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EARLY MARRIAGE AND FERTILITY OUTCOMES

IN SOUTH-EAST NIGERIA

A RESEARCH REPORT SUBMITTED TO THE SCHOOL OF SOCIAL SCIENCE, UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN THE FIELD OF DEMOGRAPHY AND POPULATION STUDIES FOR THE YEAR 2012

BY

CHINEME O.I. OZUMBA-537255

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UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
FACULTY OF HUMANITIES
SCHOOL OF SOCIAL SCIENCES

SUPERVISOR:

DR. LATIFAT D. G. IBISOMI

Declaration

I, Chineme Obiageli Ifenkily Ozumba, declare that this research report is my own original work. It is being submitted for the degree of Master of Arts in Demography and Population Studies at the University of the Witwatersrand, Johannesburg. I declare that to the best of my knowledge, it has not been submitted before in part or in full for any degree or examination at this or any other University.

_____

12th March 2012

Dedication

I dedicate this work to my Lord Jesus Christ, with whom ALL things are possible.

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ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
AU	African Union
GDP	Gross Domestic Product
HIV	Human Immune Virus
NCEB	Number of Children Ever Born
NDHS	Nigeria Demographic and Health Survey
NPC	National Population Commission
RC	Reference Category
SEZ	South East Zone
STIs	Sexually Transmitted Diseases
TFR	Total Fertility Rate
UN	United Nations
UNFPA	United Nation Population Fund
UNICEF	United Nations Children's Education Fund
USA	United States of America
WHO	World Health Organization

ABSTRACT

Background: Despite the adverse demographic and health impact of early marriage, it still occurs in many developing nations including Nigeria. One of the outcomes of early marriage is increase in population size due to the number of years of exposure to the risk of pregnancy of women who marry early. Most of the research on early marriage has been carried out in the Northern and Western zones of the country. The objective of this study was to identify the relationship between early marriage and the outcomes of Number of Children Ever Born (NCEB) and Total Fertility Rate (TFR) in the South East Zone (SEZ) of the country.

Methods: Univariate, bivariate and multivariate analysis were carried out on data obtained from 2008 Nigeria Demographic and Health Survey (NDHS) to determine the relationship between NCEB and age at first marriage as well as other independent variables such as woman's level of education, wealth status, place of abode, husband's educational level and marital status for ever married women aged 45-49 years. TFR was estimated for all ever married women in the South East Zone as well as those who married at <18 years and those who married at >=18 years of age. A sample size of 2175 comprising all ever married women in the SEZ was used for the study.

Results: The findings indicate that there is a significant relationship between NCEB and Age at first marriage as well as woman's level of education only. The TFR for women who married at <18 years and 18+ was 7.8 and 7.7 respectively.

Conclusions: The study has shown that early marriage contributes in some measure to the number of children born in South Eastern Nigeria. However the level of significance is low. The seeming contradiction suggests that there are other influencing factors such as prevailing customs and traditions and shared experiences of the Igbos (the dominant tribe in the study area). Areas of further research are highlighted and recommendations for policy and program implementation are made.

CHAPTER 1

INTRODUCTION

1.1 Background

Early marriage is still practiced in many developing nations. It has been found to be a major factor that encourages adolescent childbearing especially in developing countries. Southern Asia and Sub-Saharan Africa have the highest incidence of early marriage. Among the countries of Sub-Saharan Africa, Nigeria is one of the countries that have a high prevalence of early marriage (UNFPA, 2005; Population Council, 2004; Turner, 1992). The Nigeria Demographic Health Survey of 2008 indicates that 40% of females are married by the age of 18, with the highest concentration in the Northwest region where 78% of girls are married by the age of 18. It also shows that 23% of women have commenced child bearing by 19 years (NPC and ICF Macro, 2009; Population Council, 2011).

Apart from the well documented adverse, health and socio-economic outcomes of early marriage in Nigeria such as maternal and infant mortality and morbidity, limited educational attainment and lowered earning capacity (Oyefara, 2009; Bankole et al, 2009; Ujah et al, 2005; Akpan, 2003; Wall, 1998) the fertility impact of early marriage is equally of great concern. This is because women who marry early may have a higher fertility rate due to the longer time of exposure to the risk of pregnancy. The resultant effect of high fertility is obviously a high population growth rate eventually leading to soaring population. In a developing country like Nigeria, the consequences may include insufficient resources and infrastructure for the populace which could lead to the populace struggling over the control of available resources, as has been the case in Nigeria. This situation could further exacerbate the negative health and socio-economic problems associated with early marriage. In other words, high population growth rate as occasioned by high fertility could be a factor in the continuation of the cycle of poverty and ill-health. This cycle in turn offers

an enabling environment for the continuation of the practice of early marriage because early marriage is found to occur more in poor and uneducated families.

1.2 Introduction to the study area

1.2.1 Nigeria:

Geographically, Nigeria is located on the west coast of Africa and shares boarders with Benin republic on the west, Cameroon on the east, Chad on the northwest and Niger republic on the North. Its southern region is bordered by about 850 kilometres of the Atlantic Ocean. It covers a land area of 923,768 square kilometres and is the fourteenth largest country in Africa by land area. The population density of Nigeria is estimated at 150 people per square kilometre (NPC and ICF Macro, 2009).

Historically, Nigeria as a nation state came into existence in 1914 through the amalgamation of the Northern and Southern protectorates with the colony of Lagos. It gained full independence in 1960 as a federation of three regions (Northern, Western and Eastern regions) and proclaimed itself a federal republic in 1963. Prior to that time there were various separate empires such as the Oyo, Benin, Nupe, Kanem-Bornu and the Hausa Fulani with other strong ethnic groups such as the Igbo, Tiv and Ibibio (NPC and ICF Macro, 2009). Nigeria has been described as having high susceptibility to civil war based on its high population size, high level of poverty in comparison to its high earnings from crude oil in addition to political instability (Fearon and Laitin, 2006). Indeed the Nation has had a turbulent history of military rule interspersed with democratic governance. In its 51years of existence as an independent nation it has had about 30years of military rule but is presently under democratic governance. It also experienced civil war from 1967 to 1970 when the Eastern region (present day South East and South South zones) seceded to form the defunct republic of Biafra leading to one of the world's worst tragedies in terms of deaths as a result of war (Sule, 2011).

Administratively, the country is divided into 36 states and a federal capital territory. These states are grouped into six geo-political zones as follows: North-East, North-West, North-central, South-East, South-West and South-South zones. Currently, there are about 374 identifiable ethnic groups with the Igbo, Yoruba and the Hausa as the main groups (NPC and ICF MACRO, 2009).

Nigeria is the most populous nation in Africa with a population of over 150 million (Population Council, 2011; World Bank, 2009), growth rate of 2.9 and a Total Fertility Rate (TFR) of 5.7 (Federal Government of Nigeria, 2004; National Population Commission (NPC and ICF Macro, 2009). This could be accounted for in part by a high rate of early marriage, the consequent adolescent fertility as well as the prolonged period of exposure to risk of childbearing (Ihejimaizu, 2001; Oni and McCarthy, 1986). From the Nigeria Demographic Health Survey (NDHS) of 2008, adolescent mothers accounted for 10% of the children born in the previous year (NPC and ICF Macro, 2009).

Economically, Oil and gas reserves make up 38.8% of the GDP followed by the agriculture with 32.5%; whole sale and retail contribute 13.5%, industry (excluding oil) 2.9% and other sectors 1.5%. However Oil and gas reserves make up 99% of export revenues as well as 78% of government revenues (NPC and ICF Macro, 2009).

Education in Nigeria focuses on six spheres, early childhood education, primary education, secondary education, tertiary education, adult and non formal education and special needs education. The primary to secondary education follows the 6-3-3-4 system which provides six years of primary education, followed by three years of junior secondary education, then three years of senior secondary education and finally four years of tertiary education. The government has also made it compulsory through the Universal Basic Education System that every child be educated free up to the junior secondary school level (NPC and ICF Macro, 2009).

Health wise, although there is a national health policy targeted at providing adequate access to health care services for the entire population, there are wide regional disparities in status service

delivery and resource availability. The current priorities in the health sector are in the area of childhood immunization and HIV/AIDS prevention (NPC and ICF Macro, 2009).

Culturally, Nigeria is a male dominated society. Most ethnic groups exhibit strong patriarchal leaningswith confer on men as the key decision-makers in most matters related to the family and society.

1.2.2 South East Zone of Nigeria:

The South East Zone of Nigeria is made up of five states, Anambra, Enugu, Ebonyi, Imo and Abia states. Three of these states (Anambra, Imo and Abia) are among the most densely populated in the country (NPC and ICF MACRO). It is bounded on the west by the River Niger, to the East by Akwa Ibom state, to the South by rivers state and to the North by Benue state.

The environment is undulating with rivers and hills. Large deposits of Coal found in Enugu state led to the growth of the Enugu city at the foot of the Udi hills.

The dominant culture in the South East Zone is the Igbo culture although there are pockets of migrant communities. The major religion is Christianity of various denominations. The major occupations are private sector professionals, farming, retail trading civil service professions and artisans of various trades. As with other cultures in Nigeria, the Igbos are culturally patriarchal although traditionally, women also play an important role in decision making. However, wives on the average are dependent on their husbands socially and economically. Marriage in most communities in Nigeria including the South East Zone is with the view to produce offspring; as such early marriage necessarily encompasses early pregnancy and child bearing (Isiugo-abanihe, 1994; Okonfua, 1994). The high value placed on children entrenches the desire to have as many children as soon as possible. This encourages early marriage so that a woman can have enough time to bear all her children (Odimegwu, 1998; Ibisomi, 2008).

The South East Zone of Nigeria being populated mainly by the Igbo ethnic group, has its norms and culture (including those pertaining to marriage and childbearing), largely governed by the dictates of the traditions of the Igbo. High marital fertility is valued among the Igbo and many believe that For instance among some communities of the South East Zone so much value is placed on children, such that a woman who has given birth to 10 or more children obtains a high social status (Odimegwu, 1998). Culturally also only male children can inherit kindred land consequently there is strong preference for male children therefore, women tend to bear many children in order to produce as many sons as possible (Odimegwu, 1998; Ukaegbu, 1976). These traditions encourage the practice of early marriage.

The TFR in the South East Zone of 4.8 is higher than the four children implied in the national population policy (Federal Republic of Nigeria, 1988 in Mba, 2002). It could therefore be deduced that early marriage contributes to this high TFR, because it is expected that women who marry early would tend to have higher fertility than women who delay marriage for several reasons. The main reason would be because of the longer time of exposure to the risk of pregnancy within marriage. Other reasons could include less autonomy in decision making including matters relating to pregnancy, childbirth and the use of contraceptives in this male dominated society. The Nigeria Demographic Health Survey of 2008 indicates that 37.38% of females in the South East Zone are married by the age of 18 and 8.1% have commenced child bearing by the age of 19.

1.3 Problem Statement:

Research in early marriage is concentrated in the Northern zones of the country where the issue is believed to be a problem as well as the South West (Makinwa-Adebusoye, 2006; Wall, 1998; Olunloyo, 2009). Little attention has been paid to its implication on fertility in the South East Zone.

Early marriage is defined in this study as any marriage that involves an individual that is aged less than 18 years (UNICEF, 2001). This is in consonance with the UN charter of child rights which defines a child as someone who is under the age of 18 unless national laws recognize the age of majority earlier (UN, 1989).

1.4 Research Question:

From the ongoing, the following research question was raised:

What is the effect of early marriage on fertility in the South East Zone of Nigeria?

1.4.1 Sub Questions:

- What is the prevalence of early marriage in the South East Zone of Nigeria?
- What is the relationship between early marriage and number of children ever born in the South East Zone of Nigeria?
- What is the relationship between early marriage and Total Fertility Rate in the South East Zone of Nigeria?

1.5 Broad Objective

The broad objective of this research was to examine the relationship between early marriage and the fertility outcomes of Number of Children Ever Born (NCEB) and TFR in the South East Zone of Nigeria.

1.5.1 Specific objectives

1. To estimate the prevalence of Early marriage in the South East Zone

2. To examine the distribution of the study population by selected characteristics and age at marriage in the South East Zone.

3. To investigate the relationship between age at marriage, each of the other independent variables and Number of Children Ever Born (NCEB).

4. To investigate the relationship between age at marriage and NCEB while controlling for other covariates.

5. To investigate the relationship between early marriage and the dependent variable of TFR.

1.6 Justification:

The Nigeria Demographic and Health Survey (NDHS) report for 2008 indicates that TFR for Nigeria has remained at 5.7 between 2003 and 2008 which means that there is no change in the fertility for that period. Previous estimations of TFR in the SEZ had placed it at between 7.1 and 8.1 in 1953 (Odimegwu and Zerai, 1996), 7.3 in 1974 (Ukaegbu, 1977), 7.6 in 1998 (Odimegwu, 1998) and more recently, from the 2008 DHS report, 4.8. Although this is a reduction from previous estimations and also the value is less than that of TFR at the national level (NPC and ICF Macro, 2009), it is still higher than the four implied in the 1988 population policy and much higher than replacement fertility rate of two. This TFR of 4.8 represents the fertility of all women in the South East Zone aged 15-49, irrespective of their marital status. However, preliminary investigation of the 2008 NDHS data shows that 98.58% of all births in the South-East Zone were to ever married women, although it is not clear what proportion of births can be attributed to women who married early. (NPC and ICF Macro, 2009). Although some research has been done on fertility including the variables of

Demand for children and Total Fertility Rate in some states of the South East Zone (Nwakeze, 2007; Odimegwu, 1998; Ukaegbu, 1976), there are few known studies comparing the outcome variables in relation to early marriage in the area. Therefore, this study sheds light on the differences in the levels of fertility of women who had early marriage in the South East Zone of Nigeria and those who married late. These discoveries form a good platform for further research and policy development which can be used in interventions relating to regulating family size and contraceptive use.

1.7 Definition of Terms:

Early Marriage: Marriage involving a woman aged less than 18 years.

Number of Children Ever Born: Total number of children born alive to a woman during her childbearing years.

Total Fertility Rate: The average number of children that would be born to a woman by the time she ended childbearing if she were to pass through all her childbearing years conforming to the age-specific fertility rates of a given period.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter reviews relevant literature relating to early marriage, its causes and effects as well as efforts to prevent early marriage in Nigeria. Other research carried out on early marriage in the study area and other parts of Nigeria were also reviewed. It identifies gaps in existing research that has been carried out and it outlines the hypotheses set out for the study.

2.2 Early Marriage

Early marriage is any marriage that involves an individual that is aged less than 18 years (UNICEF, 2001). This is in consonance with the UN charter of child rights which defines a child as someone who is under the age of 18 unless national laws recognises an earlier age of majority (UN, 1989). Often, children who are involved in such marriages do so by parental decision and not of their own volition (Makinwa-Adebusoye, 2006; Otoo-Oyortey and Pobi, 2003).

Certain characteristics can be identified in most marriages involving minors all over the world. The phenomenon is found to be more common among females than males, in most cases the girls get married to men who are much older than they are. This situation gives rise to a high level of dependency by the girl on their husbands and in-laws physically, socially, psychologically and economically. It is also seen more in developing nations such as the countries of sub Saharan and North Africa, South Asia, Latin America, Middle East and Eastern Europe than in developed nations. In the developing nations, adolescent marriages are more widespread in rural areas, amongst poor families (Otoo-Oyortey and Pobi, 2003), culturally traditional communities and among communities that practice certain religions such as Islam and Hinduism (Pathfinder International, 2006; Sheela

and Audinarayana, 2000). Furthermore, early marriage is more common among women that have less than seven years of formal education than among women with more years of formal education. This could be attributed to the increased length of time spent in school (UNICEF, 2001; Manda and Meyer, 2005). Husband's educational level has also been found to affects the age of marriage of the women. In most case the more educated the man is the more likely he is to marry a girl that is at least 18years of age (Savritidina, 1997).

In Malawi, a country in South East Africa, nearly 70% of the women were married before the age of 18 years. Research indicates that region and education are the most important determinants of age at marriage (Palamuleni, 2011; Manda and Meyer, 2005).

In Nigeria, the scenario is typical for the existence of early marriage in developing nations. With a high population, high poverty level (84% live below $2 a day), high level of rural dwellers and prevalence of Islam in the Northern part of the country, the preconditions for early marriage are highly prevalent (Population Council, 2011).

2.3 Effects of early marriage

There are many negative outcomes of adolescent marriages which have physical and social implications. These negative effects arise as a result of the physical and emotional immaturity, as well as other economic and demographic constraints on the girls involved. The negative physical effects occur as a result of the girl's body not having attained its full development as such leading to complications during pregnancy and child birth which can affect both the mother and child. Some of these complications include miscarriages, obstructed labour which can result in maternal mortality, still births and fistulas (vesicovaginal and recto-vaginal) and low birth weight. In a study conducted in rural Bangladesh, mortality rates were found to be twice as high for women under age 20 at parities zero when compared to women over 20 years old. Other problems arising from the

young age of the female include less assertiveness, little or no participation in decision making even with regard to her own health and less access to health facilities. This results in low reproductive control, high fertility, high domestic violence and high maternal mortality.

Some of the negative social effects include low educational and literacy levels, divorce and low social status in the husband's families and in the society as a whole.

(WHO, 2006; Field, 2004; Jensen and Thornton, 2003; Singh and Samara, 1996; Raj et al, 2009; Mirowsky, 2005; Wall, 1998; Savtridina, 1997;Friede et al, 1987; Chen et al 1974).

Also of importance are the fertility implications of early marriage. Early marriage leads to having high number of children in the communities that practice it. This is as a result of a longer period of exposure to reproduction within marriage. As stated in Strulik and Vollmer (2010) almost all cases of fertility transition has been preceded by a secular fall of mortality rates thus it appears that reduction in mortality rates have caused fertility to fall. However, adolescent motherhood, a natural fall out of early marriage, is associated with a higher risk of neonatal deaths (Reynolds et al 2006). The implication is that high infant mortality rate, which is associated with early marriage naturally sustains high fertility rates as women have as many children as possible to ensure that some will survive. As such it leads to high population growth rate which in turn hampers the fertility transition in such areas. Japan's fertility decline has been identified as primarily being caused by the increasing delay of marriage which effectively reduces time of exposure to the risk of pregnancy (Tsuya, 2000). It has also been observed that the countries where women traditionally married at a later age also were among the first to experience fertility transition from high fertility to lower fertility. It is believed that the factors in those societies that encourage late marriage are also conducive for adoption of controlled fertility within marriage. Examples of such societies include countries of Western Europe which had traditionally older mean age at marriage ranging from 23 to 28 years, also showed 10% decline in marital fertility before 1910. This is in contrast to countries of

Asia and Africa where mean age of marriage is less than 18years and as late as 1990 some were yet to show any fertility decline (Ansley, 1992). In consonance with this view, the fertility decline observed in Ghana between 1988 and 1998 has been linked to increased age at first marriage, among other proximate determinants (Chuks, 2002).

2.4 Efforts to prevent early marriage

Due to the negative outcomes of early marriage, efforts have been made by the international community and individual nations to prevent early marriage. The Convention on Elimination of all forms of Discrimination Against Women (CEDAW) Fact Sheet No. 23 included early marriage in the list of 'Harmful Traditional Practices Affecting the Health of Women and Children'(CEDAW, 1979). Many countries that have tried to prevent early marriage have done so by introducing laws that make marriage before a specified age illegal. Some of these have attached sanctions to early marriage, such as a microfinance program in India that excludes parents of girls that marry before 17 years (Field, 2006). Others offer incentives to later marriages such as investing some amount of money that the girl can inherit at the age of 18 if she is unmarried by then (UNICEF, 2001). Yet other approaches include the human rights approach where the choice of when and whom to marry becomes a right to all (UNICEF, 2001). These interventions have achieved some success to an extent in raising the age at marriage in some countries.

In Nigeria, there are three systems of marriage, statutory, cultural and islamic. The marriage act of 1914, chapter 218 section 18 states that:

> *'If either party to an intended marriage, not being a Consent widower or widow, is under twenty-one years of age, the written consent of the father, or if he be dead or of unsound mind or absent from Nigeria, of the mother, or if both be dead or of unsound mind or absent from Nigeria, of the guardian of such party, must be produced annexed to such affidavit as*

aforesaid before a license can be granted or a certificate issued' (Federal Republic of Nigeria , 1990)

This effectively places the legal age for an individual to consent to statutory marriage at 21years although the customary and Islamic systems of marriage could allow the marriage of girls below the age of 18.

Nigeria is also a signatory to several international conventions advocating for elimination of early marriage, such as the Convention on Elimination of All forms of Discrimination against Women (CEDAW) and the 2001 *African Union Charter on the Rights and Welfare of the Child* (AUCRWC). Furthermore, Nigeria has instituted the Child Rights Act of 2003 which prohibits child marriage and betrothal under sections 21 and 22 of the act as follow:

21) 'No person under the age of 18 years is capable of contracting a valid marriage, and accordingly, a marriage so contracted is null and void and of no effect whatsoever

22. (1) No parent, guardian or any other person shall betroth a child to any person.

(2) A betrothal in contravention of subsection (1) of this section is null and void.

23. A person –

(a) Who marries a child, or

(b) To whom a child is betrothed, or

(c) Who promotes the marriage of a child, or

(d) Who betroths a child

Commits an offence and is liable on conviction to a fine of N500, 000 or imprisonment for a term of five years or to both such fine and imprisonment'

(Federal Ministry of Women Affairs Nigeria, 2006)

However, the implementation of the above Act statement is in question as the phenomenon of early marriage continues to thrive.

2.5 Relevant research in the study area

Despite all efforts to prevent early marriage as outlined above, the practice continues to with its consequent socio-economic and demographic impact on the nation thereby generating a lot of research at national and regional levels. The following studies have identified several variables which influence fertility outcomes in Nigeria. Some of these variables include religion, female education, poverty or wealth status, place of residence, husband's education and cultural factors associated with ethnicity.

In one of the early studies carried out in the former Eastern region (present day SEZ), Ukaegbu (1977) identified the ideal family size of the Ngwa Igbo to be between four to eight children, level of education, occupation and age of the interviewees notwithstanding. The reasons for this high desired family size was attributed to high infant mortality and other traditional beliefs. In another study by Ukaegbu (1976) in the same area, he found that traditional marriage habits played a major role in the population growth of the area. In this study, 1672 currently married women of all ages were interviewed to identify impediments to change with regards to high fertility. The findings of the research revealed that marriage is founded upon several traditional beliefs and practices that influence fertility behavior. Some of these beliefs hold that marriage enables maintenance of close ties with dead relatives in order for reincarnation to occur. Also, marriage is recognized as a qualification for adult status. In addition, high marital fertility is regarded as the purpose and gauge of a successful marriage as well as a sign of an ideal condition which is sanctioned by tradition, the ancestral spirits, and God Himself.

Odimegwu and Zerai (1996), in examining the proximate determinants of fertility of the Igbo ethnic group in Nigeria, found delayed marriage to be the key proximate determinant followed traditional

contraception and by postpartum amenorrhea. However in spite of the increasing age at marriage, there was still a high TFR of 6.7 and an even higher marital TFR of 8.9, the highest in the country.

In an earlier work in Eastern Nigeria, Omideyi (1983) attributed the sustained high marital fertility to the efforts of women who married late to make up for the lost years by reproducing at close intervals. He observed that educated women who usually married later, reproduced at a faster rate within the residual child bearing period than uneducated women who typically married early. This pattern of fertility was attributed to educated women reducing of the period of breast feeding and the early introduction of bottle feeding which in turn reduces period of post partum amenorrhoea. Resumption of coitus therefore, without contraception, would lead to shorter birth spacing than in the case where the traditional period of breast feeding and abstinence have been observed.

In addition, Odimegwu (1998) examined the level of fertility of the Igbo in Eastern Nigeria using various modern demographic estimations methods such as the Brass P/F method, Coale and Demeny techniques and Brass relational Gompertz model. In this study, data from 819 women aged 15-49 in Owerri, Orlu and Awo Idemili was analysed, to estimate the fertility of the Igbo. The author found that the completed family size of the Igbo is 6.1 while the TFR ranges between 6.8 and 7.4. He also proffers explanation for the high fertility as being due to the high value placed on children by the Igbo.

A more recent study was done by Nwakeze (2007) in order to find out why high fertility persisted in Anambra State (one of the states in the SEZ of Nigeria) in-spite of high population and high prevalence of women's education. It involved the analysis of cross sectional data of year 2000 household survey of married women aged 15-19 in Anambra state to identify predictors of demand

for children. Some of the factors identified as strong predictors of demand for children included wife's level of participation in decision-making, occupation, place of residence, husband's education and woman's education. However, the study identified woman's education, income and religion as being weak predictors of demand for children. The author attributes these findings to cultural inertia and to its adverse consequence on women's access to productive resources and level of participation in decision-making.

Other studies carried out in other parts of Nigeria include Odusola (2002). In this study, the author identified a link between poverty and reduction in fertility rate in Nigeria. The study was based on data collected through structured questionnaire and Focus Group Discussions (FGDs) from male and female respondents in the urban and rural areas of Lagos and Kaduna states. The author suggests however, that unlike the classical cases of fertility declines which occurred during periods of economic expansion, Nigeria's fertility decline seems to be as a result of widespread poverty, thereby making the transition temporal with the possibility of it being reversed during period of economic boom.

In a paper titled 'Fertility transitions in Nigeria: trends and prospects', Feyisetan and Bankole (2002) examined data from national and sub-national surveys such as the 1981/82 World Fertility Surveys (WFS), 1990 and 1999 National Demographic and Health Survey (NDHS) and some sub-national surveys conducted by individual researchers in selected parts of the country. Part of the objectives of the study was to demonstrate that a sustained fertility transition has begun in Nigeria and to identify some factors that might have contributed to the decline. The findings indicated that desired fertility has declined over time especially in southwest zone of Nigeria. Factors which were associated with the decline in fertility and of interest include increased use of contraception,

changes in marriage patterns, particularly reduction in the proportion marrying before age 20, and increased education of women.

Mba (2002), carried out a macro simulation analysis of the federal government's demographic targets as outlined in the 1988 population policy. His findings show that Nigeria's TFR would have actually reduced to two by year 2000 if the changes in proximate determinants of fertility stated in the policy were implemented. These changes include raising the mean age at first marriage to 18 years and raising the use of family planning methods to 80%. Obviously, these demographic targets are yet to be achieved.

As has been mentioned earlier, marriage in Nigeria is with the view of having children. Therefore the marriage institution plays a major role in fertility decisions in Nigeria. Isiugo-abanihe (1994), explored the determinants and components of marital breakdowns and rates of remarriage among various social groups in Nigeria. In an empirical study carried out by the same author, results indicated that women in continuous marriages tend to have higher fertility than those who have experienced marital dissolution. Therefore it can be inferred that the factors that influence marital stability can also influence fertility. The determinants of marital fertility examined were place of residence, level of education, socioeconomic status, type of marriage, age at 1st marriage, ethnicity, partner education current use of contraceptive, discussed children ever born with husband and married more than once.

Likewise, Ibisomi and Odimegwu (2011) in recognition of the strength of the marriage institution in influencing fertility in Nigeria, examined how couples resolve differences regarding number of desired children using information collected from focus group discussions with men and women

from the three dominant ethnic groups in Nigeria. Findings reflect the gender inequalities existing among Nigerian couples, with most of the participants believing that men should have the greater decision making power in matters regarding number of children to have in a household. However, resolution of differences in fertility preferences differed depending on which of the spouses wanted more children. If the husband wanted more children, the wife was expected to comply or face the possibility of another woman being married to replace her or complement her child bearing efforts. However, when the woman wants more, she is expected to persuade her husband to agree and perhaps be prepared to cater for the additional offspring.

2.6 Conceptual framework:

These studies all show that there are both direct and indirect determinants of fertility. Davis and Blake (1956) identified 11 intermediate variables through which social factors that influence fertility act as outlined:

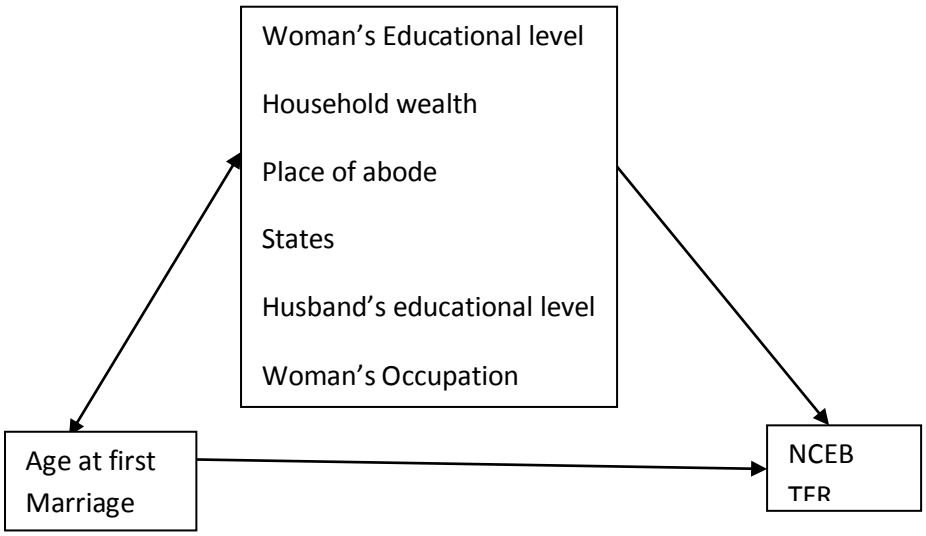
1. Age of entry into sexual unions.
2. Permanent celibacy
3. Amount of reproductive period spent after or between unions
4. Voluntary abstinence.
5. Involuntary abstinence (from impotence, illness, unavoidable but temporary separations).
6. Coital frequency (excluding periods of abstinence).
7. Fecundity or infecundity, as affected by involuntary causes.
8. Use or non-use of contraception.
9. Fecundity or infecundity, as affected by voluntary causes (sterilization, subincision, medical treatment, etc.).
10. Foetal mortality from involuntary causes.
11. Foetal mortality from voluntary causes.

Among these, Bongaarts (1978) identifies four proximate determinants of fertility which account for variation in fertility of populations. These are age of entry into sexual unions, fecundity or infecundity as affected by involuntary causes but including breastfeeding, use or non use of contraception, foetal mortality from voluntary causes. Some socio-economic factors that could influence fertility in addition to age at first marriage were selected for this study as follows:

Age at first marriage can influence age at initiation of sexual activity. Woman's Educational level could limit her exposure to intercourse by increasing the age at first marriage and indirectly time of exposure to intercourse. Household wealth of a family could limit fertility by the ability to afford certain kinds of contraceptives. Place of abode could determine access to education for the woman as well as access to contraceptives, State of origin could affect fertility based on specific sub-ethnic group cultural inclinations which can affect age at marriage and use or non use of contraception. Husband's educational level can influence the age of the woman he marries as well as use or non use of contraception. Woman's occupation can influence level of financial control and possibly increase her decision making power and access to contraception.

Based on the foregoing, the conceptual framework on which this study is based was derived as shown in figure 2.1.

Figure 2.1 Model of relationships between the independent variable of early marriage, its characteristics and the outcome variables of NCEB and TFR



CHAPTER 3

METHODOLOGY

3.0 Introduction

This chapter deals with the methodology of this study. It discusses the process of investigating the effect of early marriage on fertility in the South East Zone of Nigeria. It also outlines the analysis plan used to achieve the objective of examining the relationship between early marriage and the fertility outcomes of number of children ever born (NCEB) and total fertility rate (TFR). In addition the chapter discusses the research design, study population, data sources, variables used in the study, data management, assumptions as well as the scope and limitations of the research.

3.1 Data source:

This study utilized secondary data from the 2008 Nigeria Demographic and Health Survey (NDHS). The data was sourced from the measures DHS website. Section 3.1.1 gives excerpts of the methodology of the survey as recorded in the full report of the 2008 NDHS published by the National Population commission of Nigeria and ICF Macro USA.

3.1.1 The 2008 Nigeria Demographic and Health Survey

The survey covered a national representative sample of 33,385 women aged 15-49 years. The primary objectives of the 2008 NDHS project were to provide up-to-date information on fertility levels; nuptiality; sexual activity; fertility preferences; awareness and use of family planning methods; breastfeeding practices; nutritional status of mothers and young children; early childhood mortality and maternal mortality; maternal and child health; and awareness and behaviour regarding HIV/AIDS and other sexually transmitted infections (NPC and ICF Macro, 2009). More

information about the sample design, questionnairs, pretest activities, training of field staff, fieldwork, data processing and response rate can be seen in the 2008 NDHS report.

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3.2 Data Methods

The data methods covers detailed description of the data. It includes the identification of the study population and sample size, identification of the variables and their definition, the limitations encountered in the research and the analysis procedure.

3.2.1 Study population and sample size:

The population of study comprises ever-married women aged 15-49 in the South East Zone of Nigeria, who participated in the 2008 NDHS. Ever-married women are defined as women who are currently married or living together with their husbands/male partners and those that were formerly married (divorced, separated or widowed).

The total number of women who participated in the South East Zone was 3667 out of these 40.69% had never married. Those who were never married were excluded leaving only the number of ever-married women numbering 2175.

3.2.4 Variables and their definition

The variables used in this study were grouped into three, the main independent variable, other independent variables and the outcome variables.

The outcome variables of this study were Number of Children Ever Born (NCEB) and Total Fertility Rate (TFR).

TFR was chosen because it gives a period measure of fertility while NCEB was chosen because it gives an idea of the completed fertility.

NCEB was in two categories (<5, and 5+). The categorization is based on the premise of 4 children per woman suggested in the 1998 National Population Policy. However, only the NCEB for sample

of ever married women, aged 45-49 years will be studied. This is because this group of women is expected to have completed childbearing.

The key independent variable was age at first marriage. It was divided into two categories as follows: age at first marriage <18 years and age at first marriage 18+years.

Other independent variables used were Educational level, Wealth status, Place of residence, States, Husband's educational level and woman's occupation. The inclusion of these other explanatory variables serves two main purposes, namely to facilitate the establishment of the net or relative effect of early marriage, and to determine their respective effects on Number of Children Ever Born.

Although religion and ethnicity have been identified as a determinant of number of children ever born, this study does not include them as part of the independent variables because over 95% of the inhabitants of the South East Zone of Nigeria are Christians, 97% belong to the Igbo ethnic group (NPC and ICF Macro, 2009). Thus, the variation along religious and ethnic lines would be insignificant. The variable use of contraceptives was also excluded because the group of women has concluded childbearing.

Also polygamy which is also a determinant of number of children born was excluded because about 83% of the women in the South East zone of Nigeria are involved in monogamous marriages.

Furthermore, marital status was not included as one of the independent variables because the women in question may have been involved in several marriages. In reality, a woman reported as currently married may have been previously divorced or widowed.

Table 3.1 summarizes the variables and their definitions. The first column shows the original name of the variable as it is written in the data set. The middle column shows the new name of the variable as it is used in this research. The last column shows the variable categories, their coding in brackets and where applicable, further explanation of how the categories were derived.

Table 3.1: Definition of Variables

Original Variable name	New variable name	Variable coding and Definition
Age at first marriage	Age at first marriage	>=18years (0), <18years (1)
Highest level of education	Woman's Level of education	None (0), Primary(1), Secondary + (2) In the original data set, there were 4 categories: None-0; primary-1; Secondary-2; Higher3. Secondary and Higher were combined in the category Secondary+.
Wealth quintile	Household Wealth	Poor (1), Middle (2), Rich (3) Originally the coding for wealth quintile was in 5 categories poorest, poorer, middle, rich and richer. Here Poorest and Poorer are combined in the category Poor, while Richer and Richest are combined in the category Rich
Sample domain	States	Anambra (1), Enugu (2), Ebonyi (3), Abia (4) Imo (5) In the parent data set, the sample domains were coded as Anambra-26, Enugu-27, Ebonyi-28, Abia-31 and Imo-32
Type of place of residence	Place of abode	Rural (0) Urban (1)
Partner educational level	Husband's educational level	None/don't know/ missing (0), Primary (1), Secondary + (2) In the original data set, there were 6 categories: None-0; Primary-1; Secondary-2; Higher-3; don't know-5; missing-6. None, don't know and missing were combined and

		coded-0. Secondary and Higher were combined in the category Secondary+.
Respondent's Occupation	Woman's occupation	In the original format, there were 9 categories coded as follows: Not working-0; prof/tech/manag-1; Clerical-2; Sales-3; Agric-employee-5; Services- 7; skilled manual-8; Unskilled manual-9; don't know-98 and 99-99 In this research, the categories of woman's occupation are 8 as follows: Not working-0; Prof/tech/manag-1; Clerical-2; Sales-3; Agric-employee-4; Services- 5; skilled manual-6; Unskilled manual-7; don't know/missing-8
Total Children ever Born	Number of Children Ever Born (NCEB)	<5 is coded as 0 5+ is coded as 1 <5 comprises 0-4 children, while 5+ comprises 5 children and above. Infertility represented by 0 children was included in the <5 category. This is because only 1.7% of women with completed fertility in the South East Zone had 0 children. This proportion is considered to be too insignificant to place in a category on its own.

3.2.2 Limitations

- The main limitation identified was the aggregated nature of the results obtained such that naturally occurring variations in the population of study are overlooked. This means that the result does not reflect individual differences in the members of the population under study, rather it looks at the group as a whole.

- Another limitation arising from cross-sectional nature of the NDHS data was the difficulty in establishing the cause and effect relationship of variables. For instance, the outcome NCEB cannot be entirely attributed to the independent variables studied in this research. This is because other variables not identified in this research could influence the outcome.

- The data also has few cases of non response or missing information on some variables of interest such as marital status, Husband's educational level and woman's occupation. Marital status had one case of missing information; Husband's educational level had 17 cases of missing information and eight responses of 'don't know' by the respondent; woman's occupation had nine cases of missing information.

However these limitations do not significantly affect the result of the study.

3.2.3 Analysis Procedure

The data analysis was carried out in five stages corresponding to the five specific objectives identified. To achieve the first four objectives, data was analysed using the STATA version 11 software only. Microsoft Office Excel 2007 and STATA version 11 were used to carry out analysis for achieving the fifth objective.

1. To achieve the first objective, which is to estimate the prevalence of early marriage in the study population, a cross tab of Age at first marriage and ever-married women as well as a cross tab of Age at first marriage and women aged 45-49 was done in STATA 11.

2. To achieve the second objective, which is to examine the distribution of the study population by selected characteristics in the South East Zone, univariate analysis was done. A cross tab of each characteristic (showing column totals) was done with the South East Zone to show the distribution. Some of the characteristics were age at first marriage, level of education, wealth status, place of abode and partner's educational level.

3. To achieve the third objective which was to investigate the relationship between early marriage and Number of Children Ever Born (NCEB) as well as examine the relationship between NCEB and other independent variables, bivariate analysis was done using STATA 11. A cross tabulation of NCEB and Age at marriage was done to investigate the relationship between the key independent variable of age at marriage and the dependent variable of NCEB. NCEB was also cross tabulated with other independent variables. All cross tabulations showed row totals. They also show the level of significance of the relationship between NCEB and each of the independent variables.

4. To achieve the fourth objective which is to investigate the relationship between each of the independent variables and NCEB while controlling for other covariates, logistic regression reporting odds ratio was done using STATA. This method was chosen because the outcome variable (NCEB) is binary in nature. The general model for binary logistic regression is expressed thus:

$$\ln [P/(1-P)] = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5$$

ln[P/(1-P)] = log of the odds of the outcome variable being 1

α = constant/intercept

β = regression coefficient

X1,2,3,4,5= the independent variables in this study

5. To achieve the fifth objective which is to investigate the relationship between early marriage and the dependent variable of TFR, the TFR was calculated for all women who married before the age of 18 and all women who married after the age of 18years. The population of women in each age group and the number of births they had in the past 5 years was derived using STATA (please see Appendix 1). Thereafter, the Age Specific Fertility Rate (ASFR) and TFR was calculated using Microsoft office Excel with the following formulae:

TFR= Sum of ASFR for all age groups

ASFR =Births in the past 5 years for an age group ÷Person years for an age group

Births in the Past 5 years= total number of births for all the women in an age group

Person years= Total number of women in each age group x 5

Note: this formula was used to calculate person years for all age groups except 15-19. This is because some of the women in the age group 15-19 were not fully exposed to the risk of pregnancy for the full time.

To calculate person years for women aged 15-19, the exact person months was calculated and then divided by 12months to get the person years.

3.3 Ethical Consideration

The research adhered to principles of scientific responsibility, integrity, honesty, freedom of expression and transparency. Data used for the research is secondary data that is in the public domain. As such, there is neither identification of individuals nor undue disclosure of sensitive information. Permission was requested and granted by measures DHS for the utilization of DHS data from the official website of Measures DHS. As such there is no copyright infringement in utilization of data in this research. Plagiarism was avoided and all referenced works and authors fully acknowledged in text and in the reference section. Furthermore, the research did not involve any human or animal subjects, and did not involve experimentation with such.

CHAPTER 4

RESULTS

4.1 Introduction

The chapter is divided into six sections as follows: prevalence of early marriage, univariate analysis, bivariate analysis, estimation of fertility and multivariate analysis. Univariate analysis provides a description of the study population by selected characteristics. Whereas the bivariate analysis examines the relationship between age at first marriage and the independent variables. Lastly multivariate analysis examines the relationship between age at first marriage and NCEB while controlling for other variables.

4.2 Prevalence of Early marriage

Mean age at first marriage for ever married women in the south east zone was 20.66 years while the mean age for ever married women aged 45-49 was 19.78years

Table 4.1: Proportion of ever-married women by Age at first marriage

Age at 1st Marriage	Freq	%
<18yrs	645	29.66
>=18yrs	1530	70.34
Total	2175	100

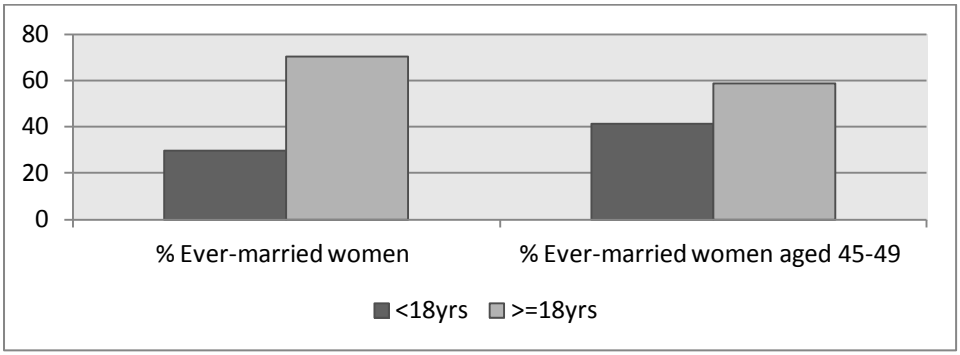
Among the ever married population of the South East Zone, majority(70.34%) of the women got married for the first time at 18 or more years while 29.66 % were involved in early marriage.

Table 4.2: Proportion of ever-married women aged 45-49 by Age at first marriage

Age at 1st Marriage	Freq	%
<18yrs	145	41.43
>=18yrs	205	58.57
Total	350	100

Among the ever married women aged 45-49 years in the South East Zone, 41.43% married at <18years, while 58.57% married at 18 years or more.

Figure 4.1: Proportion of ever married women by Age at first marriage



The fact that a higher proportion of women aged 45-49 when compared to the whole study population married early could be an indication that the age at marriage has increased over the years.

4.3 Univariate Analysis

This section describes the distribution of the study population according to the background characteristics of age at first marriage, woman's educational level, wealth status, place of abode, states, husband's educational level, marital status, number of children ever born and number of births in the past one year and five years respectively. It shows the distribution of ever married

women by the outlined characteristics followed by a comparison of those who married before the age of 18 with those who married at 18 years and above.

Table 4.3 presents the distribution of the variable Age at first marriage in the study population by selected characteristics.

Table 4.3 Proportion of women by selected variables and Age at first marriage

Variable	Age at 1st marriage <18 % N=645	Age at 1st marriage >=18 % N=1530	All Ever married women % N=2175
Woman's Educational Level			
None	23.41	11.05	14.71
Primary	46.67	30.26	35.13
Secondary+	29.92	58.69	50.16
Total	**100**	**100**	**100**
Household Wealth			
Poor	30.08	18.24	21.75
Middle	30.39	24.38	26.16
Rich	39.53	57.38	52.09
Total	**100**	**100**	**100**
Place of Abode			
Urban	30.39	41.63	38.3
Rural	69.61	58.37	61.7
Total	**100**	**100**	**100**
States			
Anambra	15.5	18.8	17.84
Enugu	16.9	17.39	17.24
Ebonyi	38.76	24.38	28.64
Abia	14.42	21.50	19.4
Imo	14.42	17.91	16.87
Total	**100**	**100**	**100**
Husband's Educational Level			
None	29.43	23.14	23.81
Primary	49.92	42.03	44.37
Secondary+	29.15	34.84	24.51

Total	**100**	**100**	**100**
Woman's Occupation			
Not working	14.73	20.65	18.9
Prof/Tech/Manag	3.57	8.69	7.17
Clerical	0.78	1.24	1.10
Sales	32.56	32.16	32.28
Agric Employee	39.84	22.61	27.72
Services	4.81	6.41	5.93
Skilled Manual	3.41	7.45	6.25
Unskilled Manual	0.31	0.20	0.23
Don't Know/missing	0	0.59	0.41
Total	**100**	**100**	**100**
5-year Age Groups			
15-19	5.43	0.52	1.98
20-24	10.7	11.24	11.08
25-29	13.64	21.96	19.49
30-34	13.49	20.26	18.25
35-39	18.14	18.43	18.34
40-44	16.12	14.18	14.76
45-49	22.48	13.40	16.09
Total	**100**	**100**	**100**

Among those that married early, 23.41% had no education while 46.67% had only primary education. This leaves 29.92% with some education at secondary school level or higher. In comparison, those that married at 18 years or more had 58.70% of the population with secondary school education or higher, 30.26% had primary education, while 11.05% had no education.

Generally, majority of the population (78.25%) fall within the middle and rich household wealth categories. However among those that married early, fewer women (69.92%) fall within those categories compared to 81.76% of those that married later. 30.08% of the women who married early fit into the category of poor household wealth while 18.4% of those who married later fit into that category.

While more (61.7%) of the ever married women lived in rural areas than in the urban areas. A higher proportion (69.61%) of those who married early lived in the rural areas than those who married later (58.37%). In contrast 41.63% of women who married at 18 years or more lived in the urban areas compared to 30.39% of those involved in early marriage.

The distribution of the study population by states, showed that Ebonyi state had the highest proportion of women at 28.64% followed by Abia at 19.4%, Anambra at 17.84%, Enugu with 17.24% and Imo bringing up the rear with 16.87%. Among those that married at less than 18 years, Ebonyi state also has the largest proportion with 38.76%, followed by Enugu state with 16%, Anambra 15.5%, while Abia and Imo states bring up the rear with 14.42%. Among the women that married later, Ebonyi state still had the highest proportion with 28.64%, followed by Abia with 19.4%, Anambra and Enugu states come next with 17.84% and 17.24% respectively while Imo state has the lowest proportion with 16.87%.

In relation to husband's education, 49.92% of women that married at less than 18 years were married to men that had only primary school education while 29.15% were married to those that had secondary education or more and 29.43% had husband/partners that had no education. In comparison, 23.14% of women married at the age of 18 years or more were with husbands/partners that had secondary education, 42.03 had partners with primary education, while 34.84% had husbands/partners with secondary education or more.

By women's occupation, majority of the women overall (60%) were employed as sales or agricultural employees. Among these, 32.28% were employed in sales while 27.72% were employed as agric employees. 18.9% were not working while 7.17% worked in

professional/technical/management occupations. 6.25% were in skilled manual occupations, 5.93% in unskilled manual occupations while 1.1% worked in clerical occupations. Among those that married at <18years, the highest proportion of women were agric employees (39.845) followed by sales (32.56%). 14.73% were not working, 4.81 were in service occupations while 3.57% were Professionals, technicians or managers and 3.41% were in skilled manual occupations. Clerical occupations made up 0.78% while unskilled manual contributed 0.31% of the occupations of women married at <18 years. Those that married at 18 years or more had 32.16% in sales, 22.61% agric employees while 20.65% were not working. Professionals/technical/management occupations made up 8.69%, skilled manual 7.45%, services 6.41% and unskilled manual occupations 0.2%.

With regard to distribution by age groups, the largest age group over all was 25-29 with 19.49%. The same age group was also the largest among women married at 18 years or more while the largest among women that married at <18 years was the 45-49 age group with 22.48%. The age group with the least proportion was that of women aged 15-19, who made up 1.98% of all ever married women, 5.43% of those who married early and 0.52% of those who married later.

4.4 Bivariate analysis

This section shows the distribution of the births by women in the SEZ. It also shows the mean number of children born to women by age at marriage as well as the results of bivariate analysis done by performing a cross tabulation of each of the independent variables and the outcome variable of Number of Children Ever Born on ever married women aged 45-49. The results are presented in Tables 4.4 and 4.5.

Table 4.4: Mean number of children born by age at marriage to women aged 45-49 in the SEZ

Variable	Mean NCEB by Age at first marriage	
	<18	18+
Age group		
All women	7.4	6.0
Woman's * Educational Level		
None	7.7	6.8
Primary	7.0	6.1
Secondary+	7.9	5.6
Household Wealth		
Poor	7.3	6.8
Middle	7.4	5.8
Rich	7.5	5.7
Place of abode		
Urban	6.5	5.7
Rural	7.7	6.1
States *		
Anambra	5.9	4.8
Enugu	7.0	6.1
Ebonyi	7.7	6.5
Abia	6.8	6.4
Imo	7.9	5.5
Husband's Educational Level		
None	7.4	6.1
Primary	7.8	6.0
Secondary+	5.8	5.7
Woman's Occupation		
Not working	9.1	6.4
Prof/Tech/Manag	6.5	4.5
Clerical	5.0	0.0
Sales	7.3	6.0
Agric Employee	7.5	6.4
Services	4.7	4.6
Skilled Manual	6.7	5.9
Unskilled Manual	na	na

The mean NCEB for women of early marriage ranged between 4.7 - 9.1 and 4.5 - 6.8 for women who married later.

Table 4.5: Relationship between NCEB and each independent variable for women aged 45-49 in the South East Zone of Nigeria

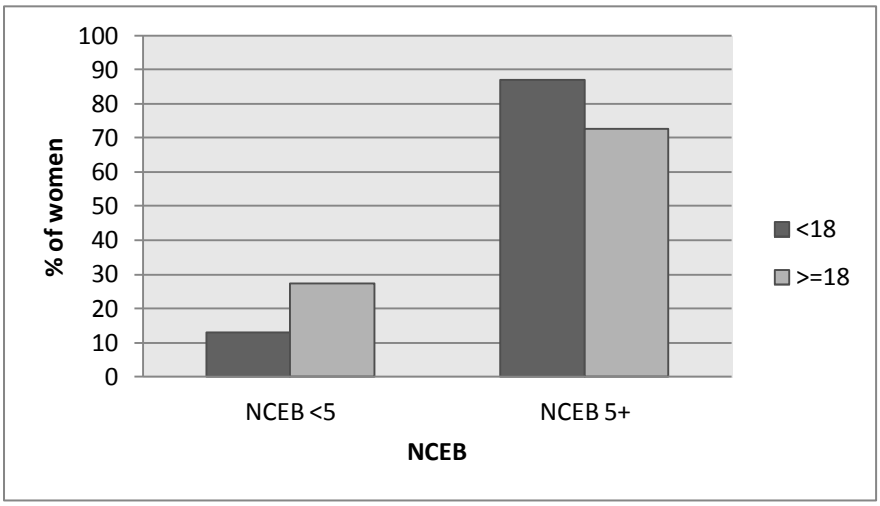
Variable	NCEB		Total
	<5	5+	N=350
	N=75	N=275	
Age at first marriage **			
<18	13.10	86.90	100
>=18	27.32	72.68	100
Woman's Educational Level *			
None	12.9	87.10	100
Primary	24.16	75.84	100
Secondary+	29.87	70.13	100
Household Wealth			
Poor	15.05	84.95	100
Middle	21.70	78.30	100
Rich	25.17	74.83	100
Place of abode			
Urban	27.08	72.92	100
Rural	19.29	80.71	100
States *			
Anambra	36.11	63.81	100
Enugu	22.41	77.59	100
Ebonyi	13.11	86.89	100
Abia	28.98	73.02	100
Imo	22.54	77.46	100
Husband's Educational Level			
None	20	80	100
Primary	20.56	79.44	100
Secondary+	28.89	71.11	100
Woman's Occupation			
Not working	17.86	82.14	100
Prof/Tech/Manag	40	60	100
Clerical	0	100	100
Sales	20.91	79.09	100
Agric Employee	18.18	81.82	100
Services	50	50	100
Skilled Manual	23.08	76.92	100

**=p-value <0.05; **= p-value <0.01*

Overall, a total of 350 ever married women in the South East Zone were aged 45-49 years. 275 (78.57%) of the women had 5+ children while 75 (21.4%) had <5 children. The significant variables were Age at first marriage, Woman's educational level, and States which had p-values < 0.05. The variables wealth status, place of abode and husband's educational level had p-values >0.05 and therefore are insignificant.

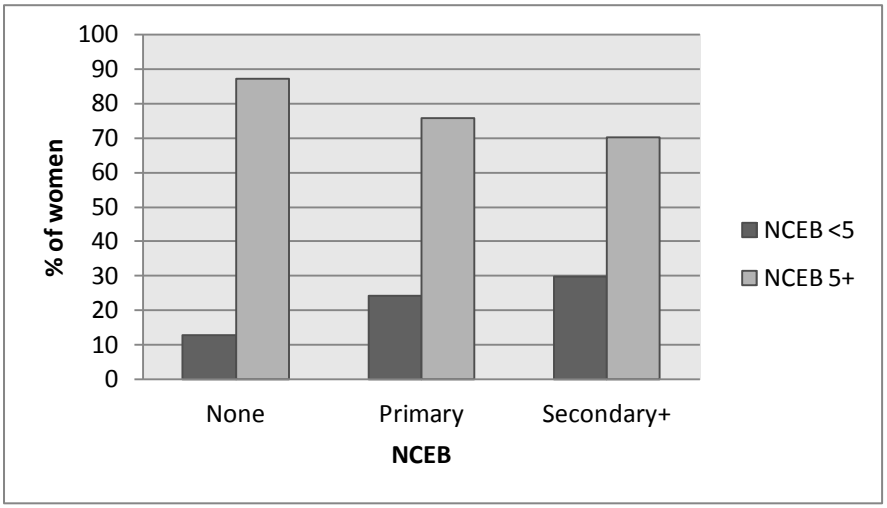
Among the women that married at <18years, 86.90% had 5+ children while 13% of them had <5 children. 72.68% of those that married at 18+ had 5+ children while 27.3% had <5 children as shown in figure 4.2.

Figure 4.2: Proportion of women by age at marriage and NCEB



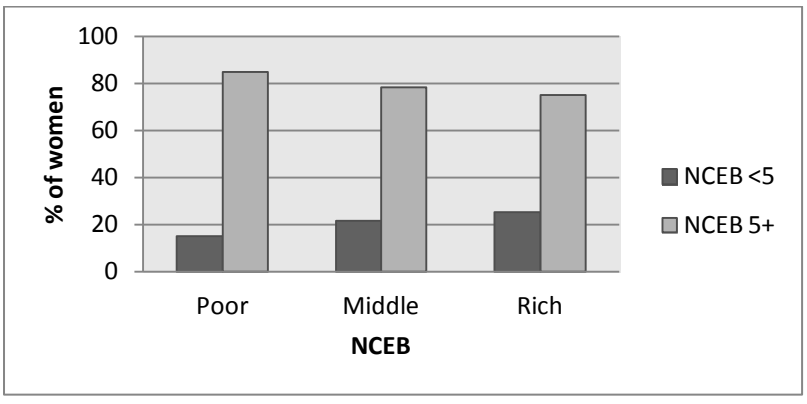
87.10% of women that had no education had 5+ children while 12.09 had <5 children. Among women that had primary education, 75.84% had 5+ children while 24.16% had <5 children. 70.13% of those that had Secondary or more education had 5+ children while 29.87 had <5 children. See figure 4.3.

Figure 4.3: Proportion of women by Woman's level of education and NCEB



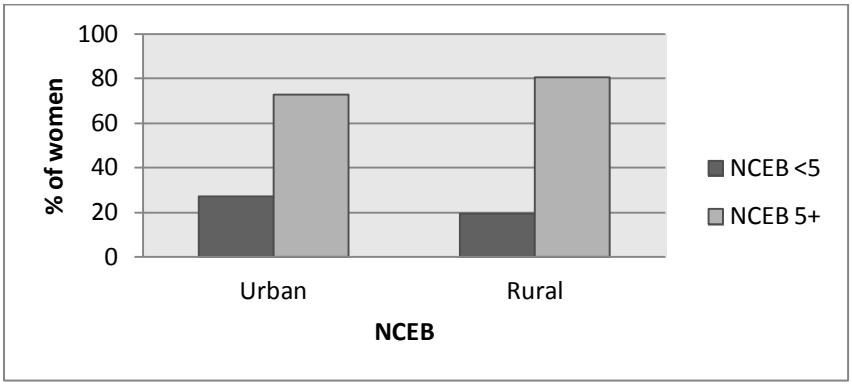
Although all the household wealth categories showed that more women had 5+ children than those that had <5 children, women in the poor households wealth category had the highest proportion with 84.95% having 5 or more children. While women in the middle household wealth category had 78.30% with 5+ children, the women in the rich household category had 74.83% with 5+ children. Among the poor, those that had <5 children were 15.05%, the middle 21.70% and the rich 25.17%. See figure 4.4.

Figure 4.4: Proportion of women by Household wealth and NCEB



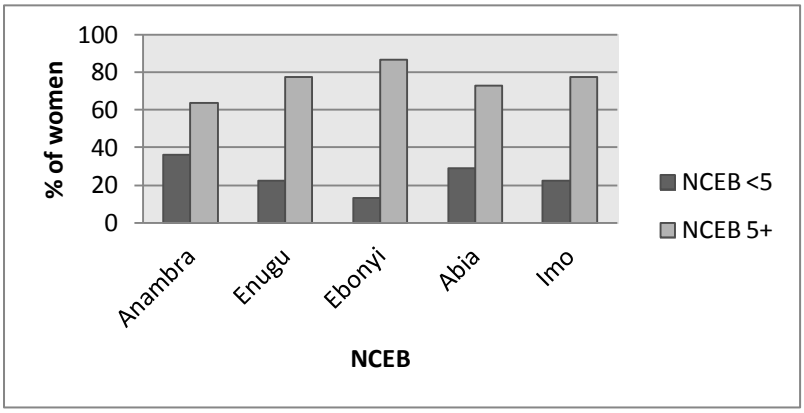
Majority of those living in urban areas (72.92%) had 5+ children while 27.08% had <5 children. Also, 80.71% of rural dwellers had 5 or more children while 19.29% had less than 5 children (figure4.6)

Figure 4.6: Proportion of women by Place of residence and NCEB



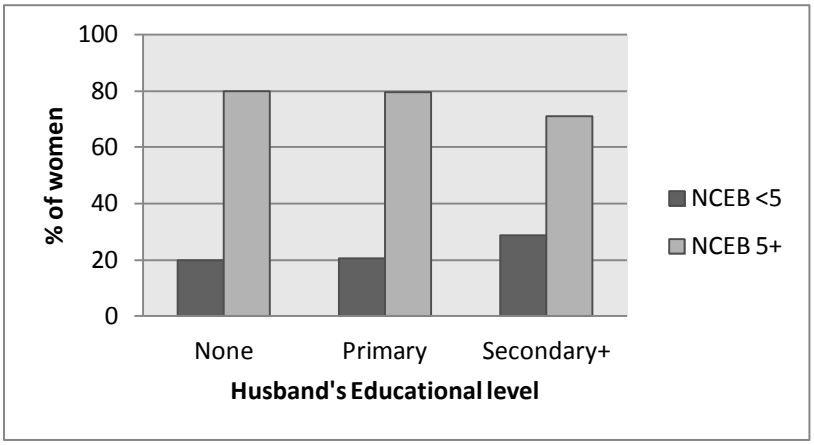
Within the states, those that had <5 children were 36.11% in Anambra, 28.98% in Abia, 22.54% in Imo, 22.41 in Enugu and 13.11% in Ebonyi state. The women that had 5+ children were 86.89% in Ebonyi, 77.59 in Enugu, 77.46% in Imo, 73.02% in Abia and 63.81% in Anambra state. See figure 4.7.

Figure 4.7: Proportion of women by States and NCEB



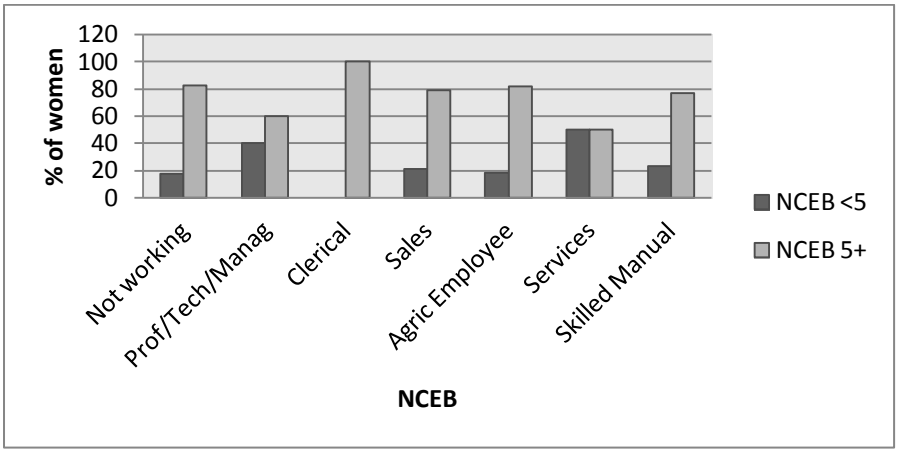
Among women whose husbands had no education 80% had more than 5 children while 20% had less than 5 children. Among those that their husband's has primary education, 79.44% had 5+ children while 20.56% had less than 5 children. Among those whose husbands had secondary or more education 71.11% had 5+ children while 28.89% children had <5 children. See figure 4.8.

Figure 4.7: Proportion of women by Husband's Educational level and NCEB



According to women's occupation, 82.14% of those not working had 5+ children while 17.86% had <5 children. 60% of women in professional/technical/management occupations had 5+ children while 40% had <5 children. 100% of the women in clerical occupations had 5+ children. 79.09% of women in sales occupation had 5+ children while 20.91 had <5 children. 81.82% of women employed in agric employee occupations had 5+ children while 18.18% had <5 children. The women in service professions were split evenly between 5+ children and <5 children with each category contributing 50%. Lastly those in skilled manual occupations that had 5+ children were 76.92% while those that had <5 children were 23.08%. See figure 4.9.

Figure 4.8: Proportion of women by Woman's occupation and NCEB



4.5 Multivariate analysis

Three models of logistic regression was done, the results are displayed in the table 4.4a. The first model shows unadjusted odds ratios of the relationship between NCEB and Age at first marriage only. The second model shows the relationship between NCEB and each of the independent variables. The third model shows the relationship between NCEB and the significant variables retained from stepwise logistic regression in STATA.

The reference category (RC) for NCEB was <5 children, while the first category of each of the independent variables was used as the reference category and is denoted RC.

Table 4.6 Odds ratios of models of relationships between selected variables and NCEB

Variable	Unadjusted Odds Ratios	Adjusted Odds Ratios	Stepwise
Age at 1st marriage			
>=18	RC	RC	RC
<18	2.4924**	2.2356*	2.1868*
Woman's Educational Level			
None		RC	RC
Primary		0.4970	0.4871*
Secondary+		0.6009	0.4333*
Household Wealth			
Poor		RC	
Middle		1.0363	
Rich		1.4047	
States			
Anambra		RC	
Enugu		1.7733	
Ebonyi		2.8949	
Abia		1.5047	
Imo		1.5368	
Place of abode			
Rural		RC	
Urban		1.1721	
Husband's Educational Level			
None		RC	
Primary		1.4231	

Secondary+	0.8592
Woman's Occupation	
Not Working	RC
Clerical	0.3685
Sales	0.7818
Agric Employee	0.5597
Services	0.1963
Skilled Manual	0.6458

RC=Reference Category; statistically significance:= p-value <0.05;**=p-value<0.01*

The outcome of the logistic regression is as follows:

Model 1: Women who married at <18 years or more are 2.5 times more likely to have 5+ children than those that married at >=18 years. This relationship show strong statistical significance with a p-value less than 0.01.

Model 2: Women who married at <18 years are 2.2 times more likely than those who married at >=18 years to have 5+ children, while controlling for woman's educational level, household wealth, place of abode, states, husbands educational level and woman's occupation. The relationship between age at marriage and number of children is statistically significant with a P-value of <0.05.

Those who had primary education are 50% less likely to have more than four children than women with no education. Also women with secondary or more education with an odds of 0.6 are 40% less likely to have 5+ children than the women that had no education, while adjusting for age at marriage, household wealth, states, place of abode, husband/partner education and woman's occupation.

With regard to household wealth, women in the middle house hold wealth category families are 4% more likely or 1.04 times more likely to have 5+ children than women in the poor household wealth category. Likewise women from the rich category are 40% more likely to have 5+ children than

women from poor families while adjusting for age at marriage, woman's education, states, place of abode, husband/partner education and woman's occupation.

Women in urban areas are 17% more likely than women in rural areas to have more than four children while adjusting for age at marriage, woman's education, household wealth, states, husband/partner education and woman's occupation.

Using Anambra as the reference category in States, the results indicate that women form all the other states of the South East Zone are more likely than women from Anambra State to have 5+ children. Specifically, Enugu women were 77 % more likely to have 5+ children than Anambra women. Ebonyi women with odds of 2.89 were 189% more likely to have 5+ children, women from Abia were 50% more likely to have 5+ children and women from Imo state were 54% more likely to have 5+ children than women from Anambra state, while adjusting for age at marriage, woman's education, household wealth, place of abode, husband/partner education and woman's occupation.

With reference to Husband/Partner's Educational level, the results show that women married to husbands with primary education were 55% more likely to have more than four children than women whose husband/partner did not have any education, while those whose husband's had secondary education or higher where approximately 1% more likely than those whose husbands had no education to have more than four children while adjusting for age at marriage, household wealth, woman's education, states, place of abode and woman's occupation.

The relationships between NCEB and all the other Independent variables are insignificant because their p-values are greater than 0.05 (see Appendix 2)

Model 3: women who married at <18 years are 2.19 times more likely to have 5+ children than those who married at >=18. The relationship was statistically significant with p-value less than 0.05.

Women who had primary education were 49% less likely than those that had no education to have more than 5+ children and women that had secondary+ education were 43% less likely than those that had no education to have 5+ children, while adjusting for age at marriage. The relationship between NCEB and woman's education was found to be statistically significant for both primary and secondary categories of woman's education.

4.6 Calculation of TFR

The Total Fertility Rate (TFR) was calculated for all the women of the South East Zone, the women who married before the age of 18 years and those who married after the age of 18 years. This was done by calculating the Age specific fertility rates for each age group and multiplying the sum of the ASFRs by 5. Table 4.8 shows the TFRs of the three categories of women while Figure 4.10 shows the ASFRs of the three categories of women.

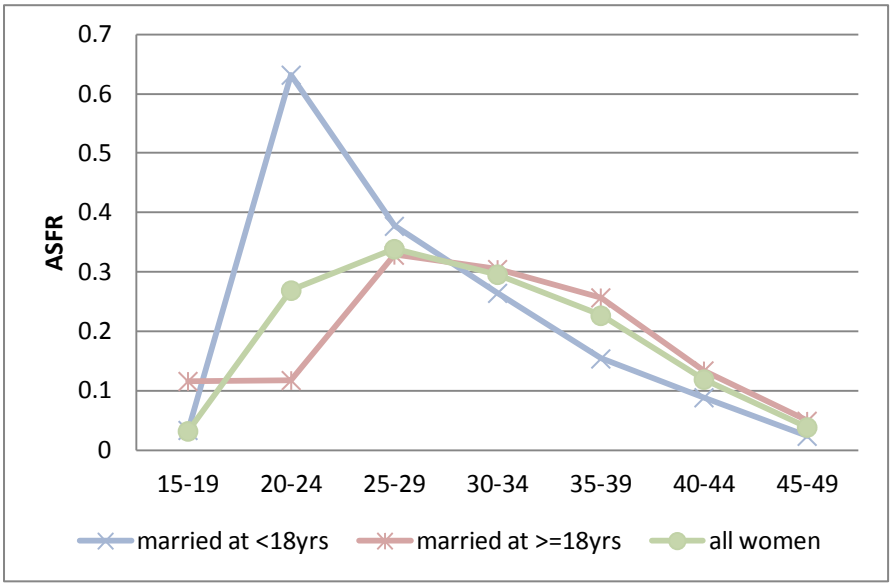
The TFRs are as follow;

- TFR for women who married at <18 years of age = 7.8
- TFR for women who married at >= 18years of age = 7.7
- TFR for all ever married women of the South East Zone =7.8

Table 4.7 TFR of ever married women in the SEZ (based on 5-year births)

5yr-Age groups	Total women	person years	total births	TFR
<18 yrs	645	4039	598	7.8
18+ yrs	1530	7650	1782	7.7
All	2175	10875	2380	7.8

Figure 4.8: ASFR of ever married women in SEZ Nigeria



The graph of the ASFR for all the ever married women of the South East Zone of Nigeria shows a gradual increase from age group 15-19, reaching its highest point at age group 25-29 and also declines gradually from age group 30-34 to 45-49.

The graph of ASFR for ever married women who married before the age of 18 shows a sharp increase from 0.03 for age group 15-19 to above 0.6 for ages 20-24. It then drops sharply also to below 0.4 for age group 25-29 and after that shows an average of 0.1 unit drop for the ages 30-34 and 35-39 before slowing further to a drop of about 0.06 for age groups 40-44 and 45-49. The sharp peak for age group 20-24 indicates the peak period of childbearing for women that marry at <18 years.

The graph of ASFR for women who married at the age of 18 years or more shows that the age group 15-19 years had an ASFR of 0.1 which remained constant for ages 20-24 before an increase to above 0.3 for ages 25-29. It then drops a total of about 0.1 unit for ages 30-34 and 35-39 before reducing further for ages 40-44 and 45-49. This is can be explained by the fact that not all women who married at 18+years did so at the exact age of 18. Also not all who married even at 18 years

exactly had children immediately. The sharp increase in ASFR for age group 25-29 shows the peak child bearing period for women who marry at 18+ years.

4.7 Calculation of Completed fertility

While the TFR presents a picture of a woman's fertility if she conforms to the ASFR of each age group for the duration of her child bearing years, the actual fertility rate of women that have completed child bearing is given by the completed fertility rate (CFR).

It is calculated using the formula: $CFR = \frac{\text{Total number of births to women aged 45-49}}{\text{Total number of women aged 45-49}}$

The completed Fertility Rate (CFR) was calculated for all the women of the South East Zone aged 45-49, the women who married before the age of 18 years and those who married at 18 years or more. This was done by dividing the total number of births by the total number of women in each category to get the CFR. Tables 4.9, 4.10 and 4.11 show the CFR calculations for the three categories of women.

Table 4.8 CFR for women married at <18years

Births	Women	Total Births
0	1	0
1	5	5
2	1	2
3	4	12
4	8	32
5	9	45
6	17	102
7	28	196
8	26	208
9	18	162
10	15	150
11	4	44
12	6	72
14	2	28
15	1	15
Total	**145**	**1073**
CFR=1073/145=7.4 =7		

Table 4.9: CFR for women married at 18+ years

Births	women	Total Births
0	5	0
1	8	8
2	8	16
3	15	45
4	20	80
5	32	160
6	31	186
7	22	154
8	27	216
9	18	162
10	13	130
11	1	11
12	4	48
13	1	13
Total	205	1229
CFR= 1229/205 =5.9951= 6		

Table 4.10: CFR for all ever married women aged 45-49

Births	Women	Total births
0	6	0
1	13	13
2	9	18
3	19	57
4	28	112
5	41	205
6	48	288
7	50	350
8	53	424
9	36	324
10	28	280
11	5	55
12	10	120
13	1	13
14	2	28
15	1	15
Total	350	2302
CFR=2302/350= 6.577143~7		

The CFR for ever married women married <18 years was 7

The CFR for ever married women married >=18 years was 6

The CFR for all ever married women married in the SEZ was 7

The actual completed fertility rate for women who married before the age of 18 was higher than that of women who married at 18 years or more. Although the gap is not much, results show a difference of one child between the two groups of women.

In summary the results showed that the mean number of children born to women who married early was higher than those that married late irrespective of other socioeconomic factors examined in this work. Age at first marriage and woman's educational level was found to have a significant relationship with number of children ever born. TFR for women who married early was not significantly greater than that for women who married later. The completed fertility rate was also not much different between the two groups of women.

CHAPTER 5

DISCUSSIONS AND CONCLUSION

5.1 Introduction

This chapter gives an overview of the research, its objectives hypotheses and methodology. It discusses the results in line with the objectives of the study. It then examines whether the hypotheses of the research was proven or not. It also highlights areas for further research and proffers suggestions for policy and programme implementation.

5.2 Overview

This study examined the relationship between early marriage and fertility outcomes in South Eastern Nigeria. It specifically examined the outcomes of Number of children ever born and Total fertility rate among ever married women of the South East Zone of Nigeria.

It aimed to achieve the objectives of estimating the prevalence of early marriage in the South East Zone, examining the distribution of the study population, investigating the relationship between each of the independent variables and NCEB, investigating the relationship between age at marriage and NCEB while controlling for other covariates, investigating the relationship between early marriage and TFR.

In order to achieve the objectives of the study, data from the 2008 NDHS was analysed. The key independent variable was Age at 1st marriage while other independent variables used were woman's educational level, House hold wealth, Place of residence, States, Husband's educational level and woman's occupation. Analysis was done using STATA version 11 software and Microsoft Office Excel 2007.

5.3 Discussions

Objective 1 which was to estimate the prevalence of early marriage in the South East Zone was achieved. The results indicate that among the ever married women of the South East Zone, about 30% were involved in early marriage while for the ever married women aged 45-49, 41.43% were involved in early marriage.

Objective 2 which was to examine the distribution of the study population by selected characteristics in the South East Zone was achieved as can be seen from the results of the Univariate analysis.

The results show the distribution of the study population as follows: Overall, about 30% of the study population experienced early marriage. Following are the highest proportions of the other characteristics among the women that married before the age of 18 years. 81% were currently married and 65.12 % had more than 4 children. 47% had primary education while about 50% were married to husbands with primary education. About 40% were grouped in the Rich household wealth category; about 40%were from Ebonyi State, 70% lived in rural areas while 60% had sales or agric employee occupations.

In comparison, among those that married at 18 years and above, 90.46 were currently married and 55.42% had four or less children. 57.38% belonged to the Rich category of household wealth and 24.38 were from Ebonyi State while 58.37% lived in the urban areas. 57.8% had primary education, 42.03% were married to men that had primary education only while 78.76% were employed.

Objective 3 was to investigate the relationship between early marriage and Number of Children Ever Born (NCEB). This was achieved by using STATA to perform a cross tabulation of the number of children ever born, age at marriage and the key independent variables. The results indicate that there is significant relationship between the Number of children ever born and the variables of Age

at first marriage, Woman's level of education and States. This is because their p-values were all less than 0.05. In contrast, the p-values for wealth status, place of abode and husbands educational level and woman's occupation was greater than 0.05. This means that there is no significant relationship between NCEB and each of those variables.

The results of the logistic regression in STATA was used to achieve objective 4, which was to investigate the relationship between early marriage and NCEB while controlling for other covariates. The results show a significant relationship between age at first marriage and NCEB for all the models. However, only model 3 indicated a relationship between NCEB and woman's educational level.

The results also indicate that the women who married at <18 years or more are more likely to have 5+ children than those that married at 18+ years when the variables of woman's educational level, states, Place of abode, husband's educational level, and woman's occupation are held constant.

In addition, the relationship between woman's level of education and the number of children born is such that the likelihood of a woman having <5 children increases with the woman's level of education while holding the variables of age at first marriage, place of abode, states, husband's educational level and woman's occupation constant. NCEB did not show any significant relationship with other independent variables of Place of residence, Household wealth, States, Husband's educational level and Woman's occupation.

Objective 5 which was to investigate the relationship between early marriage and the dependent variable of TFR was achieved by calculating the TFR for all women who married before the age of 18 and all women who married after the age of 18years. The results indicate that the TFR for women who married at less than 18 years was higher than the TFR of the all the women put together. While the TFR of women who married at 18 years and above was lower than that of all the women put together. The pattern shown in the graph of ASFRs indicate that the women that

married early have a high fertility regime with a higher peak and steeper decline while the women who married later show a medium high fertility with a flatter curve.

5.4 Conclusion

The results of the multivariate analysis indicate that women who marry at <18 years are more than 100% more likely to have five or more children when compared to those who married later. The implication of these figures is that the completed fertility which is given by the TFR should be much higher for the women aged 45-49 years who married at <18 years when compared with women of the same age group that married later. However this postulation does not appear to hold for women aged 45-49 years in the South East Zone of Nigeria. The period fertility which is given by the TFR is the number of children a woman would bear if she survives till age 50 and experiences the same age specific fertility rates as the specified period. The result of the TFR estimation shows that the TFR of those who married early (7.8) is not significantly greater than the TFR for those who married later (7.7). It is expected that the women who married at less than 18 years should have had a higher TFR than those who married later for the fact that they are fully exposed to the ASFRs of each age group unlike those who married later who are not fully exposed to the ASFR of the age group 15-19 but this is not so. However, the actual CFR for women who marry early in the south East zone was one point more than the CFR of women that married later. The difference is also not as much as is expected based on the outcome of the logistic regression. It is also important to note that the TFR for ever married women in the South East Zone (7.8) is much higher than the TFR of all the women of the South East Zone (4.8).

These results as they stand, while presenting an apparent contradiction, indicate the existence of other influencing factors which the survey does not pick up. Influencing factors referred here include prevailing customs, traditions, norms, shared experiences of the community.

Some explanations could be proffered for the apparent contradictions based on the culture of the Igbo. In the Igbo culture, extramarital and pregnancy is considered disgraceful and abhorred while marital fertility is highly valued and extolled. This could be the reason why over 98% of births are credited to ever married women (see table 4.4). Although abortion is illegal in Nigeria, it is also possible that a number of teenage girls who get pregnant abort the pregnancy to avoid public disgrace and being married off to an old man, thereby accounting for the minimal contribution of never married women to fertility. Based on this culture also, if a girl becomes pregnant due to premarital sex, the family will try to marry her off immediately. The marriage may not be to the man/boy responsible for the pregnancy rather could be to an elderly widower or as a 2nd or 3rd wife to an elderly man or even to a childless woman. In this case the woman may not continue childbearing as the elderly husband may die while she is still in her child bearing years. This could be the reason for the high ASFR of age group 15-19 for those who experience early marriage because pregnancy actually occasioned the marriages. In contrast the women who married later could have married voluntarily to a man nearer their age and therefore have a longer marital period and consequently longer exposure to pregnancy. Also the culture of male child preference and high value placed on marital childbearing could drive fertility increase among the women that married at a later age.

Also in some parts of Igbo land, marriage may be contracted at an early age but consummated at a later time. In this case the girl lives with her parents but visits her husband's home to understudy her mother in-law until such a time as she is considered mature enough both physically and mentally to handle the responsibilities of child bearing. It is at this stage of maturity that the public celebration of the marriage is conducted and the marriage consummated. This means although the girl was technically married before the age of 18, she was not exposed to the risk of childbearing for

the full length of time she has been married. As such her childbearing pattern would be similar to that of women that married at 18 years and above.

As has been mentioned in literature (Odimegwu, 1998; Ukaegbu 1976), the Igbo culture places a high value on children more especially male children, presumably in order to provide security in old age. Another factor that could influence NCEB irrespective of age at marriage is the oppression of only children and orphaned children. Folklore of the Igbos are rife with the character "Nwa enwe nne" meaning the motherless child, who in the stories, are usually oppressed by stepmothers and kinsmen. In addition certain names like 'Nwa bu Nwanne" meaning my child is my sibling, "Nwanneka" meaning it is better to have siblings, "Umunna" meaning kinsmen, Ezinwanne meaning good sibling all depict the desire to have several children so that no child will be without a sibling.

Yet another factor that could contribute to the high fertility of women in the South East Zone could be the lingering after effects of the Nigerian-Biafran civil war in which an estimated 3 million Igbos including about two million children died within 30 months as a result of the war (Fearon and Laitin, 2006; Sule, 2011). As is characteristic of societies recovering from war, high fertility would be encouraged in order to replace war casualties (Agadjanian and Prata, 2001; The Economist 2009). Although the cohort under study was not in its their reproductive period by the end of the war, these women would have been between the ages of six and eleven, therefore it is possible childhood memories of the loss of family members may drive the need to have as many children as possible.

One of the reasons why the women had more than four children irrespective of age at first marriage could be because of the point in time in their child bearing when the population policy was introduced. The National Population Policy which suggested that women should have a

maximum of four children was approved in 1988, at which time the cohort of women would have been in the age group 25-30 years (the peak of their childbearing years).

Changes in society usually occur as a result of diffusion of innovations and ideas (Rogers, 2003:5-6). The adoption of such a policy would therefore take some time to diffuse into the society by which time the cohort of study may have passed their peak in reproduction period.

5.5 Areas of further study

- It would be inappropriate to conclude from these results that women who marry at <18years always have more children than those that marry later. This is because only one cohort that has concluded childbearing has been studied. It is important, that more cohorts that have completed child bearing from the same study area, be observed. This will help to identify any tempo or quantum effects on the fertility of the categories of women studied in that zone.

- As was mentioned, the possibility that the adoption of the National Population Policy pertaining to number of children per woman may not have diffused enough into the society to influence the fertility patterns of the study population. Therefore research on succeeding cohorts of women need to be carried out to see if there is any effect of the policy on completed fertility.

- This study has examined the effects of selected variables on the number of children ever born. More research is recommended to determine other variables that could influence the fertility choices of women such as desired number of children and number of living children.

- In addition, the study focused on identifying relationships between the independent variables and the outcome variable but did not include analysis that will show what proportion of the outcome each of the variables in the results. A factor analysis is recommended to determine to what extent each of the selected variables and perhaps other variables explain the number of children ever born.

- A comparison of the number of children ever born, number of living children and desired number of children between women who experience early marriage and those who marry later could yield further explanations for the fertility of women in the South East Zone.

- Although the occurrence of early marriage is lower than what occurs in the Northern part of the country, it contributes to an increase in TFR as such more research can be carried out to determine reasons for the continued occurrence of early marriage in the South East Zone.

- From the results of this study, one of the reasons TFR of the SEZ of Nigeria seems to be decreasing appears to be because fewer women are married and not as a result of the increasing age of marriage. It is therefore important to examine the factors that influence the possibility of marriage in the SEZ.

- Furthermore, it is necessary to investigate these marriage influencing factors or determinants in relation to the different independent variables used in this study to see which group of women would be most impacted.

5.6 Suggestions for Implementation:

Since there is a relationship between the number of children born and woman's education, women should be encouraged to study up to secondary school and above before marrying. This will automatically raise the age at marriage of the girl.

Being a patriarchal society, husbands play a key role in decision in matters concerning the family; therefore involvement of men in campaigning for the reduction of fertility and prevention of early marriage is essential.

Unmet contraceptive needs among married women in the South East Zone should be addressed since ever married TFR is very high compared to the TFR of all women of the South East Zone.

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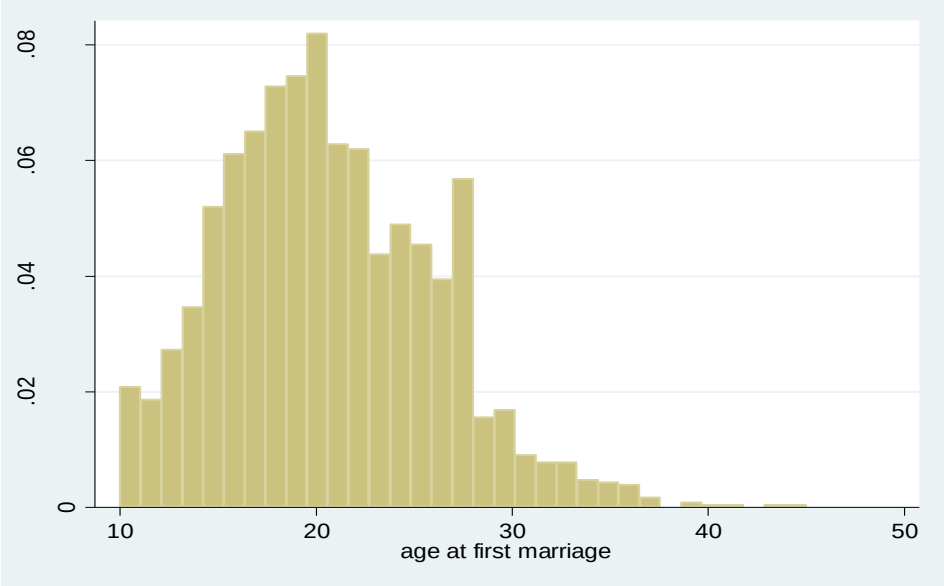
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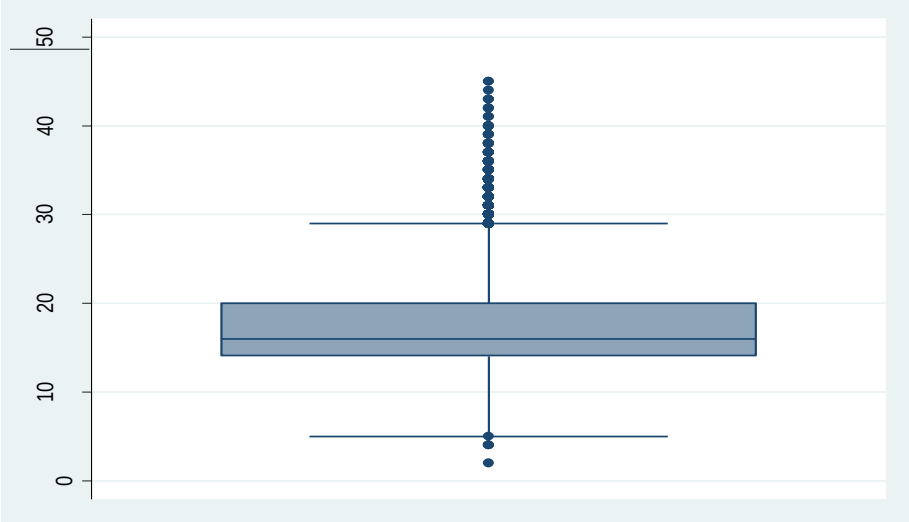
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APPENDIX 1
STATA Output for normal distribution tests





APPENDIX 2
STATA Output for logistic regression models

Model 1

```
. xi:logistic  NCEB Age_at_1st_marriage if zones==4 & age_5_year_groups==7

Logistic regression                               Number of obs   =        350
                                                  LR chi2(1)      =      10.67
                                                  Prob > chi2     =     0.0011
Log likelihood = -176.51988                       Pseudo R2       =     0.0293

------------------------------------------------------------------------------
        NCEB | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
Age_at_1st~e |   2.492406   .7272387     3.13   0.002     1.406869    4.41554
------------------------------------------------------------------------------
```

Model 2

```
. xi:logistic  NCEB i.Age_at_1st_marriage i.Woman_Educational_Level i.Household_Wealth i.STA
> TES i.Place_of_Abode i.Husband_Educational_level i.woman_occupation if zones==4 & Age_5_ye
> ar_groups ==7
i.Age_at_1st_~e   _IAge_at_1s_0-1     (naturally coded; _IAge_at_1s_0 omitted)
i.Woman_Educa~l   _IWoman_Edu_0-2     (naturally coded; _IWoman_Edu_0 omitted)
i.Household_W~h   _IHousehold_1-3     (naturally coded; _IHousehold_1 omitted)
i.STATES          _ISTATES_1-5        (naturally coded; _ISTATES_1 omitted)
i.Place_of_Ab~e   _IPlace_of__1-2     (naturally coded; _IPlace_of__1 omitted)
i.Husband_Edu~l   _IHusband_E_0-2     (naturally coded; _IHusband_E_0 omitted)
i.woman_occup~n   _Iwoman_occ_0-8     (naturally coded; _Iwoman_occ_0 omitted)
note: _Iwoman_occ_2 != 0 predicts success perfectly
      _Iwoman_occ_2 dropped and 1 obs not used

note: _Iwoman_occ_7 omitted because of collinearity
note: _Iwoman_occ_8 omitted because of collinearity

Logistic regression                               Number of obs   =        349
                                                  LR chi2(17)     =      28.39
                                                  Prob > chi2     =     0.0406
Log likelihood = -167.41828                       Pseudo R2       =     0.0782

------------------------------------------------------------------------------
        NCEB | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_IAge_at_1~1 |   2.235609   .7082203     2.54   0.011     1.201554    4.159572
_IWoman_Ed~1 |   .4969964   .2120628    -1.64   0.101     .2153551    1.146968
_IWoman_Ed~2 |    .600878   .3316495    -0.92   0.356     .2036915    1.772555
_IHouseho~2  |    1.03631   .4816648     0.08   0.939     .4167361    2.577023
_IHouseho~3  |   1.404646   .7196717     0.66   0.507     .5145799    3.834253
  _ISTATES_2 |   1.773264   .9320274     1.09   0.276     .6329683    4.967809
  _ISTATES_3 |   2.894869   1.620715     1.90   0.058     .9662222     8.67323
  _ISTATES_4 |   1.504739   .7219293     0.85   0.394      .587597    3.853386
  _ISTATES_5 |   1.536838   .7949722     0.83   0.406     .5575969    4.235803
_IPlace_of~2 |   1.172143   .4060134     0.46   0.647      .594479     2.31113
_IHusband_~1 |   1.423106   .4941672     1.02   0.310     .7205451    2.810691
_IHusband_~2 |   .8592029   .3977778    -0.33   0.743     .3467546    2.128968
_Iwoman_oc~1 |   .3685202   .2576877    -1.43   0.153     .0935963    1.450988
_Iwoman_oc~2 |  (omitted)
_Iwoman_oc~3 |   .7817813   .4465844    -0.43   0.666     .2551792    2.395109
_Iwoman_oc~4 |   .5597077   .3177854    -1.02   0.307     .1839393    1.703132
_Iwoman_oc~5 |   .1963249    .175908    -1.82   0.069     .0339075    1.136726
_Iwoman_oc~6 |   .6457709   .5569673    -0.51   0.612     .1191051    3.501277
_Iwoman_oc~7 |  (omitted)
_Iwoman_oc~8 |  (omitted)
------------------------------------------------------------------------------
```

Model 3

```
. *using stepwise logistic regression reporting odds ratios
. xi:stepwise, pe(0.05):logistic  NCEB  (i.Age_at_1st_marriage) (i.Woman_Educational_Level)
> (i.Household_Wealth) (i.STATES) (i.Place_of_Abode) (i.Husband_Educational_level) (i.woman_
> occupation) if zones==4 & Age_5_year_groups ==7
i.Age_at_1st_~e   _IAge_at_1s_0-1     (naturally coded; _IAge_at_1s_0 omitted)
i.Woman_Educa~l   _IWoman_Edu_0-2     (naturally coded; _IWoman_Edu_0 omitted)
i.Household_W~h   _IHousehold_1-3     (naturally coded; _IHousehold_1 omitted)
i.STATES          _ISTATES_1-5        (naturally coded; _ISTATES_1 omitted)
i.Place_of_Ab~e   _IPlace_of__1-2     (naturally coded; _IPlace_of__1 omitted)
i.Husband_Edu~l   _IHusband_E_0-2     (naturally coded; _IHusband_E_0 omitted)
i.woman_occup~n   _Iwoman_occ_0-8     (naturally coded; _Iwoman_occ_0 omitted)
note: _Iwoman_occ_7 dropped because of collinearity
note: _Iwoman_occ_8 dropped because of collinearity
note: _Iwoman_occ_2 dropped because of estimability
note: o._Iwoman_occ_2 dropped because of estimability
note: 1 obs. dropped because of estimability
                  begin with empty model
p = 0.0019 <  0.0500  adding  _IAge_at_1s_1
p = 0.0488 <  0.0500  adding  _IWoman_Edu_1 _IWoman_Edu_2

Logistic regression                               Number of obs   =        349
                                                  LR chi2(3)      =      16.99
                                                  Prob > chi2     =     0.0007
Log likelihood = -173.11839                       Pseudo R2       =     0.0468

------------------------------------------------------------------------------
        NCEB | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_IAge_at_1~1 |    2.18684     .66173     2.59   0.010       1.2085    3.957196
_IWoman_Ed~1 |   .4870874   .1620431    -2.16   0.031     .2537647    .9349375
_IWoman_Ed~2 |   .4332912   .1634545    -2.22   0.027     .2068584    .9075836
------------------------------------------------------------------------------
```

APPENDIX 3

STAT output of 5-year births and TFR calculations

```
. tab  Age_5_year_groups births_in_past_5yrs  if zones==4 & Age_at_1st_marriage==1
```

Age_5_year_groups	births_in_past_5yrs 0	1	2	3	4	Total
15-19	7	23	5	0	0	35
20-24	3	19	29	18	0	69
25-29	5	18	47	18	0	88
30-34	19	30	29	9	0	87
35-39	51	46	17	2	1	117
40-44	70	22	12	0	0	104
45-49	131	11	3	0	0	145
Total	286	169	142	47	1	645

Age_5_year_groups	births_in_past_5yrs 0	1	2	3	4	Total
15-19	9	28	5	1	0	43
20-24	44	96	75	26	0	241
25-29	46	120	181	72	5	424
30-34	79	110	153	49	6	397
35-39	123	142	98	30	6	399
40-44	191	78	44	7	1	321
45-49	293	48	8	1	0	350
Total	785	622	564	186	18	2,175

```
. tab  Age_5_year_groups births_in_past_5yrs  if zones==4 & Age_at_1st_marriage==0
```

Age_5_year_groups	births_in_past_5yrs 0	1	2	3	4	Total
15-19	2	5	0	1	0	8
20-24	41	77	46	8	0	172
25-29	41	102	134	54	5	336
30-34	60	80	124	40	6	310
35-39	72	96	81	28	5	282
40-44	121	56	32	7	1	217
45-49	162	37	5	1	0	205
Total	499	453	422	139	17	1,530

TFR of women married at <18yrs in the SEZ (based on 5-year births)

5yr-Age groups	Total women	person years	total births	ASFR
15-19	35	120.33175	33	0.2743
20-24	69	345	131	0.3797
25-29	88	440	166	0.3773
30-34	87	435	115	0.2644
35-39	117	585	90	0.1539
40-44	104	520	46	0.0885
45-49	145	725	17	0.0235
Total	645	4039	598	1.5614
TFR = 5 x 1.5614 =7.8065 = 7.8				

TFR of women married at 18+yrs in the SEZ (based on 5-year births)

5yr-Age groups	Total women	person years	total births	ASFR
15-19	8	33.75	8	0.2370
20-24	172	860	193	0.2244
25-29	336	1680	552	0.3286
30-34	310	1550	472	0.3045
35-39	282	1410	362	0.2567
40-44	217	1085	145	0.1336
45-49	205	1025	50	0.0488
Total	1530	7650	1782	1.5337
TFR= 5 x 1.5337=7.6685 =7.7				

TFR of ever married women in the SEZ (based on 5year births)

5yr-Age groups	Total women	person years	total births	ASFR
15-19	43	154.08	41	0.2661
20-24	241	1205	324	0.2689
25-29	424	2120	718	0.3387
30-34	397	1985	587	0.2957
35-39	399	1995	452	0.2266
40-44	321	1605	191	0.1190
45-49	350	1750	67	0.0383
Total	2175	10875	2380	1.5532
TFR = 5 x 1.5532 =7.7661 =7.8				