

**FACTORS ASSOCIATED WITH MODERN CONTRACEPTIVE USE IN ZAMBIA**

**By**

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A Dissertation Submitted to the University of Zambia in Partial fulfilment  
of Requirements of the Degree of Master of Arts in Population Studies

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## DECLARATION

I, CAROLINE BANDA hereby declare that this dissertation;

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## APPROVAL

The dissertation of **CAROLINE BANDA** is approved as fulfilling part of the requirements for the award of the degree of **Master of Arts in Population Studies** by the University of Zambia.

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## ABSTRACT

The research aimed at investigating factors associated with modern contraceptive use in Zambia. Data from the 2007 Zambia Demographic Health Survey (ZDHS) was utilized in order to investigate the above topic. Only data on women aged 15-49 was used in this study. Statistical tests, specifically bivariate correlations analysis and binary logistic regression analysis were performed in order to analyse the relationships between/among variables (residence, age, education, employment, wealth quintile, fertility preference and marital status), using Stata software. Contingency tables and graphs were used to facilitate presentation of findings.

The findings show that knowledge levels of contraceptive are very high (97 percent) among women. The modern contraceptive prevalence is however, about 30percent. The modelling of the variables was based on the constructed conceptual framework that basic variables (age, residence) work through intermediate variables (education, employment, wealth quintile) which work through immediate variables (marital status, knowledge of contraceptives). Analysis of the variables shows that only six variables can be used to explain variations in modern contraceptive use. These are age, education, employment, wealth quintile, fertility preference and marital status. The multivariate regression results indicate that residence is not statistically significant to the model. Among the significant explanatory variables, much variation is observed in marital status as those currently married are 4 times more likely to use contraceptives with reference to the never married. The formerly married are almost twice more likely to use contraceptives with reference to the never married. This shows that there is high contraceptive use among the currently married as they are at risk of child bearing. With regard to age, age groups 30-34 and 35-39 are almost twice more likely to use contraceptives with reference to those aged 15-19.

Fertility preference and marital status can be used to explain the influence of residence, age, education and employment on modern contraceptive use as the odds drop when these are introduced in the regression. With regard to education, secondary education is more statistically significant. However, the results also show that the influence of education on modern contraceptive use can be explained by wealth quintile. In terms of employment, those with professional employment are almost twice (1.72) more likely to use modern contraceptives in the final model. The odds in wealth quintile increase when fertility preference and marital status are introduced in the model, with the richest being almost twice (1.68) as likely to use contraceptives as the poorest. In the final model, the odds in marital status also reduce with the currently married being almost 4 times (3.84) more likely to use modern contraceptives than the never married. The final fitting model accounts for 9.2percent,  $R^2$ , variations in modern contraceptive use.

In conclusion only six of the seven variables in the conceptual framework can be used to explain variations in modern contraceptive use.

Based on the findings, recommendations made include ensuring that all women attain at least secondary level of education and that services providing contraceptive use are made more user friendly to accommodate those in the younger age groups.

## **DEDICATION**

To my family and all who wish me success

## **ACKNOWLEDGEMENTS**

Success in one's life is a journey that requires the support and encouragement of others. I therefore, take this opportunity to thank all who have seen me through this work and ensured that it is a success. There have been many family members, friends, peers, colleagues and academics who have inspired, and me to achieve as much as was humanly possible. I extend to you all my gratitude.

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## ACRONYMS

<b>CPH</b>	Census of Population and Housing
<b>ICPD</b>	International Conference on Population and Development
<b>MDGs</b>	Millennium Development Goals
<b>MoH</b>	Ministry of Health
<b>NGO</b>	Non-Governmental Organization
<b>SFH</b>	Society for Family Health
<b>SRH</b>	Sexual Reproductive Health
<b>UNFPA</b>	United Nations Population Fund
<b>UNICEF</b>	United Nations Children Fund
<b>ZDHS</b>	Zambia Demographic and Health Survey



## Table of Contents

DECLARATION.....	
COPYRIGHT .....	ii
APPROVAL .....	iii
ABSTRACT .....	iv
DEDICATION .....	v
ACKNOWLEDGEMENTS .....	vi
ACRONYMS .....	vii
List of tables .....	x
List of Figures .....	x
CHAPTER ONE: BACKGROUND .....	1
1.0 Introduction.....	1
1.1 Statement of the problem .....	4
1.2 RESEARCH OBJECTIVES .....	5
1.2.1 General objective .....	5
1.2.2 Specific objectives .....	5
1.2.3 Research questions.....	5
1.3 Rationale of study .....	6
CHAPTER TWO: LITERATURE REVIEW .....	7
2.1 Empirical Literature .....	7
2.1.1 Age.....	7
2.1.2 Residence and distance .....	7
2.1.3 Socio-economic status.....	8
2.1.4 Demand for contraceptives and quality of service .....	9
2.2 Conceptual framework.....	10
2.3 DEFINITIONS OF CONCEPTS .....	13

CHAPTER THREE: STUDY METHODOLOGY.....	14
3.1 RESEARCH DESIGN.....	14
3.2 SAMPLING DESIGN .....	14
3.3 POPULATION DEFINITION .....	14
3.4 DATA COLLECTION .....	15
3.5 DATA PROCESSING AND ANALYSIS .....	15
3.6 STUDY LIMITATIONS .....	16
CHAPTER FOUR: FINDINGS.....	17
4.1 Demographic and socio-economic characteristics of respondents.....	17
4.2 Knowledge of contraceptive method .....	19
4.3 Current contraception use .....	20
4.4 Knowledge and contraceptive use.....	21
4.5 Bio-demographic and Socio-economic factors associated with contraception use .....	21
4.5.1 Model building: binary logistic regression model .....	24
4.5.2 Logistic regression .....	29
4.5.2.1 Basic Variables .....	29
4.5.2.2 Model 2: basic and intermediate variables.....	30
Intermediate variables .....	30
Basic and intermediate variables .....	32
4.5.2.3 Model 3: basic, intermediate and proximate Variables.....	34
Proximate variables .....	34
Basic, intermediate and proximate variables .....	35
CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS .....	40
5.1 Knowledge and contraceptive use.....	40
5.2 Bio-demographic factors and contraceptive use .....	40
5.3 Socio-economic factors and contraceptive use .....	41
Conclusions .....	44

Recommendations .....	45
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### **List of tables**

Table 4.1: Background characteristic of all women sample in the 2007 ZDHS .....	17
Table 4.2: Current use of contraception by type of method .....	20
Table 4.3: Knowledge of contraception method and contraceptive use .....	21
Table 4.4: Modern contraceptive use by background characteristics .....	22
Table 4.5: Contraception use by background characteristics .....	27
Table 4.6: Contraceptive use by Basic variable .....	30
Table 4.7: Contraceptive use by intermediate variables.....	31
Table 4.8: Contraceptive use by basic and intermediate variables .....	33
Table 4.9: Contraceptive use by proximate variables.....	34
Table 4.10: Contraceptive use by background variables .....	36

### **List of Figures**

Figure 4.1: Knowledge of contraceptive method .....	20
Figure 4. 2: Contraceptive use by Age- Odds ratios.....	25
Figure 4.3: Contraceptive use by Education- Odds ratios .....	26

## **CHAPTER ONE: BACKGROUND**

### **1.0 Introduction**

Recent available data proves that the attention and resources directed toward improving family planning programs in developing countries have been decreasing, even though need remains high. This can be seen through the increasing number of women with no access to family planning. According to a report, more than 100 million women worldwide remain without access to family planning, and many times that number do not receive other essential reproductive health services (Populations Report Bureau, 2004). This is particularly true in the world's poorest region, sub-Saharan Africa, where almost a quarter of women still lack family planning services and information. Statistics show that for the region as a whole, only 14 percent of women are using modern methods of contraception (ibid). Zambia is no exception as the contraceptive prevalence rate is about 30 percent (CSO, 2009).

The fifth millennium development goal seeks to address improvement of maternal health. At the fourth International Conference on Population and Development, held in Cairo, Egypt, it was discussed that countries with the highest levels of mortality should aim to achieve by 2005 a maternal mortality rate below 125 per 100,000 live births and by 2015 a maternal mortality rate below 75 per 100,000 live births. However, all countries were to reduce maternal morbidity and mortality to levels where they no longer constitute a public health problem (ICPD, Para. 8.21, 2005). It has been argued that maternal health is closely related to the reproductive health of the woman, family planning, the use of contraception methods, and the active participation of the partner (Honduras, 2003: 39).

Reports show that at least three of the eight Goals – on maternal health, child health and HIV/AIDS – are directly related to sexual and reproductive health, SRH (UNFPA). In order to monitor the progress of achieving universal access to reproductive health, contraceptive prevalence rate, which monitors a couple's ability to choose the timing and size of their families, an important aspect of maternal health, is one of the indicators being used.

Contraceptive prevalence rate is the percentage of women who are married or in union and of reproductive age (15-49 years old), using any method of contraception, either modern or traditional ([www.unfpa.org](http://www.unfpa.org)). It is influenced by a lot of factors including, socio economic factors, socio-cultural factors, bio-demographic, the availability and supply of contraceptives, and involves the choice to begin and to continue to use contraceptives over a period of time, to mention but a few.

One of the targets under this goal is to achieve, by 2015, universal access to reproductive health. It is however, interesting to note that in the initial MDGs, the target of achieving universal reproductive health was not included. It was only made explicit in the 2005 report presented on Preparing National Strategies to Achieve the Millennium Development Goals (<http://mdgs.un.org>). This allows couples to avoid high-risk pregnancies as well as choose the timing and size of their families. One of the “quick wins” identified by the report, therefore, was to expand access contraceptive information and services, among others (UN Millennium Project, 2005; 14). This will partly reduce fertility and indirectly reduce maternal mortality, hence improving maternal health in the long run.

According to UNFPA, the need for voluntary family planning method is growing very fast ([www.unfpa.org/rh/planning](http://www.unfpa.org/rh/planning)). The international community agrees that reproductive choice is a basic human right: freedom to decide when and how many children to have. Low contraceptive use not only has implications on the maternal health but also on fertility; it results in high fertility. Sustained high fertility rates create a large population of young dependents, creating demand for support for young children, for an adequate number of schools and for affordable child care. This is evidenced by the 1946-1964 baby boom period that caught communities unprepared and without the school facilities to accommodate the rapidly increasing number of school age children (World fertility Report, 2003). High fertility in turn results in a high growth rate of the population which has further implications on the limited resources in a population.

It is argued that universal access to reproductive health will only be achieved when women have access to the information and services they need to plan the number and timing of their pregnancies (ibid), especially if modern contraceptive methods are used. This is because it is seen as a factor to saving mothers' lives in that it helps reduce

fertility thereby reducing the risks of dying due to pregnancy related complications. Therefore, under efficient access and use to modern contraceptives, couples will be able to have small family sizes that they are able to support. It has thus been concluded that fulfilling the global demand for family planning can significantly reduce the costs of achieving the U.N. targets, especially in maternal health and education. By investing in reproductive health and family planning, countries can cost-effectively accelerate progress towards achieving the eight MDGs (UNICEF 2008). This is for the reason that, when maternal health is improved, maternal deaths will partly reduce implying that there will be more human resources to help reduce extreme poverty and there will be mothers to take care of their children, hence reducing child and infant mortality.

Efforts have been made to deal with the low contraceptive prevalence rate in Zambia. For instance, there have been a number of policies on family planning with the most important being “Family Planning in Reproductive Health: Policy Framework, Strategies, and Guidelines” ([www.acquireproject.org](http://www.acquireproject.org)). This comprehensive document described the program guidelines and provided substantial detail on eligibility criteria for the various methods. In addition, an important aspect of the policy is that it addressed barriers to services, such as spousal consent, age, and parity restrictions. Training was also considered essential to making providers more confident about and comfortable with providing the service, to ensure a real choice of methods and quality of care. Another program is the Planned Parenthood Association of Zambia (PPAZ). This is a non-governmental organization that attempts to respond to the challenges of the unmet needs in reproductive health such as low contraceptive use.

A comprehensive overview of Zambia’s contraceptive logistics supply system reports that in 2000, donors (DFID, USAID, and UNFPA) financed 100percent of contraceptive purchases (Bates & Rao, 2000). In addition, DFID supported the full-time Logistics Specialist in the Contraceptive Commodities Logistics Unit. These are some of the measures in an effort to increase contraceptive use in Zambia.

## **1.1 Statement of the problem**

The 2007 ZDHS shows that knowledge of any contraceptive method is almost universal in Zambia, with 97 percent of women and 99 percent of men knowing at least one method of contraception. It is also interesting to note that the contraceptive prevalence rate for modern methods increased from 7 percent in 1992 to 25 percent in 2007. Another development worth noting is that 63 percent of men age 15-49 reported to have used a method of contraception at some time, with most men (59.0 percent) having had used a male condom. The data show that the majority of women (71 percent) who use modern contraceptive methods get them for free, with the common method being a pill (11.0 percent). In the 15-year period between the 1992 and 2007 ZDHS surveys, ever use of modern methods among all women has more than doubled from 23 percent to 56 percent.

Given that most people have knowledge of at least one method and the provision of contraceptives is almost free, the contraceptive prevalence rate is expected to be higher than the current level (25 percent) for modern contraceptive. It is assumed that there are factors militating against modern contraceptive use in Zambia. Factors such as partner's approval, quality of the services, friendliness of the staff administering the services, income levels, proximity to the provider and fertility preferences aside from the woman's knowledge and cost of family planning services are among the many factors that can be attributed to the low utilization of contraceptives. However, in this paper, only factors such as age, residence, education, wealth quintile, employment, fertility preference and marital status were considered. These selected variables were based on gaps observed in the literature in explaining factors associated with contraceptive use.

Some notable interventions to improve access to family planning services in Zambia are those that have been done by Society for Family Health (SFH). SFH social markets oral contraceptives, male and female condoms, to the Zambian market (SFH 2009). Their reproductive health program includes behaviour change communications campaigns that promote the benefits of family planning and advertise the availability of contraceptive products, with the goal of increasing use. The organization introduced Safe plan oral contraceptives in 1996 as a safe and effective way to space births and to achieve a healthy family. It distributed the product through pharmacies, drugstores, clinics and community-based distributors—making it one of the most widely available

contraceptive brands in the country. Another intervention is by the Ministry of Health. It distributed more than 2 million cycles of oral contraceptives and 15 thousand injectable contraceptives in 2007 (MOH Report, 2007).

Despite interventions to improve access to family planning services, empirical evidence shows that there is low utilization of family planning services as suggested by the contraceptive prevalence rate. Thus there's a disparity between the actual contraceptive prevalence rate and what it needs to be.

There is a problem of low modern contraceptive use, despite all efforts put in place. Therefore, this research aimed at investigating factors contributing to low modern contraceptive use in Zambia.

## **1.2 RESEARCH OBJECTIVES**

### **1.2.1 General objective**

The main objective of this study was to investigate factors associated with modern contraceptive use in Zambia.

### **1.2.2 Specific objectives**

The specific objectives of this study were:

1. To establish the relationship between contraceptive knowledge and use of modern contraceptive
2. To investigate the influence of bio-demographic factors on modern contraceptive use
3. To examine the relationship between socio-economic factors and modern contraceptive use

### **1.2.3 Research questions**

In order to achieve the above objectives, the following research questions were used:

1. Why is modern contraceptive use low despite high contraceptive knowledge?
2. What influences the use of modern contraceptives in Zambia?



### **1.3 Rationale of study**

Results obtained from this study have both theoretical and practical purposes. Theoretically, the study will contribute to the body of knowledge on factors influencing reproductive health in general, and specifically to factors associated with modern contraceptive use. The study has employed regression analysis of the variables on which the conclusions have been based and hence will add to the existing knowledge on modern contraceptive use.

A low contraceptive prevalence rate may partly contribute to a high rate of maternal deaths. Hence this research looks at the factors that are associated with contraceptive use, which in turn helps address the problem of low modern contraceptive prevalence rate in the country. The results may be used to help increase modern contraceptive prevalence rate in Zambia based on the recommendations.

Effective policy making and implementation depend on applied research. Hence an understanding of factors associated with modern contraceptive use in Zambia will provide a sound basis for policy making. The study also provides a basis for future analysis of the problem for more focused policy intervention.

## **CHAPTER TWO: LITERATURE REVIEW**

This chapter looks at the studies that other researchers have done on modern contraceptive use. Many studies on access to family planning have been conducted with focus on the current use of contraceptives and factors associated with access to and use of family planning services. This provided a platform on which to base the arguments and discussion of finding in this study.

### **2.1 Empirical Studies**

#### **2.1.1 Age**

It is suspected that women in the older age groups are more likely to use contraceptives than women in the younger ages. In a study conducted in Kenya, the results showed that contraceptive use was highest among women aged 20-39 compared to those below 20 years and above 39, as 49percent and 41percent of the women interviewed that were using contraceptives were aged 20-29 and 30-39 respectively (Okech C. 2011). In a study conducted in Namibia, (Irja 2007), higher condom use was also reported among young women of 15-19 years old than among 20-24 year olds.

#### **2.1.2 Residence and distance**

In this study, residence was one of the factor suspected to be influencing modern contraceptive use. In a study conducted in Kenya, by Amoi (2011), the findings showed that women in the urban parts of Kenya are 73.1 percent more likely to have ever used modern methods of contraception compared with the respondents in rural Kenya.

In a related study on physical access to health facilities and contraceptive use in Kenya, data used was obtained from the 2008 and 2009 Kenya demographic health survey ((Ettarh and Kyobutungi, 2012). In this study, results from multivariate analysis showed that distance to the nearest health facility and density of health facilities influenced the use of modern contraceptive. It was further reported that women resident 5 km or less to the nearest health facility were 26 percent more likely to use contraceptives than those resident at distances more than 5 km (Ibid: 2012: 53).

### **2.1.3 Socio-economic status**

A study on socio-economic status, contraceptive knowledge and use in Nigeria concluded that high knowledge of contraceptive does not translate to high contraceptive usage (Odusina et al. 2012). This is in line with modern contraceptive use in Zambia as available data in the 2007 ZDHS shows a high knowledge (97 percent) of modern contraceptives couple with very low usage (30 percent).

Differentials in modern contraceptive use can also be attributed to differences in education levels of women. For example, in a study conducted in Namibia based on both quantitative and qualitative data provided by the 2000 Namibian Demographic and Health Survey and Focus Group Discussions with young women (15-24 years) respectively, the data were used to analyze the factors affecting contraceptive use and method choice among young women in Namibia (ibid). The logistic regression method that was applied to examine the determinants of contraceptive use and method choice and findings from the multivariate analysis showed that increased education was significantly associated with a greater likelihood of using contraception. In a study conducted in Kenya earlier mentioned, women with secondary and higher levels of education are six times more likely to have ever used modern methods of contraception compared with respondents with no education at all.

Using the 2000 and 2004 Malawi Demographic and Health Survey data, Palamuleni M.E; 2013 demonstrates the bivariate analysis of education proved that women with higher education (40 percent) are more likely to use contraceptives compared to those with primary (28 percent) and no education (20 percent). He further observed that the likelihood of using contraceptives decrease with reference to secondary and above level. This indicates that the likelihood of using contraceptives increases as education level increases. In a similar study in Ethiopia, it was concluded that there were strong associations between women's education and contraceptive use (Beekle and McCabe, 2006).

Gordon C. et.al; (2011) observed that during their reproductive years, in the labour market, highly educated women demand less children because of the foregone income that rearing children entails, hence the high demand for contraceptive use. Other scholars have argued that household wealth is an intermediate variable between

education and contraceptive use, and have hence concluded that the relationship between education and women's contraceptive use was mediated through household wealth (Heeks, 2008).

Regarding employment, it is expected that women with professional employment are more likely to use contraceptives than women in other categories as children may be seen as an opportunity cost in terms of time taken to care for them and to work. In a study in Malawi, earlier mentioned, the results showed that women who are not working were 1.26 times less likely to use contraceptives than women who are working (Palamuleni 2013).

In a study conducted in Kenya earlier mentioned, the results showed that in the absence of an income source, usage of family planning would decline (Okech, 2011). It is interesting to note that by wealth quintile, women in the middle quintile are least likely to use a contraceptive method (31 percent) and women in the highest quintile are most likely to use a contraceptive method (54 percent) as reported in the 2007 ZDHS.

The ZDHS also reports that more than two-thirds of current modern method contraceptive users obtained their contraceptive method from the public sector, mostly government health centres (53 percent). Private medical institutions are the second most common source of contraception (17 percent), while non-medical sources are the least common (13 percent). This basically shows women are likely to obtain contraceptives where they are almost free of price.

#### **2.1.4 Demand for contraceptives and quality of service**

Literature reveals an increasing use of multivariate analysis in determining factors associated with use of family planning services. In a study conducted in Kenya to examine the utilization level of family planning services, a binomial logit model was used to analyze the determinants of demand for family planning services among women in City slum (Okech et.al 2011). In terms of methods, the study revealed that the most commonly used contraceptives were condoms (35 percent), pills (33 percent), injection (19 percent), and IUD (4 percent) (ibid).

Regression analysis was also conducted in which use of family planning services was the dependent variable and was used as a proxy for demand for contraceptives (op cit).

In order to determine the explanatory variables to use, correlation analysis was undertaken to establish the degree of correlation between the explanatory variables to avoid the problem of multicollinearity. After a binomial logistic regression was performed, the explanatory variables that influenced use of contraceptives included income, marital status, female education, knowledge of the contraceptives and other variables.

The type and quality of service provided is also an important determinant of contraceptive use. A cross-sectional study in Tanzania found that subjective reports of the quality of family planning services were related to the use of such services (Mroz, Bollen, Speizer and Mancini, 1999). Similarly in Lesotho, Tuoane et.al (2003) found that the type of facility to which women had access to (e.g. hospital, clinic, community-based and employment-based) was a significant predictor of current use of contraception. Use of contraception was higher where facilities did not combine family planning and maternal care services and qualitative data indicated that women felt such combined services prioritised maternal care over family planning.

In summary, this literature review provides a basis for the comprehensive analysis of this study as the results observed in the above studies help explain the results obtained in this study.

## **2.2 Conceptual framework**

To help structure this study in perspective, the Davies and Blake framework was adopted. In this framework, determinants are divided in to four classes; demand-generating factors such as education, age and other personal factors; demand components which are composed of desire to limit births and desire to space future births; supply factors; and demand crystallizing components that facilitate the implementation of the outcome such as spousal support, social (peer) support and parental support. In this framework, programme activities play a role in contraceptive adoption. The psychological, logistical and social constraints to contraceptive adoption are offset by programme activities that enhance service accessibility, improve the climate of information, exchange and legitimize contraceptive behaviour.

In line with the Davies and Blake framework, the following conceptual framework has been modified by the researcher to explain probable factors associated with contraceptive use.

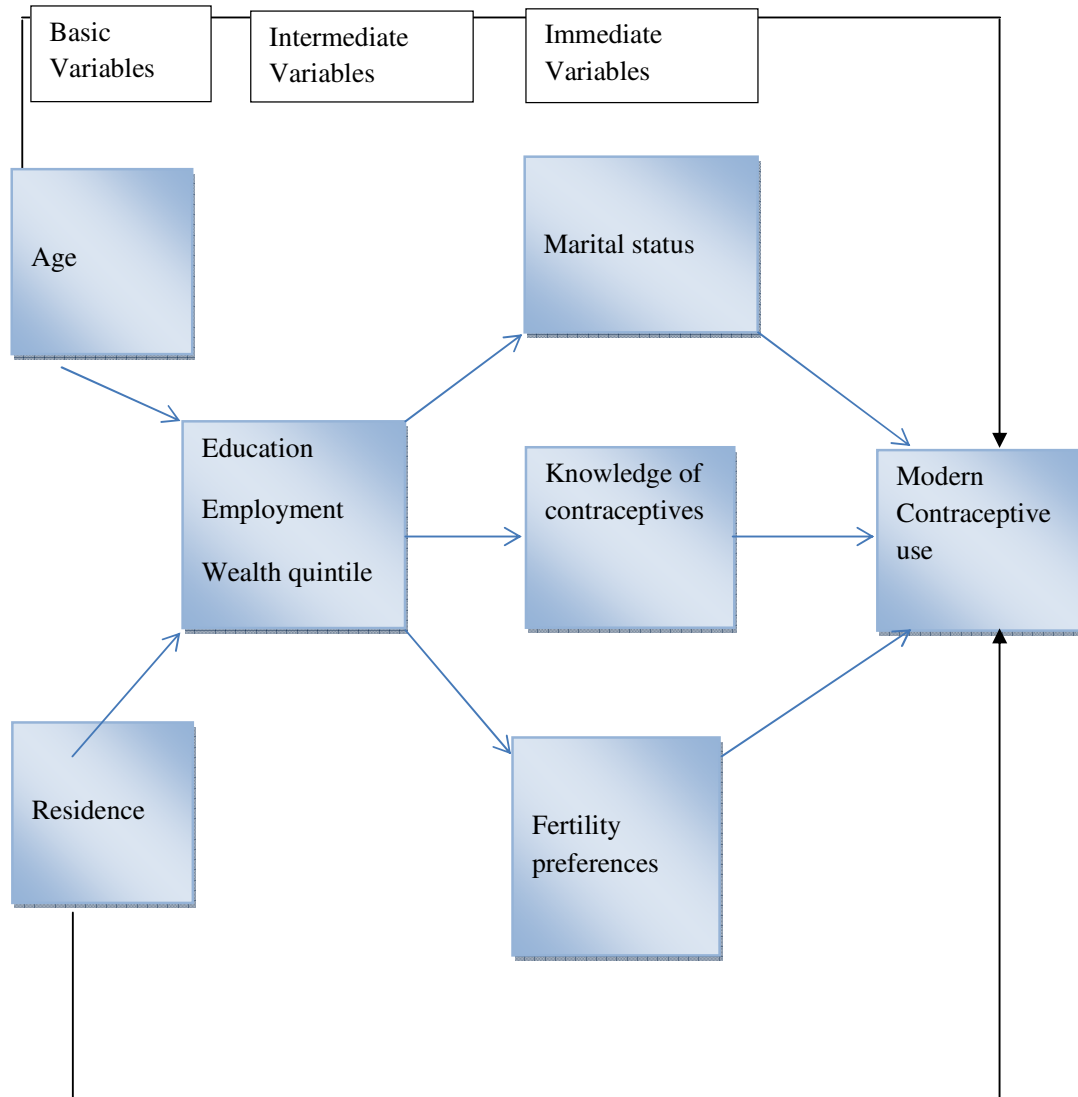
The variables in the conceptual framework are divided according to basic variables, underlying variables, and immediate variables. Basic variables are composed of the societal and individual variables such as age and residence. These indirectly affect contraceptive use through the underlying variables such as education, employment and wealth quintile. It is expected that differences in contraceptive use among different age groups may be due to differences in socio-economic status. For example, women in older ages may be more likely to use contraceptives simply because women in the older age groups are likely to have higher education (tertiary and higher) than those in the lower ages. Similarly, women in the older age groups are expected to be in higher employment and higher wealth quintile category. Likewise, the differences between rural and urban levels of modern contraceptive may be due to differences in education, employment and wealth quintile. Women with higher education, professional employment and in the higher wealth quintile category are expected to be in urban areas than in rural areas.

However, intermediate variables influence modern contraceptive use through immediate variables. In this framework, immediate variables chosen are marital status, fertility preference, through which the intermediate variables work. It is assumed that in the case of marital status, for example, married women are more likely to use modern contraceptives than women in the single category as the latter have almost no reason to use contraceptives, regardless of the level of education. Similarly people who want to stop bearing children or postpone a birth are more likely to use contraceptives than those that would want a child at the time of the interview.

Another variable and probably most important is knowledge through which all the variables are likely to work. Without the knowledge of modern contraceptives, no one would be using them. However, knowledge alone is not sufficient as one still needs to have the reason to use and the means with which to use modern contraceptives. Therefore social economic variables are expected to influence modern contraceptive use only if respondents have the knowledge. However, knowledge directly affects modern contraceptives as much as marital status and fertility preference. Therefore, the

following framework has been developed to help explain probable factors associated with contraceptive use.

**Fig 2.1 Conceptual framework-factors associated with contraceptive use**



### 2.3 Definitions of concepts

In this study, the concepts adopted are defined as follows:

**Modern Contraceptive use:** the number of women currently using a modern contraceptive at the time of the survey, which was the dependent variable in this study.

**Bio-demographic factors:** These were defined as age and marital status in this study.

**Socio-economic factors:** these included residence education, wealth quintile and employment status of the women interviewed in the survey.

**Knowledge** of a family planning method: having heard of a method or ways by which a couple can delay or avoid pregnancy (CSO, 2009). In this study, fertility preference was defined as the number of women who want another child, those undecided and those who do not want another child.

**Fertility preferences:** current desire to have a/another child, the length of time one would like to wait before the birth and what one considers being the ideal number of children (ZDHS 2007).

**Fertility:** this is defined as the total number of live births a woman has had in her lifetime (ZDHS 2001/02).



## **CHAPTER THREE: STUDY METHODOLOGY**

In order to achieve the objectives and research questions stated above, a vigorous systematic and scientific approach was employed paying particular attention to the study design and population definition. It is important to note that this study was an exploratory survey with the view of determining the factors associated with modern contraceptive use in Zambia. Therefore, variables assumed to be associated with modern contraceptive use were explored through analysis.

### **3.1 RESEARCH DESIGN**

The adopted study design was a cross-sectional study which used data collected at one point in time. This was chosen on the basis that the study was seeking to determine factors associated with modern contraceptive use in Zambia. However, this study relied on already collected dataset as obtained from the 2007 ZDHS. The DHS applies comprehensive consistency checks and data quality methodologies that make the data of high quality. Thus it accounts for high levels of both validity and reliability of data for analysis. In addition, several variables were not yet analysed. Weights were applied in order to infer statistics to the population parameters.

### **3.2 SAMPLING DESIGN**

The sample for ZDHS 2007 was a stratified sample selected in two stages from the census of population and housing (CPH) 2000 frame. Stratification was achieved by separating every province into urban and rural areas. Therefore, the then nine provinces were stratified into 18 sampling strata. Samples were selected independently in every stratum by a two-stage selection. In the first stage, 320 SEAs were selected with probability proportional to the SEA size. The household listing operation was conducted in all selected SEAs, with the resulting lists of households serving as the sampling frame for the selection of households in the second stage. Selected SEAs with more than 300 households were segmented, with only one segment selected for the survey with probability proportional to the segment size.

### **3.3 POPULATION DEFINITION**

The study population was drawn from the Zambian population consisting of all women age 15-49 and all men age 15-59 who were either permanent residents of the

households in the 2007 ZDHS sample or visitors present in the household on the night before the survey. A representative sample of 8,000 households was drawn for the 2007 ZDHS survey. However, information only based on women was used in this research paper.

### **3.4 DATA COLLECTION**

The dataset that was already collected was used hence this study utilized the quantitative data that was obtained in the 2007 ZDHS. Three questionnaires were used for the 2007 ZDHS. These are the Household Questionnaire, the Women's Questionnaire, and the Men's Questionnaire. These questionnaires were based on questionnaires developed for the MEASURE DHS programme and were adapted to reflect the population and health issues relevant to Zambia. Comprehensive information was collected on fertility, infant and child mortality, family planning and other health related matters such as breastfeeding, antenatal care, and children's immunization and childhood diseases. Hence the information on family planning, obtained from the women questionnaire was used for this study.

### **3.5 DATA PROCESSING AND ANALYSIS**

Data processing of the 2007 ZDHS consisted of office editing, coding of open-ended questions, data entry, and editing computer identified errors. Data entry and editing were accomplished using the CSPro software. In this study however, only data analysis was done using the 2007 ZDHS processed data. Stata software was used to perform statistical analysis on the variables. Weights were applied to the data in order to infer statistics on the population. Statistical tests specifically binary logistic regression, logistic regression, and bivariate correlations analysis were performed in order to analyse the relationships between/among variables. In order to perform logistic regression, a model was developed in which the dependent variable was recoded into a two-response (binary) category variable and then regressed with the independent variables. The stepwise (forward) elimination method was used in order to eliminate variables that were not significant in the model, based on the p-value and the log likelihood ratio statistics were used to test the goodness of fit for the model. Contingency tables and graphs were used to facilitate presentation of findings.

### **3.6 STUDY LIMITATIONS**

Since the study used already collected data, some form of analyses on certain variables could not be performed as the intended purpose for which they were collected was not in line with that of the researcher.

## CHAPTER FOUR: FINDINGS

This chapter presents the findings from the study. The chapter is divided in different sections reflecting the objectives of the study.

### 4.1 Demographic and socio-economic characteristics of respondents

The section presents tabulations showing the background characteristics of all women that were sampled in the 2007 ZDHS. The statistics are based on weighted figures.

**Table 4.1: Background characteristic of all women sample in the 2007 ZDHS**

Background characteristic	Frequency	Percent
<b>Age</b>		
15-19	1,574	22.0
20-24	1,370	19.2
25-29	1,363	19.1
30-34	1,056	14.8
35-39	747	10.5
40-44	561	7.9
45-49	475	6.6
<b>Residence</b>		
Urban	3009	42.1
Rural	4137	57.9
<b>Region</b>		
Central	659	9.2
Copperbelt	1,264	17.7
Eastern	972	13.6
Luapula	531	7.4
Lusaka	1,172	16.4
Northern	967	13.5
Northwestern	365	5.1
Southern	727	10.2
Western	492	6.9
<b>Education</b>		
No education	744	10.4
Primary	3,891	54.5
Secondary	2,140	30.0
Higher	371	5.2
<b>Total</b>	7,146	100

**Table 4.1 – continued**

<b>Background characteristic</b>	<b>Frequency</b>	<b>Percent</b>
<b>Religion</b>		
Catholic	1,461	20.5
Protestant	5,558	77.9
Other	119	1.7
<b>Current marital status</b>		
Never married	2,001	28.0
Currently married	4,403	61.6
Formerly married	743	10.4
<b>Occupation</b>		
Unemployed	3,255	45.7
Informal employment	3,649	51.2
Professional employment	226	3.2
<b>Number of living Children</b>		
0	1,855	26.0
1	1,103	15.4
2	1,047	14.7
3	902	12.6
4+	2,240	31.3
<b>Desire for more children</b>		
Another	3,212	46.4
Undecided	1,586	22.9
No more	2,126	30.7
<b>Total</b>	<b>7,146</b>	<b>100</b>

Source: 2007 ZDHS Dataset

Table 4.1 above shows that most women sampled in the survey, were in the age group 15-19 with a percentage of 22. The percentage of the women reduces to less than 10 percent in age groups 40-44 and beyond. The oldest age group 45-49 only has 6.6 percent of the total.

Regarding residence, the table shows that more women (57.9 percent) were from the rural areas compared to only 42.1 percent in the urban areas.

With respect to region, it can be deduced from the table that most of the sampled women were from Copperbelt Province and Lusaka Province, representing a percentage of 17.7 percent and 16.4 percent respectively, of the total. Western province and North-

western province had the least representation with 6.9 percent and of 5.1 percent respectively.

About half (54.5 percent) of the population sampled had attained primary level of education whilst the only 5.2 percent had attained highest level of education. Table 4.1 shows that more than three-quarters (77.9 percent) of the sample population were Protestants. Catholics only represented about one-fifth of (20.5 percent) of the total, while “Other” had less than 2 percent.

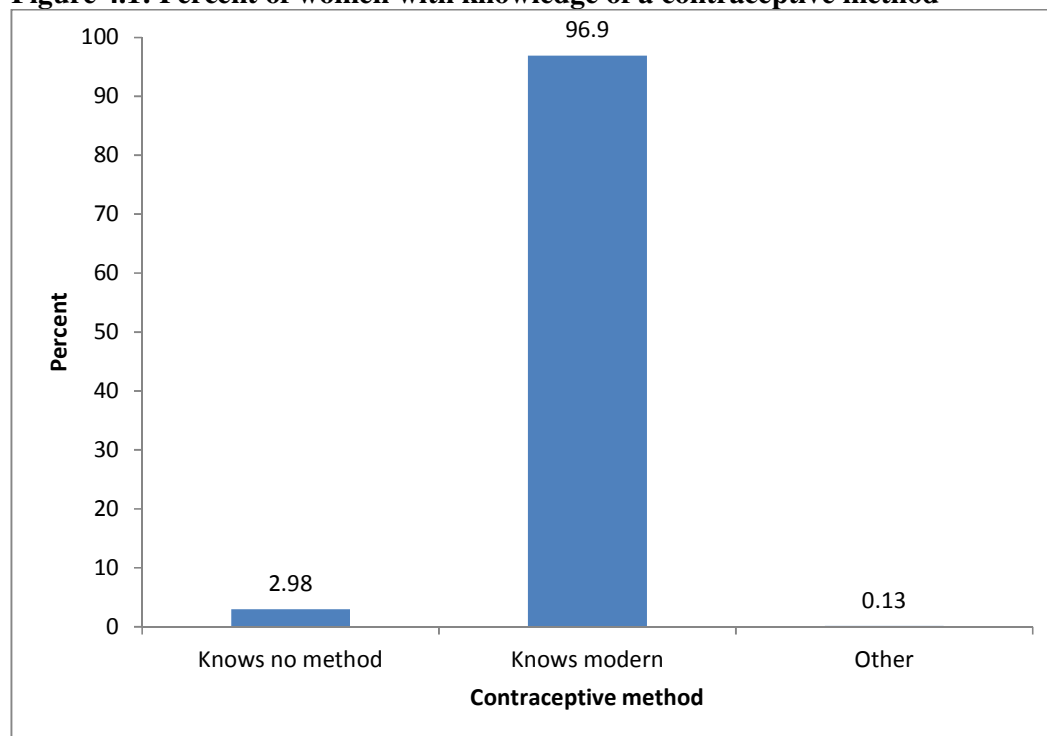
Over half (61.1 percent) of the women sampled were married while slightly above a quarter (28.0 percent) were never married. The formerly married had about 10 percent representation. Almost half (45.7 percent) of the women were not working, with only about 3.2 percent representation of those working professionally.

In terms of fertility, women without a child had a higher representation of slightly above a quarter (26.0 percent) followed by those with one child (15.4 percent). The percentage of the women decreases with increase in parity as shown in the table 4.1. However, 31.3 percent of the women had 4 children and above. Regarding desire for more children (fertility preference), about half (46.4 percent) of the women desire to have another child while 30.7 percent do not want to have any more. The table also shows that 22.9 percent are undecided about having another child.

#### **4.2 Knowledge of contraceptive method**

Information on knowledge of contraception was collected in ZDHS by asking female respondents to name ways or methods by which a couple could delay or avoid pregnancy. The findings show that knowledge of modern contraceptive method is almost universal (97 percent). The “other” category includes all those knowing methods and not modern contraceptives. See Figure 4.1.

**Figure 4.1: Percent of women with knowledge of a contraceptive method**



Source: 2007 ZDHS Dataset

### **4.3 Current contraception use**

The level of current use of contraception is the mostly widely used and valuable measure of the success of a family planning program. It is also widely used as a measure of analysing the determinants of fertility. Table 4.2 shows percent distribution of women who are currently using specific family planning method. The findings show that contraception use in Zambia is very low with only 25.1 percent of women reporting current use of a modern contraception method, while 70.1 percent were not using any contraceptives at the time of the survey.

**Table 4.2: Current use of contraception by type of method**

Contraceptive use	Frequency	Percent
No method	5,006	70.1
Modern method	1,794	25.1
Other	346	4.8
<b>Total</b>	<b>7,146</b>	<b>100</b>

Source: 2007 ZDHS Dataset

#### 4.4 Knowledge and contraceptive use

Knowledge of contraceptive was cross-tabbed with use of contraception in order to establish the relationship between these two variables. Table 4.3 below shows the results obtained.

**Table 4.3: Knowledge of contraception method and contraceptive use**

Knowledge of any method	Current use of contraceptives			
	No method	Modern	Other	Total
Knows no method	100 (220)	0.0 (0)	0.0 (0)	100 (220)
Knows modern	69.1 (4,778)	25.9 (1,794)	5.0 (343)	100 (6,915)
Knows other	72.7 (8)	0.0 (0)	27.3 (5)	100 (11)
Total	70.1 (5,006)	25.9 (1,794)	4.8 (348)	100 (7,146)

$$X^2 = 111.3 \quad df=4 \quad P < 0.05$$

Source: 2007 ZDHS Dataset

The findings in table 4.3 clearly show that knowledge significantly affects the use of contraceptives. However, knowing a method does not necessarily result into usage of the method. Among the many women who know modern methods of contraceptive, only 25.1 percent actually use while 69.1 percent do not use any method.

#### 4.5 Bio-demographic and socio-economic factors associated with contraception use

In this section, the chi-square test of independence is used to examine the relationship between the dependent and independent variables. Selected background characteristics were cross-tabulated with modern contraceptive use to determine the relationship. The results are shown in Table 4.4:



**Table 4.4: Modern contraceptive use by background characteristics**

<b>Background characteristics</b>	<b>Percent</b>	<b>Pearson X<sup>2</sup></b>	<b>P&lt;0.05</b>
<b>Age</b>		486.1042	0.000
15-19	9.7		
20-24	28.0		
25-29	35.1		
30-34	32.0		
35-39	29.4		
40-44	25.5		
45-49	17.1		
<b>Residence</b>		46.0961	0.000
Urban	28.1		
Rural	22.7		
<b>Marital Status</b>		635.702	0.000
Never married	10.7		
Currently Married	33.1		
Formerly married	17.8		
<b>Education</b>		50.7	0.000
No education	22.4		
Primary	23.9		
Secondary	26.5		
Higher	34.9		
<b>Employment</b>		147.3834	0.000
Unemployed	21.5		
Informal employment	27.3		
Professional employment	41.5		
<b>Fertility preference</b>		50.1685	0.000
Another	23.7		
Undecided	20.4		
No more	28.9		
<b>Wealth quintile</b>		103.9947	0.000
Poorest	24.1		
Poorer	20.5		
Middle	19.9		
Richer	28.7		
Richest	30.1		

Source: 2007 ZDHS Dataset

A cross tabulation between age and current use of modern contraceptive shows that there is a significant relationship between the two variables (P-value is less than 0.05). Table 4.4 clearly shows that modern contraceptive use is lowest in the age group 15-19. In this age group, usage of contraceptive is 9.7 percent. However, the peak age group for contraceptive use is 25-29 in which 35.1 percent are using contraceptives beyond which, usage starts falling.

Table 4.4 above also shows that there is enough evidence to conclude that residence is associated with modern contraceptive use. Compared to those in rural areas (22.7 percent), those in urban areas (28.1 percent) are more likely to use modern contraceptives.

With respect to marital status, Table 4.4 shows a significant relationship with current contraceptive use. Most women using contraceptives are those married (33.1 percent). Women who are never married have the least usage of contraceptives (10.7 percent). Among the formerly married, who include the widowed, divorced and separated, about 17.8 percent use modern contraceptives.

The level of education is significantly related to current use of contraceptive (P-value is less than 0.05). Women with higher education have the highest percent (34.9 percent) use of modern contraceptives than women with other levels of education. There seems to be little variations in terms of use between those with primary education (23.9 percent) and those with no education (22.4 percent).

There is enough statistical evidence that employment and contraceptive are associated. The use of modern contraceptives is highest for women with professional level of employment with about 41.5 percent women in this category using contraceptives at the time of the survey. About 21.5 percent and 27.3 percent women with no employment and informal employment respectively, use modern contraceptives.

Table 4.4 further shows that there is a relationship between fertility preference and contraceptive use. Respondents that do not want to have any more children (28.9 percent) are more likely to use contraceptives than those who want to have another child (23.7 percent) and those who are undecided (20.4 percent).

With regard to wealth quintile, the variable is significantly related to current use of modern contraceptives. Women in the richest category have the highest percentage of contraceptive use (30.1 percent). It is interesting to note however, that women in the poorest category (24.1 percent) are more likely to use contraceptives than those in the middle (19.9 percent) and poorer (20.5 percent) categories.

#### 4.5.1 Model building: binary logistic regression model

In order to measure the extent of the effect of each independent variable on the dependent variable, logistic regression analysis was performed. In this analysis, the dependent variable, current use of contraceptive, was recoded into a binary form with 0 representing “no use of modern contraceptive” and 1 representing “current use of modern contraceptive method”. Reference categories among the explanatory variables were selected in order to compare the odds of using modern contraceptives within respective explanatory variables. The reference categories were selected based on the category which is likely to have low contraceptive use. The model fitting was based on the following logit model function:

$$\text{Prob}(y=1/x) = \frac{\exp(x\beta)}{1 + \exp(x\beta)}$$

$$p = \frac{e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n}}{1 + e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n}}$$

Assuming that the P is a linear combination of variables of interest, the function can be presented as:

$$\text{logit}(P) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n$$

Where P= the dichotomous dependent variable called logit and defined in this study as:

*1=current modern contraceptive use*

*0=Not using modern contraceptive*

*Others are:*

*$\beta_0$ =Intercept*

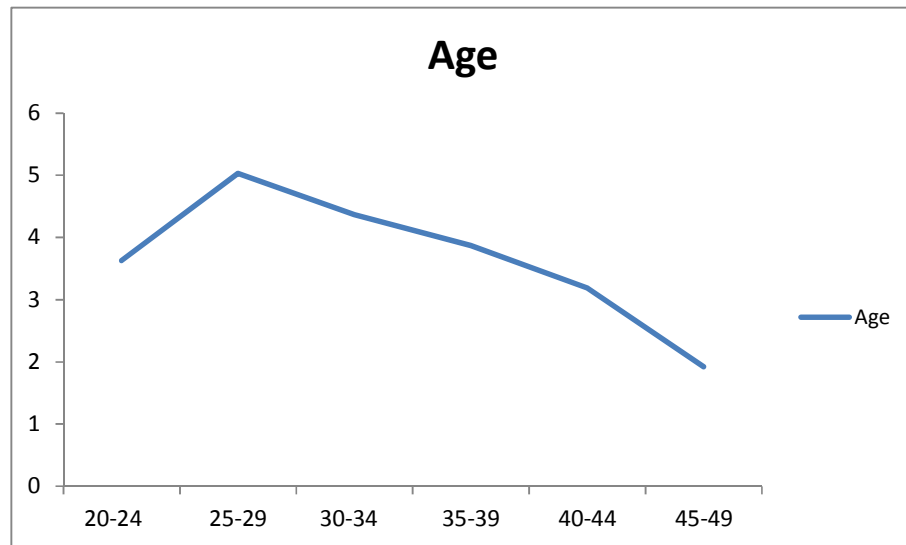
*$\beta_1, \beta_2, \beta_n$ =Logistic Regression coefficient of  $X_1, X_2, X_n$*

*$X_1, X_2, X_n$ = Independent variables*

*Exp=Exponential Value*  
*n=the number of predictors (independent variables)*

In this paper, odds ratios were adopted. These (Odds ratios) represent a constant effect of a predictor X (independent variable) on the likelihood that one outcome will occur. In other words, the exponential function of the regression coefficient ( $e^{b1}$ ) is the odds ratio associated with a one-unit increase in the exposure (independent variable). The results obtained from this analysis presented in the following graphs and tables:

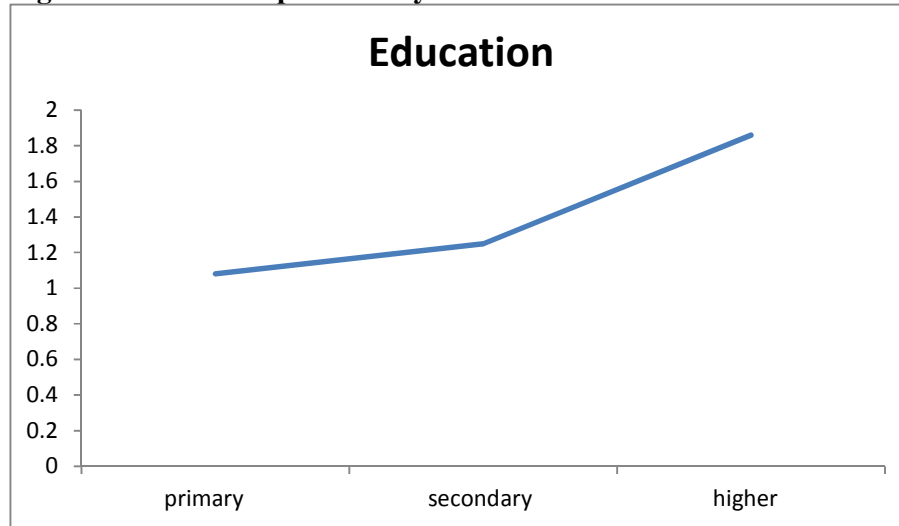
**Figure 4.2: Contraceptive use by age- odds ratios**



Source: 2007 ZDHS Dataset

From figure 4.2 above, it can be clearly observed that the odds of women to use modern contraceptives with reference to age 15-19 were higher for the women in the age group 25-29 in 2007. The results of the odds show that women in age group 25-29 are about 5 times more likely to use modern contraceptives than women in the age group 15-19. The odds drop after age group 25-29 to as low as 1.92 odds for the age group 45-49. However, the odds of using modern contraceptives in all ages are still statistically significant. Therefore, modern contraceptive use differs between age groups with reference to age group 15-19. The results obtained show that age accounts for about 4.5 percent variations ( $R^2$ ) in current use of modern contraceptives.

**Figure 4.3: Contraceptive use by education- odds ratios**



Source: 2007 ZDHS Dataset

The findings in figure 4.3 show that odds ratio of women to use modern contraceptive increases with increase in education level. The figure further shows that the odds of women with “higher” education, to use modern contraceptives with reference to those with no education is 1.86 implying that women with higher education are almost twice as likely to use contraceptives compared to women with no education. It is interesting to note however, that the odds of those with primary education with reference to those with no education is statistically non-significant (P-value=0.325). However, only about 0.3 percent variation ( $R^2$ ) in modern contraceptive use can be explained by education.

The other background variables were also regressed with modern contraceptive use and their results of the odds ratios are shown in Table 4.5:

**Table 4.5: Contraception use by selected background characteristics**

Explanatory Variables	Odds ratio	P-value
<b>Residence</b>		
Urban	1.33	0.00
Rural	(RC)1.00	RC
R <sup>2</sup>	0.34%	
<b>Marital Status</b>		
Never Married	(RC)1.00	RC
Currently Married	4.14	0.00
Formerly Married	1.81	0.00
R <sup>2</sup>	5.3%	
<b>Employment</b>		
Unemployed	(RC)1.00	RC
Professional employment	2.58	0.00
Informal employment	1.36	0.00
R <sup>2</sup>	0.74%	
<b>Fertility preference</b>		
no more	1.31	0.00
undecided	0.82	0.068
Another	(RC)1.00	RC
R <sup>2</sup>	0.36%	
<b>Wealth quintile</b>		
Poorest	(RC)1.00	RC
Poorer	0.81	0.03
Middle	0.78	0.01
Richer	1.23	0.01
Richest	1.35	0.00
R <sup>2</sup>	0.84%	

Source: 2007 ZDHS Dataset

With regard to residence, Table 4.5 shows that the odds of women to use modern contraceptives in urban areas, is 1.3 with reference to rural areas. This implies that those in urban areas are 30 percent more likely to use contraceptives than those in the rural. The variation in contraceptive use due to residence is 0.3 percent (R<sup>2</sup>). However, residence is statistically significant in explaining the difference in modern contraceptive use.

The table further shows that the odds of married women (4.14) to use modern contraceptives with reference to those never married is about 4 times. Women formerly married are almost twice more likely to use contraceptives than those never married. The table further shows that modern contraceptive use varies significantly with reference to marital status. The variation ( $R^2$ ) in modern contraceptive use due to marital status accounts for 5.3 percent.

In addition, Table 4.5 shows that odds ratio to use modern contraceptives of women with professional employment is 2.58 with reference to women with no employment. This indicates that women with professional employment are almost three times more likely to use contraceptives than those with no employment. It is observed that those with informal employment are 36 percent more likely to use contraceptives than those with no employment. Hence there are statistical differences in modern contraceptive use in employment categories with reference to the unemployed. Therefore, it is statistically evident that modern contraceptive use varies with employment levels.

Table 4.5 also shows that odds ratio to use modern contraceptives of women who do want another child is 1.31 with reference to those who want another. Thus women who do not want another child are 31 percent more likely to use contraceptives than those who want another. However, it is interesting to note that those who are undecided were less likely to use contraceptives than those who want to have another, as the odds are 0.82. This is probably because they are undecided and thus are also undecided on whether to use or not. The relation between the two categories is statistically non-significant as the P-value (0.06) is greater than 0.05. The variation ( $R^2$ ) in contraceptive use due to fertility preference is 0.4 percent.

Regarding wealth quintile, the reference category was the poorest class as women in this category are expected to have less contraceptive usage compared to the other categories, as they probably may not have the means to access contraceptives. However, it is interesting to note that women in the poorer and middle categories are less likely to use contraceptives as both their odd ratios are less than 1.00, being 0.81 and 0.78 respectively. This means that women in the middle and poorer categories are less likely to use contraceptives than women in the poorest category. Women in the richest category are 35 percent more likely to use contraceptives than those in the poorest category. However, there are statistical significant differences in the odds of women to

use contraceptives in all classes with reference to the poorest category, at  $P < 0.05$ . Variation in modern contraceptive use due to wealth quintile is 0.8 percent ( $R^2$ ).

#### **4.5.2 Logistic regression**

In this section, results from a logistic regression analysis presented where, all variables were entered into the model and variables tested for significance at  $p < 0.05$  (5 percent) level in all the categories. This was done by first categorizing independent variables into basic variables (age, residence), underlying variables (education, employment and wealth) and immediate or proximate variables (marital status and fertility preference), based on the conceptual framework used in the study. Basic variables were firstly fitted into the model, then the intermediate variables and finally the proximate variables were added and observations based on the behaviour of the variables were made. The log likelihood ratio statistics were also observed in model fitting.

##### **4.5.2.1 Model 1: basic variables**

Two basic variables were identified; residence and age. These are variables that affect the dependent variable through other variables which are more directly related to the dependent variable. These were fitted on the model as follows:

$$1. \text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{residence}$$

$$2. \text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{residence} + \beta_2 \text{age}$$

The results obtained from the above manipulation of variables are shown in the proceeding table:



**Table 4.6: Contraceptive use by Basic variable**

Variables	Model	
	1	2
<b>Residence</b>		
Rural	(RC)1.00	(RC)1.00
Urban	1.33	1.43
<b>Age</b>		
15-19		(RC)1.00
20-24		3.69*
25-29		5.18*
30-34		4.57*
35-39		4.09*
40-44		3.34*
45-49		1.99*

\* Significant at P<0.05

Source: 2007 ZDHS Dataset

Table 4.6 shows the results obtained when residence and age are regressed with modern contraceptive use. It is clearly observed in the table above that, the odds to use modern contraceptives in urban increases with reference to rural when age is introduced. Similarly, the odds in age have also increased compared to when regressed as a single variable with modern contraceptive (refer to Table 4.4). This simply implies that age enhances the influence of residence on modern contraceptive use and vice versa. In the above table, both variables are significant at P<0.05. The variables, residence and age account for 5.1 percent ( $R^2$ ) variation in modern contraceptive use.

#### 4.5.2.2 Model 2: basic and intermediate variables

##### Intermediate variables

Three intermediate variables identified to influence modern contraceptive use include: education, employment and wealth quintile. The following analysis shows the behaviour of the dependent variable with different intermediate variables

1.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{education}$
2.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{education} + \beta_2 \text{employment}$
3.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{education} + \beta_2 \text{employment} + \beta_3 \text{wealthquintile}$

Table 4.7 shows the results from the above regression:

**Table 4.7: Contraceptive use by intermediate variables**

Intermediate variables	Model		
	1	2	3
<b>Education</b>			
No education	(RC)1.00	(RC)1.00	(RC)1.00
Primary	1.08	1.10	1.04
Secondary	1.25*	1.32*	1.04
Higher	1.89*	1.40*	0.99
<b>Employment</b>			
Unemployed		(RC)1.00	(RC)1.00
Informal employment		1.40*	1.45*
Professional		2.22*	2.21*
<b>Wealth quintile</b>			
Poorest			(RC)1.00
Poorer			0.82*
Middle			0.81*
Richer			1.32*
Richest			1.38*

\* Significant at P<0.05

Source: 2007 ZDHS Dataset

Table 4.7 above shows logistic regression of intermediate variables and how they influence each other with regard to modern contraceptive use. As observed, the odds of using modern contraceptive reduces for those with higher education, while it increases for those with primary and secondary level of education with reference to those without education, when employment is introduced in the regression. The odds of using contraceptive for those with professional employment also reduce from 2.6 (refer to Table 4.5) to 2.2 in the table above when regressed with education; therefore, education explains the influence of employment on modern contraceptive use and vice versa.

When wealth quintile is introduced, the odds of using contraceptives reduce for all education categories. This shows that wealth quintile can be used to explain variability in modern contraceptive due to education. It is however, interesting to note that education is now statistically insignificant when wealth quintile is added to the regression. This indicates that the influence of education on modern contraception is

simply due to wealth levels. The variable is however, not dropped though, as it may change with the introduction of more variables in the regression.

With regard to employment, there is a very slight change in odds for those with professional employment. However, the odds of using contraceptives increase for those in informal employment with reference to the unemployed. Therefore, wealth quintile enhances the influence of informal employment on modern contraceptive use.

Nevertheless, both education and employment enhance the influence of wealth quintile on modern contraceptive use. This is because the odds of wealth quintile increase when the variable is regressed with the two former variables (refer to table 4.7) compared to when it is regressed (refer to table 4.4) as a single variable.

### **Basic and intermediate variables**

The following shows the influence of basic variables on modern contraceptive use when the intermediate variables are introduced to the model.

1.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{residence}$
2.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{residence} + \beta_2 \text{age}$
3.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{residence} + \beta_2 \text{age} + \beta_3 \text{education}$
4.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{residence} + \beta_2 \text{age} + \beta_3 \text{education} + \beta_4 \text{employment}$
5.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{residence} + \beta_2 \text{age} + \beta_3 \text{education} + \beta_4 \text{employment} + \beta_5 \text{wealthquintile}$

The results obtained from the above models are shown in table 4.8:

**Table 4.8: Contraceptive use by basic and intermediate variables**

Variables	Model				
	1	2	3	4	5
<b>Residence</b>					
	(RC)1.00	(RC)1.00	(RC)1.00	(RC)1.00	(RC)1.00
Rural					
Urban	1.33*	1.43*	1.31*	1.32*	0.95
<b>Age</b>					
		(RC)1.00	(RC)1.00	(RC)1.00	(RC)1.00
15-19					
20-24		3.69*	3.75*	3.65*	3.72*
25-29		5.18*	5.33*	5.11*	5.19*
30-34		4.57*	4.78*	4.52*	4.53*
35-39		4.09*	4.30*	4.05*	4.09*
40-44		3.34*	3.54*	3.31*	3.32*
45-49		1.99*	2.13*	1.98*	1.97*
<b>Education</b>					
			(RC)1.00	(RC)1.00	(RC)1.00
No education					
Primary			1.12	1.12	1.09
Secondary			1.38*	1.36*	1.21
Higher			1.34*	1.03	0.85
<b>Employment</b>					
				(RC)1.00	(RC)1.00
Unemployed					
Informal					
employment				1.11	1.77
Professional				1.81*	1.12*
<b>Wealth quintile</b>					
					(RC)1.00
Poorest					
Poorer					0.82*
Middle					0.80*
Richer					1.39*
Richest					1.50*

\* Significant at P&lt;0.05

Source: 2007 ZDHS Dataset

From table 4.8 above, it can be noted that the intermediate variables can be used to both explain and enhance the influence of residence and age on modern contraceptive use, as shown by the change in the odds ratios. When education is introduced in the regression model, the odds ratio of using modern contraceptive in urban areas reduces. This implies that education can be used to explain the differences in modern contraceptive use in rural and urban areas. However, the odds ratios in different age groups increase

implying that education enhances the influence of age on modern contraceptive use. On the other hand, employment explains the influence of both residence and age on modern contraceptive use. As observed, wealth quintile also explains the influence of residence on modern contraceptive use as the odds in residence decrease. This shows that differences in contraceptive use between rural and urban areas can be explained by wealth quintile. However, wealth quintile enhances the influence of age as the odds ratio increase, holding other variables constant. This is because the odds ratio to use modern contraceptive in age categories increase when wealth quintile is introduced. This model accounts for 5.9 percent ( $R^2$ ) variations in modern contraceptive use.

#### 4.5.2.3 Model 3: basic, intermediate and proximate Variables

##### Proximate variables

Two proximate variables identified were fertility preference and marital status. These are variables that affect modern contraceptive directly. They were fitted on the following model:

$$1. \text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{fertility preference}$$

$$2. \text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{fertility preference} + \beta_2 \text{marital status}$$

The following table shows the results obtained from the above fitting:

**Table 4.9: Contraceptive use by proximate variables**

Variables	Model	
	1	2
<b>Fertility Preference</b>		
Another	(RC)1.00	(RC)1.00
No more	1.31*	1.08
Undecided	0.82*	0.93
<b>Marital status</b>		
Never married		(RC)1.00
Currently married		4.03*
Formerly married		1.73*

\* Significant at  $P < 0.05$

Source: 2007 ZDHS Dataset

Table 4.9 shows the influence of fertility preference and marital status on modern contraceptive use. The variable is significant at 0.05 confidence level. The odds of using contraceptives are higher (1.31) among those that do not want to have children anymore while among those undecided are lower (0.82) with reference to those that

want another child. However, when another variable, marital status is added, the odds for those that do not want to have another child, drop from 1.31 to 1.08. This therefore, implies that marital status can be used to explain the influence of fertility preference on modern contraceptive use and vice versa. It can be noted that fertility preference becomes statistically insignificant when marital status is introduced. The variation in modern contraceptive use due to marital status and fertility preference accounts for 5.3 percent.

### **Basic, intermediate and proximate variables**

The following equations show how all the variables fit in the regression model and Table 4.10 shows the results obtained. The statistical significance of the exponentiated odds was established based on the observed p-value.

1.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{residence}$
2.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{residence} + \beta_2 \text{age}$
3.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{residence} + \beta_2 \text{age} + \beta_3 \text{education}$
4.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{residence} + \beta_2 \text{age} + \beta_3 \text{education} + \beta_4 \text{employment}$
5.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{residence} + \beta_2 \text{age} + \beta_3 \text{education} + \beta_4 \text{employment} + \beta_5 \text{wealthquintile}$
6.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{residence} + \beta_2 \text{age} + \beta_3 \text{education} + \beta_4 \text{employment} + \beta_5 \text{wealthquintile} + \beta_6 \text{fertility preference}$
7.  $\text{logit}(\text{modern contraceptive use}) = \beta_0 + \beta_1 \text{residence} + \beta_2 \text{age} + \beta_3 \text{education} + \beta_4 \text{employment} + \beta_5 \text{wealthquintile} + \beta_6 \text{fertility preference} + \beta_7 \text{maritalstatus}$

**Table 4.10: Contraceptive use by background variables**

Variables	Model						
	1	2	3				
<b>Residence</b>							
	(R C) 1	(R C)1	(R C)1	(R C)1	(R C)1	(R C)1	(R C)1
Rural	.00	.00	.00	.00	.00	.00	.00
	1.3	1.3	0.9	0.9	0.9	0.9	0.9
Urban	43*	1.3*	1.3*	0.9	0.9*	0.9	0.9
<b>Age</b>							
	(R C)	(R C)1	(R C)1	(R C)1	(R C)1	(R C)1	(R C)1
15-19	.00	.00	.00	.00	.00	.00	.00
20-24	3.69*	3.7*	3.6*	3.7*	3.6*	3.6	1.9
25-29	5.18*	5.3*	5.1*	5.1*	4.9*	2.3	0
30-34	4.57*	4.7*	4.5*	4.5*	4.1*	1.8	6*
35-39	4.09*	4.3*	4.0*	4.0*	3.5*	1.5	6*
40-44	3.34*	3.5*	3.3*	3.3*	2.7*	1.2	6
45-49	1.99*	2.1*	1.9*	1.9*	1.6*	0.7	1
<b>Education</b>							
	(R C)	(R C)	(R C)	(R C)	(R C)	(R C)	(R C)
No education	.00	.00	.00	.00	.00	.00	.00
Primary	1.12	1.12	1.09	1.08	1.07	1.07	1.07
Secondary	1.38*	1.36*	1.21	1.20	1.39*	1.39*	1.39*
Higher	1.34*	1.03	0.85	0.86	1.17	1.17	1.17

<b>Employment</b>				
	(R C)	(R C)	(R C)	(R C)
	1. 00	1. 00	1. 00	1. 00
Unemployed				1. 00
	1. 11	1. 12	1. 12	15 *
Informal employment				1. 72
	1. 81	1. 77	1. 76	1. 72
Professional				*
<b>Wealth quintile</b>				
		(R C)	(R C)	(R C)
		1. 00	1. 00	1. 00
Poorest		0. 82	0. 81	0. 84
Poorer		*	*	
		0. 80	0. 79	0. 79
Middle		*	*	*
		1. 39	1. 37	1. 41
Richer		*	*	*
		1. 50	1. 50	1. 68
Richest		*	*	*
<b>Fertility Preference</b>				
		(R C)	(R C)	(R C)
		1. 00	1. 00	1. 00
Another		1. 24	1. 30	1. 30
No more		*	*	*
		0. 86	0. 95	0. 95
Undecided				
<b>Marital status</b>				
				(R C)
				1. 00
Never married				3. 84
Currently married				*
				1. 57
Formerly married				*



Iteration 0: log likelihood = -4026.6656  
 Iteration 1: log likelihood = -3680.7881  
 Iteration 2: log likelihood = -3662.7547  
 Iteration 3: log likelihood = -3662.6491  
 Iteration 4: log likelihood = -3662.6491  
 \* Significant at P<0.05.  
 Source: 2007 ZDHS Dataset

Table 4.10 shows the regression of all independent variables with modern contraceptive use. The third model shows the change in odds of the basic and intermediate variables when fertility preference and marital status are added to the regression. Both fertility preference and marital status can be used to explain the influence of basic and intermediate variables on modern contraceptive use. In the final model, difference in contraceptive use in urban and rural areas is statistically non-significant.

With regard to age, the odds in age groups have dropped in the last model. For instance, Table 4.10 shows that those aged 25-29 are now only about twice (2.3) from the initial five times, more likely to use modern contraceptives with reference to those aged 15-19. However, the differences among the different age categories are still statistically significant, except for the older age groups 40-44 and 45-49.

Regarding education, the odds ratios have dropped among the different education categories when all other variables are put in the model. However, the drop in the odds ratios is not significant. Of interest, are the results obtained when fertility preference is added. Table 4.10 shows that the likelihood to use modern contraceptives for women with higher education with to those without education is 0.86. It is also noted that the odds increased for those with informal employment and reduced for those with professional employment when marital status is introduced. Table 4.10 shows that odds of fertility preference increase with those who do not want to have another child being 1.30 times more likely to use modern contraceptives while those who are undecided (0.95) are almost as much likely to use contraceptives as those who want another.

The final results for model three are shown in the last column of Table 4.10 with all variables added to the regression. This shows the influence of individual variables controlling for other variables within the model. The model shows that marital status explains the differences in contraceptive use with regard to age and residence. Therefore, the higher contraceptive use in older ages (25-34) earlier observed could be explained by the possibility that most women in these ages are likely to be married than

those in the younger ages (<25). Similarly, the influence of residence on modern contraceptive use can be explained by differences in marital status. The table shows that there is almost no difference in modern contraceptive use between urban and rural areas given marital status. The final model explains 9.2 percent ( $R^2$ ) variations in modern contraceptive use.

## **CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS**

This section discusses the findings of the study. These are discussed according to the analysis performed, that is; univariate, cross tabulations and binary logistic regression (odds ratio). The section further provides the conclusion and recommendations based on the results.

### **5.1 Knowledge and contraceptive use**

From the results obtained, it is evident that there is a statistically significant relationship between knowledge of contraceptive method and contraceptive use among women in Zambia. The level of knowledge of modern contraceptive is high among women in Zambia, 96.8 percent (CSO, 2009). However, high knowledge does not result in high usage of contraceptives because it was observed that only about 25.9 percent of those who know modern contraceptives actually use them. In a related study conducted in Nigeria by Odusina E.K. (2012), it was also observed that high level of knowledge about contraceptive methods does not translate into high contraceptive use. Varied reasons could be attributed to this disparity. The bio-demographic, socio economic factors were therefore investigated and observed as discussed in the paragraphs that follow.

### **5.2 Bio-demographic factors and contraceptive use**

The bio-demographic factors that were investigated include: age, marital status and fertility preference. In the bivariate analysis, age was found to be significantly influencing contraceptive use. Women in the age group 25-29 are found to be more likely to use contraceptives than any other age group. In a broader age group, the results show that women aged 20-39 are more likely to use contraceptives. This is in line with what was observed in a similar study conducted in Kenya which showed that contraceptive use was highest among women aged 20-39 compared to those below 20 years and above 39 (Okech C. 2011). This could possibly be due to economic reasons such as people in this age group may be concentrating more on economic empowerment and would therefore be postponing births. It could also be an indication that women in the younger age group have a high desire for children, hence the low use of

contraceptives. The low use at older ages could be attributed to the fact that women in this age group are at low risk of pregnancy, probably due to widowhood or divorce, thereby engage less frequently in sexual activities. The 2007 ZDHS shows that most people (above 60 percent) who were sexually active within the past 4 weeks preceding the interview were in the age group 25- 39, beyond which the percentage starts to decline below 60 percent (CSO, 2009:99).

Another demographic variable of interest considered in this study was marital status. The results obtained clearly show that contraceptive use is high among married women than among other categories. This is in line with observational studies earlier mentioned in Okechi's study in which it was also observed that most women using contraceptives were married. This could be attributed to the fact that married women have high incidences of sexual activities (coital frequency) compared to women in the other marital categories. This is evidenced with the data collected in Zambia 2007 on coital frequency (CSO, 2009:99). The 2007 ZDHS shows that 79 percent of the married women had been sexually active in the last four weeks prior to the interview, while only 17 percent and 10 percent of the formerly and never married women respectively, had been sexually active; married women therefore, have a high demand to space and limit births.

Fertility preference was another variable of interest. According to the findings in this study, contraceptive use was highest among women who did not want to have any more children and lowest among those undecided. In a related study in Kenya, out of those with a desire to have children, only 11 percent were using contraceptives while 89 percent were not (Okech et.al; 2011).

### **5.3 Socio-economic factors and contraceptive use**

The socio-economic factors considered in this study include: residence, education, employment and wealth quintile.

Despite the differences in accessing health facility in urban and rural areas in Zambia, the findings in this study show that residence has no influence on contraceptive use once other variables were controlled for. Therefore, there's no difference in accessing contraceptives between rural and urban areas in Zambia. The findings in a similar study conducted in Kenya by Ettar R.R. and Kyobuntungi C. (2012) shows that women

resident within 5 km or less to the nearest health facility were 26 percent more likely to use contraceptives than those resident at distances more than 5km from the health facility.

Regarding education, it was observed that contraceptive use increases with increase in education level. Contraceptive use was found to be highest among women with higher education. This could be attributed to the fact that in attaining high education, women in this category delay child bearing and postpone it to a later stage. This shows that there is high demand to use contraceptives in order to achieve high education, reducing the demand for children as children may be perceived as an opportunity cost of time spent raising them. These findings are substantiated with the findings of the study conducted in Malawi in 2013 using data from the 2000 and 2004 Malawi demographic and health survey (Palamuleni M.E 2013). This is further backed up with the study in Ethiopia, in which it was concluded that there were strong associations between women's education and contraceptive use (Beekle and McCabe, 2006). Education of women may also increase women's knowledge and access to a varied contraceptive methods; they are therefore, more likely to use contraceptives than uneducated women, all other factors being constant.

However, the relationship between education and contraceptive use becomes insignificant when wealth is introduced as observed in Table 4.7. This is in line with the findings of Heeks who argues that household wealth is an intermediate variable between education and contraceptive use (Heeks, 2008:12). This therefore, implies that the influence of education on contraceptive use is due to differences in wealth quintile. Thus contraceptive use is as a result of wealth rather than education. This is somewhat true as the more educated are more likely to be wealthier.

The findings of this study with reference to wealth quintile support the above assertion. Women were divided in five categories: poorest, poorer, middle, richer and richest. As expected, it was observed that there is high contraceptive use among women in the richest category (30.1 percent) compared to women in the other categories. It was however, interesting to observe that women in the middle category have the lowest use of contraceptives. A further analysis of odds ratio shows that women in the richest category are 1.35 times more likely to use contraceptives with reference to the poorest.

This is not surprising as women in this category are expected to have the means to access any methods of contraceptives.

In the richest category, women opt for fewer children because in this category, children are economically seen as a cost. This is consistent with the Easterlin and Crimmins fertility model which, among the three immediate determinants of the demand for children includes: income (increased demand for quality rather than simply increased quantity) and prices (or costs of children) (Easterlin, R. A. and E.C. Crimmins, 1985). In this model, families with a higher income have fewer children as they are interested in having quality children, a number that they are able to fully financially support.

Another variable of interest was employment. As expected, contraceptive use is high among women with professional employment. The results show that 41.2 percent of the women with professional employment use modern contraceptives compared to 27.3 percent and 21.5 percent for women with informal employment and those unemployed respectively. This is probably because women in this category can afford any contraceptive as they are likely to have a higher income compared to women in other categories. Women in this category are also likely to keep themselves busy with work and thus will have little or no time to care for their children, hence the use of contraceptives to prosper in their careers. However, women in the other two categories are likely to be housewives and hence have more time to take care of their children. This could also be ascribed to the fact that women with professional employment are more likely to be educated, implying more wealth and therefore most likely to use contraceptives than otherwise.

Other studies have shown similar results. The assertions above are in line with the findings of Gordon C. et.al (2011). They observed that during their productive years in the labour market, coupled with high education, women with professional employment demand less children because of the foregone income that rearing children entails, hence the high demand for contraceptive use. Women in this category are also expected to have higher income to purchase more effective contraceptives. In a related study in Malawi, earlier mentioned, the results showed that women who are not working were 1.26 times less likely to use contraceptives than women who are working (Palamuleni 2013).

The multivariate analysis of the variables was done in three parts with reference to the variable categories: proximate variables, intermediate variables and basic variables. The final model accounts for 9.2 percent variations in contraceptive use at 95 percent confidence level.

The findings from multivariate analysis shows that there are strong associations between marital status and contraceptive use, as the power of the odds ratios for the currently married are higher than for any other variable. This is expected as women in this category have a high coital frequency than the never married and formerly married, as earlier indicated. However, contraceptive use is still influenced by other social demographic factors regardless of the marital status. The regression results show that education is also an important variable especially for those with higher education. Employment status highly affects contraceptive use as the power of the odds increase regardless of the variable introduced; therefore, variation in contraceptive use due to employment status is enhanced by other variables.

Another variable of interest was fertility preference. The bivariate analysis showed that the variable is statistically significant in explaining the variations in modern contraceptives. When it is regressed with other variables however, fertility preference becomes statistically insignificant. Residence is not significant to the model and therefore, cannot be used to explain any variations in contraceptive use, as it works through other variables. The differences in contraceptive use in urban and rural areas can be attributed to socio-economic variables such as education and women's employment status. This is because more educated women are found in urban areas and so are women in professional employment. Women in these two categories are expected to be wealthier. The results show that much variation in modern contraceptive in this study can be attributed to employment, wealth quintile, age and marital status.

## **Conclusions**

This study has examined selected factors associated with contraceptive use in Zambia using data obtained in the 2007 Zambia Demographic Health Survey. Earlier in this study, the conceptual framework stated that basic variables (residence and age) influence modern contraceptive through social economic variables which are (education, employment and wealth quintile). These in turn work through immediate

variables which include fertility preference and marital status. However, findings in this study have identified six variables as important explanatory variables in modern contraceptive use which are: marital status, fertility preference, employment, wealth quintile, education and age. Among these, marital status is the major variable that can be used to explain variation in modern contraceptive use as the odds ratios in the marital status categories are higher than that of any other variable in the regression model.

The results have also shown that modern contraceptive use increases as education level of women increases. However, variation in contraceptive use is due to wealth rather than education. These findings further indicate that education is a basic variable that works through wealth quintile and not an intermediate variable, as earlier stated in the conceptual framework.

The analysis also shows strong associations between employment and contraceptive use, indicating that economic empowerment of women significantly affects contraceptive use. Another important conclusion is with reference to age which indicates that contraceptive use increases with increase in age and hence provides the age group that requires effective interventions. The last model however, shows that residence is insignificant when regressed with all variables; it is therefore dropped from the model.

The findings also show that there is a strong relationship between age and modern contraceptive use compared to other variables as the variations due to age is 4.5 percent. This means that age the second strongest relationship after marital status which accounts for 5.3 percent. The model shows that age is an immediate variable. Nevertheless, most of the variables have been proven to influence modern contraceptive use as they are statistically significant in the regression model.

## **Recommendations**

In light of the findings in this study, the following recommendations have been made.

- It is very important that the government ensures that all women attain at least secondary level of education, as one effective way of increasing modern contraceptive use in Zambia. This is because the results show that women with secondary level of education are more likely to use contraceptives and the relationship between secondary



education and modern contraceptive use is statistically significant. Therefore, already existing programs aimed at improving girl child education should be enhanced and strengthened in both rural and urban areas. This will enable more women to be knowledgeable about contraceptive methods and also effectively use them.

- It is also important to put up family services targeting women in the 15-19 year age group as these have the lowest use of contraceptive probably due to low access to contraceptives. Hence institutions like Society for Family Health, Planned Parenthood Association of Zambia should give particular attention to this age group. This age group should have family planning services separate from the older age groups to make them user friendly.
- The government may consider introducing family planning services in schools, preferably in secondary schools as this will help teenagers have easy access and knowledge on contraceptive use and various methods available. This will avoid mixing family planning services with other services such as maternal health that probably make people shun away to use the services.
- The government should aim at policies that emphasize on the benefit and the need for smaller family sizes.
- Further investigations on factors associated with contraceptive use should be done to ascertain the association of other variables.

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