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COUPLE ASYMMETRIES AND ITS IMPACT ON MODERN CONTRACEPTIVE USE AMONG YOUNG (15-24) MARRIED WOMEN IN NIGERIA

BY

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A dissertation submitted in partial fulfillment of the requirement for the award of Master of Arts in Demography and Population Studies, University of the Witwatersrand.

Supervisor:

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2017

DECLARATION

I, Olaide Olawumi Ojoniyi, declare that this research report is my original work. This research work is being submitted in partial fulfilment for the degree of Masters in Demography and Population Studies at the University of the Witwatersrand, Johannesburg. To the best of my knowledge, this work has not been submitted for any degree or examination or to any other university.

……..

MARCH 2017

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CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

Nigeria is one of the countries with the lowest contraceptive prevalence rate in the world, as only 13% of married and cohabiting women are using modern contraceptives (Lamidi, 2015). Given the close relationship between fertility and contraception, Nigeria is among the sixteen countries with the highest total fertility rates (TFR) in the world, with an average of six children per woman (PRB, 2014). If the current level of contraceptive use and its resultant effect of high fertility in Nigeria persist, by 2050 Nigeria will be the third largest country in the world(DESA, 2015).

In recent years, most Nigerian women are informed of at least one modern method of contraception. Nevertheless, young women, especially those who are married, are not likely to use modern contraceptives(Singh & Darroch, 2012). Only 2% of married women aged 15-19 and 7% among those who are married between ages 20-24 use a modern method of contraception in Nigeria, one of the lowest percentages in sub-Saharan Africa (PRB, 2012).

Contraceptive use reduces the number of births and risky pregnancies, especially among very young or old mothers, those at high parity, and women with narrowly-spaced pregnancies. Also, modern contraceptive users are more likely to exhibit a wider birth interval, which in turn increases child survival(Merali, 2016). Contraceptive use could avert as many as one in three maternal deaths by enabling women to postpone birth, space births, avoid unplanned pregnancies and abortion, and stop reproducing when they have reached their desired family size(Ashford, Clifton, & Kaneda, 2006).

In Nigeria, 42% of young married women got married before their 18^{th} birthday, most of these young women get married to older men; the prevalence of early marriage differs broadly from one region to another - it is highest (76%) in the north-west region and lowest (10%) in the south-east region (Abdallah, 2011).

Given that Nigeria is a patriarchal society; men are more advantaged than women (Makama, 2013). Hence, differences between marital partners is inevitable. Ninety-eight percent of women in Nigeria are younger than their partner (Ibisomi, 2014). Wide age gaps are often complemented by differences in maturity, exposures, social status and financial resources(Longfield, Glick, Waithaka, & Berman, 2004; Luke, 2005). Even when there is no age difference between partners, women are still more disadvantaged than men in access to resources, there is gender inequality

in access to jobs and other sources of livelihood in the country(Makama, 2013). For instance, about six million young women and men join the labour market annually, but only 10% get a job in the formal sector of which only one-third are women (Gender in Nigeria Report, 2012). This study will be assessing socio-economic and demographic differences as barriers contributing to the uptake of modern contraceptives among young married and cohabiting women in Nigeria.

1.2 STATEMENT OF THE PROBLEM

Knowledge of contraceptive methods is high among all reproductive-aged women (84%) in Nigeria. However, this knowledge is not reflected in the practice of contraception. Regrettably, the level of modern contraceptive use has remained low over the years (National Population Commission, 2015). Contraceptive behaviour differs significantly among young married women (15-24 years) compared to older married women. Young women are less likely to use modern contraceptives because of inadequate knowledge and lack of decision-making autonomy. Thereby leading to high fertility, increased unsafe abortions resulting from unwanted pregnancies, and pregnancy and birth complications (Haque, Rahman, Mostofa, & Zahan, 2012).

Low contraceptive use places young women, especially adolescents, at risk for unplanned pregnancies; which cause health risks for them as well as the new-born. Young married women aged 15-24 years in Nigeria experience a higher level of unmet need for spacing compared to those in older age groups. There has been no significant change in this level among young (15-24 years) currently married women for years. It stood at 19.8% in 2008 from 21.9% in 1999 (Austin, 2015; MacQuarrie & Kerry, 2014).

Fertility remains high in Nigeria; the total fertility rate (TFR) is 5.5 children per woman; 15% higher than the total wanted fertility rate of 4.8 children per woman (NPC & ICF, 2014). Fertility is higher among Nigerian young women aged 15-24 years compared to their Ghanaian counterparts, 21% of the young women have more than two children compared to 11% of their Ghanaian counterparts (Fagbamigbe, Olatoregun, Akinyemi, Yusuf, & Bamgboye, 2014).

Maternal mortality is also associated with contraceptive prevalence rates, countries with low contraceptive prevalence rates has been found to be countries with very high maternal mortality ratios (Okonofua, 2003). Nigeria is one of the countries with the highest maternal mortality ratio

in sub-Saharan Africa, and it is the country with the second highest number of maternal deaths in the world (814 maternal deaths per 100,000 live births), after Sierra Leone (WHO, 2015).

Both young mothers and their newborns are more likely to suffer birth complications. Young mothers, especially those below age 20, face greater life-threatening complications of pregnancy such as pre-eclampsia, obstructed labour, post-partum hemorrhage and iron-deficiency anemia or death due to childbearing than older women. Infants born to young women suffer from low birth weight and early neonatal deaths (Ganchimeg et al., 2014).

These health challenges could be significantly reduced, if not averted totally, by effective modern contraceptive use. According to the Family Planning Saves Lives report, between 2005 and 2015, contraceptive use would have prevented 1.2 million abortions, 3.9 million unintended pregnancies, 1 million under-five deaths and 18,849 maternal deaths in Nigeria (Ringheim, Gribble, & Foreman, 2007).

1.3 JUSTIFICATION

Since the 1994 International Conference on Population and Development (ICPD), national governments, international agencies, and donor organizations have intensified efforts to ensure an increase in the use of effective methods of contraception in Sub-Saharan Africa and elsewhere (Cohen & Richards, 1994; Nancy et al., 2015). Despite these efforts, contraceptive use is still low in Nigeria.

Considering the present level of contraceptive use, achieving the Sustainable Development Goal (SDG) 3.7 of ensuring universal access to sexual and reproductive health-care services, including family planning; and the country's new plan for accelerating uptake of family planning with the aim of increasing the national contraceptive prevalence rate to 36% by 2018 will be a major challenge (Federal Government of Nigeria, 2014). Therefore, ascertaining the determinants of low contraceptive use among young women aged 15–24 will help program managers to probably design more and implement existing programs, and evaluate their contributions to improving young women's contraceptive use properly.

Also, Nigeria is a country with a very high young adult population; it is acknowledged that reproductive choices made by these young adults have a huge effect on their prospect for health,

education, and employment as well as their shift to adulthood(Hogan et al., 2010). Hence, paying attention to effective contraceptive use in this age group of women is very important. Although countless studies on modern contraceptive use among young unmarried people has been done, the needs of the married population have been ignored by researchers and programme staff alike, in spite of the fact that modern contraceptive use is lower among this group (Cleland, Ali, & Shah, 2006).

Furthermore, in a patriarchal setting, decision-making power is conventionally bestowed on males, pro-natal views tend to be stronger among males than females, and husband's real or perceived opposition to contraceptives may prevent wives who want to delay or stop childbearing from using it(Barden-O'Fallon & Speizer, 2010). In Nigeria, a patriarchal society, the situation is similar. Decision-making power is conventionally bestowed on males (FMoWASD, 2006). This may affect the use of modern contraceptive use of young married women because they may not be able to discuss it with their partners.

The low level of modern contraceptive use among young married women could be due to the differences in partner's socio-economic and demographic differences given that these differences might make relationships naturally unequal and affect the women's capability to discuss modern methods of contraception. This study examined the association between partner's socio-economic and demographic differences and modern contraceptive use among young married women in Nigeria.

1.4 RESEARCH QUESTIONS

What is the association between partner's socio-economic and demographic differences and the uptake of modern contraceptives among young married women aged 15-24 years in Nigeria?

1.4.1 Sub- Questions

1. What is the level of modern contraceptive uptake among young married women in Nigeria?
2. What are the socio-economic characteristics of young married women associated with the use of modern contraceptives in Nigeria?

3. What is the relationship between partner's socio-economic and demographic differences and the use of modern contraceptives among young married women in Nigeria?

1.5 RESEARCH OBJECTIVES

To examine the association between partner's socio-economic and demographic differences and uptake of modern contraceptives among young married women in Nigeria.

1.5.1 Specific Objectives

1. To assess the level of modern contraceptive uptake among young married women in Nigeria.
2. To examine the socio-economic characteristics of young married women, that affects their use of modern contraceptives.
3. To assess the relationship between partner's socio-economic and demographic difference and modern contraceptive use among young married women in Nigeria.

CHAPTER TWO: LITERATURE REVIEW

The literature on determinants of contraceptive use spans from developing countries to less developed countries, especially in sub-Saharan Africa where effective methods of contraception is imperative considering the high fertility level in the region. Several studies suggest that socio-economic and demographic factors, knowledge and beliefs are strongly associated with contraceptive use among women both at the micro- and macro-level. This chapter reviews previous studies on the use of modern contraceptives among women in developing countries of the world.

2.1 GLOBAL DETERMINANTS OF CONTRACEPTIVE USE

In developing countries of the world, knowledge of contraceptive methods may not result in use; although inadequate awareness of contraceptive methods has been identified as a limiting factor in use (Ezeanolue et al., 2015; Zavier & Jejeebhoy, 2015). A cross-sectional study to examine contraceptive knowledge and use among reproductive-aged women in Nepal revealed that knowledge of methods is higher than their actual use (Dhital, Shrestha, Pradhan, & Rajbhandari, 2015). The study also revealed that younger women, less than thirty-five years, and those whose last child is less than five years are less likely to use contraceptives. However, the study sample was purposively selected.

Similarly, in a qualitative study on contraceptive use and intention among young unmarried and married women aged 15-24 undergoing an abortion in India; many reported they were not well-informed about contraception (Zavier & Jejeebhoy, 2015). This study did not give any report on the reasons for abortion among the study participants.

Also, it was found in Karnataka in India among nursing mothers who should be more receptive to contraceptive advice - Muslim nursing mothers showed less willingness (78.4%) to use contraception compared to their Hindu counterparts (84.6%) (Rao & Mathada, 2016). Although this study was limited to breast-feeding mothers and their parity was not examined.

A qualitative study of women obtaining health education and clinical services in rural Honduras revealed that gender dynamics is associated with contraception. This result may not be generalizable to the whole population because the study participants might have a good health

seeking behaviour, more information on reproductive health issues and hold more affirmative attitudes towards contraception compared to other women in rural Honduras who don't seek health education and clinical services(M. G. Hall, Garrett, & Barrington, 2014).

Reduction in unions with older partners has been identified as one of the factors associated with progress in adolescent reproductive behaviour; such as teenage pregnancy, sexual activity and contraceptive use in the U.S (Manlove, Ikramullah, Mincieli, Holcombe, & Danish, 2009). A national longitudinal study in America, looking at contraceptive use patterns across teenagers' sexual unions using data from the National Longitudinal Study of Adolescent Health found that teenagers with more homogamous partners had greater odds of contraceptive use and consistency in use, compared with teenagers with less homogamous partners (Manlove, Ryan, & Franzetta, 2007).

Likewise, findings from a study on relationship characteristics and contraceptive use among sexually active youth aged 18-26 years old who are in "dating" relationships between 2002 to 2005 from a national longitudinal survey. This study revealed a reduced probability of any method use with increasing level of partner conflict and asymmetry (Wildsmith, Manlove, & Steward-Streng, 2015)**.**

2.2 DETERMINANTS OF CONTRACEPTIVE USE IN SUB-SAHARAN AFRICA

The results of a regional study using the fifth wave of DHS for Kenya, Ghana, Madagascar and Zimbabwe revealed that education is a key factor contributing to contraceptive use in sub-Saharan Africa though it may not affect the choice of method effectiveness (Stanfors & Larsson, 2014). Similarly, in Lusaka (Zambia) a secondary analysis of a repeated cross-sectional population-based survey showed that women with low levels of education are less likely to report long-term contraceptive use(Hancock et al., 2015).

Education is a widely acknowledged determinant of reproductive behaviour(F. OlaOlorun, Seme, Otupiri, Ogunjuyigbe, & Tsui, 2016a), as it increases knowledge and awareness of contraceptives. Formal education gives access to information and with this, highly educated women are likely to know and practice contraception to postpone child-bearing or prolong birth intervals (Bankole & Audam,2011).

Differences in contraceptive use have been reported between the employed and the unemployed. A study in Ghana among female adolescents reported a higher prevalence of contraceptive use among those who are employed (28.9%) compared to those who were unemployed (12.8%). Also, the odds of contraceptive use among the employed group was three times higher compared to the unemployed group (Nyarko, 2015). This difference, as suggested by the author, is due to the fact the employed female adolescents may be engrossed on their jobs and careers and place less focus on having children. Furthermore, due to the working status of employed females, they are more privileged financially to afford contraceptives compared to their unemployed counterparts hence, they tend to use contraceptive more than their unemployed counterparts. Similarly, a community-based cross-sectional study in western Ethiopia among married women of reproductive age also revealed that earning monthly income is positively associated with modern contraceptive use (Tekelab, Sufa Melka, & Wirtu, 2015).

Another important hindrance to modern contraception in sub-Saharan Africa is myths and mistaken beliefs about modern methods, such as exaggerated or incorrect information on side effects, erroneous beliefs about short or long-term health problems and negative labels given to persons who use contraception. The dominance of such myths and misconceptions has been established in numerous national-level studies. A secondary analysis of the Measure, Learning and Evaluation Project Baseline data (2010-2011) in selected cities in Kenya, Nigeria, and Senegal revealed that belief in myths is negatively associated with modern contraceptive use in all the three countries (Gueye, Speizer, Corroon, & Okigbo, 2015).

Similarly, a study in Northern Ethiopia using both quantitative and qualitative methods to examine intention to use long-acting and permanent contraceptive methods among married women in the study area, revealed that fear of side effects and infertility after use were limiting factors of intention to use (Gebremariam & Addissie, 2014). The authors suggested that formal education may reduce this fear and encourage more discussion on modern contraceptive methods. Even though the study only considered long-acting and permanent contraceptive methods and intention to use, this may be a good pointer to the cause of low contraceptive use in Africa (Gebremariam & Addissie, 2014).

Health care decision-making patterns also have effects on contraceptive use. Women's participation in decision-making in the home, especially health care decisions has been found to be associated with their contraceptive use. A study that measured the effects of individual and community factors on the uptake of modern contraceptive methods in Uganda revealed that

contraceptive use is more prevalent in communities where women's individual control over household decisions is higher (DeRose & Ezeh, 2010). The short-coming of this study is that it made use of secondary data in which women's influence was inadequately measured, as joint decision-making and wife controlled decision-making were considered together.

Similarly, a study in Mozambique using the demographic and health survey data set reported that women whose husbands/partners usually made the decision about her health were less likely to report an intention to use contraceptives compared to those women who themselves, or jointly with their husband, made the decision (Mboane & Bhatta, 2015). In the same vein, the difference in fertility intention of the woman and her spouse may contribute to the uptake of modern contraceptives. A study in Ethiopia showing a trend of contraceptive use among young women from 2005 to 2011, reported a decline in the percentage of husbands who want more children than their wives contributing substantially to the increase in modern contraceptive use over the survey period (Worku, Tessema, & Zeleke, 2015).

2.3 DETERMINANTS OF CONTRACEPTIVE USE IN NIGERIA

The highest level of education attained by women may be a factor affecting contraceptive use in Nigeria. A study on the effects of gender and age at sexual initiation on contraceptive use among teenagers and young adults in Nigeria found that the likelihood of using modern contraceptives among sexually active female teenagers and young adults increases with educational attainment (Fagbamigbe & Idemudia, 2015). Similarly, another study in Nigeria comparing contraceptive use among women across states found that contraceptive use is higher in states with women with higher levels of education; also at the individual level, education presented a significant influence on contraceptive use (Lamidi, 2015).

In north east and north west Nigeria, a study observed a significant association between women's employment status and contraceptive use (Unumeri, Ishaku, Ahonsi, & Oginni, 2015). Women who are employed may have higher autonomy in making household decisions. Another study among women aged 35-49 years in Nigeria revealed a statistically significant association between women's decision-making power and modern contraceptive use after adjusting for age, education, religion, parity and wealth (F. M. OlaOlorun & Hindin, 2014).

Determinants of contraceptive use in Nigeria are not limited to economic factors. A study in 2014 revealed that large spousal age difference is significantly related with women's contraceptive behaviour in Nigeria (Ibisomi, 2014). Although the relationship became statistically insignificant when other variables were controlled for in the multivariate analysis. Also, the study was restricted to women aged 15-49 years whose husbands were not more than 59 years old at the time of the survey (Ibisomi, 2014).

Numerous studies have addressed contraceptive use among the general population and among the unmarried youths (Fagbamigbe & Idemudia, 2015; Manlove, Ikramullah, Mincieli, Holcombe, & Danish, 2009; Zavier & Jejeebhoy, 2015) but studies concentrating on young married women and socio-economic differences between marital partners especially in Nigeria are scarce.

2.4 THEORETICAL AND CONCEPTUAL FRAMEWORK

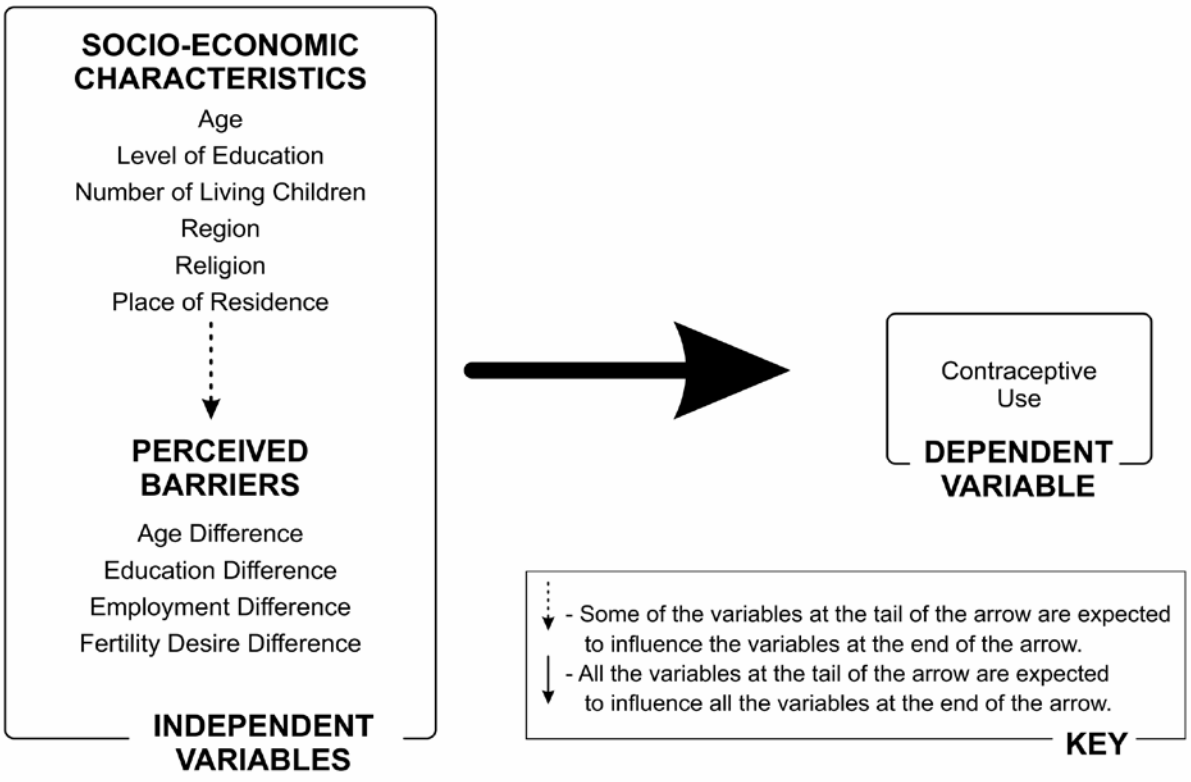
2.4.1 Theoretical Framework

The Health Belief Model (HBM) guides this study. The Health Belief Model is a psychological model originally developed in the 1950s by social psychologists Hochbaum, Rosenstock, and Kegels. These psychologists were working in the U.S public health services at that time. The model attempts to explain and predict health behaviours by centring on the attitudes and beliefs of individuals; and consider humans as rational beings who make decisions from different perspectives(Rosenstock, 1974). This model is appropriate in preventive health behaviour, such as contraceptive behaviour. Its components are drawn from a recognized body of social psychology theory that is largely based on cognitive factors concerned with goal realization (motivation to prevent pregnancy). It was one of the models used to predict and describe differences in contraceptive behaviour among women in the 1970s and 1980s(Hester & Macrina, 1985).

This model has since then been applied to contraceptive behaviour. For instance, research has shown the effects of perceived benefit of contraceptive use and perceived barriers to using on birth spacing; and has recommended Its effectiveness in changing health beliefs about birth spacing (Mohsen, El-Abbassy, & Khalifa, 2016). Its link with the determinants, attitudes towards and intent to use a modern method of contraception among both men and women is well documented (K. S. Hall, 2012; King, Kaighobadi, & Winecoff, 2016).

The Health Belief Model hypothesizes that contraceptive behaviour is a function of the perceived risk of unintended pregnancy, perceived severity, perception of contraceptive benefits and barriers to use. It also states some demographic, social, structural, psychological and reproductive factors called modifying or enabling factors that interact with an individual perception of pregnancy and decision to use contraceptives (K. S. Hall, 2012). Perceived risk has to do with the belief of experiencing unintended pregnancy. Perceived severity is the belief about how serious an unintended pregnancy can be and its consequence, perceived benefits is the belief in the efficacy of action (contraception) to reduce unintended pregnancy risk while perceived barriers are belief about the costs of contraception (Champion & Skinner, 2008). However, this study considers perceived barriers and modifying factors of the model. Perceived barriers per the model are potential negative aspects of contraceptive behaviour, which may act as a hindrance to contraceptive use. Differences in partners' characteristics may hinder young married women from discussing modern contraception with their partner, and this may reduce their likelihood of contraceptive use. Hence, this study also examined the relevance of the HBM as a framework for explaining and predicting modern contraceptive behaviour among young married women in Nigeria.

Figure 1.1: Conceptual framework for the study of partner's economic and demographic asymmetries and the uptake of modern contraceptives among young married women in Nigeria. (Adopted from Health Belief Model).



2.4.2 Conceptual Framework

This conceptual framework is adopted from the Health Belief Model. As pointed out earlier, it considers just the modifying factors and perceived barriers, and how they affect contraceptive use. From figure 1.1 above, modifying factors are the socio-economic characteristics on the top left side of the framework which affect contraceptive use directly and some of which may influence contraceptive use indirectly through perceived barriers (partners' differences). According to the model, different demographic and socio-economic variables may influence perceptions and thus indirectly affect contraceptive use (Champion & Skinner, 2008).The arrows in the diagram show that the variables on the left side (i.e., socio-economic characteristics and partners' difference) affect the one (contraceptive use) on the right side of the framework.

CHAPTER THREE: METHODOLOGY

3.1 STUDY DESIGN

This study used secondary data from the 2013 Nigerian Demographic and Health Survey (NDHS). The 2013 NDHS is a nationally representative sample survey, the fifth of its kind since 1990. It was carried out by the National Population Commission, the agency responsible for the collection, collation, analysis and dissemination of population census and survey data at all levels that influence to policy formation and population activity management in the country. NDHS is the fourth demographic and health survey to be carried out by NPC in Nigeria, and it was funded by the United States Agency for International Development (USAID), the United Kingdom Department for International Development (DFID), the United Nations Population Fund (UNFPA), and the Nigerian government.

The cross-sectional survey was carried out using a stratified three-stage cluster sample design. The sampling frame used for this survey is the list of enumeration areas (EAs) which was designed for the country's 2006 population census prepared by the NPC. The EAs were grouped by state, by local governments within the state, and by localities within the local government areas. 904 clusters were selected with 372 urban areas and 532 rural areas. The cluster is the primary sampling unit (PSU) with a fixed sample of 45 households. All women aged 15-49 years who were either resident of the household sampled or a visitor in the household on the night before the survey were eligible to be interviewed(National Population Commission, 2015).

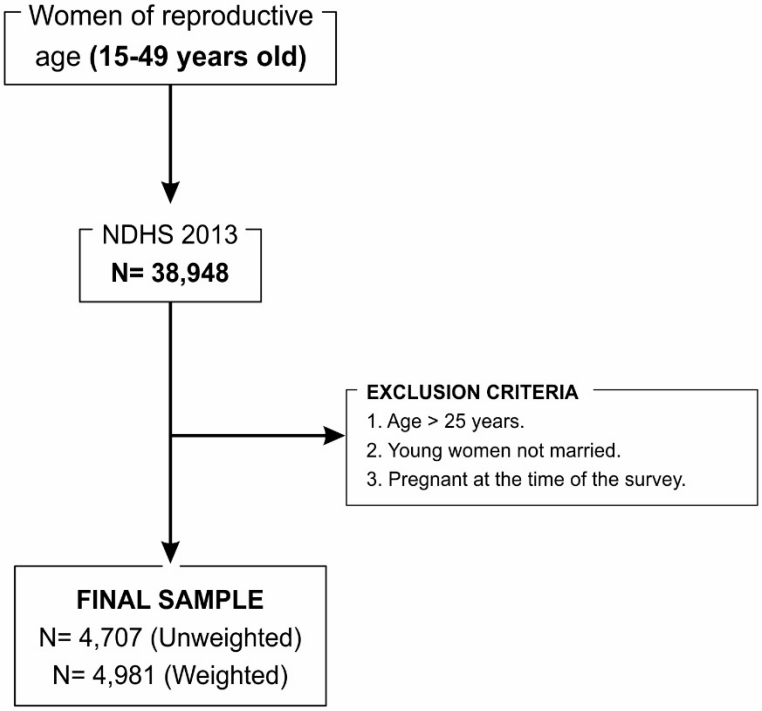
3.2 STUDY POPULATION

A nationally representative sample of 40,320 households was identified in the country, of these households 39,902 women aged 15-49 were eligible, but 38,948 were successfully interviewed thereby giving a response rate of 98%. For this study, data for only 4,981 young (15-24 years) married/ cohabiting women who were not pregnant at the time of the survey was used. Pregnant youths were excluded because they were not expected to be using any method of contraceptive.

3.3 SAMPLE SIZE

For this study, data for 4,981 young women between ages 15-24 years who are married or cohabiting and were not pregnant at the time of the survey; 22% of whom do not have any child; while 78% had at least one living child. The study sample was drawn from a total sample of 38,948, to examine the association between partner's socio-economic asymmetries and the use of modern contraceptives amongst young women in Nigeria.

Figure 2.1: The exclusion procedures to identify the final sample size in NDHS 2013 dataset



3.4 QUESTIONNAIRE DESIGN

In Nigeria, the survey data was collected using three questionnaires: household, man's and the woman's questionnaires. For this study, the woman's questionnaire was used. It was designed based on the country's requirements to capture issues on family planning, domestic violence, HIV/AIDS, and maternal and child health. It was translated from English to the three major languages in Nigeria- Hausa, Yoruba, and Igbo. The questionnaire was pretested in 120

households in four locations at Makurdi, where the residents are majorly Hausa, Yoruba, English, and Igbo speaking (National Population Commission, 2015).

3.5 STUDY VARIABLES

3.5.1 Outcome Variable

The outcome variable for this study is contraceptive use. This is measured using level of current use, and the actual practice at the time of survey namely "current use by method type". This indicator was chosen as a measure of contraceptive use because the contraceptive prevalence rate is defined as the proportion of currently married women who are using a method of contraception. Monjok et al., (2010) as well as Nyarko (2015), measured contraceptive use using current use. Nevertheless, the variable - current use by method type comprising folkloric, traditional and modern methods was dichotomized into modern method users and non-users of modern contraceptive methods making it a binary variable.

3.5.2 Predictor Variables

The main predictor variables are partner's age difference, employment difference, and fertility intention difference. New variables were created from the NDHS 2013 dataset to measure these predictors individually. Partner's age difference was created using respondent current age and age of partner and was categorised based on literature and the focus of this study. The variable has four categories namely – 'respondent not younger' for respondents who are older than their partner or of the same age with partner; 'younger by 1-5 years' for those who are younger compared to partner with 1-5 years; 'younger by 6-10 years' for those who are younger than partner by 6-10 years; and 'younger by 11 or more years' for those who are younger than partner by more than 10 years.

The difference in education attainment was measured using a new variable which adds the respondents' highest level of education and partners' highest level of education. The variable has four categories- 'both have no education', 'same level of education, 'woman more educated', 'partner more educated'.

For couple's employment difference, a new variable was created from respondent employment status and partner's employment status. The variable will have four categories namely- 'both unemployed', 'woman employed but partner unemployed', 'woman unemployed but partner employed' and 'both employed'.

The difference in fertility desire was measured using the original variable the way it is in the dataset. This variable has three categories which are – 'same number', 'partner wants more' and 'partner wants less'.

The other predictor variables are the selected socio-economic characteristics of the respondents which have been found to influence contraceptive use in the literature. These variables are age, education, religion, the number of living children, place of residence, and region.

Education is measured as respondents' highest level of education at the time of the survey which can be one of these "no education", "primary", "secondary", and "tertiary". Number of living children is the total number of living children of the respondent at the time of the survey and was categorized based on the frequency. Place of residence is the place where the respondent was interviewed which is either rural or urban during the survey. Similarly, the region is the geo-political zone where the respondent was interviewed. Religion refers to the religious affiliation of the respondent at the time of the study. The variable religion was regrouped into three categories "Catholics", "other Christians", "Islam", and "others" because there are three major religion affiliations in Nigeria.

Table 3.1: Study variables and their definitions

VARIABLE	**OPERATIONAL DEFINITION**
OUTCOME VARIABLE Current contraceptive use (current use by method type)	Not using any modern method currently (0) Currently using a modern method (1) ****folkloric, traditional and no methods were collapsed into not using any modern method.
MAIN PREDICTOR VARIABLES Partner's age difference	Respondent not younger (1) Younger by 1-5 years (2) Younger by 6-10 years (3) Younger by 11 or more years (4)
Couple employment difference	Both unemployed (1) Respondent employed but partner unemployed (2) Respondent unemployed but partner employed (3) Both employed (4)
Fertility desire	No difference (1) Partner wants more (2) Partner wants less (3) Don't know partner's desire (4)

Table 3.1 continues

Education difference	Both have no education (1) Same level of education (2) Respondent more educated (3) Partner more educated (4)
OTHER PREDICTORS Highest level of education	No education (0) Primary (1) Secondary (2) Tertiary (3)
Number of living children	None (0) 1 child (1) 2 children (2) 3 or more (3)
Region	North-central (1) North-east (2) North-west (3) South-east (4) South-south (5) South-west (6)
Religion	Catholic (1) Other Christians (2) Islam (3) Others (4)
Place of residence	Urban (1) Rural (2)

3.6 HYPOTHESIS

Ho: There is no association between partners' socio-economic and demographic differences and the uptake of modern methods of contraception among young married women in Nigeria.

H_A: There is an association between partners' socio-economic and demographic differences and the uptake of modern methods of contraception among young married women in Nigeria.

3.7 ETHICAL ISSUES

This study used secondary data from the 2013 NDHS. Therefore, there is no issue of confidentiality as identifying information and names of the respondents were not included in the dataset. Permission to use the dataset was sought from measuredhs.

3.8 DATA MANAGEMENT PLAN

Weightings were applied to the data to control for sampling errors and to make the sample representative of the entire population (Pitblado, 2009). In addition to the sample weight variable, the following stata command was used to allow for the correct use of significance testing for a complex survey design, such as the NDHS. STATA thus takes the sample design into account when calculating standard errors.

gen weight=v005/1000000

svyset[pw=weight],psu(v001)strata(v022)

Where:

pweight = sampling weight,

psu (primary sampling unit) v001 is the cluster number

V022 is sample strata for sampling error number.

(Pitblado, 2009; NDHS, 2013)

With this weighting procedure, the weighted eligible respondents were 4,981 married young women in Nigeria who were not pregnant at the time of the survey.

More so, the statistical package STATA version 12 was used for the statistical analysis.

3.9 DATA ANALYSIS PLAN

Data analysis was done in three levels; namely univariate, bivariate, and multivariate analysis. The univariate analysis was done to describe the background characteristics of the respondents, the predictors using percentage distribution, also to achieve objective one of the study using a pie chart. This is followed by descriptive cross-tabulations of each of the predictors with modern contraceptive use, bar charts to illustrate the proportion of modern contraceptive users by

partners' socio-economic differences. Moreover, the analytical bivariate analysis was conducted using bivariate binomial logistic regression to measure the association of each of the predictor variables with modern contraceptive use and to test their goodness of fit for the multivariate binomial logistic regression.

At the third level, multivariate analysis was done using binomial logistic regression to achieve objective two and three of the study. Binomial logistic regression was used because the outcome variable (modern contraceptive use) was measured as a dichotomous variable and the aim of the study is to analyse the relationship between a binary outcome and a set of predictors which can take any form (Cox, 1958). The statistical tests were all conducted at 5% level of significance.

Three models were included. Model 1 is the bivariate binomial logistic regression (unadjusted), Model 2 is the multivariate logistic regression model (adjusted) which consist of all the socio-economic and demographic difference variables or all the socio-economic characteristics of the respondents used for this study. Model 3 consists of all the study variables i.e. both the socio-economic and demographic difference variables and the socio-economic characteristics of the respondents.

Diagnostic tests for logistic regression such as multicollinearity test, link test for detecting model specification error, and goodness of fit test for the model were conducted, the results of these tests is in the appendices. The goodness of fit test checks for the consistency of the model - or how well the model can predict the outcome (Healy,2006). A correlation coefficient less than 0.6 or variance inflation factor less than 10 indicate uncorrelated variables or no multicollinearity between independent variables; for specification error, a statistically significant predict value (_hat) shows a completely specified model and an insignificant predicted value squared (_hatsp) means no variable has been omitted or link function is correctly specified while a large p-value for goodness-of-fit test signifies a fit model (Healy,2006;Menard, 2002; UCLA,2017)

Objective one: To achieve this objective, which is to determine the level of modern contraceptive use among young married women aged 15-24 years in Nigeria, a pie chart was used.

Objective two: To examine the socio-demographic factors associated with the use of modern methods of contraception was accomplished using binomial logistic regression model for unadjusted and adjusted odds ratio. 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. This test is used when the outcome

variable is dichotomous and there is no assumption of normality, linearity or homoscedasticity (Healy, 2006).

The formula used for this test is:

$$\text{Log}\left[\frac{p(x)}{1-p(x)}\right] = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \ldots + \beta_n x_n$$

$\text{Log}\left[\frac{p(x)}{1-p(x)}\right]$ = log odds ratio

β_0 = coefficient for intercept

$\beta_1 x_1 =$ coefficient for predictor variable 1

x_1 = predictor variable 1

(Cox, 1958)

Objective three: To assess the relationship between partner's socio-economic difference and use of modern methods of contraception among young married women in Nigeria was achieved using binomial logistic regression model. 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 formula for this test is:

$$\text{Log}\left[\frac{p(x)}{1-p(x)}\right] = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \ldots + \beta_n x_n$$

$\text{Log}\left[\frac{p(x)}{1-p(x)}\right]$ = log odds ratio

β_0 = coefficient for intercept

$\beta_1 x_1 =$ coefficient for predictor variable 1

x_1 = predictor variable 1 (Cox, 1958)

CHAPTER FOUR: DATA ANALYSIS

The first part of this chapter presents the distribution of the respondents by selected demographic and socio-economic characteristics; as well as their partner's differences; which could either affect contraceptive use directly or indirectly as established in the literature. A clear insight into the characteristics of the study population will enrich good and distinct understanding of the results in the latter part of this chapter.

Background characteristics are presented using descriptive statistics. The characteristics are divided into two sub-sections: demographic and socio-economic characteristics, and partner's differences. Descriptions of the respondents by selected demographic and socio-economic characteristics, partner's differences, and modern contraceptive use using a frequency and percentage distribution table and the bar chart is shown in table 4.1 and 4.2 below.

Table 4.3 and 4.4 show the cross tabulations of the independent variables with the dependent variable. Table 4.3 depicts the frequency and percentage distributions of selected respondents' characteristics by modern contraceptive use, while table 4.4 shows the frequency and percentage distribution of partner's difference by contraceptive use.

The latter part of the chapter contains table 4.5 and table 4.6. Table 4.5 shows the unadjusted (Model 1), adjusted (Model 2) odds ratio of the relationship between selected respondents' socio-economic characteristics and modern contraceptive use; and odds ratios for Model 3, which is the complete model that contains all the study variables. Table 4.6 shows the unadjusted (Model 1), adjusted (Model 2) odds ratio for the relationship between partner's differences and modern contraceptive use, and odds ratio for Model 3.

4.1 DESCRIPTION OF RESPONDENTS

This section comprises of the background characteristics of the respondents, partners' differences distribution and the answer to the first objective of this study, which is to assess the level of modern contraceptive use among young married women in Nigeria.

4.1.1 Selected Socio-Economic Characteristics

Table 4.1 below illustrates the weighted frequencies and percentages of the socio-economic characteristics of the respondents.

Table 4.1: Frequency and percentage distribution of respondents by selected demographic and socio-economic characteristics

CHARACTERISTICS	FREQUENCY (n= 4,981)	PERCENTAGE
AGE (Mean=20.19, SD=2.48)		
15-19	1,671	34.0
20-24	3,310	66.0
NUMBER OF LIVING CHILDREN		
None	1,119	22.5
1 child	1937	38.9
2 children	1,241	24.9
3 or more	683	13.7
HIGHEST LEVEL OF EDUCATION		
No education	2,862	57.5
Primary education	734	14.7
Secondary education	1,293	26.0
Higher education	92	1.8
RELIGION		
Catholic	307	6.2
Other Christians	851	17.1
Islam	3,749	75.3
Others	74	1.5
REGION		
North-Central	677	13.6
North-East	1,134	22.8
North-West	2,257	45.3
South-East	214	4.3
South-South	308	6.2
South-West	391	7.8
PLACE OF RESIDENCE		
Urban	1,253	25.2
Rural	3,728	74.8

Weighted frequencies may not add up to 4981 due to missing values. **SOURCE: NDHS 2013**

The results show that 66% of the respondents were between ages 20-24 years, 34% were in aged 15-19 years while the mean age of the respondent is 20 years. Most of the respondents (39%) have one living child, 22% have no living child, 25% have two living children and 14% have at least three children. Out of the overall sample, 58% of the respondents have no education while only 2% have tertiary education. Most of the respondents were Muslim 75%, 6% were Catholics, 17% were other Christians, and 2% practiced other religions. Close to half of the respondents

(45%) were residents in the North-western region, while 23% were in the North-eastern region, and 14% reside in the North central region. Also, 8% of the respondents reside in the South-west, 6% in the South-south and 5% reside in the South-east. More than two third of the respondents (75%) live in rural areas.

4.1.2 Partner Differences

Most the respondents (40%) are younger than their partner by 11 or more years, followed by those younger than their spouses by 6-10 years (38%), 22% were younger than their partners by 1-5 years while less than one percent were not younger than their partner (Table 4.2). Most of the respondents (43%) are uneducated and are married to uneducated men. More than one-fourth of the respondents (26%) are married to a partner who is more educated, 23% have the same level of education as their spouses while 9% are more educated than their partners. Just less than half of the participants (41%) are married to partners who desire more children than they do, 30% desired the same number of children as their spouses, 27% do not know their partners' fertility desire, and very few of them (3%) want more children than their partners. Half of the respondents are employed and married to employed partners at the time of the survey, 48% are unemployed but their partners were employed.

Table 4.2: Frequency and percentage distribution of respondents by partner's differences

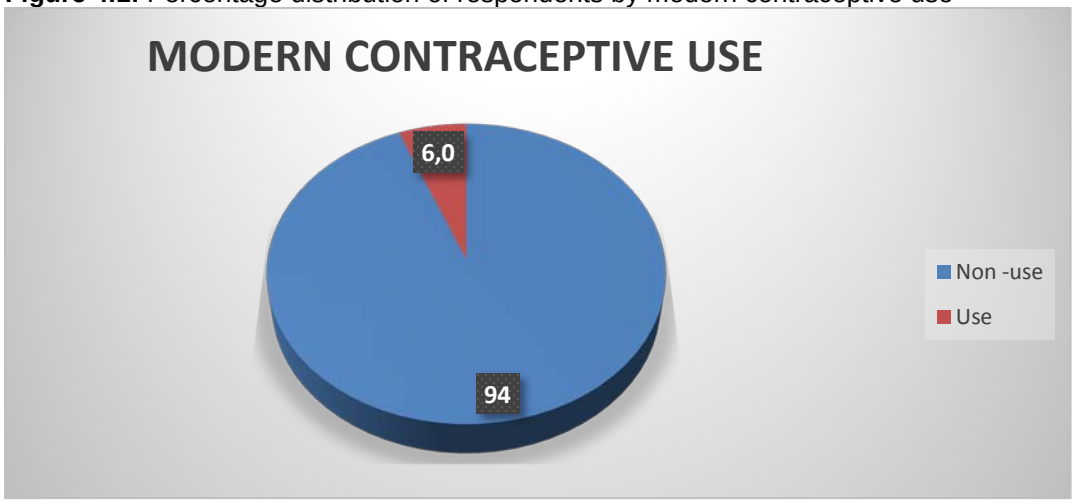
CHARACTERISTICS	FREQUENCY (n= 4,981)	PERCENTAGE
AGE DIFFERENCE		
Respondents not younger	34	0.7
Younger by 1-5years	1,072	21.5
Younger by 6-10years	1,891	38.0
Younger by11 or more years	1,984	39.8
EDUCATION DIFFERENCE		
Both uneducated	2,114	43.1
Same level	1,111	22.7
Respondent more educated	417	8.5
Partner more educated	1,264	25.8
FERTILITY DESIRE DIFFERENCE		
No difference	1,479	30.0
Partner wants more	2,026	40.7
Partner wants less	137	2.8
Don't know partner's desire	1,340	26.9
WORK DIFFERENCE		
Both Unemployed	34	0.7
Woman employed but partner unemployed	25	0.5
Woman unemployed with employed partner	2,388	48.4
Both Employed	2,485	50.4

***Weighted frequencies may not add up to 4981 due to missing values*.** **SOURCE: NDHS 2013**

4.1.3 Level of Modern Contraceptive Use

Figure 4.1 shows that most the respondents (94%) were not using any modern contraceptive method at the time of the survey. Very few of the young married women in Nigeria use a modern method of contraceptive (6%).

Figure 4.1: Percentage distribution of respondents by modern contraceptive use



4.2 DESCRIPTION OF MODERN CONTRACEPTIVE USERS AND NON-USERS

This section consists of a description of users of modern methods of contraception by selected socio-economic characteristics and modern contraceptive users by partner difference.

4.2.1 Description of Modern Contraceptive Users and Non-users by Selected Respondents' Socio-economic Characteristics

Table 4.3: Frequency and Percentage distribution of selected respondent characteristics by modern contraceptive use

	NON-USE		USE	
VARIABLE	**Frequency (n=4,683)**	**Percentage (94.0%)**	**Frequency (n=298)**	**Percentage (6.0%)**
AGE				
15-19	1645	35.1	26	8.7
20-24	3038	64.9	272	91.3
NUMBER OF LIVING CHILDREN				
None	1,102	23.5	16	5.5
1 child	1,797	38.4	140	47.0
2 children	1,147	24.5	94	31.7
3 or more	637	13.6	47	15.7

Table 4.3 continues

HIGHEST LEVEL OF EDUCATION				
No education	2846	60.8	17	5.6
Primary	679	14.5	55	18.5
Secondary	1087	23.2	206	69.2
Higher	72	1.5	20	6.6
PLACE OF RESIDENCE				
Urban	1,096	23.4	157	52.8
Rural	3,588	76.6	140	47.2
RELIGION				
Catholic	256	5.5	50	16.9
Other Christian	688	14.7	163	54.7
Islam	3666	78.3	84	28.2
Others	73	1.6	1	0.3
REGION				
North-Central	617	13.2	59	20.0
North-East	1,120	23.9	14	4.6
North-West	2,209	47.2	48	16.0
South-East	188	4.0	26	8.9
South-South	239	5.1	68	23.0
South-West	308	6.6	82	27.5

Weighted frequencies may not add up to 4981 due to missing values. ***SOURCE: NDHS 2013***

Table 4.3 depicts modern contraceptive use by respondents' socio-economic characteristics. Most of the respondents who use modern methods (91%) are 20-24 years of age. The least of the modern contraceptive users (5%) have no living children, 16% have at least three children, 32% have two living children, 47% have just one living child. The results showed that most of the respondents who used modern contraceptive methods had only up to secondary education (69%), while only 6% of those who use modern contraceptives have no education. More than half (53%) of those who used modern methods lived in urban areas. Most of those who use modern contraceptive methods were from the South-West region (28%), while the region with the smallest percentage of contraceptive users is the North-East.

4.2.2 Description of Modern Contraceptive Users and Non-users by Partner Differences

From table 4.4 below, almost an equal proportion of those who used modern contraceptive methods were younger than their partners by 1-5 years and 6-10 years (37% each), followed by those who were younger than their partners by 11 or more years (25%). Very few of those who used modern contraceptives (2%) were not younger than their partners.

Table 4.4: Frequency and Percentage distribution of partner's differences by modern contraceptive use

	NON-USE		USE	
VARIABLE	**Frequency (n=4,683)**	**Percentage (94.0%)**	**Frequency (n=298)**	**Percentage (6.0%)**
AGE DIFFERENCE				
Respondent not younger	29	0.6	5	1.7
Younger by 1-5 Years	963	20.6	109	36.6
Younger by 6-10 Years	1,781	38.0	110	36.9
Younger by 11 or more	1,910	40.8	74	24.8
EDUCATION DIFFERENCE				
Both uneducated	2,105	45.6	8	2.9
Same level	934	20.3	177	60.3
Respondent more educated	381	8.3	36	12.2
Partner more educated	1,192	25.8	72	24.7
WORK DIFFERENCE				
Both Unemployed	26	0.6	8	2.6
Respondent employed but partner unemployed	22	0.5	3	1.0
Respondent unemployed but employed partner	2,293	49.5	96	32.3
Both Employed	2,294	49.5	190	64.1
FERTILITY DESIRE DIFFERENCE				
No difference	1,340	28.6	138	46.4
Partner wants more	1,960	41.9	66	22.0
Partner wants less	116	2.5	22	7.3
Don't know partner's desire	1,267	27.1	72	24.3

Weighted frequencies may not add up to 4981 due to missing values*.** ***SOURCE: NDHS 2013

Most of those who used modern contraceptives (60%) were at the same level of education as their partners, while those with no education whose husbands were also not educated reported the lowest percentage of use of modern contraceptive methods (3%). More than half of those who used modern contraceptive methods (64%) were employed and were married to partners who were employed, while the least users were those who were employed but their partners were unemployed (1%). Most of respondents who used modern contraceptive methods desired the same number of children as their spouses (46%), while the lowest proportion of users (7%) were those whose partners desired more children**.**

4.2.3 Description of Partner Difference by Modern Contraceptive Use and Non-use

The proportion of those who used modern methods of contraception decreases as age differences between respondents and their spouses increase (Figure 4.2). More than one-tenth (15%) of respondents who were not younger than their spouse's used modern methods of contraception followed by those who were younger than their spouses by 1-5 years (10%). Very few of those who were younger than their spouses by 6-10 years and those younger by 11 years or more used modern methods of contraception (6% and 4% respectively).

Figure 4.2: Percentage distribution of modern contraceptive users by partner's age difference

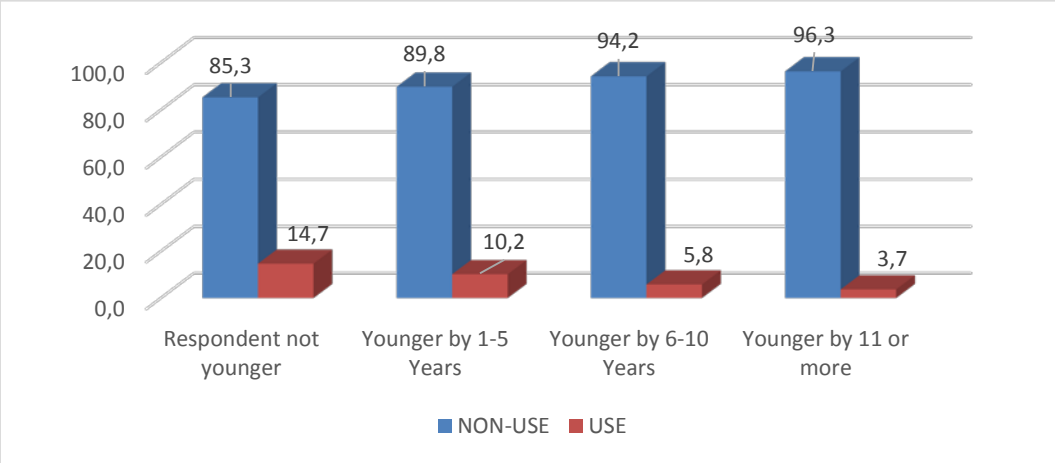
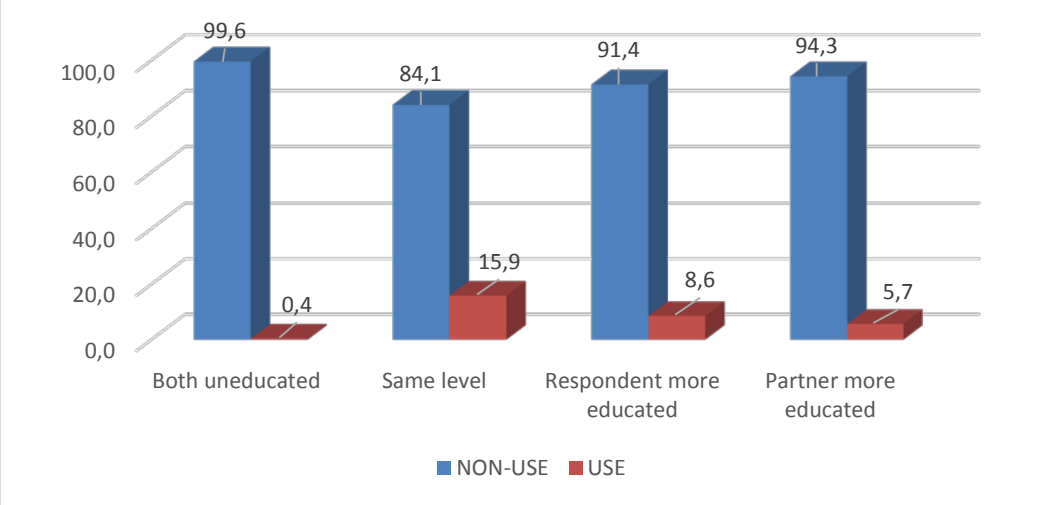


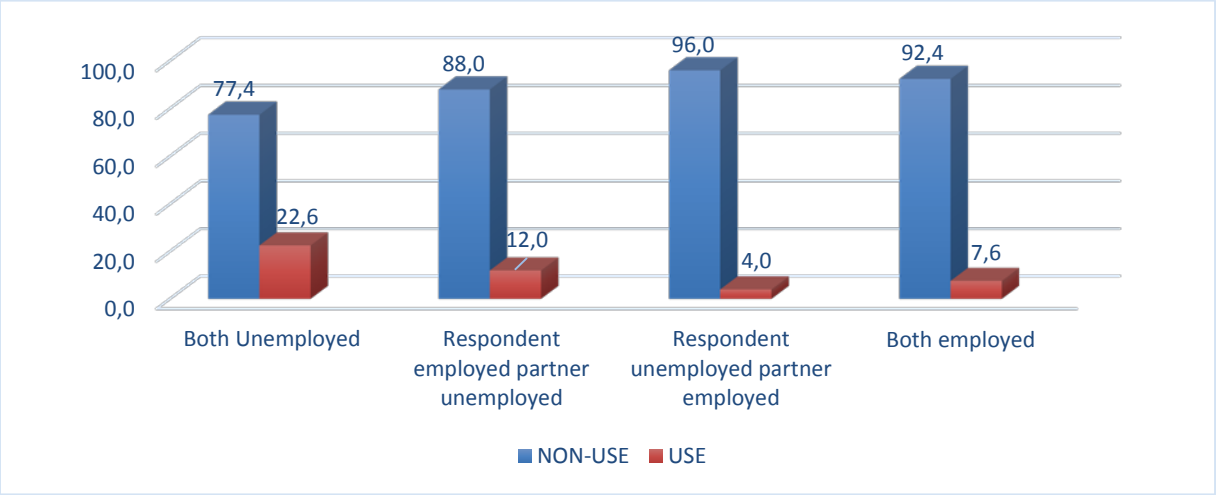
Figure 4.3 shows that very few of those with no education whose husbands were also not educated reported modern contraceptive use (<1%). Also, few of those whose partners were more educated used modern methods of contraception (6%), 9% of respondents who were more educated than their spouses used modern methods of contraception, while 16% of those at the same level of education as their partners used modern methods of contraception.

Figure 4.3: Percentage distribution of modern contraceptive use by partner's education difference



More than one-fifth of respondents who were unemployed with unemployed partners used modern methods of contraception (23%). More than one-tenth of respondents who were employed but their partners were unemployed reported modern contraceptive use (12%), 8% of respondents who were employed and were married to partners who were employed used modern methods of contraception. Very few of those who were unemployed with employed partners used modern methods of contraception (4%) (Figure 4.4).

Figure 4.4: Percentage distribution of modern contraceptive use by partner's employment difference



More than one-tenth of respondents whose partner wanted fewer children than them used modern methods of contraception, 9% of respondents who desired the same number of children as their spouse's used modern methods of contraception; while very few respondents whose spouses desired more children reported modern contraceptive use (3%) (Figure 4.5).

Figure 4.5: Percentage distribution of modern contraceptive use by partner's fertility desire difference

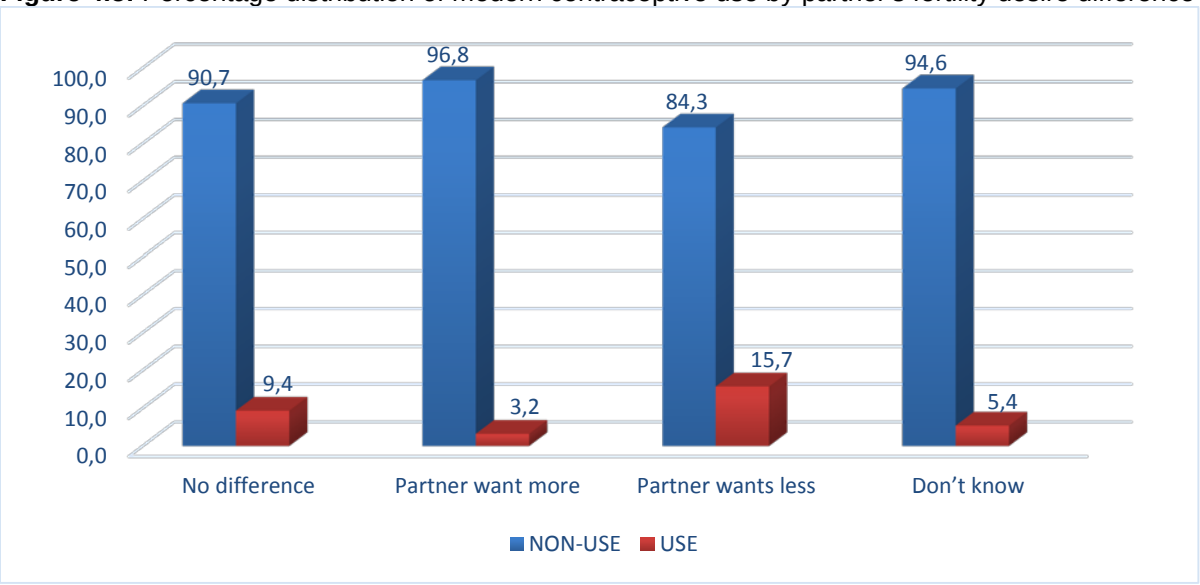


Table 4.5: Unadjusted and Adjusted odds ratio of the relationship between respondents' socio-economic characteristics and modern contraceptive use

	MODEL 1		MODEL 2		MODEL 3	
VARIABLE	**OR [95% CI]**	**P-VALUE**	**OR [95% CI]**	**P-VALUE**	**OR [95% CI]**	**P-VALUE**
AGE	1.400* [1.320, 1.485]	0.000	1.145* [1.063, 1.233]	0.000	1.125* [1.042,1.213]	0.002
NUMBER OF LIVING CHILDREN						
None	RC					
1 child	5.274* [3.141, 8.858]	0.000	3.154* [1.833, 5.428]	0.000	3.009* [1.741, 5.201]	0.000
2 children	5.576* [3.274, 9.494]	0.000	3.271* [1.855, 5.769]	0.000	3.338* [1.884, 5.915]	0.000
3 or more	4.984* [2.814, 8.832]	0.000	3.750* [2.011, 6.993]	0.000	4.053* [2.158, 7.611]	0.000
RELIGION						
Catholic	*RC*					
Other Christians	1.207 [0.853, 1.709]	0.287	0.817 [0.553, 1.206]	0.309	0.868 [0.583, 1.293]	0.487
Islam	0.117* [0.080, 0.169]	0.000	0.310* [0.195, 0.493]	0.000	0.359* [0.223, 0.575]	0.000
Others	0.061* [0.007, 0.511]	0.010	0.103 [0.012, 0.907]	0.041	0.134 [0.015, 1.180]	0.070
REGION						
North-Central	*RC*					
North-East	0.128* [0.070, 0.232]	0.000	0.399* [0.212, 0.754]	0.005	0.435* [0.227, 0.831]	0.012
North-West	0.224* [0.151, 0.331]	0.000	0.851 [0.541, 1.338]	0.485	0.946 [0.592, 1.510]	0.815
South-East	1.460 [0.898, 2.376]	0.127	0.464* [0.272, 0.791]	0.005	0.537* [0.310, 0.33]	0.027
South-South	2.962* [2.030, 4.322]	0.000	1.286 [0.846, 1.956]	0.239	1.443 [0.932, 2.234]	0.100
South-West	2.751* [1.918, 3.947]	0.000	1.650* [1.087, 2.503]	0.019	1.808* [1.173, 2.786]	0.007
PLACE OF RESIDENCE						
Urban	*RC*					
Rural	0.273* [0.215, 0.346]	0.000	0.624* [0.464, 0.838]	0.002	0.673* [0.496, 0.911]	0.011
HIGHEST LEVEL OF EDUCATION						
Higher education	*RC*					
No education	0.021* [0.011, 0.042]	0.000	0.094* [0.043, 0.208]	0.000	0.106* [0.038, 0.291]	0.000
Primary	0.295* [0.167, 0.521]	0.000	0.568 [0.302, 1.069]	0.080	0.436* [0.215, 0.885]	0.022
Secondary	0.689 [0.410, 1.159]	0.160	0.902 [0.512, 1.587]	0.721	0.859 [0.411,1.400]	0.377

**** significant at 0.05 level of significance. RC-reference category, OR-odds ratio, 95% CI- 95% confidence interval. SOURCE: NDHS 2013***

Model 3 Pseudo R^2= 0.2793

Model 1 in table 4.5 above is the unadjusted model for each of the socio-economic variables, Model 2 represent the multivariate model for all the socio-economic variables while Model 3 is the regression model adjusting for all the socio-economic variables and partner difference variables.

Model 1 in Table 4.5 shows a significant relationship between age and modern contraceptive use; as age increases the probability of using modern contraception by 40% (OR=1.400, CI 1.320-1.485). This result remains significant even after adjusting for the effects of other socio-economic variables (model 2). For every one year increase in age, the probability of using modern methods of contraception increases by 14% (OR= 1.145, CI 1.063-1.233). Also after controlling for partner differences and socio-economic characteristics of respondents (Model 3), the probability of using modern contraceptives increases by 12% for every year increase in age (OR=1.125, CI 1.042-1.213).

The probability of using modern contraceptives increase with increased number of living children. The odds of using modern contraceptives for respondents with one living child is 5.3 times the odd for respondents with no living children (OR=5.274, CI 3.141-8.858); controlling for the respondents' age, religion, education region and place of residence, their odds of using modern contraceptives is three times the odds for respondents without living child (OR= 3.154 CI 1.833-5.428). Adjusting for socio-economic and partner difference variables in the model the odds of using modern contraceptives for respondents with one living child is three times the odds for respondents with no living children (OR=3.009, CI 1.741-5.201). Respondents with only two living children are 5.6 times most likely to use modern contraceptives compared to respondent without any living child (OR=5.576, CI 3.274-9.494). Controlling for the respondent's socio-economic characteristics, respondents with two living children are 3.3 times most likely to use modern contraceptives compared to respondents with no children (OR=3.271, CI 1.855-5.769). Controlling for both socio-economic and partner difference variables the odds remain 3.3 times the odds for respondents with no child (OR=3.338, CI 1.884-5.915). Respondents with three or more living children are five times most likely to use modern contraceptives compared to respondents with no living child (OR=4.984, CI 2.814- 8.832). Adjusting for socio-economic variables, respondents with three or more living children are 3.7 times more likely to use modern contraceptives compared to respondent with no children (OR=3.750, CI 2.011-6.993). After controlling for both socio-economic and partner difference variables, respondents with three or more living children are four times most likely to use modern contraceptives compared to respondents with no living children (OR=4.053, CI 2.158-7.611).

Other Christian affiliations show no significant relationship with the use of modern contraceptives, even after adjusting for the other variables in models 2 and 3. The odds of using modern contraceptives is 88% lower amongst Islamists, compared to Catholics (OR=0.117, CI 0.080-0.169). Adjusting for the effects of other socio-economic variables in model 2, the probability that Muslim women will use modern contraception reduces to 69% compared to the Catholics and the relationship remains significant (OR=0.310, CI 0.195-0.493). Controlling for all the study variables in model 3, the probability of Islamists using modern contraceptives is 64% lower compared to Catholics (OR=0.359, CI 0.223-0.575). Young women who practice other religions are 94% less likely to be using modern contraceptives compared to Catholics (OR= 0.061, CI 0.007- 0.511). Controlling for the effect of the other socio-economic variables in model 2, as well as in model 3, the relationship became statistically insignificant.

Regarding the effects of region of residence, the unadjusted odds ratio from model 1 shows that respondents in the North-East are significantly less probable of using modern contraceptives that respondents from other regions. The probability of using modern contraceptives among respondents in the North-East is 87% lower, compared to those in the North-Central region (OR =0.128, CI 0.070-0.232). Adjusting for other socio-economic variables in model 2, the probability is 60% lower (OR=0.399, CI 0.212-0.754); and 56% lower in model 3 (OR=0.435, CI 0.227-0.831). Table 4.5 also shows that the probability of using modern contraceptives amongst respondents in the North-West region is 78% lower compared than those in the North-Central region (OR=0.224, CI 0.151-0.331).

The odds of using modern contraceptives amongst respondents in the South-West region is 2.8 times greater than the odds amongst the respondents in the North-Central region, at 5% level of significance (OR=2.751, CI 1.918-3.947). After controlling for other socio-economic variables, the odds is 65% higher than the odds for the respondents in the North-Central region (OR= 1.650, CI 1.087-2.503). After adjusting for socio-economic and partner difference variables in model 3, the odds of using modern contraceptives amongst respondents in the South-West region is 1.8 times the odds amongst the respondents in North-Central region (OR=1.808, CI 1.173-2.786).

Both adjusted and unadjusted odds ratios from the models revealed that the probability of using modern contraceptives is significantly lower for respondents in rural areas, compared with respondents in urban areas. The odds of modern contraceptives among women in rural areas is 73% lower compared to respondents residing in urban areas (OR=0.273, CI 0.215-0.346). When other socio-economic variables were adjusted for, the probability of using modern contraceptives

among respondents in rural areas was 37% lower compared to those in urban areas (OR=0.624, CI 0.464-0.838). These odds remain almost the same after controlling for partner's difference variables in model 3 (OR=0.673, CI 0.496-0.911).

The unadjusted odds ratio for the highest level of education showed that the probability of using modern contraceptives decreases as the level of highest education increases. The odds of using modern contraceptives among respondents with no education was 98% lower compared to those with higher education in model 1 (OR=0.021, CI 0.011-0.042). Controlling for other socio-economic variables in the model, the odds were 89% lower (OR=0.094, CI 0.043-0.208) and 87% lower after adding partner difference variables in model 3 (OR=0.106, CI 0.038-0.291).

The probability of using modern contraceptives is 70% lower for respondents with primary education, compared to those with higher education (OR=0.295, CI 0.167-0.521). Adjusting for other socio-economic and partner difference variables the odds of using modern contraceptives is 57% lower compared to the odds for respondents with tertiary education (OR=0.436, CI 0.215-0.885).

Table 4.6: Unadjusted and Adjusted odds ratio of the relationship between partner's difference and modern contraceptive use

	MODEL 1		MODEL 2		MODEL 3	
VARIABLE	**OR [95% CI]**	**P-VALUE**	**OR [95% CI]**	**P-VALUE**	**OR [95% CI]**	**P-VALUE**
AGE DIFFERENCE						
Not Younger	*RC*					
Younger by 1-5 years	0.655 [0.247, 1.732]	0.394	1.396 [0.495, 3.936]	0.528	0.985 [0.347, 2.795]	0.978
Younger by 6-10 years	0.357* [0.135, 0.943]	0.038	0.909 [0.322, 2.571]	0.858	0.772 [0.271, 2.194]	0.627
Younger by 11 or more years	0.223* [0.084, 0.595]	0.003	0.684 [0.238, 1.961]	0.479	0.678 [0.235, 1.956]	0.472
EDUCATION DIFFERENCE						
Same level	*RC*					
Both uneducated	0.021* [0.010, 0.042]	0.000	0.029* [0.014, 0.058]	0.000	0.506 [0.180, 1.422]	0.196
Respondent more educated	0.498* [0.341, 0.726]	0.000	0.608* [0.412, 0.895]	0.012	0.618* [0.410, 0.931]	0.021
Partner more educated	0.321* [0.241, 0.427]	0.000	0.393* [0.292, 0.527]	0.000	1.143 [0.801, 1.631]	0.460
WORK DIFFERENCE						
Both unemployed	*RC*					
Woman Employed Partner unemployed	0.466 [0.108, 2.004]	0.305	0.470 [0.104, 2.119]	0.326	0.631 [0.133, 2.996]	0.563
Woman Unemployed Partner employed	0.143* [0.062, 0.328]	0.000	0.365* [1.102, 3.130]	0.024	1.025 [0.403, 2.604]	0.958
Both Employed	0.283* [0.124, 0.654]	0.003	0.498* [0.533, 0.991]	0.113	1.087 [0.433, 2.733]	0.858
FERTILITY DESIRE DIFFERENCE						
No difference	*RC*					
Partner wants more	0.325* [0.240, 0.439]	0.000	0.577* [0.417, 0.797]	0.001	0.941 [0.661, 1.340]	0.738
Partner wants less	1.812* [1.108, 2.963]	0.018	1.857* [1.102, 3.130]	0.020	1.374 [0.794, 2.375]	0.256
Don't know partner's desire	0.554* [0.413, 0.744]	0.000	0.727* [0.533, 0.991]	0.044	0.851 [0.610, 1.189]	0.345

**** significant at 0.05 level of significance. RC- reference category, OR-odds ratio, 95% CI- 95% confidence interval.*** ***SOURCE: NDHS 2013***

Model 3 Pseudo R^2= 0.2793

The unadjusted odds of using modern contraceptives decreases as age differences between respondents and their partner's increase. Respondents who were younger than their partners by 6-10 years are 64% less likely to use modern contraceptives, compared to those who were not younger than their spouses (OR=0.357, CI 0.135-0.943). A respondent who is younger than her spouse by 11 or more years is 78% less likely to use modern contraceptives compared to the one who is not younger than her partners (OR=0.223, CI 0.084-0.595). Adjusting for other variables, none of the categories of age differences were statistically significant, but the odds revealed a decrease in the likelihood of using modern contraceptives as the gap between the ages of the respondents and their partner increases.

The odds of using modern contraceptives for respondents who are uneducated and are married to uneducated partners is 98% lower compared to those who are at the same level of education with their partner (OR=0.021, CI 0.010-0.042). The odds remain almost the same after adjusting for other partner difference variables; the likelihood of using modern contraceptives for respondents who are uneducated and are married to uneducated partners is 97% lower compared to those who were at the same level of education with their partners (OR=0.029, CI 0.014-0.058). The odds of using modern contraceptives for respondents who are more educated than their partners is 50% lower compared to those who were at the same level of education as their partner (OR=0.498, CI 0.341-0.726). After adjusting for other partner difference variables in model 2, the odds of using modern contraceptives is 39% lower compared to those who were at the same level of education as their partner (OR=0.608, CI 0.412-0.895). Adjusting for the effects of all the study variables in model 3, the probability for this group of respondents using modern contraceptive became 39% lower compared to those at the same level of education (OR=0.618, CI 0.410-0.931). The odds of using modern contraceptives for respondents whose partners are more educated than them is 68% lower compared to those who were at the same level of education with their partner (OR=0.321, CI 0.241-0.427). Controlling for other partner difference variables in model 2, the odds is 61% lower (OR 0.393, CI 0.292-0.527).

The odds of using modern contraceptives for respondents who are unemployed, but their partner is employed is 86% lower compared to those who were unemployed and whose partner too was unemployed (OR=0.143, CI 0.062-0.328). After controlling for other variables in model 2, the odds of using modern contraceptives was 64% lower compared to those who are unemployed and whose partner too are unemployed (OR=0.365, CI 1.102-3.130). The odds of using modern contraceptives for respondents who are employed and whose partners are employed is 72%

lower compared to those who were unemployed and whose partner too was unemployed (OR=0.283, CI 0.124-0.654).

The likelihood of using modern contraceptives is 67% lower for respondents whose partners want more children than them compared to those whose partners want the same number of children as they do (OR=0.325, CI 0.240-0.439). After controlling for other partner difference variables, the likelihood is 42% lower (OR=0.577, CI 0.417-0.797). The odds of using modern contraceptives by respondents whose partner want fewer children is almost twice the odds for those whose partners want the same number of children as they do (OR=1.812, CI 1.108-2.963). When other partner difference variables were controlled for in model 2, the result remained significant and it is 27% lower compared to those who want the same number of children as their partners (OR=1.857, CI 1.102-3.130).

CHAPTER FIVE: DISCUSSION, CONCLUSION, AND RECOMMENDATION

This study has tackled three specific objectives. First, it examined the levels of modern contraceptive use among young (15-24 years old) married women in Nigeria. Second, it identified the socio-economic characteristics of young women associated with their use of modern methods of contraception in Nigeria. Third, it determined the relationship between partner's differences and the use of modern contraceptives among young married women in Nigeria.

Contraception is one of the major determinants of fertility. The role of modern contraception in reproductive health and population cannot be over emphasized. Nevertheless, in Nigeria, modern contraception is low; unmet needs for contraception and fertility is high resulting in speedy population growth and high maternal and child mortality and morbidity (MacQuarrie & Kerry, 2014). Hence paying attention to factors associated with the low level of modern contraceptive use especially among young married women in Nigeria is important to address the challenge.

The purpose of this chapter is to present the discussion of findings of this study. Moreover, it presents the study's conclusion and recommendations. Summaries of the findings presented in the fourth chapter are expounded and discussed in relation to the literature.

This chapter is divided into segments. The first section presents the discussion, the second segment the strengths and weaknesses of the study while the third segment shows the conclusions, recommendations and policy implications of the findings, and some leading edge for future research.

5.1 DISCUSSION OF FINDINGS

This study revealed that the prevalence of modern contraceptive use among young married women in Nigeria is low (4%), compared to some other African countries - such as 36% and 34% for Ethiopia and Uganda respectively (Asiimwe, Ndugga, Mushomi, & Ntozi, 2014; Worku et al., 2015). Previous studies had confirmed that the use of modern methods of contraception in Nigeria is low (Lamidi, 2015; F. M. OlaOlorun & Hindin, 2014). This could be because young women who are married in Sub-Saharan Africa do not have the final say regarding their own health care and they lack access to ample and correct sexual and reproductive health information (UNAIDS,

2014). Second, this study examined the association between some selected socio-economic characteristics and use of modern methods of contraception. This study ascertained a positive relationship between women's socio-economic status and their reported use of modern contraceptives. As the women's socio-economic status increases their reported use of modern contraceptives increased.

Age is strongly associated with modern contraceptive use. Use is higher among older youth (20-24 years). This is expected because older women have a higher number of children compared to the younger women, so use may be higher among them to space or delay or stop births (Achana et al., 2015). Due to strong socio-cultural expectations of child-bearing in the country, modern contraceptive use is expected to be lower among younger married women (15-19 years) compared to older age groups. This result is in accordance with the findings of previous studies. Modern contraceptive use was found to be higher among women aged 20-24 compared to women aged 15-19 years in Northern Nigeria (Unumeri et al., 2015). Similarly, in the Upper Eastern region of Ghana modern contraceptive use among 15-19 year olds was lower compared to older women (Achana et al., 2015). Women aged 20-24 years are likely to be more educated, more mature and enlightened; compared to those 15-19 year olds - particularly in terms of contraception (Nyarko, 2015).

Number of living children has a strong association with the use of modern contraceptives. This is consistent with previous studies (Farrell, Masquelier, Tissot, & Bertrand, 2014). Use increases as the number of living children increase. This could be that families find that increased cost of living, such as feeding, clothing, housing and education; and providing quality care for each additional child becomes ever more challenging. Moreover, as the number of living children increase, there are tendencies that the desired number of children has been achieved. Therefore, modern contraceptive use is expected to increase.

Consistent with previous literature, education influences contraceptive use. As the level of education increases, use of modern contraceptives also increases. Formal education increases knowledge and awareness of contraceptives, which gives access to information and increases women's agency. Education has been confirmed in numerous studies to be a predictor of modern contraceptive use (Achana et al., 2015; F. OlaOlorun, Seme, Otupiri, Ogunjuyigbe, & Tsui, 2016b; Stanfors & Larsson, 2014). In this study, less than 28% of women had up to secondary or tertiary education, and as high as 58% of the women had never been to school. The low level of education in this group explains why their use of the modern contraceptive methods is low. Hence, low level

of education among young married women in Nigeria is one of the factors associated with low level of modern contraceptive use among this group.

Place of residence is associated with modern contraceptive use - there is a higher prevalence of contraceptive use in the urban areas, compared to the rural areas. This is expected as previous studies have consistently shown a positive correlation between place of residence and modern contraceptive use. Women in urban areas have consistently reported higher modern contraceptive use compared to women in rural areas (Farrell et al., 2014; Nyarko, 2015). This is because there is a higher cluster of health facilities and qualified family planning providers in urban areas compared to rural areas in Nigeria. Hence, access to modern contraceptives is higher in urban areas compared to rural areas. Also, most of the health promoting programmes by the government and private sectors happens in the urban areas which make women in these areas to be more frequent with behavioural change information (Unumeri et al., 2015).

The study further found the region of residence to be associated with the use of modern methods of contraception, especially in the North-East and the South-West which were consistently significant at all the three models Young married women in the South-West were more likely to use modern contraceptives than any young married women in other regions of the country. This could be a sign of good socio-economic status and reproductive health among residents of southwest Nigeria compared to the other regions (Feyisetan & Bankole, 2009; Izugbara, Ibisomi, Ezeh, & Mandara,2010).

Young married women who practice Islam were less likely to be using modern contraceptives, compared to Catholics. This is in contrast to what was found in among female adolescents in Ghana where Muslims were 14% more likely to use contraceptives compared to Catholics (Nyarko, 2015). Findings from another study in Cameroun, Senegal and Burundi revealed that Muslims are more likely to use modern methods in Cameroun and Senegal, while they are less likely in Burundi (Farrell et al., 2014). However another study in Nigeria on state variations in the use of modern methods of contraceptives reported lower use among Muslims in Nigeria, compared to their Catholic counterparts (Lamidi, 2015). Other religious affiliations, such as other Christians, showed no significant association with the use of modern methods of contraception. A plausible reason for the lower use among Muslims who are dominant in this study is that Islam religion support polygamy, which promotes strive for childbearing among co-wives, especially of male children to secure their seats in the household (Unumeri et al., 2015).

This primary focus of this study was about partner asymmetries and modern contraceptive use among young married women in Nigeria. From the results, nearly all the respondents are younger than their spouse, with about 78% being younger by six years or more. Large partner age difference is negatively associated with modern contraceptive use among young married women in Nigeria, although the relationship is insignificant in the multivariate analysis where women's characteristics and other partner difference variables were controlled for. These findings offer support to earlier research that examined the relationship between spousal age difference and women's contraceptive behaviour in Nigeria. Using DHS couples dataset, it was found that large age difference between partners is associated with low contraceptive use at the bivariate level of analysis (Ibisomi, 2014). Large age difference in a marital union may not be a threat to reproductive health as it is in non-marital relationships, as much as studies have indicated a reduction in age gap between partners as one of the factors associated with improvement in young women reproductive health (Manlove et al., 2009; Wildsmith et al., 2015).

Almost half of the respondents are unemployed with an employed partner and they are less likely to use contraceptives, compared to when both partners were unemployed. This may be because when only the man is the breadwinner of the house he tends to see modern contraceptive as an extra cost for the family considering the cost and the side effects. Another reason could be that when the husband is employed and the woman is not employed it may reduce the woman's autonomy in household decision-making which is more likely to affect their contraceptive use; numerous study have found this to be associated with modern contraceptive use (Lamidi, 2015; F. M. OlaOlorun & Hindin, 2014).

Women who are more educated than their partners are less likely to use modern contraceptives, compared to women who are on the same level of education as their husbands. A plausible explanation for this could be that balanced level of educational status in a union increases women's autonomy and increases their participation in decision-making in the family. Many studies have established a positive association between women autonomy, decision-making power and contraceptive use (Mboane & Bhatta, 2015). Previous studies have revealed that balanced relationships encourage communication hence increases the probability of contraceptive use (Manlove et al., 2007; Wildsmith et al., 2015).

Most the respondents are married to partners who want more children than them. The spousal difference in fertility desire is associated with modern contraceptive use in both the unadjusted and adjusted models. Young married women are more likely to use contraceptives when their

partner wants fewer number of children compared to when they want the same number of children or the woman wants less. This finding is similar with the result from a study of trends in contraceptive use among young women in Ethiopia, which reported a decline in the percentage of husbands who want more children than their wives contributing significantly to the increase in modern contraceptive use over the survey period (Worku et al., 2015). Also, in Mozambique women whose partner wants a higher number of children than them are less likely to use contraceptive compared to when they want the same number of children (Mboane & Bhatta, 2015). This is because, in a patriarchal society, men desire more children than women and husband's disapproval of contraceptives may prevent wives who want to delay or limit births from using contraceptives; the decision of the man overrides that of the women(Barden-O'Fallon & Speizer, 2010).

Overall, partner socio-economic difference is not associated with low modern contraceptive use among young married after adjusting for the women's characteristics. This may be because of the desire for large families in the country which is evident in the total wanted fertility rate of 4.8 children per woman in the country (NPC & ICF,2014).

This study launched out with the Health Belief Model to explain the relationship between partner's difference and modern contraceptive use. The health belief model has a lot of construct in explaining contraceptive behaviour such as perceived risk of unintended pregnancy, perceived severity, perceived benefits, barriers to use, modifying or enabling factors and cue to action. However, this study only considered the modifying factors which are the respondent's background characteristics in the study; and proposed barriers (partner's socio-economic differences). The respondent's characteristics, as well as the partner's socio-economic difference, were expected to be associated with modern contraceptive use. Nevertheless, the findings from this study revealed an association between the modifying factors and contraceptive use and between the partner's difference independently with contraceptive use. The framework to an extent can be said to be suitable for the study but partner difference regarding this study is not a barrier to modern contraceptive use among young married women in Nigeria. Partner's socio-economic difference may not be regarded as barriers to modern contraceptive use as explained by the health belief model except all the other construct of the model not included in this study are measured. This is supported by the specification error test for model 3 (association between partner's difference, socio-economic characteristics and modern contraceptive use) which revealed that more variables are needed to explain modern contraceptive use among young married women in Nigeria (hatsq>0.05).

5.2 STRENGTHS AND WEAKNESS

The limitations of this study include that the data used is from a cross-sectional survey and so suffers temporal defects. A causal relationship between the outcome of interest (modern contraceptive use) and partner asymmetries cannot be established. Also, the limited use of all Health Belief Model constructs to explain modern contraceptive use among young married women in this study may affect the findings. Another short-coming of this study is that it made use of secondary data in which women's influence was inadequately measured, as joint decision-making and wife controlled decision-making were considered together. These limitations were taken into consideration in the interpretations and discussion of the results from this study.

The strengths of this study include the use of a nationally representative dataset, which allows for the generalization of findings. The survey employed a sampling method which allows for the collection of a representative sample.

Furthermore, the use of a multivariate binomial logistic model to examine the relationship between modern contraceptive use and partner asymmetries, controlling for other covariates is another advantage because it reveals whether the relationship between variables is real or spurious. In addition, diagnostic tests were carried out to ensure that the model fits the data. Strengths of this study also include the use of survey weight to adjust for sampling error and non-responses during the survey.

5.3 CONCLUSION

In conclusion, this study set out to answer three research questions: (1) what is the level of modern contraceptive use among young married women aged 15-24 in Nigeria? (2) what are the socio-economic characteristics of young married women associated with their use of modern contraceptives? (3) what is the relationship between partner's socio-economic and demographic difference and use of modern contraceptives among young married women in Nigeria? These research questions were answered, results from 2013 NDHS individual recode data have indicated some findings and contribution to knowledge.

Modern contraceptive use is low among young married women in Nigeria compared to their counterparts in other African countries. This may be because of their low socio-economic status,

most of them are uneducated and reside in rural areas and in North-west Nigeria. Those who are highly educated, residents in urban areas and southern Nigeria reported higher use.

Young married women in Nigeria have a very low socio-economic status. Few of them are educated very minute of which have higher education. Young married women's highest level of education, number of living children, place of residence and region of residence affects their use of the modern contraceptives in Nigeria.

Young married women in Nigeria are married to husbands who are older than them by at least five years and who wants more children than they do. Modern contraceptive use is higher among those who are in more homogamous union although this is influenced by the status of the woman. Differences in partners characteristics do not have influence on modern contraceptive use among young married women provided they have high socio-economic status. Young married women socio-economic characteristics is key in determining modern contraceptive use in Nigeria.

5.4 POLICY IMPLICATION AND RECOMMENDATION

Findings from this study have crucial programmatic and policy implications not only for the young married women but all women in Nigeria. Much still needs to be done to achieve increased modern contraceptive use among young married women in Nigeria. International organisations and donor communities need to double their effort to ensure a considerable rise in modern contraceptive use among young married women, and perhaps the country would be placed on track towards achieving the country's new plan of 36% contraceptive prevalence rate by 2018 and the Sustainable Development Goal (SDG) 3.7.

At the current rate of modern contraceptive use, the country's aim of achieving 36% national contraceptive prevalence rate by 2018 may not be possible with repercussions on reproductive health, child health, and women development unless effort towards achieving it are intensified.

A recent finding by USAID/Africa Bureau (2011) indicated Ethiopia as one of the three countries in the region with accelerated increase in modern contraceptive use. Ethiopia witnessed a substantial increase in young women's modern contraceptive use from 5.76% in 2000 to 35.61% in 2011; this was ascribed to arduous family planning programs by the government and NGOs through the development of the health care infrastructure and increased government attention to meeting the MDG goals owing to the health sector development schemes (Worku et al., 2015).

Nigeria may consider employing the same method to increase modern contraceptive use among this group in the country.

Although the federal government of Nigeria has approved the distribution of free family planning supplies in public health facilities by the Federal Ministry of Health to ensure Nigerians unlimited access to contraceptives, a lot still need to be done in educating young married women on ample and accurate information on modern contraceptives and its benefit to ensure they use the supplies (FMoH, 2013a).

These findings support the call for young women education empowerment especially rural women, targeting men for significant commitment to reproductive health programs and re-orientation on cultural beliefs towards desiring many children. This is important for the country as modern contraception is an operational public health tool that guarantees women staying healthy, more productive, and more opportunity for education, training, and employment, which in turn, benefits entire families, communities and the nation (Obaid, 2009).

5.5 FRONTIERS FOR FUTURE STUDY

Future study on modern contraceptive use among young married women in Nigeria using health belief model will benefit from moving beyond, modifying factors and just one construct of the model, all the construct of the health belief model may give a better explanation for low modern contraceptive use among young married women in Nigeria. Qualitative methodology is also recommended to explore and give better understand as to why partner difference in marital union does not affect modern contraceptive use among young women in Nigeria.

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APPENDICES

APPENDIX 1: DIAGNOSTIC TESTS

Multicollinearity Test for all the Study Variables

Tolerance= 1 - R^2

= 1 - 0.2798

= 0.7202

VIF (Variance Inflation Factor)

VIF = 1/ tolerance

= 1 / 0.7202

= 1.3885

Tolerance value of 0.7202 and VIF 1.3885 show that the variables in the complete model are not closely correlated.

Note: A tolerance value of 0.1 or less and VIF of 10 or greater show that variables are closely correlated.

Table A1: Result from multicollinearity

	Modern contraceptive use	Age	Residence	Region	Religion	Age difference	Education	Education difference	Work difference	Fertility desire difference	Number of living children
Modern contraceptive use	1										
Current age	0.1565	1									
Place of residence	-0.1484	-0.2036	1								
Region	0.1764	0.1065	-0.1908	1							
Religion	-0.2409	-0.222	0.1207	-0.2716	1						
Age difference	-0.1047	-0.0956	0.013	-0.0698	0.1654	1					
Education	0.2901	0.2866	-0.4025	0.2872	-0.5065	-0.1448	1				
Education difference	0.0801	0.1379	-0.1969	0.0204	-0.2102	0.0244	0.308	1			
Work difference	0.015	0.1498	-0.0018	0.019	-0.1075	0.0156	0.0573	0.0741	1		
Fertility desire difference	-0.0297	-0.0618	0.0628	-0.0582	0.0778	0.0132	-0.099	-0.0529	-0.0386	1	
Number of living children	0.0561	0.5379	-0.0121	0.005	-0.0514	-0.0076	0.0018	0.029	0.1343	-0.03	1

The coefficients show no collinearity between any of the variables, none exceed 0.6 (Table A1).

Specification Error Test for Model 2 (Partner difference model)

Table A2: Result from model specification test for Partner's difference model

	Coefficient	SD	p>|z|
hat	0.610	0.217	0.000
hatsq	-0.068	0.037	0.610
cons	-0.447	0.277	0.107

From the table above, the model is completely specified (hat<0.05) and the link is correctly specified (hatsq>0.05).

Goodness-of-fit Test for Model 2

Hosmer-Lemeshow chi2 (8) = 11.59

Prob > chi2 = 0.171

The model fits the data (Prob > chi2 = 0.171)

Specification Error Test for Model 3 (Complete model of partner difference and respondents' characteristics)

Table A3: Result from model specification test for the complete model

	Coefficient	SD	p>|z|
hat	0.399	0.194	0.040
hatsq	-0.125	0.041	0.002
cons	-0.514	0.198	0.009

Table A3 above shows that the model is completely specified (hat<0.05) but the link is not correctly specified (hatsq>0.05).

Goodness-of-fit Test for Model 3

Hosmer-Lemeshow chi2 (8) = 8.12

Prob > chi2 = 0.422

The model fit the data (Prob > chi2 = 0.422).