Discontinuation among unmarried adolescents aged 15-19 years in Nigeria.*




From figure 19 above, more than half (54.6%) of adolescent who discontinued contraceptive in the last five years did so because of infrequent sex, 11.2% discontinued use as a result of

inconvenience in use, this is followed by 7.0% who discontinued use because of side effects. Very few (1.1%) reported fatalistic as the reason for discontinuation.

***Table 5.0.2:*** *Percentage* distribution of method discontinuation by reason among unmarried adolescents aged 15-19 years in Nigeria.

| Last method discontinued in the last five years | Reason of last discontinuation | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Became pregnant | Partner disagree | Side effect | Access unavailable | Wanted more effective | Inconvenient | Infrequent sex | Cost | Fatalistic | Union dissolution | Other | Total |
| Pill | 0.0 | 0.0 | 100 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 |
| Male condom | 2.8 | 6.9 | 0.0 | 5.5 | 4.3 | 10.6 | 63.9 | 4.3 | 1.5 | 0.0 | 0.0 | 68.2 |
| Periodic Abstinence | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 21.2 | 0.0 | 0.0 | 19.6 | 59.2 | 6.4 |
| Withdrawal | 27.4 | 0.0 | 0.0 | 0.0 | 7.8 | 24.6 | 40.2 | 0.0 | 0.0 | 0.0 | 0.0 | 13.7 |
| Other traditional method | 0.0 | 0.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 6.0 |
| Lactational amenorrhea | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 0 | 0 | 0 | 0.0 | 0.0 | 0.6 |
| Emergency contraception | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 |
| Other modern method | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.1 |
| Total | 5.7 | 4.7 | 7.0 | 3.8 | 4.0 | 11.2 | 54.5 | 2.9 | 1.0 | 1.2 | 3.8 | 100.0 |

Note: weighted percentages. Respondents were never married.

Male condom is the method mostly discontinued in the last five years among adolescents (68.2%), while lactational method is the least method (0.6). Over one-tenth (13.7%) discontinued withdrawal method. While 1.0% discontinued pills.

All who discontinued pill discontinued because of side effects. Majority of those who discontinued male condom did so because of infrequent sex (63.9%) while one-tenth (10.6%) reported inconvenience as reason for discontinuation followed by partner's disagreement.

More than half (59.2%) of those who discontinued periodic abstinence did so because of other reasons followed by infrequent sex (21.2%) then union dissolution (19.6%). Two-fifths of those who discontinued withdrawal method did so because of infrequent sex (40.2%) while 27.4% did so because they became pregnant and 24.6% because it is not convenient. All respondents who reported other traditional method as method discontinued within the last five years discontinued the methods because of side effects. Also, all those who stopped emergency contraception and other modern method did so because of infrequent sex. In the same vein those who discontinued LAM discontinued because it is inconvenient for them.

### *5.5 DISCUSSION*

The goal of this research is to look at the reasons why Nigerian unmarried 15-19 years old adolescents who had ever used any method to prevent pregnancy have ever discontinued use in the last five years. This study found that one-fifth of adolescents (20%) aged 15-19 years have ever discontinued a method of contraceptive. Most of unmarried adolescents who discontinued use have only primary education, resides in the Urban areas, had first sex before age 15, from poorest household and lives in the Southeast, listens to radio weekly, are from male headed household. However, the prevalence is not statistically different within groups. The most reported reasons for discontinuation are infrequent sex, inconvenience of use, and side effects.

The overall prevalence reported in this study (20%) is lower compared to the prevalence reported in 2014 for all women of reproductive age in Kenya (30.5%), the prevalence reported among all married women across ethnic groups in Nigeria (Hausa/Fulani 40.2%, Igbo 35.6%, Yoruba 33.6% and Minority 37.8%) (Mobolaji et al., 2017), and the prevalence reported among all women in Urban Senegal (34.5%), Ethiopia (27.1%), Ghana (56%) (Barden-O'Fallon et al., 2018, Belete et al., 2018, Modey et al., 2014). This may be because of the study population. Most of unmarried adolescents who discontinued method are older, they have secondary education, they reside in the Urban areas, and they had first sex at age 15 or older, from richer household and lives in the South-east.

The most reported discontinued methods are the male condom, withdrawal, and periodic abstinence while the least reported are the pills, emergency contraceptives, and other modern method (IUD/Implants). This could mean that adolescents' contraceptive users prefer male condom more than other type of contraceptives. Male condom is the most reported

discontinued method. This is line with findings from a study among undergraduates Brazil which shows that male condom is the most predominantly method discontinued (do Nascimento Chofakian et al., 2019). The study further shows that ladies in spontaneous relationships are at higher risk of male condom discontinuation. This may also explain the situation here as the prevalent reason for male condom discontinuation is infrequent sex. This is also similar to the finding in northern Tanzania among women aged 16-44 years and in Urban Senegal among women of reproductive age, male condom has the highest rate of discontinuation (Sato et al., 2020, Barden-O'Fallon et al., 2018). Studies have shown that high discontinuation rate is majorly because short-term methods are the commonestAli and Cleland (2010), (Bradley et al., 2009).

The most cited reason for discontinuation of all method of contraceptive are infrequent sex, inconveniency, and side effects. These were the same reasons given for discontinuation apart from pregnancy by women of childbearing age in Tanzania (Safari et al., 2019). This is similar to the findings among married women of reproductive age in the country, infrequent sex is the most reported reason for discontinuation among married women (Mobolaji et al., 2017). It could be that unmarried adolescents in Nigeria engage in sexual relation occasionally and only use contraceptive once-off at the event. In this case, the risk of unintended is worthy of note. In support of this finding, side effect was mentioned as one of the main reasons for discontinuation in Senegal and Ethiopia among all women (Barden-O'Fallon et al., 2018, Belete et al., 2018). Similarly, generally among all married women in Nigeria it is reported as one of the major reasons for discontinuation (Mobolaji et al., 2017). This is evident in the method use, it explains why there is low use of hormonal methods among unmarried adolescents in Nigeria.

In conclusion, despite the low use of contraceptives among unmarried adolescents in Nigeria, a large proportion of those who have ever use any method of contraceptive discontinues use. The reasons reported and profile of affected adolescents indicated a need for better sexual and reproductive health education for adolescents. Correspondingly, encouraging the uptake of long term modern contraceptive method among adolescents in Nigeria. It has been shown that short term users ae more likely to discontinue use compared to long term users (Ontiri et al., 2020). Although not statistically significant attention needs to be directed towards adolescents with low education, in Southeast and from poorest household. Findings guides program managers towards effective intervention to increase uptake and continuity of contraceptives among unmarried adolescents in Nigeria.

## *6.0 CONCLUSION AND RECOMMENDATION*

### 6.1 Conclusion

By way of concluding this study, the following research questions are adequately answered below:

1. How soon do sexually active unmarried adolescents in Nigeria initiate contraceptive?
2. What are the factors associated with modern contraceptive use and intention among sexually active unmarried adolescent girls aged 15-19 years in Nigeria?
3. What is the association between perceived susceptibility to pregnancy and modern contraceptive use among sexually active unmarried adolescents in Nigeria?
4. What is the prevalence of and reasons for modern contraceptive discontinuation adolescents in Nigeria?

These questions were answered using a quantitative method of analysis of the 2018 Nigeria Demographic and Health survey data, the findings contribute to knowledge and indicate that:

<u>How soon sexually active unmarried adolescents in Nigeria initiate contraceptive</u>

a) The rate of modern contraceptive initiation among Nigerian adolescents who are sexually active but not married is low, 5.8 per 100 adolescents initiate modern contraceptive between age 15 and 19.
b) There is a time gap between time of first sex and time of first use of a modern type of contraceptives among unmarried adolescents in Nigeria. On average, an unmarried adolescent in Nigeria initiate sex at age 15.7 years but only use a modern method of contraceptive at age 18.2 years.
c) The first incidence of the use of modern method of contraceptive is between age 11 and 12 years.
d) There is regional disparity in the time of modern contraceptive initiation in Nigeria. Adolescents in the North-central initiate modern contraceptive earlier than other adolescents in other regions while those in North-west initiate at later age.

e) Age at first sex is a risk factor for modern contraceptive initiation. Adolescents who initiate sex before age 15 initiate modern contraceptive sooner than those who initiate sex at age 15 or after.
f) The incidence of initiation of modern use decreases with current age.
g) Coerced first sexual experience affect initiation of modern contraceptives. Adolescents who were coerced at first risk initiate modern contraceptive later than those who were not.
h) Higher education increases the incidence of modern contraceptives.
i) There is difference in time of first use of modern contraceptive across household wealth quintile.
j) At age 18 years, a quarter of unmarried sexually active adolescents between the ages of 15 and 19 who are currently using a modern contraceptive has not initiated use.

The factors associated with modern contraceptive use and intention among sexually active unmarried adolescent girls aged 15-19 years in Nigeria

a) Three fourth of sexually active unmarried adolescents in Nigeria has never used a modern method of contraceptive.
b) One in 20 of unmarried adolescents in Nigeria has no formal education.
c) The most popular modern contraception is the male condom.
d) The use of modern method of contraceptives such as implants and injectables is almost non-existent among sexually active unmarried adolescents.
e) Adolescents get modern contraceptives from chemists, Patent medicine store and shops.
f) Adolescents in Nigeria usually have one sexual partner at a time.
g) Adolescents in Nigeria are aware of modern method of contraceptives. Half of Nigerian unmarried sexually active adolescents are not currently using any modern method but want to use in the future.
h) Approximately one-third of sexually active unmarried adolescents are not using and do not want to use a modern method of contraceptive in future.
i) The use of internet is an important factor to increase adolescents' use of modern contraception.

j) Number of sexual partners is a critical factor in current contraceptive use among unmarried adolescents in Nigeria.

The association between perceived susceptibility to pregnancy and modern contraceptive use among sexually active unmarried adolescents in Nigeria.

a) Incorrect knowledge of timing of ovulation is high among adolescents in Nigeria.
b) Prevalence of modern contraceptive use is higher among those with correct knowledge of timing of ovulation.
c) Knowledge of timing of ovulation is not associated with adolescent girls 'modern contraceptive use.

The prevalence of and reasons for modern contraceptive discontinuation adolescents in Nigeria.

a. One in five of adolescent girls in Nigeria who had ever use a modern method discontinue use.
b. Male condom is the most reported discontinued type.
c. The pill is discontinued for fear of side effects.
**d.** Adolescents majorly discontinue method due to infrequent sex, fear of side effects, inconvenience of use, and partner's disagreement.

### *6.2 Policy implications*

Findings from this study has significant policy implication for the Nigerian government as well as other stake holders in general. Primarily, both time event analysis and cross-sectional analyses show that modern contraceptive use is low among sexually active unmarried adolescents between ages 15 to 19 years in Nigeria. With the current level of modern contraceptive use among adolescents in the country, Nigeria needs to scale up necessary and timely intervention to achieve the country's contraceptive goals and the sustainable goal 3 realistic by 2030.

Subsequently, current users are method selective. The uptake of long-acting modern contraceptive is almost non-existent compared to short term modern contraceptive. This has a strong implication for method failure and its attendant effects. Interventions and policies should be formulated to encourage the use of long-acting modern contraceptives among unmarried adolescents in the country.

Furthermore, there is regional disparity in level of modern contraceptive use. Use is lower in some regions than other. Hence, the prevalence of use may remain unchanged and unmet need may continue if interventions and policies are not region specific. Program managers and health care providers should target adolescents reside in the North-west and South-east Nigeria.

Then, some of the adolescents are uneducated while some just have primary education. It is a requisite for government at all levels to intensify their approaches to social and economic development to increase adolescents' use of modern contraceptive. Formal education has strong influence on modern contraception especially higher education. Hence if modern contraception must increase, the country's level of education must first increase.

Next to the aforementioned is that internet access among this population is very low. This has a strong implication for little or no proper awareness of modern contraceptive methods. Health care is increasingly being delivered through digital channels. Interventions and policy formulations may need to target improving access to internet and other digital channels to increase knowledge and acceptance of modern contraceptive methods in the country.

In conclusion, despite low use of contraceptives among unmarried adolescents in Nigeria, a large proportion of those who have ever use any method of contraceptive discontinues use. The reasons reported and profile of affected adolescents indicated a need for better sexual and reproductive health education for adolescents. Also, encouraging the uptake of long term modern contraceptive method among adolescents in Nigeria. It has been shown that short term users ae more likely to discontinue use compared to long term users (Ontiri et al., 2020).

### *6.3 Recommendations*

Since internet use is associated with modern contraceptive use, Government and ministry of education may consider building youthful application on smart phone for the improvement of Adolescents reproductive health knowledge.

Similarly, policy makers and implementers may consider using digital services. This services in sexual and reproductive health can overcome barriers to accessing modern contraception.

Digital communication channels allow wide coverage and the delivery of group or individual specific sexual and reproductive health and rights information and support.

Public hospitals and clinics need to be more youth-friendly to promote use, seeing that majority of these adolescents get methods from shops.

Government also needs to promote the use of implants and injections among adolescents in Nigeria. It has been shown that condom users are more likely to discontinue use compared to other type of users.

Government needs to intensifying plans towards social and economic development especially with regards to education among women to increase their agency and make wise decisions concerning their reproductive health.

Policy implementers may consider ways of reaching adolescents with no formal education probably through community engagements and introduce reproductive health education to those in primary schools for early awareness on how their body work and make informed decisions later in life.

Also, effective contraception programmes addressing reasons for discontinuing contraception use, especially enhanced counselling can curb the rate of discontinuation. This was experienced in Enugu state among Implanon users. The discontinuation of Implanon before its expiration is low once the users are adequately counselled (Ezegwui et al., 2011).

### *6.4 Frontiers for other studies*

- Further studies on factors associated with modern contraceptive use are needed in Nigeria particularly for adolescents aged 10-14.
- The causes of discontinuation among this population needs to be further explored especially with the use of qualitative data.

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