Socio-Demographic Determinants of Adolescent Fertility in Zambia

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Declaration

I, Nwamaka Chinwe Nwogwugwu (Mrs) hereby declare that this research report is my own original work. It is being submitted to the Faculty of Humanities and School of Social Sciences, University of the Witwatersrand in Johannesburg, South Africa. It is submitted in partial fulfilment of the requirements for the degree of Master of Arts in the field of Demography and Population Studies. I declare that this report has not been submitted before in part, or in full, for any other degree or examination at this or any other university.

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I am very grateful to God for giving me guidance, wisdom and the strength to complete this work. It has been by HIS grace and mercy. Thank you God.

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Dedication

I humbly dedicate this work to my husband Mr. Benson Chinedu Nwogwugwu and children; Angel, Rhema, Michael and Nicole.

Abbreviations

AIDS : Acquired Immune Deficiency Syndrome

AOR : Adjusted Odds Ratio

ASFR : Age Specific Fertility Rate

CI : Confidence Interval

CPH : Census of Population and Housing

CSO : Central Statistics Office

DHS : Demographic and Health Survey

HIV : Human Immune Deficiency Virus

ICDP : International Conference on Population and Development

MDHS : Malawi Demographic and Health Survey

OR : Odds Ratio

RC : Reference Category

SEA : Standard Enumeration Areas

SSA : Sub Saharan Africa

STIs : Sexually Transmitted Infections

TDRC : Tropical Disease Research Centre

TFR : Total Fertility Rate

UN : United Nations

UNFPA : United Nations Population Fund

UNICEF : United Nations Children's Fund

UNZA : University of Zambia

UOR : Unadjusted Odds Ratio

USAID : United States Agency for International Development

WHO : World Health Organization

ZDHS : Zambia Demographic and Health Survey

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CHAPTER 1

INTRODUCTION AND BACKGROUND

This chapter introduces an overview of magnitude and distribution of adolescent fertility and why it is a problem in our society. It also outlines the problem statement, background, scope, justification and objectives of the study.

1.1 Introduction

Adolescent childbearing is reported globally as a problem (Bearinger, Sieving, Ferguson and Sharma, 2007). In 2008, there were 16 million births by adolescents aged between 15-19 years; this accounts for 11 percent of all births worldwide. Notably, about 95% of these births occurred in low and middle income countries (WHO, 2012). In Latin America, the average birth rate is 78 per 1000 among girls aged 15-19 years, North Africa and the Middle East 56 per 1000 and Europe 25 per 1000 (Bearinger, et. al., 2007). Alarmingly, in sub-Saharan Africa the average birth rate is at 143 per 1000; this is one of the highest compared to other parts of the world.

A report from the National Research Council on adolescent childbearing shows an increase in childbearing among unmarried female adolescents in sub-Saharan Africa which raises religious and cultural concerns (Bledsoe and Cohen, 1993). Early childbearing shapes the mother and her child's opportunities; their subsequent life chances for good or bad depending on the socio-economic status of the adolescent's family. Moreover, rising age at marriage combined with a decline in the age at menarche resulted in an increased number of sexually mature but unmarried adolescents. This leads to a higher prevalence of sexual activity among unmarried girls and expose them to unplanned pregnancies, unsafe abortions and HIV/AIDS (Marston and Cleland, 2004).

1.2 Statement Problem

Adolescent pregnancy is a growing concern in Zambia (Warenius, 2008). It has been a major cause for school drop-outs of young pregnant girls in order to avoid social stigma; so, to continue schooling girls in Zambia have to resort to induced abortions which can often be accompanied by devastating consequences (Warenius, 2008). With such detrimental development among adolescent girls, children who are supposed to add to national development, poverty coupled with sexually transmitted diseases including HIV-AIDS are apparent (Phiri, 2012).

The implications of adolescent fertility vary at different levels. At a global level, adolescent fertility contributes to rates of population growth. That is, early childbearing leads to high overall fertility rate in societies with low contraceptive use (Bongaarts, 1985). Furthermore, population growth rates are more rapid when adolescents' age at first birth is less than twenty years (Singh, 1998). A special world population report has estimated that births to adolescents 15-19 years will reach 4.8 million by the year 2020; this is an increase of 400,000 births compared to the 1996 recorded rate (Garenne, Tollman, Kahn, Collins and Ngwenya, 2001).

Childbearing during the age of adolescence can shape and change the future of female adolescents. At a personal level, adolescents who bear children before the age of twenty have less educational qualification(s), fewer job possibilities, lower income and more likely to live in poverty, especially in sub-Saharan Africa (Zabin and Kiragu, 1992). Also, adolescents face the risk of high blood pressure, infections, anemia and hemorrhage which are more likely to occur in adolescent pregnancy than older women (Zabin and Kiragu, 1998). As a consequence, young women are more likely to attempt abortions, most of which are unsafe or cause damage in the process of giving birth that might endanger their lives or render them infertile. Bledsoe and Cohen (1993), suggest that most of the implications of adolescent fertility such as abortion are not only from adolescent childbearing, but condemnation from the society.

As such, when comparing infants born to adolescent and older mothers, infants born to adolescent mothers experience greater risk of prematurity, low birth weight and mortality (Zabin and Kiragu, 1992). Moreover, sexual activities at young ages may be associated with unprotected sex and multiple sexual partners. Therefore, adolescents who are sexually active are at risk of sexually transmitted diseases. All of these vulnerabilities are intensified whenever the affected adolescent and her infant are not placed on program priorities (Bledsoe and Cohen, 1993).

In Southern Africa, implications and complications of adolescent pregnancy and childbearing are taught by media and Life Orientation lessons in schools and churches. Despite the fact that a great deal of research has been done on this subject, we still continue to see that a high number of adolescent births persists, especially in sub-Saharan Africa compared to developed countries. United Nations estimated that in Angola 200 out of 1000 women aged 15-19 years give birth each year, 115 in Zambia and about 99 in Namibia (UN, 2002). It is evident from these figures that more studies on adolescent childbearing are needed in order to identify determinants which may aid in developing and implementing effective intervention(s).

1.3 Research Objectives

1.3.1 General Objective

To examine the factors associated with and distribution of adolescent fertility in Zambia.

1.3.2 Specific Objectives

2. To examine the relationship between socio-demographic factors and adolescent fertility.
3. To identify the explanatory variables associated with adolescent fertility in Zambia.
4. To examine the differences between socio-demographic determinants of adolescent fertility for married and unmarried adolescents.

1.4 Research Question

Main Research Question

Is there an association between socio-demographic factors and adolescent fertility in Zambia?

1.5 Justification of Study

The policy in Zambia is to provide all sexually active men and women with contraceptives; however, this service is not easily available to adolescents (Warenius, 2006). Hence, this leaves female adolescents with periodic abstinence (Zambia Demographic and Health Survey, 2007). Therefore, given this limited access to contraceptives adolescents resort to unprotected sex that exposes them to HIV/AIDS and STIs. Evidently, findings from a study by Warenius (2006) revealed that 5 percent of adolescents in the Copperbelt province in Zambia aged 15-19 are HIV positive. Still, in Zambia, adolescent sexual and reproductive health needs are neglected. Many clinics and family planning programs serve only married women, leaving unmarried adolescents to seek these services through informal ways or local medical practitioners. An increase in the proportion of adolescents using contraceptives may show an important step towards decline in fertility; this underscores the importance of this study.

The study of socio-demographic determinants of adolescent fertility will focus on marital and premarital adolescent births given that adolescent pregnancy and childbearing are generally accompanied by great risks. Notably, adolescent premarital births come with additional risk(s); i.e., social stigma presents the danger of the adolescent not being able to return to school shortly after birth or even dropping out, and hence, not being able to care for her infant. On top of that, in Zambia, marriage is not a prerequisite to childbearing. Thus, many women have children before they get married**.** Informal unions (women cohabiting with men) are common, and women may have children within the context of such unions (ZDHS, 2007). This leaves them vulnerable, unprotected and usually dependent on men to provide for them. In fact, only 17 percent of adolescents 15-19 years and 61 percent of women 15-49 years were married, while 26 percent of women 15-49 years had never been married (ZDHS, 2007). The mean age at

first marriage is about 19 years. This suggests that marriage may be popular or common in Zambia. Also, it may further indicate that sexually active unmarried adolescents have a longer period to avoid pregnancy.

In the study, socio-demographic determinants of adolescent fertility also focus on married adolescents' births because adolescent marriages remain common in many parts of the developing world, especially in sub-Saharan Africa; e.g., in Northern and Southern Africa 20 percent of girls get married before the age of 19 years (UNICEF, 2001). In Zambia, 1 out of 4 adolescent females aged between 15-19 years is married before the age of 19 (Tawiah, 2002). Early marriage has possible dire consequences for adolescents; i.e., when an adolescent girl gets married she is expected to start bearing children, this leads to population growth, and it usually cuts off her education and employment opportunities. Beside these factors, the study will acknowledge other determinants of adolescent fertility in the literature review; such as, adolescent behaviors that may be influenced by the environment in which they live and the behavior of household members.

This research will potentially contribute to the body of knowledge that aids in reducing unwanted pregnancy in adolescents. Thus, the research implication for the study is to provide a significant basis for studies of this nature to be conducted in other African countries. The research will identify the significant levels and patterns of socio-demographic factors and adolescent fertility. Furthermore, and overall, the study, through examining the association between socio-demographic factors and adolescent childbearing will substantiate the need for further research in Africa. As a result, it will be substantiating for the importance of the specific needs of adolescents highlighted in ICPD, 1994. In addition, adolescents in Zambia and other developing countries need close attention; the study will help program planners and policy makers in creating programs aimed at reducing adolescent childbearing.

1.6 Scope of the Study

World Health Organization defines adolescence as persons between the ages of 10 to 19 years (Goodburn and Ross, 1995). However, Zambia Demographic and Health Survey does not collect data on adolescents of 10-14 years. As a result, the study will focus on childbearing of female adolescents aged 15 to 19 years in Zambia. Adolescence is a transitional period from childhood to adulthood; and during this period an individual experiences significant physiological, emotional and social changes. (Unprotected) Sex at this early age has given rise to adolescent childbearing. Studies have shown that countries of sub-Saharan Africa have the highest levels of adolescent childbearing. Almost 10 percent of adolescents become mothers by the age 16, with majority being in sub-Saharan Africa. Each country varies in the proportion of women who become pregnant before the age of 15 years; e.g., in Rwanda the rate is 0.3 percent and 12.2 percent in Mozambique (WHO, 2012).

Some studies conducted in Zambia have also shown that adolescent pregnancy and delivery are common practice. According to UNFPA (2006), the policy that allows girls to go back to school after delivery is associated with high pregnancy rate among adolescents. The Zambia Demographic and Health Survey (ZDHS) of 2007 reported that 28 percent of women aged 15-19 years have begun childbearing; 5 percent of women aged 25-29 years gave birth at the age of 15 and 61 percent became mothers at the age of 20.

Other studies in sub-Saharan Africa investigating the effect(s) of socio-demographic factors on adolescent fertility have shown that socio-demographic characteristics of adolescents have an association with adolescent fertility. For example, education, urbanization and place of residence of adolescent girls have a close association with adolescent childbearing. In particular, education and urbanization have an effect on rates of adolescent pregnancy and childbearing since increasing enrolment in educational institutions gives priority to personal goals other than motherhood and family formation for young women; the pursuit of which has led to a decline in adolescent fertility. However, other researchers argue that increased education may be associated with higher fertility instead, because education is also associated with better health which may increase fecundity (Bledsoe and Cohen, 1993). Furthermore,

access to media, economical status, employment status, and ethnicity has shown mixed effects on adolescent fertility (Alemeyehu, Haider, Habte and Dereje, 2010).

Some studies showed that girls in Africa and South Asia are often married young and are under pressure to produce children. In Bangladesh, almost 16 percent of 15 year old girls are pregnant or already have children. In the Democratic Republic of Congo, 75 percent of girls, and over half of the girls in Afghanistan and Bangladesh are married before the age of 18 years. In Nepal, 7 percent of girls are married before they are 10 and 40 percent by the age of 15 (UNICEF, 2011). In developed nations, young mothers are usually unmarried. Regardless of marital status, the consequences of teen pregnancy are serious. Young mothers are frequently isolated, have little or no educational opportunities and are often trapped in long term poverty.

Therefore, the objective of this study is to identify the socio-demographic factors of childbearing among adolescents aged 15-19 years in Zambia.

1.7 Definition of Terms

1.7.1 Adolescence

World Health Organization defines adolescence as persons between the ages of 10 to 19 years (Goodburn and Ross, 1995). For the purpose of this study the age range will be narrowed and thus defined as females between the ages of 15 to 19 years. This is primarily because Zambia Demographic and Health Survey does not collect data on adolescents between the ages of 10 to 14 years.

1.7.2 Adolescent Fertility

Adolescent fertility (also known as *teenage fertility*) refers to a condition where a woman has given live birth before the age of 20 years. It should be noted that the terms adolescent fertility and adolescent childbearing are used interchangeably in this study.

1.7.3 Age Specific Fertility Rate (ASFR)

Age specific fertility rate is the number of births occurring in a year to women of a specific age group per one thousand women of that age group, usually given in five year age groups.

1.7.4 Fertility

The number of children born to women.

1.7.5 Total fertility Rate (TFR)

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 year.

1.8 Organisation of the Study

The study is divided into six chapters

Chapter One

- Introduction and background with the statement of problem, justification for the study, objectives and the definition of terms.

Chapter Two

- Literature review, theoretical framework and hypothesis.

Chapter three

- Deals with methodological issues.

Chapter Four

- Descriptions of some demographic and socio-economic characteristics of the respondents are given. Bivariate analysis reporting odds ratios.

Chapter five

- Multivariate analysis reporting odds ratio and interpretation.

Chapter six

- Discussion of results, possible policy implications, conclusion and recommendations.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This chapter gives an overview of the determinants of adolescent fertility including contraceptive practices, cultural practices, socio-economic status, age at first sex, age at marriage, and type of place of residence. It also discusses the theoretical framework and hypothesis proposed for this study.

2.1.1 Overview of Determinants of Adolescent Fertility

There are different measures of adolescent fertility; one of them is the proportion of women who have had a child by the age of 15, 18 or 20 years. This measure is based on women who have completed adolescent period (Singh, 1998:119). The study population of this would be women aged 20-24 years (and older). The merit of this measure is that it describes the exact age of adolescent childbearing (Singh, 1998). Furthermore, the second measure of adolescent fertility is births to adolescents before the age of 20 years; this describes current incidence adolescent childbearing, usually three or five years before the survey. This measure is used in this study.

In sub-Saharan Africa, adolescent childbearing has received attention; this is due to the serious implications associated with early childbearing. For instance, numerous studies have been published which focused on adolescent sexuality, childbearing and HIV/AIDS (Meekers, 1994; Garenne, 2008; Gage and Meekers, 1993), while others have concentrated on premarital childbearing among adolescents (Mturi and Moerane, 2001). In addition, some studies have placed emphasis on trends, levels and factors associated with adolescent childbearing (Singh, 1998). Studies by McCullough and Scherman (1991), put more emphasis on pregnancy

outcomes than on the implications and factors that influence adolescent pregnancy and childbearing.

A recent study in Ethiopia by Alemeyehu et. al., (2010), found that the major factors associated with adolescent fertility were age, educational status, place of residence, employment, use of contraceptives and marriage. This is consistent with Bledsoe and Cohen's (1993) study which reported similar findings. A few studies have also been carried out on factors associated with adolescent pregnancy, sexual behaviour and childbearing in South Africa and Nigeria (Manzini, 2001; Odimegwu, 2005). On one hand, the studies on adolescent sexual behaviour and childbearing are reasonably documented in South Africa (Garenne et al., 2001). On the other hand, very few studies have been carried out in Zambia on adolescent pregnancy and childbearing (Webb, 2000; Warenius et al 2007).

2.1.2 Contraceptive practices

Wood and Jewkes (2006) undertook a qualitative study on the barriers of adolescent girls to access clinic services of contraception in Limpopo, South Africa. The authors used thirty-five in-depth interviews, five group discussions with girls 14 to 20 years and interviews with nursing staff at 14 clinics. They found out that despite contraception being free, a third of adolescent girls become pregnant before the age of 20 years. The girls described pressure from male partners and family members to have a baby or prove their fertility as a barrier to contraceptive use. Other barriers included inaccurate notions of how conception occurs, fears about the effects of contraception on fertility and menstruation which were not taken seriously by nurses. The Nurses' attempts to stigmatise adolescent sexuality: with their scolding, harsh treatment and unwillingness to acknowledge adolescents' experiences as contraceptive users reduced the effective use of contraception by girls. As a result, we still see the high prevalence of adolescent childbearing.

Similarly, Malawi Demographic and Health Survey (MDHS 2004) indicated that contraceptives are not commonly used among adolescents, placing most of the adolescents at risk of childbearing. The reason(s) for not using contraceptives are consistent with findings from South Africa; poor quality of services, negative attitude from service providers, misconceptions, fear of side effects and stigma associated with the use of contraceptives as adolescents may be labelled as promiscuous (Paz Soldan, 2004). In developed world, countries such as United Kingdom, Kmietowicz (2002) reports that non-use of contraceptives among adolescents was due to feeling embarrassed about contraceptive services leading to an increased adolescent pregnancy and childbearing. The data from Zambia Demographic and Health Survey (ZDHS, 2007) indicates that 95 percent of adolescents 15-19 years are less likely to know of any method of contraceptive. Among women of reproductive age, only 30 percent are using contraceptives. As such, adolescents are less likely to use contraceptives than older women. Furthermore, the report revealed that contraceptive use increases with age as 24 percent of women aged 45-49 years use contraceptive compared to 10 percent of women aged 15-19 years.

2.1.3 Education

It has been established that low literacy levels can lead to unemployment, early marriage and non-use of contraceptive; thereby increasing the adolescent pregnancy and childbearing. In addition, findings from a study in Kenya showed that adding one more year to education decreased the probability of experiencing adolescent childbearing by 10 percent. It also showed that completing primary education reduces adolescent fertility rate by 15 percent. Thus, it is sufficient to recognize how contraceptive use increases with level of education. For example, 35 percent of women with no education, 49 percent with secondary education and 57 percent with more than secondary education had used contraceptives (Zambia Demographic and Health Survey, 2007). On one hand, the survey indicates that Zambia's literacy level is high among 15-19 years (73 percent), but, on the other hand, there is a high prevalence of adolescent childbearing; this indicates that there are still unmet need(s) of supply and use of

contraceptives, adolescents who seek contraceptive services might still be stigmatized (Warenius et al, 2006).

2.1.4 Cultural practices

Culture plays a role in adolescent childbearing in many parts of sub-Sahara Africa. In Malawi, girls are taught about the importance of childbearing at an early age. This message is communicated in such a way that many adolescents do not see early childbearing as a problem (Jimmy-Gamma, 2009). The initiation ceremonies by Yao and Chewa tribes in Malawi promote early sex and early marriage. Furthermore, at the end of the first initiation ceremony an older man is enlisted to be the first sexual partner of the adolescent to mark womanhood (Allan Guttmacher Institute, 2005). In the absence of contraception, adolescent girls are more likely to have children. As a result, this puts adolescent girl at risk of childbearing.

Similarly, in Zambia, the Cewa allow limited and discrete sexual relations among adolescents, but stipulate that women should only have children when they get married (Warenius, 2006). To the contrary, the Bemba in Zambia and Luo in Kenya expect girls to be chaste before marriage (Warenius, 2006). Equally, the Sesotho culture, in Lesotho, strongly opposes pre-marital adolescent childbearing; children born out of wedlock and their mothers are stigmatised (Mturi and Moerena, 2001). In each context, it is clear how culture plays an important role in preventing or promoting adolescent childbearing.

2.1.5 Socio-economic status

The inability of adolescents to meet personal and basic needs expose them to pre-marital sex in exchange for money and material gains, such factors are likely to predispose them to unwanted pregnancies and childbearing. A study in Malawi indicates that 66 percent of adolescents have accepted money in exchange for sex (Allan Guttmacher Institute, 1999). According to Were

(2007), in Kenya lack of access to sex education predisposes adolescent females to pregnancies. Furthermore, studies in Bida local government in Nigeria by Odimegwu, Solanke and Adedokun (2002) revealed that adolescents whose parents were poor are more likely to engage in premarital sex which can lead to adolescent childbearing than adolescents whose parents were middle to high income level. It is visible that adolescents from lower socio-economic status are more prone to engage in early sexual activities (Manlove, 1998). This is consistent with the study by Odimegwu et. al., (2002) which found that adolescent girls whose parents attained only primary education or low income had the highest level of sexual activity than adolescents whose parents had medium or high income.

2.1.6 Age at first sex

Age at first sex is an indicator of exposure to the risk of pregnancy during adolescence. In America, about 5 to 10 percent of adolescent females had sexual intercourse by the age of 13 years and about 70 to 80 percent by age of 19 (XU, 2004). In Malawi, 52 percent of adolescent females had first intercourse at the age of 17 (Malawi Demographic and Health Survey, 2004). In Zambia, 12 percent of adolescent females 15-19 had first intercourse by the age of 15 (Zambia Demographic and Health Survey, 2007). Local and global studies indicate that sexual activity is common and initiated early in adolescent years; family and peer pressure may influence the initiation of sexual intercourse.

In a study of six sub-Saharan African countries, using data from the Demographic and Health Surveys, it was found that Ghana, Kenya and Uganda experienced considerable decline in age at first sex than Tanzania, Zambia and Zimbabwe. Uganda and Zimbabwe have low rates of premarital sexual activity while Kenya and Zambia have high rates (Zaba, Pisani, Slymaker and Boerma, 2004). The same study found that in Uganda there is a short interval between initiation of sexual active and marriage; thus, in the absence of contraceptives early initiation of sexual intercourse can lead to high prevalence of adolescent childbearing.

2.1.7 Age at marriage

Age at marriage is an important factor in the life of an adolescent because it is associated with the complete fertility and implications of adolescent childbearing. In Zambia, 62 percent of women are married or in a union (ZDHS, 2007). In sub-Saharan Africa, areas that have a high rate of early marriage tend to have high prevalence of adolescent childbearing and a high fertility rate (ZDHS, 2007). Early marriage has a negative social and physical outcome for an adolescent and her infant. A study by Ahmed, Nahar, Nural and Shirin (2007) to find out the age at marriage and fertility patterns among 15-19 years married female adolescents in rural areas of Bangladesh showed that most of the respondents got married at 15 years. The total fertility rate for the respondents was 2.6 births; the study also found out that husband's education was significantly associated with age at marriage. In certain parts of the world, we have a legal minimum age at marriage which is fixed but this is not always adhered to.

2.1.8 Type of place of residence

Fertility is higher for adolescents whose childhood residence from birth to the age of 12 years was in the rural areas than adolescents who dwell in the urban areas (Palumuleni, 2007). Furthermore, studies by Bledsoe and Cohen (1993) showed that fertility in sub-Saharan African countries is higher in the rural areas than in the urban areas; knowledge of and access to contraceptive, higher education and aspiration for higher standard of living plays a role in lowering the fertility rate of adolescents in the urban areas.

In a study of fifty-one countries which included twenty-nine countries in Africa, thirteen in Asia and nine in Latin America and the Caribbean, using data from demographic and health surveys trends and levels of adolescent fertility in the 1990s and 2000s were measured. The result showed that in all countries studied, except Rwanda, adolescent fertility was higher in rural areas than in the urban areas. In Ghana and Senegal, adolescent fertility rate in rural areas was almost three times more than the adolescent fertility rate in the urban areas.

2.2 Theoretical Framework

The theoretical framework explains how socio-demographic factors affect adolescent fertility through proximate variables. Proximate variables and socio-demographic variables are the two groups of determinants of fertility (Bongaarts and Potter, 1983). According to this framework, the socio-demographic or background variables operate through the proximate determinants to affect fertility. The proximate determinant has a direct influence on fertility; it helps in understanding how socio-demographic variables affect fertility. The study will be based on this theoretical framework for fertility.

Fertility is different among populations due to the following proximate determinants; proportion of women married, contraception, induced abortion, postpartum infecundability and primary sterility in areas where there is high prevalence of sterility (Bongaarts et al., 1984). For the purpose of this study, contraceptive use, marital status and postpartum infecundability will be used as proximate determinants (intermediate variables) of adolescent fertility. The dependent variable (outcome variable) is adolescent fertility; this is whether an adolescent aged 15-19 years had one or more children.

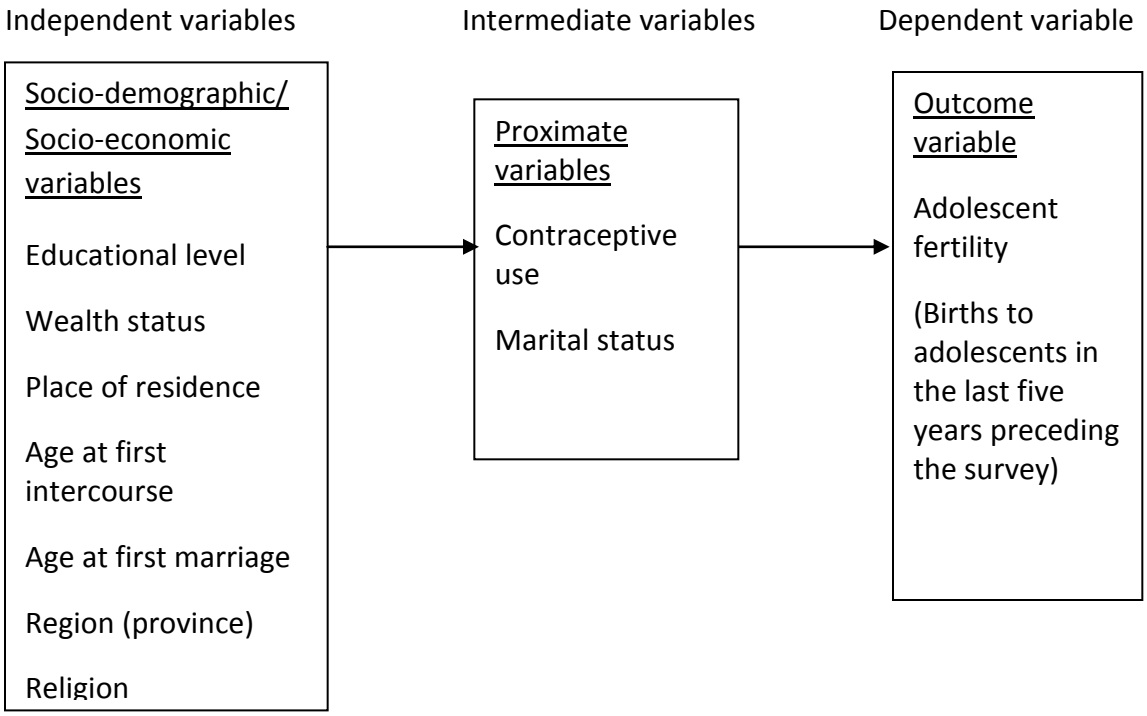

Figure 1: Adapted framework for the study of socio-demographic determinants of adolescent fertility: (Bongaarts et al., 1984)

Education affects fertility through knowledge and access to contraceptives; adolescents who are educated are more likely to delay marriage and childbearing, and this reduces fertility. Education is time consuming, thus, reduction in demand for children and an increase in demand for contraceptives. Furthermore, education can also affect breast-feeding; breast-feeding suppresses ovulation and menstruation following a birth. This delays the return of menstrual period during which the adolescent is exposed to the risk of falling pregnant (Letamo, 2002). However, studies found that educated women are less likely to breast-feed and thus increasing fertility (Bledsoe and Cohen, 1993).

Age at first birth affects the number of children a woman will have throughout her reproductive years. If age at first birth is low and contraception is used for spacing and not limiting birth, age at first birth can affect family size. Also, religion has an influence on contraceptive use and

marital status. For example, Catholics have negative attitude towards use of modern contraceptives. In addition, Christianity does not support adolescent marriage; such factors are likely to predispose adolescents to unwanted pregnancies and childbearing. However, exposure of adolescents to media increases their knowledge about sexual risk(s), access and use of contraceptives; this in turn influences adoption of positive sexual and reproductive behaviour. Positive sexual behaviour by adolescents reduces adolescent fertility rate.

2.3 Hypotheses

The hypotheses proposed and examined in this study are:

- Older adolescents (18-19 years) are more likely to have adolescent fertility compared to younger adolescents (15-17 years).
- Married adolescents are more likely to experience adolescent childbearing compared to unmarried adolescents.
- Adolescents with no education or primary education are more likely to experience adolescent childbearing compared to adolescents with secondary and higher education.
- Unemployed adolescents are more likely to experience adolescent childbearing compared to working adolescents.
- Adolescents not using contraceptives are more likely to experience adolescent childbearing compared to adolescents who are using contraceptives.

2.4 Summary

This chapter has provided relevant literature on socio-demographic determinants of adolescent fertility. One can conclude that as far as adolescent childbearing is concerned these are the socio-demographic determinants: contraceptive practices, cultural practices, education, socio-economic status, age at first sex, age at marriage and type of place of residence. The literature

review provided an essential foundation for this study. The theoretical framework attempts to contextualise the relationship between socio-demographic factors, socio-economic factors and adolescent fertility.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter discusses the methods, source of data, study design, study population and variables used in this study. It further highlights the ethical consideration observed.

3.2 Source of Data

The data for this study was taken from a nationally representative probability sample of women 15-49 years in Zambia (Zambia Demographic and Health Survey, 2007). The survey consisted of individual and household questionnaires.

3.2.1 Study Population

The study population for these analyses consisted of 270 married and 1328 unmarried female adolescents aged 15-19 years in Zambia who had or had no birth(s) in the five years preceding the survey and interviewed during the Zambia Demographic and Health Survey, 2007.

3.2.2 Study Design

This is a cross sectional study design which uses 2007 Zambia Demographic and Health Survey data to examine socio-demographic determinants of adolescent fertility. Zambia Demographic and Health Survey is nationally representative and the findings achieved using this data can be generalized to the entire Zambia population.

3.3 The 2007 ZDHS

The 2007 Zambia Demographic and Health Survey is the fourth demographic and health Survey to be conducted by the Central Statistics Office (CSO) of Zambia in partnership with the Ministry of Health, Tropical Disease Research Centre (TDRC) and the Demography division at the University of Zambia (UNZA). Macro International Inc. provided technical assistance as well as funding to the project through the MEASURE DHS programme. Financial aid for the 2007 Zambia Demographic and Health Survey was provided by the Ministry of Health, the Ministry of Finance and National Planning and the United States Agency for International Development (USAID), among other international organisations.

Zambia is divided into nine provinces: Central, Copper belt, Eastern, Lusaka, Luapula, Northern, North-Western, Southern and Western. The sampling frame used for 2007 ZDHS was adopted from the Census of Population and Housing of the Republic of Zambia (CPH) conducted in 2000, provided by CSO. The sampling frame consists of 16,757 Standard Enumeration Areas (SEA) created for the CPH 2000. Each SEA covered an average area of 130 households. Information about each SEA includes its location, type of residence, number of households, number of males and females.

A total of 7969 households were sampled, but only 7,164 successfully provided interviewees by the time interviews were executed yielding 98 percent response rate. The women initially expected to participate in the interviews were 7,406 but 7,146 successfully participated. This was a 97 percent response rate.

The nine provinces were stratified into 18 sampling strata. Samples were selected independently in every stratum by a two-stage selection. Stratification was achieved by separating every province into urban and rural areas.

3.4 Variables and Variable Definitions

3.4.1 Independent Variables

The independent variables are the explanatory variables which consist of demographic and socio-economic profile of the respondents. The demographic and socio-economic characteristics of adolescents are the background variables that predict sexual and contraceptive behaviours. These variables are, therefore, expected to be associated with fertility. Table 1 shows all the explanatory variables that will be used in this study and their definitions. The variables are segregated into socio-economic characteristics, demographic characteristics and proximate determinants.

The variables; “occupation”, “highest educational level”, “type of place of residence” and “wealth index” are used as indicators of socio-economic status. Adolescents who are poor, with very little or no education and unskilled manual labour are considered as indicators of low socio-economic status. Indicators for high socio-economic status are having secondary/higher education and residing in urban areas. “Age at first marriage” is generally associated with fertility. It is correlated with exposure to the risk of pregnancy (Zambia Demographic and Health Survey, 2007). The variable “age at first intercourse” is often used as a proxy for the first exposure to intercourse. The variables; “age of respondent”, “religion” and “region” are demographic variables that aid in describing the sample of adolescents which took part in the study. The variable “listens to radio” is an indication of access to mass media. Information increases an adolescents’ knowledge of what is happening around them, which can affect their behaviour and make them aware of contraceptive practices.

Educational level is categorized as; no education, primary, secondary and higher education. The wealth status has three categories of lower quartile for the poor, medium and upper quartile for the rich. Under occupation, adolescents were categorized as either working or not working. Age of respondents is categorized as 15-17 and 18-19. The ‘age at first intercourse’ and ‘age at first marriage’ were categorized as <16 years or ≥16 years. Place of residence is classified as either rural or urban. In terms of religion, adolescents are classified as Catholics, Protestants, Muslims and others. Access to radio was categorized as no or yes. Region includes Central, Copperbelt, Eastern, Luapula, Lusaka, Northern, Northwestern, Southern and Western regions. Copperbelt and Lusaka are predominantly urban while other regions are predominantly rural.

3.4.2 Intermediate Variables

The intermediate variables or proximate determinants are a set of behavioural variables which directly determine fertility. According to Bongaarts (1983), the differences in fertility among populations are largely due to 4 proximate determinants, namely: (1) marriage, (2) contraception, (3) induced abortion and (4) postpartum infecundability. However, for the purpose of this study, the proximate determinants used in this study are "contraceptive use" and "marital status". The exclusion of abortion as proximate determinants of fertility is because the statistics on adolescents' abortion rate are not reliable. Furthermore, the study looks at the births in the past five years before the survey; therefore, postpartum infecundability will also not be applicable as one of the proximate determinants.

The variable "marital status" refers to the type of relationship that the respondent is in and determines the extent of exposure to intercourse. Marriage is a primary indication of an adolescent's regular exposure to the risk of pregnancy, and it is also very important in understanding fertility of the respondents in the study. The variable "contraceptive use" is a practice deliberately undertaken to reduce the risk of falling pregnant. Although breast-feeding and postpartum abstinence are a form of contraceptive given that they increase child spacing, they are, however, not included as contraception because while they affect fertility, their primary aim is to improve maternal health and child development rather than regulation of childbearing (Bongaarts et al., 1984).

3.4.3. Dependent Variable

The dependent variable is adolescent fertility (adolescent childbearing) and it has a binary outcome. In the case of no children, fertility was categorized as "No", and in the case of one or more children, fertility was categorized as "Yes". This is determined by the respondent's response to the question - "Did you have any births in the last five years preceding the survey" (ZDHS, 2007). Births in the five years preceding the survey were extracted and used in this analysis.

Table 1: VARIABLES USED IN THE STUDY

VARIABLES	DEFINITION
Demographic &Socio-economic	
Age of respondent	15-17 (1), 18-19 (2)
Age at first intercourse	<16 (1), ≥16 (2)
Age at first marriage	<16 (1), ≥16 (2)
Highest educational level	No education (0), Primary(1), Secondary and Higher (2)
Wealth status	Poor (1), Medium (2), Rich (3)
Place of residence	Urban (1), Rural (2)
Religion	Catholic (1), Protestant (2), Muslim (3), Other (4)
Occupation	Working (0), Not working (1)
Access to radio	No (0), Yes (1)
Region	Central (1), Copperbelt (2), Eastern (3), Luapula (4), Lusaka (5), Northern (6), Northwestern (7), Southern (8) Western (9)
Intermediate Variable	
Marriage	Married (0), Not married (1)
Contraceptive use	No (0), Yes (1)
Dependent Variable	
Adolescent fertility	Births to adolescents five years prior to the survey "did you have any births in the last five years". When answer to the question is "No" the variable is coded as No (0) and if answer is "Yes" variable is coded Yes (1)

3.5 Ethical Considerations

The study is a secondary analysis performed with the use of the 2007 Zambia Demographic and Health Survey dataset. Thus, anonymity is guaranteed; the names or personal information of the respondents was not disclosed. No approval from an ethics review board was necessary.

3.6 Data Management

The data management began with downloading Zambia Demographic and Health Survey 2007 from the Demographic and Health Survey website. The data was presented in STATA format. The data was collected from April to October 2007 by properly trained data collectors using standardized, structured and pre-tested questionnaires. Adolescents aged from 15 to 19 years were selected and extracted from the women's data, and all variables considered to be relevant to this study were analysed.

3.7 Study Limitations

ZDHS Data is Secondary Information

The Zambia Demographic and Health Survey 2007 collected information from female respondents aged 15-19 years only; as a result, the definition of adolescence in this study will be restricted to females aged 15-19 years. This does not tally with the World Health Organization's definition of adolescence which includes 10-14 years. Demographic and Health Survey is a retrospective data and the subject of adolescent fertility is not openly discussed, this can lead to underreporting.

Importance of other Information

The ZDHS data does not include information about perceptions and beliefs that shape certain behaviors. This kind of information is usually obtained from focus groups and individual interviews about their views concerning certain sexual and reproductive health behaviors. Furthermore, information about cultural practices that can influence adolescent fertility is not included in the data set. Data of this nature would have given the researcher a deeper understanding of why some adolescents engage in early sexual activity and how it is linked to fertility. In addition, ZDHS is a cross-sectional studies; thus, causality cannot be determined only by using statistical analysis.

Data restrictions

The study has been restricted to using ZDHS 2007 data which is no longer current. As such, it is highly possible that major changes have occurred within the Zambian population in terms of fertility by the time this study was carried out. The analysis is also restricted to literature-identified factors available in the data set and other factors believed to be relevant to the study. These factors/variables have been defined in Table 1.

3.8 Data Analysis

STATA software version 11 was used to perform the data analysis of the study and all tests were done at 95% confidence interval and 5% significant level. The variables used in this research were analysed in three stages. The first stage of analysis was a univariate analysis of the variables and to summarise them as they have been presented in Table 1. As a result, the independent variables which are the socio-demographic, proximate determinants and dependent variables were summarised. These summaries were presented in frequency tables followed by discussions.

The second stage of analysis is a bivariate analysis used to examine the relationship between each socio-economic, demographic, intermediate and the dependent variables. Furthermore, cross tabulation using the logistic regression model will be conducted to examine the association between the independent and dependent variables; births by adolescents aged 15-19 in the last three years preceding Zambia Demographic and Health Survey 2007. The dependent variables will be coded 0 and 1, 0 for no children and 1 for having one or more children. The unadjusted odds ratio statistic will be reported; this explains the likelihood of adolescents 15-19 years having one child or more.

The final stage of the examination is multivariate analysis. Automatic selection of the variables found to be associated with adolescent fertility was carried out using stepwise selection methods. Logistic regression model was then fitted using the selected variables because the outcome variable is binary; thus, the model enables the use of several variables at the same

time. Also, it shows the level and direction of association between the independent and the dependent variable.

The basic logistic regression equation is:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots\ldots\ldots + \beta_i X_i$

Where:

Y = dependent variables

β_0 = intercept

$\beta_1, \beta_2 \ldots\ldots\ldots \beta_i$ = regression coefficients

X = independent variables (LaValley, 2008)

CHAPTER 4
RESULTS

4.1 Introduction

This chapter present the results of the study. It includes univariate, bivariate and multivariate analyses of socio-economic and backgrounds of the respondents as listed in Table 1. Socio-economic and demographic characteristics associated with adolescent fertility were identified. Furthermore, these socio-economic and demographic characteristics provide an understanding of the composition of the respondents.

4.2 Univariate Analysis

Univariate analysis of the Zambia Demographic and Health Survey 2007 data of adolescent female respondents who participated in the household module of the questionnaire was conducted for this section of the study. The analysis produced the following results with reference to their socio-economic, demographic, intermediate variables and fertility.

Table 2 shows the socio-economic and demographic characteristics of adolescent females aged 15-19 years at the time of the interview. A total of 1,598 adolescent females participated in the 2007 Zambia Demographic and Health Survey. Of this total number, 1003 (67.77%) were aged 15-17 years, 595 (37.23%) were aged 18-19 years and their mean age (SD) was 16.9 (1.4) years. 408 (51.26%) had first intercourse before the age of 16 years, 388 (47.74%) had first intercourse between 16-19 years; their mean age at first intercourse was 12.3 years. The majority (65.54%) of them had their first marriage between 16-19 years of age. Only 4.32% adolescents did not have any education and the proportion of adolescents who had primary and secondary or higher education was 47.31% and 48.37% respectively. Of those who had secondary and higher education 26.30% were married while 62.96% of adolescents who had only primary education were married.

More than half (54.17%) of the adolescents were from the highest wealth index. The proportions of adolescents residing in the urban and rural areas are almost equal, 50.63% and 49.37% respectively. Majority (78.41%) of them were Protestants, only 0.38% and 0.94% were Muslims and other religions respectively. This indicates that the dominant religion in Zambia is Christianity. A high number of the respondents are not working (78.85%). This is probably because at the ages of 15-19 years most adolescents are still schooling and financially dependent on their parents. 35.56% of married adolescents are working while 18.72% of unmarried adolescents are not working.

2 out of 5 adolescents (40.8%) do not listen to radio. The proportion of adolescents who listen to radio was 59.14%. Of the married adolescents, 51.48% listen to radio and almost 61% of the unmarried adolescents. The highest percentage of respondents were from Lusaka (14.02%), followed by Eastern (12.27%) and Southern (11.95%) while the lowest percentage were from Central and Luapula (9.51%). It is evident that most of the married respondents reside in the Eastern region (15.93%) while most of the unmarried respondents reside in Lusaka (14.23%).

Table 2 also shows the proximate determinants of adolescent fertility. Of the 1598 adolescents, (68.15%) of 18-19 years were married and 411 (30.95%) were not married. Among 15-17 years age group, 86 (31.85%) were married, 91 (69.05%) were unmarried. Notably, the majority of adolescents were Christians, and all Christian denominations including Catholicism do not endorse the practice of adolescent marriage; therefore, the lower percentage of the married adolescents that is demonstrated in Table 2 is relatively understandable. Only 28.52% of married adolescents were using contraceptive and 71.48% were not using them.

TABLE 2: SOCIOECONOMIC AND DEMOGRAPHIC CHARACTERISTICS OF ADOLESCENTS AGED 15-19 YEARS, ZAMBIA DHS, 2007

Characteristics	Frequency (%)		
	Married Adolescents	Unmarried Adolescents	All Adolescents
Age group			
15-17	86 (31.85)	917 (69.05)	1,003 (62.77)
18-19	184 (68.15)	411 (30.95)	595 (37.23)
Total			

Mean age ± SD =16.9 ± 1.4years	270	1328	1598
Age at first intercourse			
<16	114 (41.11)	297 (56.46)	408 (51.26)
≥16	159 (58.89)	229 (43.54)	388 (48.74)
Total	270	526	796
Mean age =12.3years			
Age at first marriage			
<16	93 (34.44)	9 (34.62)	102 (34.46)
>16	177 (65.56)	17 (65.38)	194 (65.54)
Total	270	26	296
Education			
None	29 (10.74)	40 (3.01)	69 (4.32)
Primary	170 (62.96)	586 (44.13)	756 (47.31)
Secondary +	171 (26.30)	702 (52.86)	773 (48.37)
Total	270	1328	1598
Wealth status			
Poor	106 (39.26)	337 (25.38)	443 (27.72)
Medium	64 (23.70)	226 (17.02)	290 (18.15)
Rich	100 (37.04)	765 (57.61)	865 (54.17)
Total	270	1328	1598
Place of residence			
Urban	94 (34.81)	715 (53.84)	809 (50.63)
Rural	176 (65.19)	613 (46.16)	789 (49.37)
Total	270	1328	1598
Religion			
Catholic	56 (20.74)	268 (20.18)	324 (20.28)
Protestant	208 (77.04)	1045 (78.69)	1253 (78.41)
Muslims	1 (0.37)	5 (0.38)	6 (0.38)
Other	5 (1.87)	10 (0.75)	15 (0.94)
Total	270	1328	1598
0ccupation			
Not working	174 (64.44)	1086 (81.78)	1260 (78.35)
Working	96 (35.56)	242 (18.72)	338 (21.15)
Total	270	1328	1598
Listens to radio			
No	131 (48.52)	522 (39.31)	653 (40.86)
Yes	139 (51.48)	806 (60.69)	945 (59.14)
Total	270	1328	1598
Region			
Central	25 (9.26)	127 (9.56)	152 (9.51)
Copperbelt	19 (7.04)	171 (12.88)	190 (11.89)
Eastern	43 (15.93)	153 (11.52)	196 (12.27)
Luapula	29 (10.74)	123 (9.26)	152 (9.51)
Lusaka	35 (12.96)	189 (14.23)	224 (14.02)
Northern	37 (13.70)	132 (9.94)	169 (10.58)
Northwestern	25 (9.26)	132 (9.94)	157 (9.82)
Southern	37 (13.70)	154 (11.60)	191 (11.95)
Western	20 (7.41)	147 (11.07)	167 (10.45)
Total	270	1328	1598
Contraceptive use			
No	193 (71.48)	1231 (92.70)	1424 (89.11)

Yes	77 (28.52)	97 (7.30)	174 (10.89)
Total	270	1328	1598

Table 3 shows that 11.67% births were to adolescents 15-19 years and 41.51% births were to adolescents 18-19 years. 46.81% of births were to adolescents who had first intercourse before the age of 16 years. Adolescents who had first marriage before the age of 16 years had a higher percentage of births (78.43%). In terms of wealth status, the lowest percentage of births was among the rich (18.03%) and 28.80% of births were to adolescents who are poor. About 18% of births were to adolescents who reside in urban areas and 27.63% of births were to adolescents who reside in rural areas. In terms of occupation, 18.20% of births were to adolescents who were not working and 37.02% were to adolescents who are working. A higher percentage of births were to married adolescents (65.56%) while 14.08% of births were to unmarried adolescents. About 63% of births were to adolescents using contraceptives while 17% of births were to adolescents who are not using contraceptives.

Among the married adolescents, 41.81% of births were to adolescents aged 15-17 years while 76.63% of births were to married adolescents 18-19 years. Furthermore, there were higher percentages of no births to adolescents of the two age groups 91.17% and 74.21% respectively. Of the unmarried adolescents, 8.83% of births were to adolescents 15-17 years and 25.79% of births were to 18-19 years. In terms of education, 62% of births were to married adolescents with no education, 69% of births to adolescent with primary education and 57% of births were to married adolescents with secondary and higher education. Among the unmarried, only 12% of births were to adolescents with secondary and higher education, 15% of births were to adolescents with only primary education and almost 28% of births were to adolescents with no education.

TABLE 3: SUMMARY OF THE EXPLANATORY VARIABLES AND ADOLESCENT FERTILITY

Characteristics	**Fertility**	
	No (%)	**Yes (%)**

	Married	Unmarried	All	Married	Unmarried	All
Age group						
15-17	58.14	91.17	88.33	41.86	8.83	11.67
18-19	23.37	74.21	58.49	76.63	25.79	41.51
χ^2 **(1)** = 189.1 Pr = 0.000						
Age at first intercourse						
<16	26.13	63.30	53.19	73.87	36.70	46.81
≥16	40.25	65.94	55.41	59.75	34.06	44.59
χ^2 **(1)** = 0.39 Pr = 0.53						
Age at first marriage						
<16	21.51	22.22	21.57	78.49	77.78	78.43
≥16	41.24	11.76	38.66	56.76	88.24	61.34
χ^2 **(1)** = 8.86 Pr = 0.003						
Education						
None	37.93	75.50	57.97	62.07	27.50	42.03
Primary	30.59	84.81	72.62	69.41	15.19	27.38
Secondary +	42.25	87.61	83.44	57.75	12.39	16.56
χ^2 **(2)** = 40.64 Pr = 0.000						
Wealth status						
Poor	31.13	82.49	70.20	68.87	17.51	28.80
Medium	39.06	83.63	73.79	60.94	16.37	26.21
Rich	35.00	88.10	81.99	65	11.90	18.03
χ^2 **(2)** = 25.41 Pr = 0.000						
Place of residence						
Urban	37.23	87.83	81.95	62.77	12.17	18.05
Rural	32.95	83.69	72.37	65.05	16.31	27.63
χ^2 **(1)** = 20.85 Pr = 0.000						
Religion						
Catholic	23.21	88.06	76.85	76.79	11.94	33.15
Protestant	37.50	85.17	77.25	62.50	14.83	22.75
Muslims	0	100	83.33	100	0	16.67
Other	40	100	80	60	0	20
χ^2 **(3)** = 0.22 Pr = 0.97						
0ccupation						
Not working	39.66	87.48	81.80	60.34	12.52	18.20
Working	25	78.93	62.98	75	21.07	37.02
χ^2 **(1)** = 59.27 Pr = 0.000						
Listens to radio						
No	30.53	82.57	77.13	69.47	17.43	27.87
Yes	38.17	88.09	80.74	61.87	11.91	19.26
χ^2 **(1)** = 16.28 Pr = 0.000						

Region						
Central	36	86.61	78.29	64	13.39	21.71
Copperbelt	26.32	88.89	82.63	73.60	11.11	17.37
Eastern	39.53	88.89	78.06	60.47	11.11	21.94
Luapula	34.48	88.62	78.29	65.52	11.38	21.71
Lusaka	40	89.42	81.70	60	10.58	18.30
Northern	40.54	93.94	82.25	59.46	6.06	17.75
Northwestern	16	84.09	73.25	84	15.91	26.75
Southern	35.14	81.82	72.77	64.86	18.18	27.23
Western	30	70.75	65.87	70	29.25	34.13
χ^2 **(8)** = 24.21 Pr = 0.002						
Contraceptive use						
No	47.15	82.23	82.23	52.85	12.27	17.77
Yes	2.60	62.89	36.21	97.40	37.11	63.79
χ^2 **(1)** = 186.73 Pr = 0.000						

Table 4 shows fertility and pattern of childbearing of female adolescents of 15-19 years. Age specific fertility rate for married, unmarried and all adolescents are 0.24 0.07 and 0.11 per 1,000 adolescents respectively. Furthermore, 30 percent of married adolescents, 3.69 percent of unmarried adolescents and 8.14 percent of all adolescents are currently pregnant. The mean age at first birth for married, unmarried and all adolescents are 16.59, 16.47 and 16.53 respectively. The Mean Number of Children Ever Born (MCEB) for married adolescent is 0.83, while 0.14 and 0.26 are for unmarried and married adolescents.

TABLE 4: FERTILITY AND PATTERN OF CHILDBEARING OF FEMALE ADOLESCENTS AGED 15-19 YEARS

Fertility	Married Adolescents	Unmarried Adolescents	All Adolescents
ASFR (15-19 years)	0.24	0.07	0.11
% currently pregnant	30	3.68	8.14
Mean age at first birth	16.59	16.47	16.53
Mean number of CEB	0.83	0.14	0.26

4.3 Bivariate Analysis

One of the objectives of the study was to examine the relationship between demographic, socio-economic and adolescent fertility; thus, cross tabulations of age group, age at first marriage, education, wealth status, place of residence, religion, employment status, access to radio, marital status, contraceptive use and births in the last five years preceding the survey (adolescent fertility) were done. Unadjusted odds ratio (UOR) is presented in Table 5.

Table 5 indicates the socio-demographic and intermediate determinants of adolescents based on univariate logistic regression model. In the model; age, age at first marriage, education, wealth status, region, type of place of residence, occupation, access to radio and contraceptive use are found to be significantly associated with adolescent fertility. Adolescents who are 18-19 years were five times more likely to have one or more births than the adolescents of 15-17 years (UOR= 5.3, CI 4.18-6.92). Respondents who had first marriage at 16 years (and above) are less likely to have one or more children than those who had first marriage at less than 16 years (UOR= 0.44, CI=0.25-0.76). Similarly, adolescents who had primary (UOR=0.52, CI 0.31-0.86) and secondary/higher education (UOR=0.27, CI 0.16-0.46) are less likely to have one or more children compared to adolescents without education. The shaded areas in Table 5 have lowest likelihood of adolescent fertility.

Correspondingly, adolescents who are in the middle (UOR= 0.84, CI 0.60-1.17) and upper (UOR=0.52, CI 0.40-0.68) wealth status are less likely to have one or more children compared to adolescents who are poor. In the same way, adolescents who reside in rural *(*UOR=1.73*,* CI 1.37-2.20) areas are nearly twice more likely to have one or more children than adolescents who reside in urban areas. Therefore, adolescents who reside in Copperbelt, Lusaka and Northern regions are less likely to have one or more children relative to adolescents who reside in Central region. Moreover, adolescents who are working (UOR=2.64, CI 2.05-3.40) are nearly thrice more likely to have one or more children compared to their counterparts. The likelihood of having one or more children among adolescents who listen to radio and those who do not listen to radio is nearly the same (UOR=0.62, CI 0.49-0.78*).* Conclusively, age at first intercourse and religion did not show any association with adolescent fertility in the unadjusted biavariate analysis.

In terms of marital status and contraceptive use, married respondents are nearly twelve times more likely to have one or more children relative to unmarried adolescents (UOR= 11.6, CI 8.64-15.59). Adolescents who reported contraceptive use have a higher (OR=8.15, CI 5.82-11.40) likelihood of having one or more children than adolescents reporting no contraceptive use. From this result, it should be noted that contraceptive use among adolescents could be irregular and the power to negotiate for the use of contraceptive is weak; thus, interpretation of this finding needs to be treated with care.

TABLE 5: UNADJUSTED ODDS RATIO, ASSOCIATED P-VALUES AND 95% CONFIDENCE INTERVALS OF SOCIO-DEMOGRAPHIC DETERMINANTS OF ADOLESCENT FERTILITY IN ZAMBIA

Characteristics	UOR [95% CI]		
	Unmarried	Married	All Adolescents
Age group			
15-17	RC	RC	RC
18-19	3.59 [2.61-1.27]*	4.55 [2.63-7.87]*	5.37[4.18-6.92]*
Age at first intercourse			
<16	RC	RC	RC
≥ 16	0.89 [0.62-1.27]	0.52 [0.31-0.89]*	0.91[0.69-1.21]
Education			
None	RC	RC	RC
Primary	0.47 [0.23-0.98]*	1.37 [0.61-3.14]	0.52[0.31-0.86]*
Secondary +	0.37 [0.18-0.77]*	0.84 [0.34-2.02]	0.27[0.16-0.46]
Wealth status			
Poor	RC	RC	RC
Medium	0.92 [0.58-1.44]	0.71 [0.36-1.35]	0.84[0.60-1.17]
Rich	0.64 [0.44-0,91]	0.84 [0.47-1.50]	0.52[0.40-0.68]*
Type of place of residence			
Urban	RC	RC	RC
Rural	1.41 [1.03-1.92]*	1.21 [0.71-2.04]	1.73[1.37-2.20]*
Religion			
Catholic	RC	RC	RC
Protestant	1.28[0.85-1.92]	0.50[0.25-0.99]	0.98[0.73-1.31]
Muslims	0.15[0.55-4.72]	0.22[0.15-1.82]	0.66[0.08-5.77]
Other	0.67[0.43-2.13]	0.45[0.06-3.01]	0.83[0.23-3.02]
Employment			
Not working	RC	RC	RC
Working	1.87 [1.32-2.65]	1.80 [1.07-3.01]	2.64[2.05-3.40]*
Listens to radio			
No	RC	RC	RC
Yes	0.64[0.45-0.87]*	0.71[0.43-1.18]	0.62[0.49-0.78]*

Contraceptive use			
No	RC	RC	RC
Yes	4.22 [2.70-6.59]*	33.45 [7.98-140.1]*	8.15[5.82-11.4]*
Region			
Central	RC	RC	RC
Copperbelt	0.81 [0.40-1.63]	1.58 [0.43-5.82]	0.76[0.44-1.29]
Eastern	0.81 [0.39-1.66]	0.86 [0.31-2.38]	1.01[0.61-1.69]
Luapula	0.83 [0.39-1.77]	1.07 [0.35-3.27]	1.00[0.58-1.73]
Lusaka	0.77 [0.38-1.53]	0.84 [0.29-2.44]	0.81[0.48-1.35]
Northern	0.41 [0.17-1.01]	0.83 [0.29-2.35]	0.78[0.45-1.35]
Northwestern	1.22 [0.61-2.44]	2.95 [0.77-11.3]	1.32[0.78-2.22]
Southern	1.44 [0.75-2.77]	1.04 [0.36-2.99]	1.35[0.82-2.22]
Western	2.67 [1.44-4.98]*	1.31 [0.37-4.62]	1.87[1.13-3.08]*
Marital status			
Not married			RC
Married			11.6[8.64-15.59]*
Age at first marriage			
<16			RC
≥ 16			0.44[0.25-0.76]*

***Statistically Significant**

RC = Reference category, CI= confidence interval, UOR=Unadjusted odds ratio, shaded area=lowest likelihood of adolescent fertility.

Bivariate logistic regression was conducted to discover if there are any differences between socio-demographic determinants of adolescent fertility for married and unmarried female adolescents aged 15-19 years, see Table 5. Female adolescents who are married in the age group of 18-19 years had 4.55 higher likelihood of having one or more children compared to married adolescents who are 15-17 years. Unmarried female adolescents of 18-19 years are more likely to have one or more children than the unmarried adolescents of 15-17 years. For age at first intercourse, unmarried and married adolescents who had first intercourse at 16 years (and above) are less likely to have one or more children compared to those who had first intercourse before the age of 16 years. There is a significant association between married adolescents who had first sexual intercourse at 16 years (and above) and adolescent fertility, p-value 0.02 CI 0.31-0.89.

In terms of educational attainment, unmarried adolescents with primary and secondary education are less likely to experience adolescent childbearing than unmarried adolescent with no education. There is a significant association between unmarried adolescents attaining

primary and secondary education and adolescent fertility. Married adolescents who had primary education are more likely to experience adolescent childbearing than adolescents without education. However, those with secondary education are less likely to experience adolescent childbearing than adolescents without education. There is no significant association between married adolescents attaining primary and secondary education and adolescent fertility. The odds of having adolescent childbearing were higher among married adolescents than unmarried adolescents. There is a significant association between unmarried adolescents residing in rural areas and adolescent fertility.

Both married and unmarried female adolescents who are working are more likely to experience adolescent childbearing than adolescents who are not working. The odds of adolescent childbearing were higher among unmarried adolescents who are working. For use of contraceptive, adolescents who are married and use contraceptives are more likely to experience adolescent childbearing compared to married adolescents who do not use contraceptives. There is a significant association between married adolescents who use contraceptives and adolescent fertility, p-value 0.000 CI 7.98-140.1. Adolescents who are unmarried and using contraceptives are more likely to experience adolescent childbearing relative to adolescents who are unmarried and not using contraceptives. The odds of experiencing adolescent fertility were higher among married adolescents who use contraceptives.

With regards to region, unmarried female adolescents residing in Northwestern, Southern and Western regions are more likely to experience adolescent childbearing than adolescents residing in the Central region. Married adolescents residing in Copperbelt, Luapula, Northwestern, Southern and Western regions are more likely to experience adolescent childbearing comparative to married adolescents residing in central region. Evidently, there is a significant association between unmarried adolescents residing in Western region and adolescent fertility.

CHAPTER 5
MULTIVARIATE ANALYSIS

5.1 Introduction

The final level of analysis was carried out to identify the critical predictors of adolescent fertility. Logistic regression describes the association between the dependent (adolescent fertility = Yes or No) and the independent variables (socio-demographic factors of adolescents and proximate determinants). Logistic regression was used instead of other forms of regression because the outcome variable is binary. The results are presented in two models.

In the first model, the effect of the independent variables was carried out to identify the association of socio-demographic factors and intermediate variables on adolescent fertility. The socio-demographic variables which were not significant in the bivariate analysis were dropped from model one. Hence, only the significant variables were used in model one to check the overall effect on adolescent fertility. The variables used were age group, age at first marriage, education, wealth status, employment, listening to radio, region and type of place of residence. In the second model, logistic regression was used to highlight married and unmarried adolescents' differences.

Table 6 presents the adjusted odds ratio, and confidence interval of independent variables on adolescent fertility in Zambia. This indicates that the result of a particular independent variable on adolescent fertility has taken into consideration other variables that are in the model that could also have an effect on the dependent variable.

5.2 Model 1: Odds of adolescent fertility by adolescents' socio-demographic characteristics

Table 6 indicates the socio-demographic and proximate determinants of adolescent fertility based on multivariate logistic regression models. In the model: age, age at first marriage, marital status and contraceptive use were found to be associated with adolescent fertility after controlling for other variables; while education, wealth status, type of place of residence employment, access to radio and region did not show any association with adolescent fertility in the adjusted multivariate analysis.

The odds of adolescent fertility are higher among the age group of 18-19 years. As expected, the likelihood of having adolescent births decreases with an increase in age at first marriage. Adolescents who had their marriage between 16-19 years were found to be less likely to have adolescent fertility. Adolescents who had only primary education were more likely to have adolescent fertility than adolescents with no education. Accordingly, adolescents who had secondary and higher education were less likely to have adolescent fertility compared to those who did not have any education. It is apparent that the higher the level of educational success they attain, the less likely the experience of adolescent fertility is to occur.

With regards to wealth status, adolescents in the medium wealth status were less likely to have adolescent fertility than poor adolescents. However, the likelihood of having adolescent fertility is the same for the rich and poor adolescents. There was a difference in adolescent births in urban and rural areas, with adolescents residing in rural areas more likely to have adolescent fertility; nonetheless, this difference is not statistically significant. Adolescents who are working were more likely to have adolescent fertility compared to adolescents who are not working. In terms of regions, adolescent births were less likely in most regions except Copperbelt, Northwest, Southern, Western and Luapula. Nevertheless, the odds of having adolescent fertility were not statistically significant in all regions.

5.3 Model 2: Odds of adolescent fertility by adolescents' marital status

In Table 6, the strength of association of socio-demographic and proximate determinants of fertility was measured and highlighted differences between married and unmarried

adolescents. In the model, age and contraceptive use were found to be associated with married adolescents' fertility after controlling for other variables. For unmarried adolescents; age, education, region, access to radio and contraceptive use were found to be associated with an adolescent's fertility after controlling for other variables. Among the age group of 18-19 years, adolescents who are married are 4 times more likely to have one or more children, and the unmarried adolescents are 3 times more likely to have one or more children compared to the age group of 15-17 years. With regards to education, married adolescents who had primary education are more likely to have one or more children compared to married adolescents with no education. Married adolescents who had secondary and higher education are less likely to have one or more children compared to married adolescents with no education. Furthermore, unmarried adolescents with primary and secondary/higher education are less likely to have one or more children than unmarried adolescents with no education.

Married adolescents who are rich are more likely to have one or more children than married adolescents who are poor. For unmarried adolescents, rich adolescents are less likely to have one or more children than adolescents who are poor. A comparison between adolescents who are not working and living in rural areas, married adolescents who are working and living in rural areas found that they were all more likely to have one or more children. Similarly, unmarried adolescents who are working and living in rural area were more likely to have one or more children than unmarried adolescents who are not working and living in rural area. For both married and unmarried adolescents, those who listen to radio are less likely to have one or more children compared to those who do not listen to radio.

In terms of contraceptive use, married adolescents who use contraceptives are 38 times more likely to have one or more children relative to married adolescents who do not use contraceptives. Among unmarried adolescents, those who use contraceptives are 2 times more likely to have one or more children than unmarried adolescents who do not use contraceptive. This could be due to adolescents who started using contraceptives after having one or more births. In terms of region, adolescents living in Copperbelt, Luapula, Northwest, Southern and Western are more likely to have one or more children than adolescents living in Eastern,

Lusaka, Northern and Central regions. Unmarried adolescents living in Southern and Western regions are more likely to have one or more children whilst adolescents living in Copperbelt, Eastern, Luapula, Lusaka, Northern and Northwestern regions are less likely to have one or more children than unmarried adolescents living in Central region.

TABLE 6: ADJUSTED ODDS RATIOS AND 95% CONFIDENCE INTERVALS OF SOCIO-DEMOGRAPHIC CHARACTERISTICS AND PROXIMATE DETERMINANTS OF ADOLESCENT FERTILITY BY MARITAL STATUS IN ZAMBIA

Characteristics	AOR [95% CI]		
	Married	Unmarried	All Adolescents
Age group			
15-17	RC	RC	RC
18-19	4.02 [2.1-8.22]*	3.73 [2.63-5.29]*	5.29[2.65-10.56]*
Education			
None	RC	RC	RC
Primary	1.59 [0.57-4.41]	0.59 [0.26-1.33]	1.80[0.67-4.85]
Secondary +	0.68 [0.20-2.35]	0.44 [0.19-1.03]*	0.94[0.28-3.14]
Wealth status			
Poor	RC	RC	RC
Medium	0.77 [0.34-1.77]	1.14 [0.68-1.90]	0.78[0.34-1.77]
Rich	1.21 [0.33-4.47]	0.96[0.52-1.78]	1.05[0.29-3.73]
Type of place of residence			
Urban	RC	RC	RC
Rural	1.34 [0.46-4.01]	1.19 [0.72-1.97]	1.19[0.43-3.31]
Employment			
Not working	RC	RC	RC
Working	1.09 [0.51-2.37]	1.19[0.79-1.78]	1.31[0.62-2.76]
Listens to radio			
No	RC	RC	RC
Yes	0.66 [0.33-1.29]	0.68[0.47-0.97]*	0.65[0.34-1.26]
Contraceptive use			
No	RC	RC	RC
Yes	38.79 [8.76-171.7]*	2.32 [1.38-3.90]*	3.75[2.46-5.73]*
Region			
Central	RC	RC	RC
Copperbelt	2.38 [0.47-11.8]	0.94 [0.44-2.00]	1.36[0.29-6.41]
Eastern	0.62 [0.16-2.30]	0.66 [0.31-1.42]	0.63[0.17-2.28]
Luapula	1.32 [0.34-5.01]	0.71 [0.32-1.57]	1.02[0.29-3.80]
Lusaka	0.75 [0.17-3.17]	0.86 [0.41-1.82]	0.68[0.18-2.56]
Northern	0.74 [0.20-2.67]	0.39 [0.16-0.98]*	0.73[0.20-2.58]
Northwestern	3.64 [0.71-18.6]	0.98 [0.46-2.05]	2.07[0.42-10.2]
Southern	1.21 [0.32-4.48]	1.23 [0.61-2.49]	1.18[0.33-4.22]
Western	1.24 [0.26-5.74]	1.81 [0.91-3.60]*	1.19[0.27-5.27]
Marital status			

Not married	RC
Married	7.05[0.08-1.08]*
Age at first Marriage	
<16	RC
≥16	0.31[0.15-0.67]*

***Statistically Significant**
RC = Reference category, CI= confidence interval, AOR= Adjusted odds ratio.

5.4 Test of Assumption

Ho: There is no association between socio-demographic factors and adolescent fertility.

HA: There is an association between socio-demographic factors and adolescent fertility.

The assumption will be tested at 5 percent significance level.

Bivariate and multivariate test of association showed that age group had significant association with adolescent fertility. The first hypothesis proposed that older adolescents (18-19 years) are more likely to have adolescent births than younger adolescents (15-17 years). This hypothesis is therefore upheld. We reject the null hypothesis and conclude that there is an association between age and adolescent fertility. The study also showed that there is a significant association between marital status and adolescent fertility; the result in Table 5 and 6 showed that married adolescents are more likely to have adolescent births. Therefore, the second hypothesis is also upheld. We reject the null hypothesis and conclude that there is an association between marital status and adolescent fertility.

Furthermore, the study proposed that respondents with no education and those with primary education are more likely to have adolescent fertility than respondents with secondary and higher education is supported by the findings. The study has shown that adolescents with secondary and higher education are less likely to have adolescent fertility. Moreover, multivariate analysis showed employment status had no significant association with adolescent fertility; the fourth hypothesis proposed that adolescents who are not working are more likely

to have one or more children compared to adolescents who are working. The outcome illustrated in Table 6 shows the contrary, therefore, this hypothesis is rejected.

The fifth hypothesis of the study proposed that adolescents who do not use contraceptives are more likely to have one or more births. However, the results in Table 6 showed that adolescents who use contraceptive are more likely to have one or more births; therefore, this hypothesis is rejected.

Chapter 6

DISCUSSION, CONCLUSION AND RECOMMENDATION

6.1 Discussion

The objective of the study was to examine the distribution and factors associated with adolescent fertility in Zambia. The results show that 22.8% of the 1,598 respondents had given birth and an additional 8.1% pregnant; making the adolescent childbearing rate 31 percent. This implies that 1 out of 3 female adolescents aged 15-19 years were either pregnant or had already given birth. This finding is similar to studies on adolescent fertility and reproductive health in 4 sub-Saharan African countries (Ghana, Kenya, Tanzania and Zambia) which also found high levels of adolescent fertility in Zambia (Tawiah, 2002). Adolescent fertility rates documented for Ghana, Ethiopia, Uganda, Tanzania and Malawi which were 14%, 16.7%, 19.2%, 19.6% and 25.3% respectively (Tawiah, 2002; Alemayehu et al, 2010). Evidently, the Zambian rate is quite high when compared to adolescent fertility rate in other African countries.

In addition, it was found that married adolescents had more births than unmarried adolescents. In fact, the logistic regression model results confirmed that married adolescents were more likely to have children compared to unmarried adolescents. One of the reasons for this could be that in sub-Saharan African countries, premarital sexual activity and pregnancy is seen as a taboo; i.e., findings from a study in Lesotho show that many aspects of Sesotho culture discouraged premarital pregnancy (Mturi and Moerane, 2001). Furthermore, the study showed that the percentage of married adolescents is lower than unmarried adolescents, but, the number of births to married adolescents is higher than unmarried adolescents. This could suggest that married adolescents are expected to start bearing children as early as possible; childbearing immediately after marriage is integral to a woman's social status (Ezeah, 2012). Childlessness may lead to divorce or the husband may marry a second wife.

In terms of births, adolescent respondents from Western were the highest (34.13%), followed by Southern (27.23%) and Eastern region (21.9%). Births to adolescents in the Northern and

Copperbelt regions were the lowest (17%). The bivariate logistic regression model also shows that the likelihood of adolescents having one or more children in Western region is higher than adolescents in the Central region, which was the reference category (see Table 5). This is in line with the findings from 2007 Zambia Demographic and Health Survey, which shows that the Western region has the largest proportion (44%) of adolescents who have started childbearing. Taking all other factors into consideration, unmarried adolescents residing in Western region are almost twice more likely to have one or more births than unmarried adolescents residing in Central region. Furthermore, there is a significant association between adolescents residing in Western region and adolescent fertility. Reasons for this could be that Western region is underdeveloped, poverty level is high and adolescents do not have access to contraceptives. Furthermore, adolescents in Western region usually discourage the use of condoms and engage in unprotected sex as means of entertainment. These factors have contributed to the growing rate of adolescent childbearing (Phiri, 2012).

In terms of educational attainment, the results of bivariate analysis in this study (*Secondary + UOR = 0.27)* is consistent with bivariate result of a study in Northwestern, Brazil, which found that the probability of adolescents 15-19 years giving birth is less among the adolescents who are educated, urban and exposed to mass media (Gupta, 1999). Also, the study discovered that religious affiliation is not significantly associated with adolescent fertility; this is consistent with studies in contemporary Yoruba society in Nigeria (Oyefara, 2011).

There is a significant difference in urban and rural adolescent fertility. The findings from this study show 18.05 percent of births to adolescents in urban areas and 27.63 percent of births to adolescents in rural areas. The bivariate and multivariate logistic regression results also confirmed that adolescents in the rural areas are more likely to give birth to one or more children than adolescents in urban areas. The difference could be as a lack of access to contraceptives and formal education in the rural areas. From the characteristics of the respondents, prevalence of contraceptive use is low. In general, the percentage of adolescents who use contraceptive is only 11 percent and those who do not use contraceptive is almost 89 percent. This finding is in accordance with Biddlecom and others (2009) who found that only 25

percent of adolescents use contraceptive in Malawi. This is very low when compared to contraceptive use among adolescents in Latin America, European and Asian countries which showed rate ranging between 42% and 68% (WHO, 2011).

The results obtained for contraceptive use presented some complexities. Descriptive analysis reporting the percentage of births to adolescents 15-19 years show that those who do not use contraceptive have fewer births; this is in line with bivariate analysis reporting odds ratio and multivariate analysis reporting adjusted odds ratio. However, findings from bivariate and multivariate odds ratio show that those who use contraceptives are more likely to have one or more children relative to the reference category. This is consistent with findings from Zambia Demographic and Health Survey, 1992. Nonetheless, such finding contradicts common sense. Although, this could be as a result of inconsistency in the usage of methods and also that adolescents who are using contraceptives might have only started after having one or more births.

This study shows that the likelihood of having one or more children reduces as the respondent's educational level increase. This is quite marked in respondents with a higher level of education and lower odds in the bivariate analysis (see Table 5). According to Bledsoe et al. (1999), the mechanisms through which increased schooling operate to regulate fertility levels remain less well known. As such, in some societies where fertility is high, low levels of education may be unexpectedly linked to higher fertility. Taking other factors into consideration (see Table 6), adolescents with secondary and higher education had lower odds of adolescent fertility relative to adolescents with no education. Exposure to schooling and higher level of education may undermine the traditional practices of sexual abstinence and prolonged postpartum breastfeeding that might have otherwise delayed a new pregnancy (Bledsoe et al. 1999).

Having higher educational qualification and dwelling in urban areas are expected to have a relationship with low levels of adolescent fertility through the proximate determinants (Bongaarts et al, 1984). This exposes female adolescents to access and use of modern

contraceptives to avoid pregnancy. Educated adolescents are also less likely to get married early and thereby delay childbearing. Furthermore, bivariate analysis showed that listening to radio had significant association with adolescent fertility. This is according to expectation; those who listen to radio have information about how to access and use contraceptive or family planning services.

Adolescents with higher qualifications are more likely to be in formal employment which is known to be incompatible with childbearing and rearing. Contrary to expectation, this study showed that those who are working are more likely to have one or more children. This could be because most of the respondents are working in informal sectors; hence, they will be able to combine working and childcare. The hypothesis of adolescents who are not working being more likely to have one or more children compared to adolescents who are working is not supported by the findings of the study.

6.2 Conclusion

This study examined the distribution of and factors associated with adolescent fertility among adolescents aged 15-19 years in Zambia using the 2007 Zambia Demographic and Health Survey. Descriptive, bivariate and multivariate analyses were done to achieve this. The multivariate logistic regression was used to determine the most important determinants of adolescent fertility among Zambian adolescents. These include age, marital status, contraceptive use and age at first marriage.

The study supported the hypothesis that adolescents 18-19 years old are more likely to experience adolescent childbearing compared to adolescents 15-17 years old. An explanation of this could be that as age increases, the likelihood of exposure to pregnancy and childbearing also increases due to the high levels of sexual activity in adolescents. Furthermore, it supported the hypothesis that married adolescents are more likely to experience adolescent childbearing. Results show that when taking all factors into consideration; education, type of place of residence, wealth status and employment status lost their significance in predicting adolescent

childbearing. In Zambia, the dominant religion is Christianity; Christian religious groups are opposed to premarital childbearing and thus it is perceptible why married adolescents are more likely to experience adolescent childbearing.

Age at first sexual intercourse was found to be insignificantly associated with adolescent fertility. This study showed early sexual initiation among female adolescents, the mean age at first intercourse was 12.3 years (see Table 2); this is too early in comparison to other sub-Saharan African countries. For example, studies by Odimegwu (2005) showed that female adolescents in Nigeria initiated sex at 19 years. Moreover, a higher proportion (51%) began sexual intercourse before the age of 16 years. Early initiation of sexual intercourse in the absence of effective contraception exposes adolescents to risk of childbearing and sexually transmitted diseases. In addition, early sexual intercourse has implications on reproductive health of adolescents. Further studies are needed on adolescent fertility in Zambia and factors such as partners' characteristics, household structure and sexual behaviors of adolescents should be considered.

6.3 Recommendation

The study showed that 34% of adolescents aged 15-19 years got married before the age of 16 years. Government, policy makers and community leaders should formulate and enforce laws and policies to prohibit early marriage in Zambia because they increase adolescent fertility rate. Furthermore, adolescent females should be encouraged to pursue higher educational qualifications; this will reduce early marriage and adolescent childbearing. Sex education should be taught in schools and parents should be encouraged to talk to their adolescents about sexuality and other related topics to keep adolescents informed in order to help them reduce unwanted pregnancy.

Findings from this study showed low prevalence of contraceptive use; access to contraceptives should be made available to adolescents as means for them to control their fertility and reduce

sexually transmitted diseases, including HIV/AIDS. The study also showed low ages of initiation of sexual intercourse, the researcher recommends that further studies should be done to find out factors that could help increase age at first intercourse among female adolescents in Zambia.

In Zambia, Government introduced youth friendly health services, but there is still a high adolescent fertility rate; most likely because it is done on a small scale. The youth friendly services should be introduced in all regions of Zambia, especially in the rural areas and the Western and Northern regions which showed a significant association with adolescent fertility. The health workers should also receive special training to deal with adolescents as this will reduce stigmatization; adolescents will be free to utilize family planning services from the clinics, especially unmarried adolescents. From the findings of the study, the researcher also recommends that youth should be empowered; programmes should be designed to engage adolescents fully in economical activities. Only once adolescents are fully engaged in economical activities will they seek independence and personal goals which will lower their likelihood of engaging in sexual behavior; and thus, increasing the chances to reduce adolescent fertility rate in Zambia.

Resources should be pulled together by government and NGOs to offer scholarship opportunities for adolescents; this will encourage them to work hard and dedicate most of their time to studies, therefore, keeping them away from social vices. Furthermore, adolescents should be encouraged to acquire secondary and higher education. The findings from this study showed that those with primary education (see Table 6) are more likely to have one or more births compared to adolescents with higher education. This shows that acquiring secondary and higher education will help in reducing adolescent fertility.

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