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REMOVAL OF FINANCIAL BARRIER ON CONTRACEPTIVE USE FOR WOMEN; A CASE STUDY OF GA-WEST MUNICIPALITY

BY

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THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA-LEGON, IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE MASTER OF PHILOSOPHY (MPHIL) DEGREE IN ECONOMICS

JULY, 2015

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DECLARATION

This is to certify that this thesis is the result of research undertaken by Charlotte Esenam Afudego (Mrs.), towards the awards of the Master of Philosophy (MPHIL) degree in Economics at the Department of Economics, University of Ghana.

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ABSTRACT

Access to safe and effective family planning services and contraception empowers women to have more control over when to have children and lessens the incidence of unsafe abortions that may lead to deaths. Among socio-economic factors that influence contraceptive use and its choice, price is a likely factor which has not been fully explored in most researches. Thus removing all possible barriers from contraceptive use may help achieve Millennium Development Goals (MDGs) 4 and 5.

This study sought to investigate whether price significantly determines the use as well as choice of contraceptives. Choice of contraceptives indicates whether the individual who uses contraceptives, uses the modern or traditional method. A total of 360 women in their reproductive age were interviewed from five (5) health facilities in the Ga-West Municipal Assembly in Greater Accra Region. Logistic regressions were used in determining whether price among other socio-economic variables influences the use of contraceptives. The Multinomial Logistic Regression (MLR) was also used to determine whether the price among other socio-economic variables determines the choice of contraceptives.

The findings indicate that both direct price of commodity as well as indirect prices such as time used in accessing services or the opportunity cost have significant effects on the use of contraceptives. Thus an increase in price would lead to a decline in the use as well as choice of contraceptive methods. The total respondents of women not using contraceptives in the municipality accounted for 45.3% whilst users accounted for 54.7%,

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the main reason that accounted for the lack of use is associated with the fear of side effects.

Based on the findings, it is recommended that Government takes adequate measures in scraping off the price attached to the use of these methods so as to ensure universal accessibility. Also, awareness should be intensified on the different methods and their suitability to an individual so as to allay fears of adverse side effects of family planning.

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DEDICATION

I dedicate this work to my supportive husband and best friend, Dr. David Afudego and to my children Mawuena Makafui Afudego and Elikem Bubune Afudego, for the inspiration and encouragement they have provided throughout this entire period.

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ACKNOWLEDGEMENT

I would like to acknowledge and thank God Almighty for His grace and faithfulness in Christ Jesus that has carried me successfully through this master's programme. My second appreciation goes to my Supervisors Dr. E. Nketiah-Amponsah and Dr. Mrs.N. Owoo for their invaluable contributions and supervision.

Special thanks go out to my parent-in law and sibling-inlaw for their immense encouragement, prayers and support. My parents and sibling as well as my foster children, Hosenyo Dzatey and Mary Santey also deserve a good appreciation for all their help and support in diverse ways.

My appreciation also goes out to the Municipal Health Directorate of Ga-West District Assembly particularly the Information Desk Officer, Mr. Matin Oppong and all the staff of health facilities and Family Planning Units visited in the Municipality.

Special thanks go to all my friends, loved ones and Sunday School children who supported me in diverse ways in the pursuit of my master's degree especially Salma Issa,as well as those in the Economics Department who provided great support to my thesis, particularly Mr. Emmanuel Abbey.

Finally, I wish to take full responsibility for any unintentional errors or omissions or misrepresentations that may be found in this work.

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ABBREVIATIONS

AIDS:	Acquired Immune Deficiency Syndrome
ANC:	Antenatal Care
CARMMA:	Campaign to Accelerate Reduction of Maternal Morality in Africa
CEDAW:	Convention of the Elimination of all forms of Discrimination Against Women
CHAG:	Christian Health Association of Ghana
CHOs:	Community Health Officers
CPR:	Contraceptive Prevalence Rate
CYP:	Couple-year of Protection
DHS:	Demographic and Health Survey
EmONC:	Emergency and Obstetrics New-born Care
GDHS:	Ghana Demographic and Health Survey
GHS:	Ghana Health Service
GLSS:	Ghana Living Standard Survey
GoG:	Government of Ghana
GRMA:	Ghana Registered Midwives Association
GSMF:	Ghana Social Marketing Foundation
ICC/CS:	Inter-agency Coordinating Committee for Contraceptive Security
ICESCR:	International Covenant on Economic, Social and Cultural Rights
ICPD:	International Conference on Population and Development
ILA:	Independence of Irrelevant Alternatives
IUD:	Intra-uterine device
JHS:	Junior High School
LAM:	Lactational amenorrhoea

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LDCs:	Least Developed Countries
LEKMA	Ledzokuku Krowor Municipal Assembly
MDGs:	Millennium Development Goals
MLE:	Maximum Likelihood Estimation
MLR:	Multinomial Logistic Regression
MMR:	Maternal Mortality Ratio
MoH:	Ministry of Health
MSIG:	Marie Stopes International Ghana
NDHS:	Nigeria Demographic and Health Survey
NGOs:	Non-Governmental Organisations
NHIS:	National Health Insurance Scheme
OLS:	Ordinary Least Square
PPAG:	Planned Parenthood Association of Ghana
RTI:	Reproductive Tract Infections
SRH:	Sexual Reproductive Health
STIs:	Sexually Transmitted Infections
SWAp:	Sector- wide Approach
TBAs:	Traditional Birth Attendants
TFR:	Total Fertility Rate
UNFPA:	United Nations Fund for Population Activities
UNICEF:	United Nations Children Emergency Fund
WAPCAS:	West African Project to Combat AIDS and STIs
WHO:	World Health Organisation
WIFA:	Women in Fertility Age

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CHAPTER ONE

INTRODUCTION

1.0 Introduction

Ensuring universal access to Sexual and Reproductive Health (SRH) services and information is essential for achieving many, if not all, of the Millennium Development Goals (MDGs), especially those on maternal health, child survival, HIV and AIDS and gender equality. Access to safe and effective family planning services and contraception empowers women to have more control over when to have children and lessens the incidence of unsafe abortions. Also, contraception like condoms can help reduce the transmission of STIs, including HIV. Hence services and treatments must be affordable and based on the principle of equity.

Nordqvist (2009) defines contraception as the use of various devices, drugs, agents, sexual practices or surgical procedures to prevent conception or pregnancy. Thus contraceptives are usually used by women for family planning and birth spacing and are among the most cost-effective health interventions because they are closely related to maternal and infant health and survival (Benagiano et. al., 2007). Contraceptive methods are usually classified as either modern or traditional. The 2008 Ghana Demograhpic and Health Survey (GDHS) classifies modern methods of contraception to include female and male sterilization, oral hormonal pills, the intra-uterine device (IUD), the male and female condom, injectables, the implant, diaphragm, foam jelly, lactational amenorrhoea (LAM) and emergency contraception. Whilst the Traditional methods of contraception on the other hand include rhythm (periodic abstinence), withdrawal, and folk methods.

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Modern methods are usually preferred to traditional methods since traditional methods are more likely to fail than modern methods. Thus the efficacy rates of modern contraception are higher than that of traditional particularly in preventing unintended pregnancies, this accounts for why modern methods are promoted by family planning programs which are among the main consumers of research on demand for and use of contraception (Westoff, 2012). Hence in a study on the effects of preceding birth intervals on neonatal, infant and under-five mortality in developing countries, Rustein (2005) describes modern contraception as more than a technical advance since it has caused a genuine "reproductive revolution" and is considered a "social vaccine". It also requires that services are of adequate quality and that providers do not discriminate on the basis of sexuality, gender, ethnicity and age (Creel et al., 2002; Doherty, 2005).

High levels of fertility and unwanted pregnancy persist throughout sub-Saharan Africa, often with dire consequences for women and children. For instance, Singh and Darroch (2012) estimated 80 million unintended pregnancies in the developing world largely because of contraceptive failure and non-use among women who do not want a pregnancy soon. Thus these unintended pregnancies would result in 30 million unplanned births, 40 million abortions and 10 million miscarriages Although the introduction of free maternal health services has helped to alleviate the financial burden of maternal health care on households, it also has the tendencies of rapid growth rate of population since more women are likely to give birth. This outcome is likely to exert greater pressure on social amenities such as education and health and ultimately,government spending.

Modern contraception has played a major role in reducing the world´s total fertility rate, especially in resource-poor settings (Bongaarts, 1997; Stover et al. 2010). Facilitating

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access to modern contraceptives for women has the potential benefit of improving maternal and child health and reducing mortality (Zhu etal., 1999; Benagiano et. al 2007) through lowering the number of unintended pregnancies (Hubacher et al., 2012). In looking at the cost and benefits associated with contraceptive use worldwide, Singh and Darroch (2012)emphasized that the health benefits of contraception use are substantial since they prevent unintended pregnancies, reduce the number of abortions and lower the incidence of death and disability related complications of pregnancy and childbirth. The long-term benefits also include increased education for women and better child health to greater family savings and stronger national economies.

In most resource poor countries, particularly sub- Saharan Africa, modern contraceptive use is especially low and fertility is high, resulting in rapid population growth and high maternal and child mortality and morbidity (Rutstein 2005). However, contraceptive use trends vary between and within countries (Creanga et. al., 2011), making it crucial to examine the effect of local family planning policies and interventions on the most vulnerable women particularly women who are less empowered economically and socially (Mathe, 2011). In Ghana, women and children are the most vulnerable group and form 58.3% of the population (2010 Population Census).

In 1994, the International Conference on Population and Development (ICPD) Programme of Action stressed that ‘family planning programmes should make ‘quality family planning services affordable, accessible, and acceptable to all who need and want them, while maintaining confidentiality’ and ‘in addition to quantitative measures of performance, give more emphasis to qualitative measures that take into account the perspectives of current and potential users of services through such means as effective

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management information systems and survey techniques for the timely evaluation of services' (ICPD,1994).

The 2010 World Health Organisation (WHO) report states that there were an estimated 358,000 maternal deaths globally or a mortality ration of 260 maternal deaths per 100,000 live births, resulting from pregnancy and child-birth related complications. Sub-Saharan Africa and South Asia accounted for 87% (313,000) of global maternal deaths. According to WHO (2010) report, a woman's lifetime risk of dying from pregnancy is 1 in 3700 in North America compared to 1 in 16 in Africa. In Ghana, the risk is 1 in 35.

There are varied reasons as to why maternal mortality remains high in Africa and in Ghana. Ransom (2000) in an article on 'Making Pregnancy Safer' noted that the risk of dying from pregnancy-related causes is highest in Africa because African women have more children than women on other continents and that the risks are greater with each pregnancy. The Ghana Maternal Health Survey (2008), identified haemorrhage as the largest single cause of maternal deaths (24%). Abortion, hypertensive disorders, sepsis, miscarriage and obstructed labour were also cited as causes of maternal death.

Two hundred and five million pregnancies occur annually worldwide, 35 per cent of which are unintended and 22 per cent of which end in induced abortion. Most of these pregnancies (182million) happen in the developing world. Two-thirds of these pregnancies occur among women who are not using any method of contraception, making family planning a significant contributor to maternal health (Prata et al., 2009).

A Sub-Saharan African woman today has a one in 22 lifetime chance of maternal death, and for every 109 births, a woman dies in pregnancy or childbirth (UNICEF, 2009). In

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contrast, among the European and other industrialised nations where women have good access to family planning services, fewer than one in 16, 400 will die of complications of pregnancy and childbirth, an almost 750-fold difference (Maternal Mortality Scorecard, 2007).

Ghana's revised National Population Policy (1994) replaced the 1969 population policy which was first adopted by Ghana. The revised policy providedmuch focus on a systematic integration of population variables into development planning, with a renewed emphasis on fertility reduction through family planning programmes. An important goal of the revised policy was to reduce the Total Fertility Rate (TFR) from 5.5 to 5.0 by the year 2000, to 4.0 by 2010, and to 3.0 by 2020 through increased contraceptive use (National Population Council (1994); National Population Policy (revised edition)). The GDHS (2008) clearly outlined the current contraceptive use among women in the reproductive age (15-49). For instance, the proportion of all women who have ever used any method of contraception increased from 34 percent in 1988 to 50 percent in 2008. Similarly, the proportion of married women who have ever used a modern method increased steadily from 21percent in 1988 to 42 percent in 2008.

Moreover, many governmental and non-governmental organisations in Ghana have become actively involved in the promotion of family planning methods aimed at regulating fertility and enhancing reproductivehealth outcomes. This has helped to improve the knowledge and awareness of contraceptives. Furthermore, the decline in fertility rate over the years although remarkable may not be able to reach its target of 3.0 by 2020. According to the Ghana National Contraceptive Security document (2010), this is to be achieved by attaining a Contraceptive Prevalence Rate (CPR) of 28 per cent by

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2010 and 50 per cent by 2020. The 2008 GDHS indicates that there was a marginal decline in fertility rate from 4.4 in 2003 to 4.0 in 2008, In juxtaposing this outcome to the targets set in the 1994 revised population policy, it could be realised that Ghana is achieving some decline;yet it has to do more in order to achieve the target of 3 percent fertility rate by 2020. This notwithstanding, Pritchett (1994) in a study on desired fertility and population impact, presented two contending views on fertility. One school of thought holds the view that high fertility is in large part, a consequence of inadequate contraception due to the inaccessibility or high cost of contraceptive services, thus placing a heavy emphasis on the mechanistic role of contraception as a direct or proximate determinant of fertility. The other school of thought holds the view that high fertility primarily reflects desired births and that couples are roughly able to achieve their fertility targets. Prichett (1994) in his analysis concludes that the desired children view of fertility is more valid.

However, it is important to note that the effect of contraceptive use goes beyond just fertility reduction, to improving maternal health outcomes thus reducing morbidity and mortality. Hence the unmet need for contraceptive services may provide a great obstacle in meeting the millennium development goals 4 and 5 and thus may not help to enhance the drive to reduce maternal mortality in Ghana.At a macro level, lower levels of maternal mortality and slower population growth increase social and economic development and reduce poverty (Bernstein et al, 2006). Thus ensuring access to contraceptive services has the propensity to propel a vast majority of people particularly from developing countries out of poverty.

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This study relies on information from the 2008 GDHS and therefore focuses much on the modern methods of contraception since according to the survey, the percentage of women in the reproductive group who are not using any method of contraception would prefer these modern contraception methods. For instance, among currently married women, the contraceptive method most preferred for future use is injectables (39 percent), followed by the pill (21 percent), and implants (10 percent), male condom (4.3 percent), IUD (1.4 percent), whilst the foam jelly, the female condom and the diaphragm are 0.4 and 0.2 percent respectively. Some of the modern contraceptive methods outlined in the 2008 GDHS which is also used in this study includes the female sterilisation, the pill, the IUD, injectables, implants, male and female condoms, foam jelly, lactational amenorrhoea and emergency contraceptives. However, in order to know the rate of use of traditional methods, the study has also included some of those methods such as the rhythm or periodic abstinence, the withdrawal and folk methods. For the purpose of this study, contraceptive use and family planning services have been used interchangeably.

1.1 Problem Statement

In the contemporary world, maternal mortality is considered a violation of the rights of women and its rate is perceived as a critical index of the level of development of a country (Senah, 2003). Ghana is one of the many developing countries to ratify international conventions including; the International Conference on Population and Development (ICPD); the Maputo Plan of Action, the Abuja target of allocating at least 15% of national budgets to health and the Campaign to Accelerate Reduction of Maternal Mortality in Africa (CARMMA), all aimed at improving reproductive and maternal health in line with the country's avowed goal of protecting the rights of women.

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Ghana has also committed itself to achieving the United Nations' Millennium Development Goals (MDGs) on maternal health, infant mortality and HIV/AIDS, tuberculosis, malaria and other diseases; most often referred to as the 'Health MDGS'. These are to be achieved, by putting in place various reproductive health policies including the adolescent reproductive health policy, safe motherhood protocols, reproductive health strategy plan and child health policy as well as declaring maternal mortality as a national emergency in 2008. All these mechanisms were put in place to improve maternal and child health. The nation has also signed onto many legislative and human rights instruments such as the Convention on the Elimination of all forms of Discrimination Against Women (CEDAW) and the International Covenant on Economic, Social and Cultural Rights (ICESCR) among others, that promote the welfare of women and may contribute towards achieving the MDG(5).

Despite the efforts of the Ghana government, reducing maternal and child mortality remains an unattained targetas there remainssome unmet need for family planning. A Ministry of Health (MOH) report (2010) places this unmet need at a high of 35%. As has been chronicled in the 2008 Demographic and Health Survey, men have 98.8% knowledge whilst women have 97.7% knowledge of modern contraceptive methods. However, the usage of these contraceptive methods remains abysmally low.The contraceptive prevalence rate (CPR) is usually defined as the percentage of currently married women who are currently using a method of contraception. The 2008 GDHS shows that currently about one-in-four married women (24 percent) is using some method of contraception. Majority of these users are using modern methods, which account for about 17 percent whilst 7 percent use traditional methods. Additionally, the age cohort

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analysis also shows that among currently married women, the proportion currently using any modern method of contraception rises with age from 8 percent of those aged 15-19 to 19 percent among those aged 35-39 and 40-44, after which it declines.

Meanwhile, the Safe Motherhood Initiative, a global campaign toreduce maternal mortality, launched in 1987, identified family planning as one of four strategies with antenatalcare, safe delivery, and postnatal care to reduce maternal mortality in developing countries, where 99% of all maternal deaths occur. Thus the use of contraceptives has a direct bearing of improving maternal health. For instance a (WHO; 2011) study, indicates that family planning directlyreduces the number of maternal deaths because it reduces the chance of pregnancy and the associated complications (exposure reduction), lowers the risk of having an unsafe abortion (vulnerability reduction), delays first pregnancy in young women who might have premature pelvic development, and reduces hazards of frailty from high parity and closely spaced pregnancies. The study further indicates that each year, nearly 50 million of the 190 million women who become pregnant undergo abortions to terminate unwanted pregnancies, and about 13% of maternal deaths are caused by complications of abortion.

An empirical study in Matlab, Bangladesh also provided much emphasis on how the use of contraceptives translates to improved outcomes. The study showed that if women younger than 20 years and those older than 39 years avoided having children, maternal mortality would decrease by 34%, and elimination of births in mothers with five or more children could reduce the number of maternal deaths by 58%. (Fortney, 1987).

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Although most women desire to have smaller family size as well as enough spacing time for children, the usage of contraceptive services for this need remains low (Creanga et. al., 2011). The 2008 GDHS stipulates that in Ghana contraceptives are generally not provided free of charge. Contraceptive productsare sold at highly subsidised prices and public sector prices are expected to be lower than those in the private sector. Matheny (2004) on the other hand, explained that given the disproportionate allotment of programme funds to price subsidies, one would assume the existence of substantial evidence that direct monetary costs are a significant barrier to contraceptive use since subsidies are not equated to zero cost.

Campbell et al. (2006), in a review study on the barriers to fertility regulation, defined barriers as the constraining factors standing between women and the realistic availability of the technologies as well as correct information they need in order to decide whether and when to have a child. They outlined barriers to include limited method choice, financial costs, the status of women, medical and legal restrictions, provider bias and misinformation.

Easterlin (1975) is of the view that unmet need for contraception exists because there is a cost associated with practicing contraception or a lack of information about it. The term cost was used in the broadest sense to include not just expenses for commodities, travel and services but also health, psychological and social considerations brought into play as women decide whether or not to adopt or continue a method.

A study by Creanga et al.(2011) showed that there is low use of contraception among poor women in Africa due to the cost involved. For instance, the cost to a couple using

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contraception consistently for one year which is the annual per capita household consumption expenditure for contraceptives is $281.03 in Ghana.

Some studies in Ghana, for instance Awoonor-Williams et al. (2010) in a study on scaling up health system innovations at the community level in Ghana, have also shown that the unmet need for contraceptive services is due to various social, financial, and programmatic constraints associated with contraceptive utilization. Although the services have been subsidized, the cost involved in its access may still hinder its usage.

Cost of these contraceptive services has sometimes been underestimated particularly by the indirect cost that is associated with its usage.This may become one major hindrance to its access particularly in deprived communities like Amasaman in the Ga-West Municipal Assembly.Meanwhile the national contraceptive security document recognises the fact that increased use of contraceptives will lead to improvements in maternal health outcomes particularly reduction in maternal mortality (National Contraceptive Document; (2010)). Although most studies have established the social, cultural and economic factors that serve as a barrier to contraceptive use, the extent to which price in particular bars the usage of contraceptive has not been made clear. Hence this particular research seeks to obtain information on whether price is a major factor affecting usage of contraceptive as well as its choice.

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1.2 Objectives and Significance of the Study

1.2.1 Objectives

The main objective is toascertain the effect of the monetary cost, both direct and indirect involved in the usage of contraceptive services to serve as the basis for the removal of financial barrier on contraceptive use by women.

1.2.2 Specific Objectives

- Determine whether cost/price of contraceptives is a barrier to contraceptive use among women
- Examine if cost/price influences the choice of contraceptives

1.2.3 Research Questions

The study would seek to answer the following questions;

- Is cost/price a barrier to accessing contraceptive services?
- Does cost/price affect the choice of contraceptives being used?

1.2.4 Hypotheses for this Study

1. Null Hypothesis: Monetary cost has no significant effect

   Otherwise: Monetary cost has significant effect
2. Null Hypothesis: Monetary cost has no significant effect on the choice of contraceptive usage

   Otherwise: Monetary cost has significant effect on the choice of contraceptive usage

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1.3 Significance of the Study

This study seeks to add to existing knowledge on the effect of price on contraceptive usage. The results of this study would help to inform policy makers on the necessary health measures to be undertaken to accelerate the achievement of the MDGs.

Furthermore, by determining the correlation between price and contraceptive use among women, a strong foundation would be laid as a basis for removal of financial barrier. The benefits that would accrue to the poor in society would be established, thereby helping to reduce poverty and promote development.

The study would also add to the existing literature and help to identify where additional research is likely to be productive. Additionally, it would enhance the understanding of population and development issues among students and practitioners of development.

1.4 Organisation of the Study

The thesis is organised into six chapters. Introduction to the study as well as the problem statement, objectives and significance would be captured in the first chapter. Chapter two discusses the overview of contraceptive use and health outcomes in Ghana. The third chapter provides the theoretical and empirical literature on the financial barriers to contraceptive use. Chapter four focuses on the methodology with emphasis on the economic model to be used in conducting the study. Logit and Multinomial regression analysis would be used in the estimations. The fifth chapter discuses the descriptive and empirical findings of the study. Chapter six provides the conclusions, limitations and recommendations as well as areas for further research.

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CHAPTER TWO

OVERVIEW OF CONTRACEPTIVE USE; THE GHANAIAN CONTEXT

2.0 Introduction

This chapter gives a purview of the state of reproductive health in Ghana. It presents the various components of reproductive health with particular focus on family planning. This chapter also reviews past and current performance of reproductive health indicators particularly family planning acceptance rates among women of the reproductive age group. It also highlights some of the policies and strategies that are been implemented to ensure the security of contraceptive commodity. In addition, the chapter sheds some light on maternal mortality in Ghana, nationally and regionally.

2.1 Reproductive Health

The ICPD defines reproductive health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, in all matters related to the reproductive system and to its functions and processes.

Reproductive health is also a human right. Reproductive rights encompass the right to reproductive and sexual health throughout the life cycle, reproductive self-determination, including the voluntary choice of marriage and childbearing, and sexual and reproductive security, including freedom from sexual violence and coercion. (UNFPA, 1997)

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2.1.1 Components of Reproductive Health in Ghana

The main components of Reproductive Health include:

1) Maternal and Newborn Health Services and 2) Family Planning Services as well as

3) Other essential services

Figure 2.1:Component of Reproductive Health

The maternal and newborn health services includes:

- ✓ Nutrition counselling and iron/folic acid supplementation
- ✓ Intermittent preventive treatment of malaria
- ✓ Tetanus immunization
- ✓ Prevention of mother-to-child transmission of HIV
- ✓ Early detection and management of complications
- ✓ Counselling on birth preparedness and complication readiness
- ✓ Labour and Delivery Care, including essential newborn care
- ✓ Postnatal care

Other Essential services includes:

- ✓ Prevention and management of unsafe abortion and post-abortion care
- ✓ Prevention and management of reproductive tract infections, including STIs
- ✓ Management of cancers of the reproductive system, including cervical, breast, testicular and prostatic cancers
- ✓ Prevention and management of harmful traditional practices that affect the reproductive health of men and women
- ✓ Information and counselling on human sexuality, responsible sexual behaviour, responsible parenthood and pre-conception care
- ✓ Gender-based violence and reproductive health

Source: GHS; Reproductive and Child Health Care (2013)

2.2 Reproductive Health Commodity (Product) Security

The effective coverage of reproductive health services is premised on reproductive health commodity security. Certain commodities are needed in the right quantities and stored under optimal conditions to ensure effective coverage of quality family planning and maternal health services. Commodities needed for the effective coverage of family planning services include contraceptive pills, injectable, implants, intra-uterine contraceptive devices and condoms.

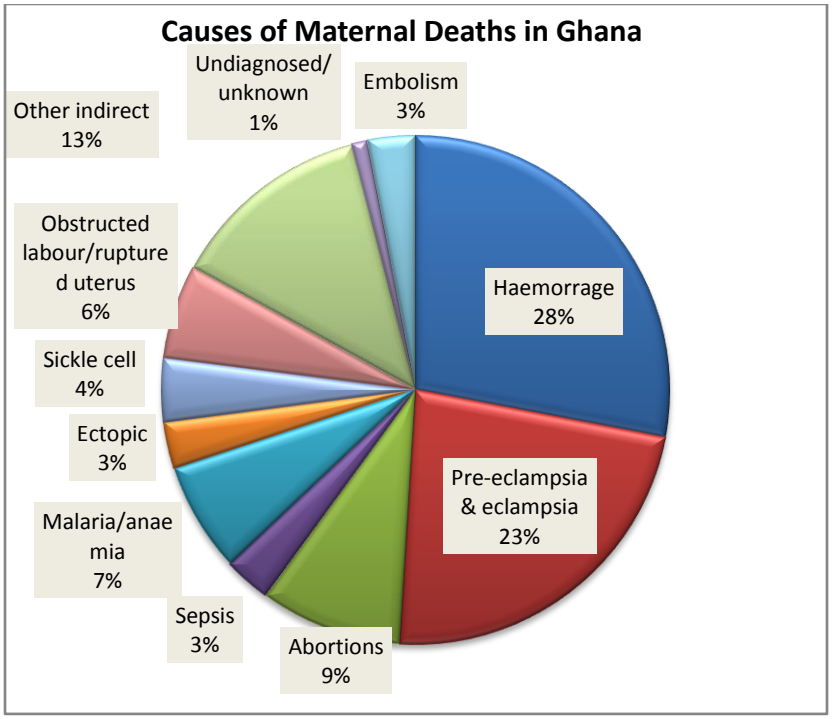
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Within the safe motherhood programme, quality uterotonics (e.g. oxytocin and ergometrine) are needed for the control of excessive bleeding immediately following childbirth. The management of complications such as pre-eclampsia and eclampsia is dependent on the use of quality medicines such as magnesium sulphate, among others.

2.3 Maternal Morbidity and Mortality and its causes in Ghana

According to the Ghana Health Service Strategic Plan Report (2007), the leading causes of death for women of reproductive age are complications of pregnancy and childbirth. Additionally many more women suffer from illness and disability related to childbearing.

Figure 2.2: Causes of Maternal Deaths in Ghana



Source: Author Generated from the 2013 Annual Reproductive and Child Health Report

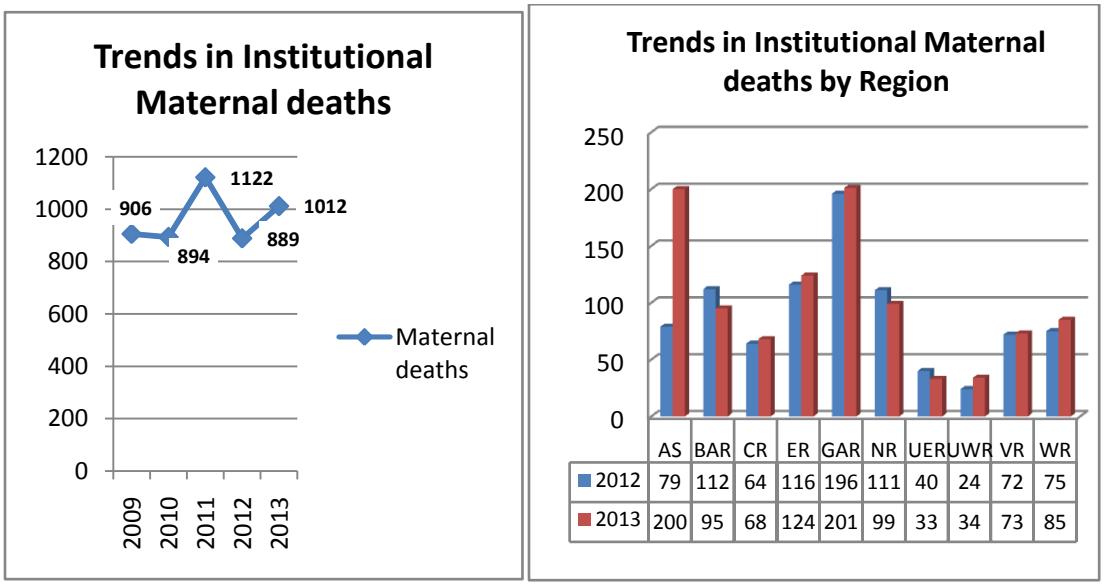
The above figure shows that haemorrage (28 percent) is the leading cause of maternal death, followed by pre-eclampsia and eclampsia (23 percent). Abortions from unwanted

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pregnancies also account for about 9 percent. Some of the indirect causes of maternal deaths as outlined in the (2011) Emergency and Obstetrics Newborn Care (EmONC) report includes malaria, HIV/AIDS –related issues, severe anaemia, sickle cell disease crisis and hepatitis.

The 2011 EmONC report thus estimated that 15 percent of pregnancies will result in obstetric complications. Met need for EmONC is assessed by measuring the number of obstetric complications treated in facilities and comparing the result with the expected number of pregnancy complications. The number of women expected to develop pregnancy complications in Ghana in 2010 was 112,874. Of this expected number of women with complications, only 38,437 (34 percent) were seen at health facilities nationally. Met need in EmONC facilities was 17 percent nationally.

Figure 2.3: Trends in National and Regional Institutional Maternal Deaths in Ghana



Source: Author Generated from the 2013 Annual Reproductive Health Report (GES)

From the above graph, it can be observed that institutional maternal mortality has assumed a cyclical trend thus it falls and increases consistently. There was a 13.8 percent

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increment in institutional maternal deaths from 2012 to 2013. Greater Accra Region has one of the highly recorded maternal deaths followed by Ashanti region.

Moreover, according to the World Bank Global Monitoring Report (2012), corroborated by UNICEF (2012), Ghana's maternal mortality ratio (MMR) stood at 350/100,000 live births as at 2008, falling from a ratio of 540/100,000 in 2000 to 451/100,000 in 2007 and to 350/100,000 in 2008. Thus the current trend shows that Ghana is close to achieving the MDG 5 target of a maternal mortality rate of 185 per 100,000 live births by 2015.

2.4 Family Planning Services in Ghana

Family planning services include methods and practices to space births, limit family size and prevent unwanted pregnancies. According to the (2013) reproductive health report, pregnancy by choice and not by chance is a basic requirement for women's health. It reduces the number of unwanted pregnancies with a resulting decrease in the total exposure to the risk the pregnancy poses as well as decrease in the number of unsafe abortions and ultimately in maternal deaths.

2.4.1 Importance of Family Planning

Proper planning of births can decrease the number of complicated pregnancies. Family planning improves the quality of life, not only for the woman but also for the family as a whole, particularly children. The quality of childcare invariably rises as parents are able to invest more of their time, energy and money in bringing up a small number of children. Family planning services serve as a link to other reproductive health services such as the prevention and management of Reproductive Tract Infections (RTI) including STI/HIV and AIDS.

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A critical feature of family planning services is the ability to provide high quality contraceptive to clients. Without contraceptive security, family planning services cannot be effective. Contraceptive security is achieved when every woman, man and youth can choose, obtain and use the contraceptives and condoms they need for family planning and prevention of sexually transmitted infections.

In Ghana, all individuals and couples including adolescents are eligible for family planning services. In view of the increasing problems associated with adolescent sexuality and adolescent pregnancies in Ghana, adolescents are provided with information. However sexually active adolescents who seek contraceptive services are counselled and served, but emphasis is usually laid on abstinence.

2.4.2 Reproductive Health Policy in Ghana- Family Planning

The goal of family planning in Ghana,is to assist couples and individuals of all ages to achieve their reproductive goals and improve their general reproductive health.

2.4.3 Objectives

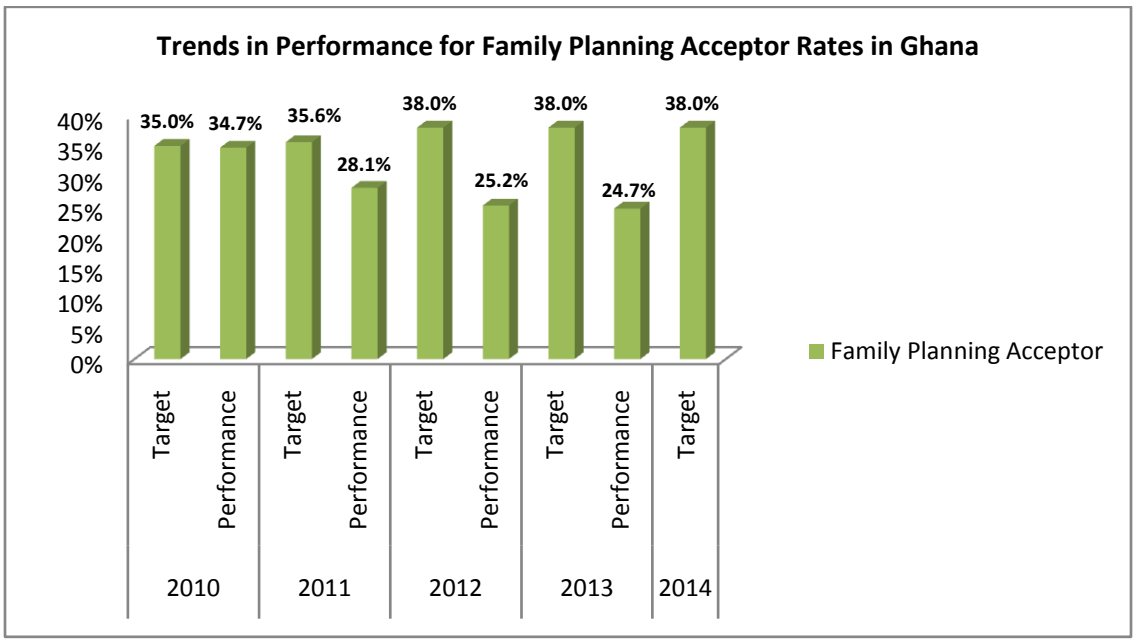
To provide information, education and counselling to individuals and couples to enable them to decide freely and responsibly the number and spacing of their children

- To provide affordable contraceptive services and make available a full range of safe and effective methods
- To provide information on childbearing
- To assist couples to achieve pregnancy and have babies
- To prevent and manage RTIs including STI/HIV/AIDS
- To promote dual protection

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Figure 2.4 below provides the trends in the target and actual performance of family planning acceptor rates in Ghana:

Figure 2.4: Trends in Performance for Family Planning Acceptor Rates in Ghana

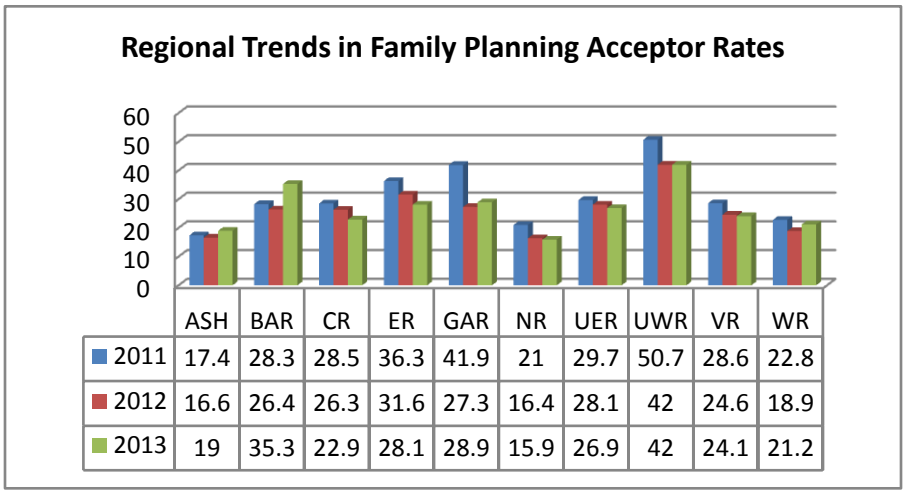


Source: Author Generated from Reproductive and Child Health Annual Report (2013)

From figure 2.4, it can be observed that the targets or expectations for family planning acceptance rates keep increasing. For instance it increased from 35 percent in 2010 to 35.6 percent in 2011 and then was benchmarked to 38 percent for all subsequent years till 2014. The actual performance on the other hand, keeps decreasing from 34.7 percent in 2010 to 24.7 percent in 2013, representing a decrease of 28.8 percent. The deviation between the target of 38 percent and performance of 24.7 percent in 2013 obviously depicts a low contraceptive usage.

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Figure 2.5: Regional Trends in Family Planning Acceptor Rates



	ASH	BAR	CR	ER	GAR	NR	UER	UWR	VR	WR
2011	17.4	28.3	28.5	36.3	41.9	21	29.7	50.7	28.6	22.8
2012	16.6	26.4	26.3	31.6	27.3	16.4	28.1	42	24.6	18.9
2013	19	35.3	22.9	28.1	28.9	15.9	26.9	42	24.1	21.2

Source: Author Generated from 2013 Annual Reproductive Health Report

Additionally, the trends in regional family planning acceptor rates follow a similar decreasing trend. Northern region has the lowest acceptance rate of 15.9 percent which is likely to be traced to religious connotations particularly of the region being the hub of Islam. Ashanti and Greater Accra region which have the biggest metropolitan cities in Ghana and have readily available contraceptive products also recorded low rates of 19 and 28.1 percent in 2013.

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Figure 2.6: Family Planning Methods Currently Available In Ghana

Source: Author Generated from the Annual Reproductive Health Report (2013)

However, the Emergency Contraception is not promoted as a regular family planning method.

2.4.4 Couple Years of Protection

Couple Years of Protection (CYP) refers to the estimated protection provided by contraceptive methods during one year period based upon the volume of all contraceptives sold or distributed. CYP is calculated by multiplying the quantity of each method distributed to clients by a conversion factor to yield an estimate of the duration of contraceptive protection provided per unit of the method. The CYP conversion factors for various methods used in Ghana are Condom (120), Vagina foaming tablet (120), Pills (13), IUD (3.5), Jadelle (3.5), Norigynon (12), Depo Provera (4), LAM (4), Sterilization (11), Vasectomy (10) and Natural (2).In all, a total of 21,494,566 couples were protected against unplanned pregnancies for 2013 whilst 2012 recorded 2,012,807.3 couple years of protection, thus representing an increment of 6.8 percent on the 2013 figure.

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2.4.5 Providers of Contraceptives

The main public sector provider organisations are the Ghana Health Service (GHS), Christian Health Association of Ghana (CHAG) and quasi-government bodies including mining institutions. The private sector provider organizations include the Planned Parenthood Association of Ghana (PPAG), Marie Stopes International Ghana (MSIG), Ghana Social Marketing Foundation (GSMF), Ghana Registered Midwives Association (GRMA), West African Project to Combat AIDS and STIs (WAPCAS) and a number of other local and international NGOs.

2.5 Ghana's Contraceptive Security Strategic Framework

Ghana currently faces an ever-widening financing gap for the purchase of contraceptive commodities. In the year 2002 the funding gap was $400,000. In 2004 the funding gap was reduced to zero, due in part to utilisation of health funds, MoH tax revenue and donor commitments. However, in 2005 and 2006 this gap was expected to widen to $2.5 and $5.3 million respectively. The Government of Ghana acknowledges that contraceptive security is not strictly a donor problem, and following the initial Sogakope national workshop on Contraceptive Security in 2002, consensus was achieved on the strategic vision of Contraceptive Security in Ghana in line with the five strategic pillars of the Health Sector's Programme of Work namely – Access, Quality, Efficiency, Financing and Partnerships.

2.5.1 Vision for Contraceptive Security

Every woman, man and youth can choose obtain and use the quality contraceptives and condoms they need for family planning and prevention of sexually transmitted infections.

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2.5.2 Strategic Objectives

- To improve availability of **quality** and affordable contraceptive products and services
- To strengthen public-private **partnership** in the supply and delivery of contraceptive products and services
- To implement reliable and **efficient** systems for the supply of contraceptive products and services
- To achieve sustainable **financing** of contraceptive products and services.
- To ensure a national capacity to **monitor and evaluate** the progress on the attainment of CS targets

2.5.2.1 Financing

Strategic Objective:

The strategic objective is to achieve sustainable financing of contraceptive products and services. This will be achieved through the leadership of the MOH/GHS and their commitment to financing contraceptive needs for the long-term, including management and allocation of funds from GOG budgets and funds from donors, NGOs, private organizations and individuals.The strategic objective for finance is critical to the success of contraceptive security in Ghana. In the past, the MOH has relied almost exclusively on donor support for the forecasting, procurement and financing of contraceptives except for the budget years 2000-2001 when the MOH used a World Bank loan to co-finance contraceptives.

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While there is generally a very favourable political environment for family planning and the use of modern contraceptive methods in Ghana, the Government of Ghana has historically not allocated adequate funds for contraceptives. Static or declining financing from a variety of sources in the face of rising unmet need for contraceptives will lead to greater contraceptive insecurity

According to the Ghana National Contraceptive Security document (2004-2010), Government of Ghana recognizes that increased use of contraceptives will lead to improvements in maternal health and reduction in maternal mortality. Thus while the political environment is supportive, continued advocacy is needed to gain widespread support across sectors (e.g. within the different Ministries and Departments, insurance schemes, District Assemblies) to finance the growing contraceptive needs that will be required over the next 7 years and beyond.

2.5.2.2 Financing Issues Emerging from Contraceptive Security Strategic Plan (2004-2010)

Pricing Structure

The GHS has conducted several studies on pricing of health commodities in general, and one in particular, on individual's "willingness to pay" for contraceptives. While the willingness to pay study was mainly concerned with private sector outlets, public sector services were also surveyed. These studies indicate that the majority of consumers are willing to pay more than they are being currently charged for many contraceptives in the market and in clinics. The strategic contraceptive security document also postulates that to support the findings of these studies in Ghana, many international studies have also shown that if prices are too low, consumers believe that the quality of the contraceptive is

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poor. Thus recommendations have been made that both the public and private sectors should come together to set realistic prices for all commodities to ensure adequate cost recovery while maintaining prices that are affordable across the different income levels of consumers. Collaboration between various levels of government, NGOs, and the private sector on pricing will avoid costly competition between sectors (due to undercutting of prices). The successful stabilisation of prices between public and private sectors is a cornerstone of financial viability of the programme.

2.5.2.3 Financing Subsidies and Health Insurance

Financing the subsidies for the poor and lower middle classes is a critical financial issue underlying the goal of full access to family planning services and products (including male and female sterilization). According to the (2004-2010) Contraceptive Security Strategic document, the MOH will need an analysis of how subsidies will be financed within current and future budget realities. Additionally, health insurance plans must consider covering preventive health services like family planning. For those who can pay insurance premiums, preventive interventions like family planning will in fact pay for themselves. Cost savings from unwanted pregnancies averted, induced abortions averted and an overall improvement in maternal health will directly result in reduced insurance outlays for maternal healthcare.

2.5.2.4 Donor Support for Contraceptive Financing

According to the Strategic Document (2004-2010), donor support still continues to play an important role in the financing of contraceptives. Thus to ensure sustained donor financing for contraceptives, it is important to strengthen and further institutionalise the

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topic of contraceptive security within the partner meetings, health summits, stakeholders' conferences, and other meetings.

Diversification of the contraceptive financing base, while difficult in the SWAp environment, is certainly possible and should be pursued. Advocacy and policy strategies should clearly articulate the MOH and donor commitment to financing contraceptives. To this end, partners have already coordinated effectively in the short-term to ensure adequate financing is available for contraceptives. In 2004, the "financing gap" was reduced from over $1 million to $0, due in part to effective coordination between donors, MoH and partners through the ICC/CS. Yet the medium and long-term financing gap remains significant without increased and additional commitments from GoG and donors. Many activities planned for the future, including MoH procurement of contraceptives, integration and increased cost recovery will contribute to reduce the projected funding shortfall.

2.6 Chapter Summary

This chapter has presented the Ghanaian context of the reproductive health situation. The use of contraceptives and it relevance have also been highlighted. The financing strategies that exist for financing contraceptives in Ghana to ensure that contraceptives do not run out of supply have been provided. The chapter also looks at some of the causes of maternal mortality in Ghana, of which abortion is one of the major causes mainly as a result of unwanted pregnancies. The declining rates of family planning acceptance also depicts the need for more sensitisation and awareness on the use of methods of contraception.

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CHAPTER THREE

LITERATURE REVIEW

This section discusses what others have done in relation to this particular area of study. The section looks at both the theoretical literature framework as well as the empirical framework. Thus the theoretical review outlines the models developed by Becker (1960) and Leibenstein (1957) as well as the Grossman model for demand for healthcare. All these form the basis within which demand for contraceptive studies are based. The review of empirical studies takes a broad look at the determinants of contraceptive use studies, as well as captures the effect of relevance of contraceptive use to reducing maternal deaths and finally examines studies that focused on price effect on contraceptive use.

3.1 Theoretical Literature

Most demand for healthcare theories have centered on the Grossman Model (1972) of investment in health particularly by engaging in healthy practices as well as consumption of health services to promote good health. The Becker (1960) and Leibenstein (1957) models on the other hand have focused on economic theory of fertility and demand for contraceptives.

3.1.1 Grossman Demand for Health and Health Care Model

Grossman assumes that an individual is born with a stock of health that diminishes over time but can be augmented through acts of health investment. The available health stock produces a stream of healthy time payoffs that determine the individual's market (investment) and non-market (consumption) participation in the economy. When this

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health stock (Ht) deteriorates below a certain point (Hmin.) death occurs. In this model, individuals use medical care and their own time to produce health. This implies that health is endogenous in the model, and the individual determines his/her optimal length of life and by implication, chooses when he or she wants to die. Thus good health is produced by combining the individuals own time (for instance dieting) with purchased medical inputs. The health status of the individual is assumed to affect the individual's utility directly by the value the individual places on good health and indirectly through increasing healthy time available for work and hence increased labour income.

The Grossman model provides a distinction between the demand for health which is considered a consumption good and demand for health care which is seen as an investment good. Thus demand for "good health" is considered by the individual as a productive good which produces healthy days. The demand for health care on the other hand, uses medical services to produce good health.

Grossman (1999) presented the utility-maximizing problem of the individual as an inter-temporal problem where the individual maximizes his or her utility over time. Thus maximizing the utility of the consumer leads to the optimal life cycle health paths, gross investment in health, consumption of medical services. In relating the Grossman model to this study, the demand for contraceptives can be derived from a model incorporating utility-maximizing behaviour and the production of an adult woman's health, treating contraceptives as input in the production process.

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3.1.2 Becker (1960) and Leibenstein (1957)

The theory dates from the effort in 1957 by Harvey Leibenstein to formalise the turning point, the process by which fertility declines, in the demographic transition. He explains that: ' the essence of the model is the presumption that families would balance utilities against disutilities ascribed to an nth child to determine whether a family wanted an nth child' (Leibenstein; 1957). Leibenstein focused on the decision process at the margin, where a couple could rationally choose whether or not to have another child.

Some years later, Gary Becker (1960) reformulated this approach into a more general model of completed fertility, based on the familiar neo-classical assumptions of fixed preferences, maximizing behaviour and the existence of equilibrium solutions for all decision situations (Becker; 1960). Becker adapted his model to the household production function paradigm, linking the fertility decision to other household economic processes, including labour force participation and consumption. This notion of the 'household production function' is basic to contemporary micro-economic theory; Thus the household itself is the unit which produces its own ultimate utility using internal and purchased external resources and employing a particular 'household technology' (Lancaster; 1996). This implies that the'demand' for children is actually a demand by parents for the flow of services which children produce for them over time. Consumption of these child-services generates pleasure or 'utility' for the parents (the household). These child-services (and other services) are produced within the household using the time and labour of the household members and inputs purchased from outside the household, and employ the 'technology' possessed by the household for such production.

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The household maximizes its total utility by using the constrained total resources available to it so as to equate the utility per unit of resource expenditure received at the margin from the various products and services consumed. This leads to a utility-maximizing equilibrium, such that no reallocation of available resources would increase total utility. However, their theory failed to capture the effect of the 'jointness' of production of children and sexual pleasure which can be broken by the general availability of acceptable and effective contraception and thus defines a true demand function.

3.1.3 Easterlin (1975); Economic Framework of Fertility Analysis

In identifying some of the weaknesses inherent in the Leibenstein and Becker model, Easterlin (1975) provided a more comprehensive economic framework of human fertility behaviour which goes beyond just the demand for children as postulated by Leibenstein and Becker. Easterlin (1975) identified the following determinants of fertility;

The Demand for children (Cd): This was defined as the number of surviving children parents would want if fertility regulation were costless. The determinants for demand for children were identified as income, prices and tastes. He thus stated that the demand for children is seen as depending on the household's balancing of its subjective tastes for goods and children against externally determined constraints of price and income in a way that maximizes its satisfaction. Furthermore, with other factors being held constant the number of children desired would be expected to vary directly with household income assuming children are a normal good and also vary directly with the price of goods

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relative to children, and inversely with the strength of tastes for goods relative to children.

Potential Output of Children (Cn): This is the number of surviving children parents would have if they did not deliberately limit fertility. Easterlin indicates that the production side of fertility is largely determined by the potential output of children, which also largely depends on the natural fertility and the probability of a baby surviving to adulthood. Given natural fertility, an increase in infant survival prospects would increase the potential output of children. Also, given the survival prospects, the potential output of children would vary directly with natural fertility. The immediate determinants of natural fertility are not the factors shaping the demand for children. Rather, they are a) frequency of intercourse, as affected by sexual desire and in- voluntary abstinence due to such factors as impotence or ill-ness, b) fecundity or infecundity as affected by involuntary causes, and c) fetal mortality from involuntary causes (Davis and Blake;1956). Thus Easterlin explains that a household wishing to reduce family size must necessarily adopt some technique of fertility limitation; hence, a corollary of any demand-based explanation of fertility is that one should be able to observe the use of fertility-limiting practices.

Motivation for Fertility Regulation (Cn – Cd)

He noted that the potential output of and demand for children jointly determines the motivation for fertility regulation (Cn-Cd). If the potential output falls short of demand Cn, < Cd, there is no desire to limit fertility; on the contrary, there is an "excess demand. Thus although households might have knowledge of means of regulating fertility, there

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would be no incentive to use them. On the other hand, if the potential output exceeds demand Cn > Cd, then there is an "excess supply" situation, parents would be faced with the prospect of having unwanted children and would be motivated to regulate their fertility. Whether fertility controls would be used also depends on cost of fertility regulations.

Cost of Fertility Regulation: Easterlin (1975) outlines that fertility regulation imposes costs on the household in two different ways. Firstly, there are psychic costs which are the displeasure associated with the idea or practice of fertility control. Secondly there is the market costs which involves the time and money necessary to learn about and use specific techniques. These costs, in turn, depend upon (a) the attitudes in society toward the general notion of fertility control and specific techniques; and (b) the degree of access to fertility control, in terms of both the availability of information and the range of specific techniques and their prices. Easterlin noted that, a family planning programme lowers market costs by increasing information and providing services free or below cost and also lowers subjective costs by lending legitimacy to the notion of practicing birth control.

Hence, the use of fertility control depends to a large extent on the costs of fertility regulation and the motivation to limit fertility. Thus, given the strength of the motivation, the lower the cost of fertility regulation, the greater its adoption and the more would be the number of children, parents would have to correspond to the number desired.

Following Bitran (1990), health care demand is conceptualized as the amount of health services that people are willing to obtain as a function of the services' prices, given

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people's socio-economic and demographic characteristics, their perception of the services' quality, the people's geographic location relative to the location of providers, and other factors which characterise the people, the providers, and the environment. As Gertler and van der Gaag (1988, 1990) have observed, the empirical literature on the demand for health care in developing countries contains mixed results or conflicting messages. One school of thought suggests that prices are not important arguments of the utilisation of health care in developing nations. For example, Akin et al. (1986), and Bitran (1989a) report very small and sometimes positive price effects, most of which are statistically insignificant. The second school of thought, including Gertler et al. (1987), Alderman and Gertler (1988), Gertler and van der Gaag (1988, 1990), Bitran (1989a, 1990), Anyanwu (1996), Mbanefoh et al. (2004a) and Mwabu et al. (2003) find that prices are important.

Additionally, Anyanwu (2007) also notes that conceptually, the demand for health care is the quantity of health services that will be purchased (assuming their availability) by consumers. It further states that such demand is determined by a number of factors. Such factors include the prices charged for health services, the consumers' incomes, health services quality (as perceived by consumers), the distance that consumers travel to obtain the services available to them, waiting time, and service time, which may also be considered as the opportunity cost or indirect cost available to the consumer.

In attempt to link prices of health services to quality, some demand for health care studies such as the one by Hotchkiss (1998) on the tradeoff between price and quality of services in the Philippines, concludes that when public facilities simultaneously increase user fees and the aspects of quality over which policy makers can exercise control in the short-run,

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the mean probability of using public facilities increases for both poor and non-poor households.

Evidence that the poor often benefit less from public spending is well established in the literature (Demery 2000; Makinen et al. 2000). The reason why the poor do not make more use of public services is driven by both supply and demand factors. For instance, financing health care through out-of-pocket payments makes prices an important determinant of demand. In relative terms, the payments can be substantial. For example, for the poorest fifth of the population in Vietnam, the cost of a hospital visit is 22% of per capita annual household income net of food expenditure (World Bank; 2001)

In reviewing theories surrounding demand for contraceptive use and preferences, many models have been adopted to suit research specific objectives.

However, one of the commonest economic model that has been adapted by most of these demand-side factors to contraceptive use is the Grossman Model (1972). It analyses the individual investment and consumption decisions to improve health and utilise health care. For instance, in the study by Nketiah-Amponsah et al. (2012), the demand for contraceptive was modelled as a derived demand in that it was not demanded for its own sake but to promote a healthy outcome. Similarly Bourne et al. (2015), in a study on women promiscuity and reproductive health; applied the Grossman economic model in their studies. Thus current use of contraceptives was modelled as a function of marital status, age at first sexual encounter, employment status and social class. The logistic and multivariate analyses were used and they concluded that early sexual initiation, multiple sexual partners and sexual promiscuity are, therefore, by-products of socio-economic ills

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of the Jamaican society, and commercial sex work is a response to the economic challenges.

On the other hand, Lewis (1985), in investigating whether prices affect contraceptive usage, analysed the interrelatedness of the three main assumptions of individuals in developing countries having low level of monetization and exceedingly low per capita incomes constrained couples' ability to buy contraceptives even if supplies were increased. Lewis (1985) modelled a simple economic demand framework in which individual demand for family planning is derived from couples' preferences for children and other goods, and constrained by their income and time, thus adopting the Leibenstein (1957) framework. The study concluded that contraceptive demand is relatively inelastic, and that in some instances where price is very low the demand curve for contraceptives is indeed backward-bending.

Oliver (1995) in a study on contraceptive use in Ghana,modelled contraceptive use based on economic model of fertility decisions and utility maximising models developed by Becker (1960) and Leibenstein (1957).Thus the demand for contraception is derived from the demand for children which was modelled as a function of the economic contribution of children to the household, the cost of children including the value of the woman's time and exogenous household income. The researcher used a woman's decision to use contraception based on these variables and the cost of contraceptives.

Likewise, Feyisetan and Ainsworth (1996) also modelled the demand for family planning in Nigeria as conditional on the demand for children in their study. Thus the demand for

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children broadly included decisions on the number of children desired and the timing of births, thereby adapting models of Becker (1960, 1981), Rosenzweig and Schultz (1985).

Also, a study by Ahmed (1981) on the determinants of contraceptive use in Rural Bangladesh, particularly in examining the demand for children, the supply of children and cost or regulation factors adopted the Easterlin (1975) economic framework of fertility analysis and used data from the world fertility survey in Bangladesh and concluded that the distance to family planning clinics is the only cost of regulation variable which consistently showed a negative effect on the likelihood of contraceptive use.

Most of the models particularly Becker (1960), Leibenstein (1957) and Easterlin (1975) have all focused on demand for contraceptives as a means for fertility regulation. But the Grossman models looks beyond this to considering the demand for contraceptives as contributing to improving the health outcomes of a woman. Hence this study makes use of the Grossman (1972) and (1999) frameworks.

3.2 Empirical Literature

3.2.1 Empirical Studies on Determinants of Contraceptive Use

Empirical analysis of reproductive health studies shows that extensive research has been done in the area of factors affecting contraceptive use as well as its prevalence. For instance, Adanu et al. (2012) using the women's health study of Accra data for 2008/2009, employed a descriptive analysis and some qualitative approach to paint the profile of reproductive health situation in Ghana. The authors concluded that despite

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increasing economic development and declining fertility, modern contraceptive method remains low at about 28 percent for women in the reproductive age group.

Gyimah (2003) attributes the higher fertility rates of Sub Saharan African countries compared to other developing countries to "the inter-related factors of early childbearing, high infant mortality, low education and contraceptive use, and persistence of high fertility-sustaining social customs".

In investigating the use of modern birth control methods among rural communities in Imo State (Nigeria), Nwachuku and Obasi (2008) using a household survey and employing a descriptive analysis found that only 30% of households used modern methods whilst 57% used traditional birth methods. The authors further identified some barriers militating against the use of contraceptives which included negative health reaction, fear of the unknown effects, cost, spouse's disapproval, religious belief and inadequate information.

According to Sharan et al. (2009), in Eastern Africa, the unmet need is attributed to socioeconomic variables, the family planning program environment and reproductive behavior models. Hence a study by Kamsu et al. (1996), that included couples in both urban and rural Kenya who did not want to have a child and yet were not using birth control, found additional factors that limited birth control use to be traditional practices, such as "naming relatives," and a preference for sons who can give parents more financial security as they age.

A study by Okezie et al. (2010) on the socio-economic determinants of contraceptive use among rural women in Ikwuano Local Government Area of Abia State in Nigeria, used primary data through a structured questionnaire. A total of 200 women, randomly

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selected were sampled for the study and a maximum likelihood probit regression analysis was used. Their study concluded that mass media messages have a powerful effect on modern contraceptive use. Education was also found to be positive in explaining current use of contraceptives, thus educated women were more likely to appreciate the advantage of fewer, better educated children.

Nketiah-Amponsah et al. (2013) in a study on the correlates of contraceptive use among Ghanaian women of reproductive age, using the 2008 GDHS and applying the logistic and multinomial regression analysis concluded that wealth status, level of education, ownership of health insurance, number of surviving children, marital status, location and geographical area of residence, religion and women autonomy are significant determinants of contraceptive use in Ghana. This particular study could not capture the effect of prices of contraceptive methods as well as the indirect such as transportation on contraceptive use due to the absence of empirical data on prices in the GDHS.

A case-control study by Eliason et al. (2014) on determinants of modern family planning use among women of reproductive age in the Nkwanta district of Ghana conducted a survey and fitted a logistic regression and found that awareness and knowledge of modern family planning methods were high among cases and controls. However lack of formal education among women, socio-cultural beliefs and spousal communication were found to influence usage. Furthermore, favourable opening hours of the facilities and distance to health facilities were seen as significant determinants to contraceptive use.

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3.2.2 Contraceptive Use, and its relevance in the improvement of Women's Health Outcomes

Moreover, the outcome of contraceptive use plays a significant role in the development agenda of most Sub-Saharan African countries particularly in advancing the reproductive rights of women. Some literature has laid much emphasis on the significant role that access to contraceptives play particularly in averting mortality and reducing fertility.

In a study on saving maternal health in resource poor countries, Prata et al. (2009) estimated that two hundred and five million pregnancies occur annually worldwide, 35 per cent of which are unintended and 22 per cent of which end in induced abortion. Most of these pregnancies (182 million) happen in the developing world. Two-thirds of these pregnancies occur among women who are not using any method of contraception, making family planning a significant contributor to maternal health.

The study further proved that ensuring access to family planning in Sub-Saharan Africa could avert thousands of maternal deaths and prevent hundreds of thousands of children from losing their mothers every year.

Additionally, a study by Cleland et al. (2012) used contraceptive use estimates obtained from Demographic and Health surveys, conducted between 1986 and 2009 in 40 developing countries. They applied the WHO time series of estimate to obtain maternal mortality ratios that corresponded to the dates of each of the contraceptive use estimates. The first data point corresponds to the earliest Demographic and Health survey data available for that country, and the second data point corresponds to the most recent

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survey data. The average length of time between surveys was 12 years (ranging from 4–21 years).

Cleland et al. (2012) concluded that increasing contraceptive use in developing countries has cut the number of maternal deaths by 40% over the past 20 years. This was achieved through the mechanism of reducing the number of unintended pregnancies, particularly preventing high-risk pregnancies as well as those that would have ended in unsafe abortion. Thus increased contraceptive use has reduced the maternal mortality ratio, the risk of maternal death per 100 000 live births by about 26% in little more than a decade. A further 30% of maternal deaths could be avoided by fulfilment of unmet need for contraception. They added that the benefits of modern contraceptives to women's health, including non-contraceptive benefits of specific methods, outweigh the risks.

In examining alternative strategies to reducing maternal mortality in India, Goldie et al. (2010) used a computer-based model that simulated women from pregnancy through to childbirth. This was used in estimating the effect of different strategies (for example, increased family planning or increased access to obstetric care) on clinical outcomes (pregnancies, live births, or deaths). In deriving the costs, and cost-effectiveness (the cost of saving one year of life) of the policy interventions the researchers found that increased family planning was the most effective single intervention for the reduction of pregnancy-related mortality. This strategy appeared capable of averting more than 150,000 maternal deaths and saving more than US$1 billion, if prevailing unmet need for family planning in India could be fulfilled over the next 5 years.

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Creanga et al. (2011), used univariate and bivariate analyses to examine the associations of interest and trends in contraceptive use and related wealth-inequity over time. After pooling the two most recent survey samples for 13 Sub-Saharan African countries, they fitted logistic regression models for the likelihood of using a long-term rather than a short-term method of contraception as a function of two key covariates which include woman's reproductive goal and household wealth quintile. They found out that poorer women use contraception much less than wealthier women.

Evidence of the role of increased use of contraceptives in reducing fertility could be pointed to an experimental study in a rural impoverished area known as Matlab in Bangladesh. The provision of low-cost health and family-planning services with support from the international donors led to a success story of engendering a great reproductive change, even in asetting where social norms, economic conditions, and development circumstances were unfavourable to progress of any kind . The system of action and commitment also catalysed an increase in the national contraceptive prevalence from 3 to 32 percent between 1970 and 1988 and thus reduced by half the total fertility rate of 6.8. The project also testedmeans of transferring service innovations fromMatlab to the national programme in two ruraldistricts, generating results that guided a decade of health-sector policy, priority, and operational planning. (Phillips et al., 1988)

The success story from the Matlab experience was also replicated in most African countries particularly Ghana. The project was piloted in Navrongo, an impoverished locality in northern Ghana where family planning was quite low due to the cultural, economic and institutional barriers to reproductive regulation (Adongo et al., 1997). According to Binka et al. (1995), the Navrongo experiment also reduced fertility and

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maternal mortality, whereas national averages remained constant. Thus between 1995 and 1998, fertility reduced by 15 percent and maternal mortality ratio declined from 800 to 600 maternal deaths per 100 000 over 14 years (1985-1997). This was achieved throughmobilising community-based health care through newly retrained Community Health Officers (CHOs), mobilised community volunteers, and the combined effect of community volunteers and CHOs compared to the traditional health-care system and provided door to door reproductive health services among other health services.

3.2.3 Contraceptive Use and Price

Health care is a common good, not a market commodity. Nearly all high-income countries organise their health-care systems around the principle of universal coverage; this approach requires that everyone within a country can access the same range of services according to needs and preferences, regardless of income, social status, or residency, and that people are empowered to use these services (Marmot et al.,2008). However this is usually not the case, as lessons from the user fee experience particularly in Ghana, has demonstrated how prices and charges on (especially health services) could hinder majority of people particularly those in the low- income groups, from accessing such services.

With the current and rising levels of people living in poverty, it cannot be expected that consumers could afford the increasing costs of family planning services, since the poor in particular are very sensitive to price changes and the results could be a decline in contraceptive use (Prata et al., 2001). Sub-Saharan Africa poses the greatest threat with 77 per cent of its population in 2002 unable to pay for the price of the contraceptive products (Prata, 2006).

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A study by Ross et al. (1988) noted that price elasticity is not known for contraceptives offered by public programmes to poor populations, but the number of contraceptive users will presumably decline as the price per unit rises thus going by the law of demand. They argued that if affordability is a high priority, contraceptives should be provided free and exceptions should be made only for reasons that clearly outweigh the presumption of no charges.

However, the prices of contraceptives vary widely in different markets and between branded and generic products. The literature on a consumer's ability to pay for contraceptives in the developing world is thin (Matheny, 2004). Furthermore there exists scanty literature on the total cost, both direct and indirect involved in accessing contraceptives. This notwithstanding, a few studies have attempted to provide empirical analysis on the correlation of price or cost of contraceptives to its use.

For instance, a study by Feyisetan and Ainsworth (1996), on contraceptive use and the quality, price and availability of family planning in Nigeria used the 1990 Nigeria Demographic and Health Survey (NDHS) and modelled the demand for family planning as conditional to the demand for children. They employed the logistic regression analysis in their study.Their results suggested that the limited levels of female schooling (and probably other factors affecting women's opportunity cost of time) are constraining contraceptive use, especially in rural areas. Another major constraint to increased contraceptive use is the low availability of family planning services in Nigeria. Outpatient or consultation fees at nearby health facilities do not appear to be constraining demand for modern contraceptive methods.

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A similar study was undertaken by Oliver (1995) on contraceptive use in Ghana; The role of service availability, quality and price, using data from the 1988-89 Ghana Living Standards Survey (GLSS) for women of the reproductive age. It also modelled a woman's decision to use contraception as a function of demand for children, the cost of children including the value of the woman's time and exogenous household income and in addition to all these, the cost of contraceptives. The study also used logistic regressions with Huber standard errors in their analysis.

The study concluded that raising levels of female schooling will also raise contraceptive use and lower fertility particularly in rural areas. Distance to services remains a binding constraint for contraceptive use among the entire sample. The number of methods offered at a health facility was found to be associated with lower fertility but had no apparent relation with current contraceptive use. Furthermore, the presence of admission fees at the nearest health facilities had no relation with contraceptive use. Also quality of services showed no consistent effect on the demand for contraception.

Barberis et al. (1997) in a study on cost of family planning programmes in fourteen developing countries, highlighted the cost effectiveness of several modes of family planning service delivery. The approach was based on the cost per couple-year of protection (CYP), including commodity costs, assessed for 1991–92 using programme and project data from fourteen developing countries (five in Africa, four in Asia, three in Latin America and two in the Middle East). In Ghana for instance, clinic-based contraceptive services cost $11.58 of the average couple year of protection as compared to $7.8 of social market services. The cost difference may be due to the administrative cost associated with clinic services as compared to the social marketing services.

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In a similar work, Frost et al. (2008) looked at the impact of publicly funded family planning clinic services on unintended pregnancies and government cost saving. The authors observed that publicly funded family planning clinics serve millions of low-income women each year, by providing a range of critical preventive services and enabling women to avoid unintended pregnancies. In quantifying the impact and cost-effectiveness of such services, in addition to health benefits, they used a methodology similar to cost-benefit analyses, and estimated the numbers of unintended pregnancies prevented by all U.S. publicly funded family planning clinics in 2004, nationally (1.4 million pregnancies) and for each state. The authors also compared the actual costs of providing these services ($1.4 billion) with the anticipated public-sector costs for maternity and infant care.Thus among the Medicaid-eligible women the births averted were($5.7 billion) and was used to calculate net public-sector savings ($4.3 billion). The researchers concluded that public expenditures for family planning care donot only help women to achieve their childbearing goals, but they also save public funds. Their calculations indicated that for every $1 spent, $4.02 is saved.

However, a study by Foreit et al. (2002) used the 1993-1998 DHS data on women with children aged 5 or below, from 8 developing countries.The study aimed at determining how maternal and child health care sources could be used as an indicator for ability to pay for family planning. The authors employed a descriptive statistics and the results countered the argument of free contraceptive services. The researchers were of the opinion that most developing countries cannot afford to provide free contraceptive to all women, hence the need to encourage women earning income and with the means to pay

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private health care to continue purchasing contraceptive services, so as to allow greater access to those who really need it.

Lewis (1985) in a study on pricing and cost recovery experience in family planning programmes using cost of contraceptive data for LDCs and employing a simple regression analysis outlined that social benefits of contraceptives are based on the externalities produced by averting pregnancy-related deaths. The author added that because contraceptive use, benefits the society at least as much as the individual, the free market price will generally not meet social welfare objectives, and government subsidies are required to equalise individual and social preferences. However, the study concluded that if government subsidises the price of contraceptives so that consumers pay nothing for family planning services, demand might be no higher than if nominal fees were charged, and conceivably could be lower. Low prices might also deter use due to psychological factors. Some evidence on consumer perception of give- aways implies that this may pose a problem for free service programmes (Stycos, 1962). Costs reflect value: free goods are often viewed with suspicion, and exceedingly low prices are associated with poor value (Blair, 1972; Howell and Seims, 1979).

Using data on price and volume of social marketing sales across many countries, Harvey (1999) concludes that individuals will spend up to 1 percent of their disposable income to purchase contraceptive protection. When, for example, this rule is applied to Africa, using data on income displayed by quintile, 97 percent of Africans would be unable to pay the full cost of modern methods of contraception (Green, 2002). By contrast, in high-income settings, raising condom prices may increase their use because more expensive condoms are perceived to be of higher quality (Levin et al., 2000). However this is

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always not the case as the value placed on limiting fertility and avoiding other sexually transmitted diseases such as AIDS can also be a contributing factor. Hence no matter the increment in prices, demand for such contraceptives would still be high.

Also, in some of the financial barrier to contraceptive literature, when asked whether cash prices influenced family planning choices, respondents in rural Bangladesh put little emphasis on cost. The travel time and waiting time were found to rather serve as a source of barrier to accessing contraceptives service (Levin et al., 2000). Molyneaux (2000) in a study on the evolution of contraceptive pricing in Indonesia found that increasing contraceptive prices in Indonesia by 100 percent decreased use by only 3 to 5 percent (cited in Matheny 2004). Ciszewski and Harvey (1994) in an experimental study on contraceptive price changes and its impact on sales in Bangladesh, found that an average price rise of 60 percent for contraceptives in the Bangladesh social marketing programme, caused sales of condoms and pills to drop by 29 percent and 12 percent respectively. This relationship was confirmed in Haiti by Donald and Harvey (1992), where a price increase in contraceptives also decreased sales. Harvey (1994) concludes, "Since lowering prices always seems to increase sales or use of services, the potential for improved coverage by the simple act of lowering prices is considerable," and he emphasises that "there appears to be no exception to this rule." However where price is used as an indicator for quality, then this rule would not hold.

Matheny (2004) noted that given the disproportional allotment of programme funds to price subsidies, one would assume the existence of substantial evidence that direct monetary costs are a significant barrier to contraceptive use. A study by Janowitz and Bratt (1996) for instance titled,***'what do we really know about the impact of price***

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changes on contraceptive use', revealed that in 56 countries with the relevant Demographic and Health Survey (DHS) data, fewer than 3% of married women not practicing contraception report that contraceptive prices are the reason for their non-use. Moreover in, the 19 countries with relevant DHS data, fewer than 3% of married women who have discontinued contraceptive use cite price as the reason. This is true even in countries like Indonesia for example, that have experienced severe contraceptive price shocks. When asked the most important barrier to use, most women report lack of knowledge about contraceptives, social opposition to their use or concerns about possible health side effects.

3.3 Summary from Literature Review

It can be observed from the reviewed literature that extensive work has been done in the area of family planning, particularly the demographic, economic, social and cultural factors that determine its usage. The theoretical literature particularly focuses on demand theories on health that have been applied to contraceptive usage. Notable among them is the Grossman model and Leibenstein (1957) and Becker (1960) economic models on fertility and contraceptive use. Easterlin (1975) further improves upon these earlier models by providing a simple framework for its application to contraceptive use. In the empirical review, strong associations have been established between the use of contraceptives and some of the socio-economic, socio-cultural and socio-demographic factors. Other works have also laid emphasis on the significance and best outcomes obtained from the use of contraceptives. Most of the techniques of analysis employed have been logistic and multinomial regressions (Nketiah-Amponsah et al. (2012), Oliver (1995), Feyisetan and Ainsworth (1996)). Others have also used the simple descriptive

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analysis. However, only a few of these studies have critically examined the financial barrier to contraceptive use. For instance, the total cost involved in accessing contraceptives has not been fully explored. Against this backdrop, this research hopes to fill the gap by providing further empirical evidence with current cross-sectional survey, thus analysing the effect of the direct and indirect cost on contraceptive usage; in effect, capturing price as a variable into the equation which was not well captured in the GDHS 2008.

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CHAPTER FOUR

METHODOLOGY

4.0 Introduction

This section discusses the methodology which was used in this study. It presents the theoretical framework within which the study is based as well as the empirical model which is adopted from Nketiah-Amponsah et al. (2012). It also presents the data source and background of study area as well as gives description to variables employed. Several methodologies exist for costing contraceptives. This study seeks to go further by looking at the indirect cost associated with contraceptive usage.

4.1 Theoretical Framework

Most of the standard economic frameworks of health care utilisation model use both supply and demand side determinants (Ensor et al., 2004). In this study, demand-side determinants are defined as those factors that influence demand and that operate at the individual, household or community level. Demand analysis usually describes the relationship between quantities of the good or service desired to be purchased and the price charged for that good or service, under the assumption that all non-price factors; income level, tastes, needs, and demographic factors, are constant (Akin et al., 1986). The consideration of these non-price factors in demand analysis gives an indication of how they are important in influencing policy. In contrast, supply-side determinants are those that influence the slope and position of the supply curve. Supply is determined by factors, derived from the health care production function, that interact to produce effective health care services, as follows:

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Qs= S (factor prices/availability, technology, management, price)

Where Qs is the Supply curve

Factor prices are the prices of those items required to'produce' treatment, such as staff time, capital equipment and buildings, consumables and land. In a market system, prices signal availability and quality. Factors are combined subject to available technology and management capability of the provider. The supply price also helps to determine the level of production. In a public system this may be replaced by plans for a required level of production, which is in turn constrained by available budget.

On the demand side, the economic literature is dominated by adaptations of the Grossman model that analyse individual investment and consumption decisions to improve health and utilise health care (Grossman, 1972;1999;2000). Demand is influenced by factors that determine whether an individual identifies illness and is willing and able to seek appropriate health care. The model leads to a demand for health care of a given quality that is determined by individual and community factors as well as the price of medical care and other similar goods. This can be written in simplified terms as:

Qd = D(individual/household factors, community factors, prices)

Where Qd is quantity demanded

Individual (and household) factors include age, sex, income, education and knowledge about the characteristics of and need for contraceptive usage. Community factors include cultural and religious influences and other social factors that affect individual preferences. Price is a complex variable and includes the direct price and indirect price

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such as distance cost, opportunity (time) cost of treatment since treatment can be time consuming, and any informal payments made to the facility for commodities or to staff. However with this study,the emphasis is more towards the demand-side determinants of health care utilisation.

Also, one issue currently receiving a good deal of attention is that of prevention. It is often asserted that one of the most effective and possibly, efficient way to achieve further improvements in the quality and length of life in the developing world would be to concentrate efforts on trying to encourage a switch from health-endangering to health-enhancing consumption patterns (Wagstaff, 1986). Thus preventive services are consumed in the expectation that the cost of prevention is significantly lower than the expected cost of illness. This 'prevention' theory can be juxtaposed to the use of contraceptives since they have the tendencies of avoiding unwanted pregnancies with its attendant effects. On the other hand, the demand for curative care is associated with the symptoms of possible illness and the desire for diagnosis, treatment or the alleviation of pain. This implies that the demand for health care is influenced both by an individual's state of health, the frequency of illness (morbidity) and underlining economic factors (Heller, 1982).

Thus this study employs the model of health care use by Grossman (1972).

4.1.1 Application of the Grossman Model

The model as applied in this study assumes that the woman in her reproductive age will maximise the utility gained from using contraceptives to the point where the marginal benefit gained is equal to the marginal cost of using contraceptives.

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Hence, the demand for contraceptives is a derived demand in that it is not demanded for its own sake but to promote a healthy outcome. Thus, the demand for contraceptives can be derived from a model incorporating utility-maximising behaviour and the production of an adult woman's health, treating contraceptives as input in the production process. However it is important to note that if the woman in the reproductive age gains less utility from obtaining contraceptives, so that marginal cost is more than marginal benefits, then she is less likely to use contraceptives.

Alternatively, if marginal cost of obtaining contraceptives is less than the marginal benefits, then she is more likely to use contraceptives. However the woman in the reproductive age (15-49), becomes our focal point of analysis and thus the dependent variable becomes the current use of contraceptives.

4.1.2 Justification for the Use of the Grossman Model

Although Leibenstein and Becker (1957) model focuses on direct effect of use of fertility regulation methods, it laid too much emphasis on cost of raising children thus putting much priority on the demand for children. Grossman model on the other hand, generally looks at investment factors among other pressing health goods that affect demand for health services and thus focuses more on the economic implications such as the cost of time, the cost of the services and so on for the individual.Hence, this study finds it more appropriate to use the Grossman model which would help in analysing the consumption and investment implications of the decision to utilise health care services.

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4.2 Model Specification and Estimation

The empirical model applied in this study is adapted from Nketiah-Amponsah et al. (2012) who estimated the correlates of contraceptive use in Ghana using the 2008 GDHS and also applied the Grossman model in their work.

To begin with, assume that the *ith* woman in reproductive age has a utility function *(U)* definedover her own health (*H)* and a vector of all other goods *(*Z_i):

Thus $Utility_i = U[H_i, Z_i ; X_i]$ (1)

With

$$\frac{\delta U}{\delta Hi} \geq 0 \; and \; \frac{\delta U}{\delta Zi} \geq 0$$

WhileX_i is a vector of characteristics of the *ith* woman that influence preferences for contraceptives relative to all other goods. The health of the *ith* woman is produced via a health production technology *(T)* using contraceptives or family planning methods (C_i) and a vector of other complementary health inputs (M_i):

$H_i = T\,(C_i, M_i, Y_i)$(2)

With $\frac{\delta T}{\delta Ci} \geq 0 \; and \; \frac{\delta T}{\delta Mi} \geq 0$

Y_i is a vector of characteristics of the *ith* woman that determine the efficiency of her own health production.

Equation 1 and 2 imply a composite utility function (*U**)

$Utility_i = U\,[T(C_i, M_i, ; Y_i), Z_i; X_i]$ (3)

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$$Utility_i = U' [C_i, M_i, Z_i; X_i, Y_i]$$

Now, regarding the choice of contraceptives, define Z'_i to be a vector consisting of the components of Z_i and M_i. Hence the composite utility function in Equation (3) is reduced to:

$$Utility_i = U' [C_i, Z_i; X_i, Y_i] \quad (4)$$

Assume that each woman in the specified age category faces the following budget constraint,

$$I_i = P_c C_i + P_z Z'_i \quad (5)$$

Where I_i is the total income for the *ith* woman, P_c is price of contraceptives, $P_{z'}$ is a vector of the prices of all other goods. P_c is the total cost of obtaining contraceptive services and thus includes both direct price and indirect prices such as transportation and opportunity cost of the waiting time for access.

Maximising Equation (4) subject to Equation (5) generates a set of first-order conditions that describe the optimal consumption bundles of C_i and Z'_i. Solving for the first order conditions derives the general equation for contraceptive demand for the *ith* woman:

$$C_i = D_c[P_c, P'_z, Ii, X_i, Y_i] \quad (6)$$

The reduced form expression for contraceptive demand in Equation (6) is a derived demand since contraceptives are not consumed for their own sake but rather their usefulness in promoting good health and thus the utility is only indirectly impacted by contraceptive.

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4.3 Method and Technique of Analysis

4.3.1 Logistic Regression

Following Anyanwu (2007), the constructed prices for this study are prices of methods which are direct, and transportation cost, travel time and waiting time which are all indirect cost. Hence, the travel time and waiting time are captured as opportunity cost or forgone income.

Most studies have relied on the use of logit and probit models in modelling the demand for healthcare services. For instance, Anyanwu (2007) used conditional logit model estimates for choice of health care services by people suffering from malaria. The conditional logit was used because the model was that of a choice behaviour, thus the explanatory variables included attributes of the choice alternatives as well as the characteristics of the individuals making the choices.

However, other demand for healthcare studies such as that of Nketiah-Amponsah et al. (2013), used the negative binomial regression to investigate the socio-economic and demographic correlates of the intensity of antenatal care utilisation in Ghana. This technique was used because the dependent variable which is the antenatal care utilisation represents a count outcome.

In this study, it is assumed that modern contraceptives are more effective than traditional contraceptives as was noted by (Gu and Che, 2013). Furthermore, it also assumes that the production technology and taste remains the same since the period of data collection was just two weeks, the utilisation of contraceptives is modelled as a discrete variable thus either an i^{th} woman in the reproductive age uses it or does not irrespective of whether it is

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a traditional or modern method. Hence, a bivariate analysis would be carried out with regards to whether the current use of contraceptives is dependent on price among other socio-economic variables. Thisparticular study's classifications for modern methods of contraceptives includes the pills, injectables, Intra-Uterine Devices (IUD), Implants, Male and Female Condoms, foam jelly, Male and Female sterilisation as well as emergency contraceptives. Traditional methods include the Rhythm or periodic abstinence and withdrawal methods.

Objective One: Determine whether cost/price of contraceptives is a barrier to contraceptive use among women

In addition to price, six other variables have been used as independent or explanatory variables in the regression model. These variables include: age of respondent, marital status, number of children, religious affiliation, education and income were selected to eliminate the potential influences on the dependent variables since most studies such as that of Nketiah-Amponsah et al. (2012) have indicated that these variables strongly influence the usage or otherwise of contraceptives and its choice.

To examine the relationship between price of contraceptives and use among women, the reduced form model below is used to determine if direct and indirect cost have a bearing on the usage.

$CU_i = f(dP, indP, Age, Agesq, numofchild, numofchildsq, mar\text{-}stat, relg, inc, educ)$... *(1)*

$CU_i = f(X)$……(2)

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CU is the contraceptive use or choice of the *ith* individual, β is the vector of the estimated parameters and **X** is the vector of explanatory variables which are represent the direct and indirect cost of method and other socio-economic characteristics of the *ith* individual. Thus the equation is specified as follows;

$CU_i=\beta_0+ \beta_1 dPi+\beta_2 indPi+\beta_3 Agei+\beta 4 Agesq+\beta_5 numofchild+\beta_6 numofchildsq+\beta_7 mar\text{-}stat+\beta_8 relg+\beta_9 inc+\beta_{01} educ+\varepsilon i$ ..... (3)

Where

CUi is a binary outcome, thus the use or no use of contraceptives, (the use can also further be categorised into modern use or traditional use)

dPi is the direct price or cost associated in accessing contraceptives; for instance, the directly observed prices of methods available in the market.

idPi is the indirect cost associated with the use of contraceptives and it includes; cost of transportation, travel time and waiting time been proxied with opportunity cost for obtaining contraceptive.

$\boldsymbol{Age_i}$ is the age of respondents (Age square has been included due to the possible non-linearity of the life cycle effect)

$\boldsymbol{Numofchild_i}$ is the number of living children of respondents (number of living children square has been included to know whether those who have had the required number of children may still want to use contraceptives.

$\boldsymbol{Mar\text{-}stat_i}$ is the marital status of respondents.

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$\boldsymbol{Relg_i}$ is the religious affiliation of respondents.

$\boldsymbol{Inc_i}$ is the income of respondents.

$\boldsymbol{Educ_i}$is the highest educational level completed.

Justification of the Use of Logistic Regression

Since the dependent variable which is current use of contraceptive is a binary outcome which is either yes or no, it becomes useful to use either the logit or probit technique for estimation rather than the Ordinary Least Square (OLS) method. This is because the OLS methods may not be able to appropriately estimate a linear function with a binary outcome since the error term would not be normally distributed. For a normal distribution, the error term is required to take any value between positive and negative infinity ($\pm\infty$). However, the error term in such a model can only take 0 or 1 for the dependent variables. This implies that the variance of the error term depends on the explanatory variables and thus may result in heteroscedasticity (Jones 2005). This then violates the assumption that there should not be any correlation between the error term and any of the explanatory variables under the application of the OLS method.

Hence, the logit and probit models become more appropriate to use because their latent variable which is the dependent variable is a linear regression (Jones 2005). However this study assumes that the error term is logistically distributed and thus adopts the logistic model as specified by Gujarati (2004) for estimation. With the logistic model the co-efficient of the independent variables only show whether the probability of an event occurring will increase or not when there is a change in the explanatory variables. A positive logit indicates that an increase in the value of the explanatory variable(s) will

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lead to an increase in the odds that the dependent variable equals one (1). Conversely, a negative logit model indicates that the odds that the dependent variable equals one (1) decreases as the value of the explanatory variable increases (Gujarati, 2004). The odds ratio explains the ratio of the probability of an event occurring to the probability of it not occurring. The marginal effect also measures the impact of a small change in the explanatory variable on the probability of the dependent variable. These are all approaches for interpreting the logistic model.

The dependent variable was measured as a dummy with 1 representing usage thus both modern and traditional and 0 representing non-usage. The logistic regression model can be represented as log of odds; Logit $(p_i) = \ln (p_i/1\text{-}p_i)$.

The model is estimated using STATA 13 with p-values reported at 90%, 95% and 99% confidence levels which are used to either reject or fail to reject the null hypothesis that the variable in question is statistically insignificant.

4.3.2 MultinomialLogisticRegression

Following Jones and Kirigia (2000), who modelled the choice of contraceptive methods on the different utility derived from contraceptive usage in South Africa, This study examines the choice of contraceptive methods vis-à-vis the direct and indirect price the individual pays.

Objective Two; Examine if cost/price influences the choice of contraceptives

This particular objective helps to know if cost/price plays a role in the choice of contraceptives being used. The reduced form model that would be used includes.

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$Y_i=\beta_0+\beta 1\text{dP}i+\beta 2\text{indP}i+\beta 3\text{Age}i+\beta 4\text{Agesq}+\beta 5\text{numofchild}+\beta 6\text{numofchildsq}+\beta 7\text{marstat}+\beta 8\text{relg}+\beta 9\text{inc}+\beta 01\text{educ}+\varepsilon i$

Where Y_i is the dependent variable which is the individual choice of contraceptive options of modern, traditional or no use. Hence, a multinomial regression analysis is employed to determine how cost plays a role in the choice of the above independent variables. The multinomial regression model is used because the dependent variable has more than two outcomes, which includes no use, modern use and traditional use. In this study, no use of contraceptives is set as the reference group or base to facilitate the comparison between the non-users and users. The multinomial regression would therefore assess the odds of modern use (1) versus no use (0) and traditional use (1) versus no use (0). Hence the multinomial logit is equivalent to running a series of binomial logits.

Justification for the Use of multinomial Logit

The Multinomial Logistic Regression (MLR) helps to predict the probability of an outcome or response occurring, given the presence of relevant effects or independent variables. Thus the independent variables may be continuous or categorical (Greene, 2003). The MLR was preferred over other estimation techniques such as the ordered andnested logistic regression , which are all polytomous in nature. Thus with the MLR, all the events are run in a single categoryand estimated simultaneously. Hence, the parameter estimates are more efficient leading to overall unexplained error. Additionally, the MLR was chosen over other qualitative response models because of its computational efficiency, simplicity and interpretability with behavioural variables. The MLR is

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regarded as an extension of the logit model which is seen as one of the easiest and most widely used of qualitative response models (Train, 2009).

The choice of contraceptives is either modern, traditional or no use of contraceptive method. Hence the variable Y is used to represent it. y=1 means choice of modern method, y=2 represents choice of traditional method whilst y=0 represents, no use of contraceptives.

εi is the error term

The multinomial logistic regression can be represented as;

$$\Pr(y = 1) = \frac{e^{X\beta^{(1)}}}{e^{X\beta^{(1)}} + e^{X\beta^{(2)}} + e^{X\beta^{(3)}}}$$

$$\Pr(y = 2) = \frac{e^{X\beta^{(2)}}}{e^{X\beta^{(1)}} + e^{X\beta^{(2)}} + e^{X\beta^{(3)}}}$$

$$\Pr(y = 3) = \frac{1}{e^{X\beta^{(1)}} + e^{X\beta^{(2)}} + e^{X\beta^{(3)}}}$$

Note the coefficient for outcome 3 has been set to zero, thus the model has base category of 3, which are those not using contraceptives currently. This means that those who do not use contraceptives currently would serve as a reference or the base outcome. The Maximum Likelihood Estimation (MLE) is used to estimate parameters of MLR. Thus the MLE is the highest probability or most likely value of the estimators.

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Marginal Effects

The estimation of the marginal effects was used to understand the relationship between contraceptive use behaviour and the socio-economic characteristics of women in their reproductive age in the Ga-West Municipality. The marginal effects estimation is used for interpreting results of both logistic and multinomial regression analysis. It represents the change in the probability of a response (dependent) variable with a unit change in an independent variable holding all other variables constant. Thus, the marginal effects emphasises the magnitude of associative effects between the dependent and the independent variables. For categorical variables, the effects of discrete changes are computed, thus the marginal effects for categorical variables show how P (Y=1) is predicted to change as X_k changes from 0 to 1 holding all other X_s equal. For instance, for categorical variables with more than two possible values, the marginal effects shows the difference in the predicted probabilities for cases in one category relative to the reference category. For continuous independent variables, the marginal effect measures the instantaneous rate of change. If the instantaneous rate of change is similar to the change in P (Y=1) as $X_k$increases by one. A negative estimate in the marginal effects estimation indicates that the probability of making a choice relative to another which is the reference category is lower for individuals with specific characteristics.

The Independence of Irrelevant Alternatives (IIA) Test for Multinomial

The multinomial logit model assumes that the odds for any pair of outcomes are determined without reference to the other outcomes that might be available, and this is known as the independence of irrelevant alternatives property (IIA). Hausman and McFadden (1984) proposed a Hasuman-type of this hypothesis.

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The study tested this assumption by comparing coefficients from a full model with the three categories of contraceptive choice, with each of two restricted models where modern contraceptive use or traditional were excluded respectively. This was done by using the suest and test commands in stata. The test showed that there was no systematic difference between the coefficients in the full and restricted models. (See Appendix C for results of the IIA test).

4.4 Data Sources

Data source was mainly primary, but was backed with some secondary data from Ghana Health Service and the Ghana Demographic Health Survey (GDHS 2008). The Ga-West Municipal Assembly was purposively selected for this study because of its peri-urban status even though it is located in the Greater Accra Region of Ghana, it records one of the highest fertility rates. Its peri-urban status provides a mix of rural and urban dynamics and helps to better analyse the contextual issues.

4.4.1 Questionnaire-Pretesting

In an attempt to overcome the diverse challenges associated with conducting a survey, particularly the likelihood of administering a questionnaire which has the probability of missing out on the study objectives, a pilot survey was conducted. Thus the data collection tool was pre-tested at the Ledzokuku Krowor Municipal Assembly (LEKMA) hospital in Teshie, Accra. LEKMA shares some similar characteristics in terms of fertility with the main study area. Thus an exit interview was conducted for 10 women from the out-patient department. This helped to test the reliability of the data collection tool, the reaction of respondents and the general feasibility of carrying out such a study. Based on

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the outcomes, modifications were made to fine- tune the questionnaire for actual data collection.

4.4.2 Training of Interviewers

Two research assistants, well vexed in language diversity, were trained to help the principal investigator in obtaining the information from the study area. Objectives of the study were clearly explained to them as well as strategies on how to obtain the right responses by making the interviewee know the essence of the study since the subject matter was quite sensitive.

4.4.3 Data Collection

A structured questionnaire was designed to elicit information from women of the reproductive age (15-49 years), regardless of marital status. Questionnaire was administered to each woman in a language of her choice ranging from the English language to the local dialects mainly Twi, Ga and Ewe. Most of the communities visited included the Amasaman, the Municipal capital and communities like Pokuase, Amamorley and Oduman, all in the Municipality. Data was collected on fertility and family planning in addition to demographic and socioeconomic data. A simple random selection of 5 health facilities was carried out in the Municipality with the help of the Municipal Health Directorate of the Assembly, to provide a good representative sample of the entire Municipality. In order to ensure randomness of data collected, the sample of women included every fourth woman from the reproductive age exiting the outpatient department of the facility. Since the only hospital in the Municipality had the largest out-patient attendance, 110 respondents were chosen from there, with two of the health centres providing 80 respondents each, whilst two Community Health-based Planning

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Systems (CHPS)in the municipality had 45respondents each. The quota distribution of health facilities was informed by their size and number of total out-patients recorded in a day. (See Appendix A for distribution of questionnaires).

An exit interview was conducted at various health facilities in the municipality in order to avoid the bias of interviewing pregnant women and nursing mothers who would be directly involved with family planning and fertility issues. Interviews were based on an individual woman in the reproductive age group and her use or otherwise of any contraceptive method for the past one year.

4.4.4 Ethical Considerations

Questions that involve reproduction and sexuality issues particularly on contraceptive use, raises a number of ethical concerns. Hence, an informed consent for the survey was obtained from the respondent at the beginning of the individual interview. Respondents were also assured of confidentiality of answers and informed on the voluntariness of their participation. Also, ethical clearance was granted by the Institute for Statistical Social and Economic Research's (ISSER) ethical review committee (ECH 032/14-15).

4.4.5 Sampling Frame and Technique

Based on the Municipality's family planning acceptance rate of 37.4 percent in 2014, a total of 360 respondents were sampled. The total number of Women in Fertility Age (WiFA) for the Municipality in 2014 was 61446 (Ga-West Municipal, Annual Report; 2014).

The sample size calculation formula used was; $N = Z^2(pq)/d^2$

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Since the population size for the study is above 50,000. The infinite calculation formula was used (Wayne, 2006).

Where N = sample size,

Z = Reliability Coefficient with 95 percent confidence certainty

P= Population variance available from previous data, where q = 1-p; q= 1-0.374= 0.626

D = the desired or the required size of standard error allowed if the value of p is 0.374 (which gives the largest sample size) and the desired standard error chosen to be 0.05 with reliability coefficient of 95 % certainty (z = 1.96)

Hence , $N = \frac{[(1.96)^2(0.374*0.626)]}{(0.05)^2}$

N= 359.8 ≈ 360

4.4.6 Background Information of Study Area

Ga West Municipality is one of the ten (10) Districts in the Greater Accra Region. It was created from what used to be formerly the Ga District, in the year 2004 in pursuance of the government's decentralization and local government reform policy that was introduced in 1988. The Ga District was divided into Ga East and West Districts in July 2005 due to its rapid population growth and vast land area. The local government ministry re-demarcated the newly created Ga West District into Ga West and South municipalities in 2008. The district is 60% rural and 40% peri-urban and urban, and is made up of about 150 communities. (Municipal Annual Report; 2014)

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Ga West municipality is bounded to the North by the Akwapim South District at Doblo, South by the Accra metropolis at Neoplan in Achimota, East by Ga East municipality at Kwabenya and West by Ga South Municipality at Tabora. Currently, the municipality has a population of 256,026, with many new settlement areas due to the influx of urban migrants into the municipality.

Ga West municipality is located along the main Accra to Kumasi highway 25 kilometres to the north western of the capital Accra. The municipality is surrounded by the Akwapim Range Mountains and enjoys a good rainfall pattern throughout the year.

The indigenous inhabitants of the Ga West municipality are mainly of the Ga tribe. However many other ethnic groups have settled in the peri urban as well as rural communities, giving a mix of Akans, Dangmes and Ewes. Currently, the municipality is divided into three (3) sub-municipal areas for the purpose of planning and delivery of services namely: Amasaman, Ofankor and Pokuase.

The municipality has the following Health Facilities (HF):

Hospital – 1, Health centre – 3, Community clinics- 4, Operational CHPS – 12, Outreach points – 62, Private clinics – 12 and Maternity homes- 4

All the government Health Facilities are located in the Amasaman and Pokuase sub districts. Ofankor sub- district has mainly Private Health Facilities.

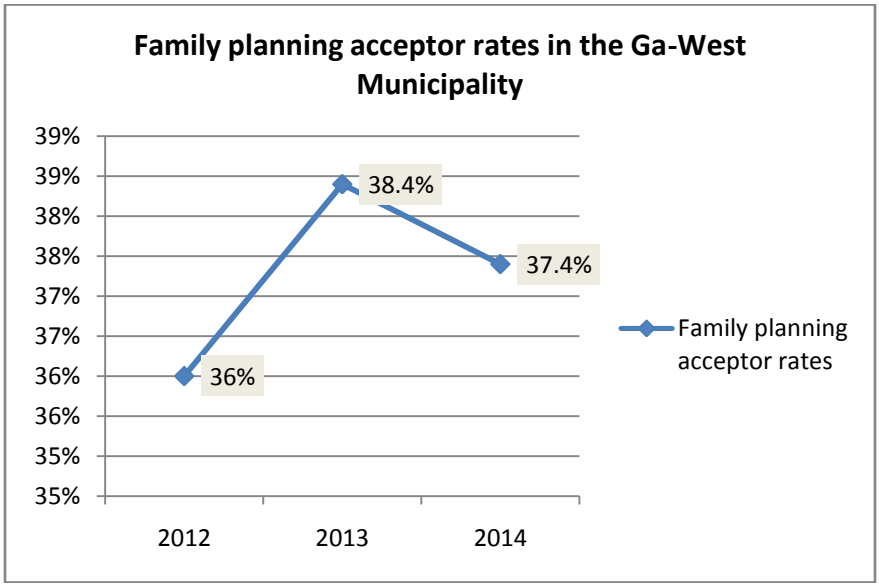
The Ga West Municipal Hospital provides a wide range of health care services and it is the nearest referral hospital that serves both Amasaman and its environs.

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With the introduction of the National Health Insurance Scheme (NHIS) some of the citizens prefer to seek medical care directly at this hospital due to the broad range of services it provides.

In 2014, the Municipality's family planning acceptance rate was estimated at 37.4 percent representing a marginal decrease of 2.6 percent on that of 2013. The graph below displays the family planning acceptance rates in the Municipality (Municipal Annual Report, 2014).

Figure 4.1: Family Planning Acceptor Rates in the Ga-West Municipality



Source: Author Generated from 2014 Municipal Health Directorate Annual Report

The municipality has poor road infrastructure, a very important factor in health care delivery which makes access to health care very difficult, hence women tend to deliver at home or with Traditional Birth Attendants (TBAs) due to the poor road network. (Municipal Annual Report; 2014).

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4.5 Description of Variables and their Expected Outcomes

In a study on overcoming barriers to health services, Ensor et al. (2004) were of the view that the determinants of demand and supply may in turn generate 'barriers' to utilisation of health services. Matheny (2004) makes reference to the various components of cost associated with contraceptive use. He noted that at least six components contribute to the cost of contraception for users: the monetary cost of purchasing contraceptives; the search cost of acquiring information about methods and where to purchase them; the time and travel costs of obtaining them; the costs associated with side effects of use, the variety-constraint cost of not getting one's preferred method; and the psychic costs of using contraceptives despite perceived social disapproval. However, this study focuses more on the direct price of the method, the waiting and travel time (opportunity cost) and transportation cost which are akin to the indirect cost and can be measured easily compared to the psychic cost and cost of side effects.

4.5.1 Dependent Variable

Contraceptive Use *(CU)*

The respondents were asked if they were current users of contraceptives. Respondents that answered no were labelled as "no use" and those that affirmed usage were captured as "use". Those have been using were further grouped into "modern use" and "traditional use". The modern use includes injectables, pill, IUD, Implants, foam jelly, emergency contraceptives, lactational amenorrhoea, male and female sterilization as well as the male and female condoms. The traditional use includes the rhythm or periodic abstinence, withdrawal and the folk methods. The dependent variable is captured as a categorical

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variable with 0 as “no use”, 1 as “modern use” and 2 as “traditional use”. The reference category is no use.

4.5.2 Independent Variable

Direct Cost of Methods

Price of Contraceptives

This variable has been captured as a continuous variable. This particular variable was measured using observed prices at the public health facilities for the various contraceptive methods (See Appendix D). Following from economy theory, it is expected that cost or price would have a negative bearing on contraceptive use in the Ga West Municipal Assembly. This would lay the solid ground for increased advocacy to be geared towards making contraceptive services free and accessible in Ghana. On the other hand , if the effect of price is insignificant, then there is a need to intensify education and awareness to increase family planning and STI prevention. This could help slow population growth within a human rights framework. In addition, family planning can contribute to improvements in maternal and child health, which can help to promote developmental goals thereby reducing poverty.

4.5.2 Indirect Cost of Methods

Opportunity Cost (Time spent in accessing services)

Time spent in accessing contraceptives, thus the waiting time and the travel time, have been proxied with the “opportunity cost” or forgone income. It has been captured as a continuous variable. Hence this study also expects opportunity cost to have a negative sign. (See Appendix B for how Opportunity Cost was practically measured and estimated).

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Transport Cost

Transport cost has been captured as a continuous variable, indicating the amount of money women spend on transportation when accessing contraceptive services in a month. The expected sign for transport cost is negative. Thus the further the distance, the higher the transportation cost and the less likely one is able to access contraceptive services.

Age

Age has been captured as a continuous variable in this analysis. The respondents used in this study are women in their reproductive age of between 15-49 years. It is expected that as one increases in age, the more likely contraceptives would be accessed. Hence a positive sign is expected. On the other hand as age increases and women reach their menopausal state, they are less likely to access contraceptives and thus presenting a negative sign for expectation.

Education

Education has been captured as a categorical variable. Thus "none" categorises those who have never attained any form of education and those who were not able to complete kindergarten. Those in the category of "primary" are those who completed up to class 6 and those who were not able to complete Junior High School (JHS). Those captured as "middle/JHS" were those who fully completed basic education level at Form 3. Those in the "secondary" level are those who completed secondary and vocational education. Respondents categorised under "Tertiary" are those who attained postsecondary education including Nursing. This particular study expects a positive relationship between education and contraceptive use, to verify economic theory, particularly that of

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Grossman (1972), which acknowledges that educated people are more likely to invest in their health.

Income

Income has been captured as a continuous variable. Following from economic theory that as one's income increases, one is more likely to invest in health services (Grossman 1999), this study has a positive expectation for income. Income was measured using the type of employment the respondents undertake. Those that were self-employed were asked the profit after sales earnings they obtain daily. This amount was converted into monthly earnings.

Religion

This variable is a categorical variable. Respondents are captured under "Catholics", "other Christians" and "Muslims". The expected signs for Catholics and Muslims would be negative since their religious practices to some extent prevent them from accessing contraceptive services. Other Christians who are not Catholics are expected to have a positive sign.

Number of Children

This variable is expected to have a positive relationship with contraceptive use. For instance the 2008 GDHS findings indicate that, the proportion currently using contraception generally increased with increasingnumber of children. This is because as women reproduce, they are more likely to practice birth-spacing. Seventeen (17) percent of women without children used contraceptivemethods, compared with 26 percent of

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women with five or more children, while women who had three or four children were 27 percent. Number of children has been captured as a continuous variable in this study.

Marital Status

Marital status is also believed to influence a woman's decision to accessing contraceptives. This variable is a categorical variable. This variable is categorized into "never married" which includes those who are single and those in consensual union and not married. Those who are categorized under "married" are those currently married and those married but not living together. There is also the "divorced/separated" category. It is expected that the sign would be negative for married women since the (GDHS 2008) estimated that the current use of contraceptives is far higher among unmarried women who are sexually active (50 percent) than among married women (24 percent) or all women (19 percent). It may be positive or negative for those who are never married. It is expected that those who are divorced would also have a negative sign.

Table 4.1:Summary of Explanatory Variables in This Model and Their Classifications and References

Variable	**Classification**	**Reference**
Direct Price of method	Continuous	N/A
Indirect Price of method	Continuous	N/A
Age	Continuous	N/A
Number of children	Continuous	N/A
Marital status Never married, Married, Divorced/Separated	Categorical	Never married

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Religion Catholic, Other Christian, Muslim	Categorical	Catholics
Income	Continuous	N/A
Education None, Primary, Middle/JSS, Secondary, Tertiary	Categorical	None

Source: Author Generated from 2015 Data Analysis

4.7 Summary of Chapter

This chapter has presented the methodology that was employed in the study. The Grossman model that uses the investment approach has been adopted and used to obtain the demand for contraceptives which is a derived demand. The specification of the empirical model, the data sources and procedures in data collection as well as variables have been clearly outlined in this chapter.

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CHAPTER FIVE

ANALYSIS AND DISCUSSION OF RESULTS

5.0 Introduction

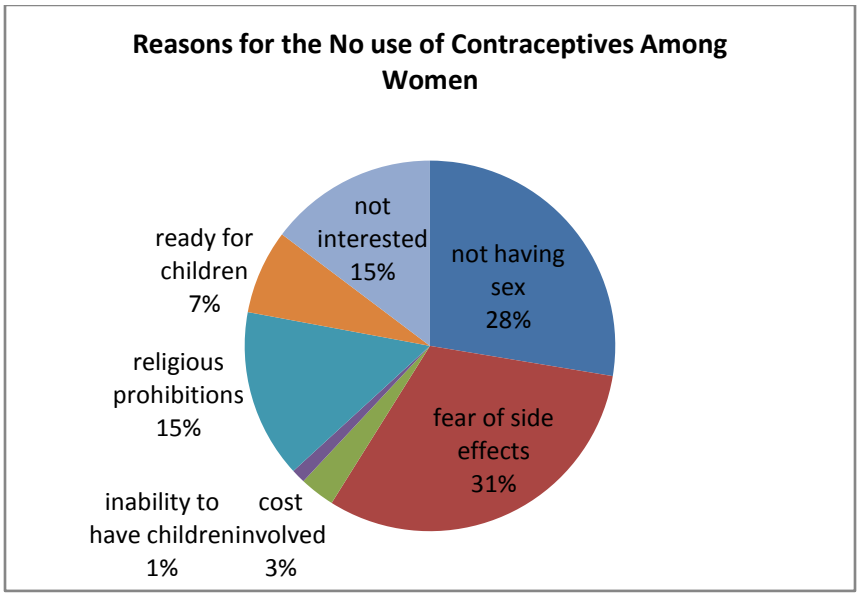
This chapter presents the descriptive statistics generated from analysing the socio-economic, cultural and demographic variables. It also discusses the empirical results from the logistic and multinomial logistic regressions and their implications on the health and welfare of women in the Ga-West Municipality.

5.1 Characteristics of Respondents in the Sample

The study sought to analyse the effects of the socio-economic variables on the use of contraceptives and its choice, thus whether the woman uses contraceptives (1) or not (0). Furthermore, for those using contraceptives,, whether they choose between modern or traditional contraceptive methods. This provides three options of no use (0), modern use (1) and traditional use (2). From the total sample, the total respondents of women not using contraceptives in the municipality accounted for 45.3 %whilst users accounted for 54.7%.Most of the reasons for the lack of use are associated with the fear of side effects. Figure 5.1 presents the reasons for the current non-use of contraceptives in the municipality.

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Figure 5.1: Reasons for the No Use of Contraceptive Among Women



Source: Author Generated from Survey, 2015

Although the cost involved was not cited as the most pressing reason for the none use of contraceptives, it appears most women do not take into consideration the indirect cost associated with its use and thus may not see cost as a major hindrance to the use of contraceptives.

Table 5.1: Descriptive Statistics of Independent Continuous Variables

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Age	360	29.77	8.60	16	48
Number of Children	360	1.85	1.69	0	7
Income	360	233.35	194.34	0	1200
Commodity Price	360	2.58	3.17	0	10
Transport Cost	360	1.85	1.98	0	12
Opportunity Cost	360	3.53	4.67	0.50	81.25

Source: Author Generated from Survey, 2015.

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From Table 5.1, the average age of women is 29.77 years with standard deviation of 8.6 and aminimum and maximum of 16 years and 48 years respectively. Furthermore, the mean observation of the number of children is 1.85 with a minimum of 0 with the maximum being 7. The mean income of the respondents is 233.35 with the minimum being 0 and the maximum of 1200.

The mean cost of contraceptive commodity is 2.8 with a minimum and maximum of 0 and 10 respectively. Transport cost also has a mean of 1.8 and a minimum and maximum of 0 and 12 respectively. The opportunity cost has a 3.53 and a minimum of 0.5 as well as a maximum observation of 81.25. The total number of observations for all continuous independent variables is 360.

Table 5.1 also shows that out of the total number of users, 36.1% are using modern contraceptive methods, with the remaining 18.6% of women using traditional methods, whilst the non-users constitute 45.3%. The 2008 GDHS findings however provided 19% of women as those who were currently practicing contraception. Furthermore, among the choice of contraceptives, the most used is the Rhythm (traditional method) accounting for 16.4% of total use, this is followed by Injectables accounting for 11.4%, followed by male condom, pills, implants, withdrawal, IUD and emergency contraceptives and lastly by the female condom accounting for 7.8%, 6.9%, 5.3%, 2.2%, 1.7% and 1.4% respectively. Meanwhile those not using any method are about 45.3%. This indicates that the Injectables are the most used of contraceptives among the modern methods.However the male and female sterilization and the diaphragm were not mentioned as current methods of contraception since most of them were not familiar with such methods. The analysis shows the preference for short term rather than long term methods. This finding

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is consistent with Adanu et al. (2012) who found the Rhythm as the most used contraceptive and additionally the Injectables as the modern contraceptive method which is most used.

Table 5.2, presents the descriptive statistics for the variables and provides a bivariate analysis.

Table 5.2: Descriptive Statistics of Socio-economic variables and the Choice of Contraceptive Methods

Variable	No Method (%)	Modern Use (%)	Traditional Use (%)	Chi-square (X^2)
Age				53.94***
15-19	9.7	0.3	0.3	
20-29	15.3	19.4	10.8	
30-39	9.2	12.8	5.3	
40-49	11.1	3.6	2.2	
Total	**45.3**	**36.1**	**18.6**	
Education				20.71***
None	7.5	3.1	3.1	
Primary	6.7	8.1	1.9	
Middle/JSS	14.2	12.5	6.1	
Secondary	13.3	6.4	3.9	
Tertiary	3.6	6.1	3.6	
Total	**45.3**	**36.1**	**18.6**	
Marital Status				9.13***
Unmarried[1]	22.2	20.0	9.7	
Married	23.1	16.1	8.9	
Total	**45.3**	**36.1**	**18.6**	
Religion				65.58***

[1] It includes those who are divorced and separated

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Catholics	12.5	1.7	8.9	
Other Christians	17.8	33.9	8.1	
Muslims	15.0	0.6	1.7	
Total	**45.3**	**36.1**	**18.6**	
Children				23.43***
None	16.1	6.7	5.0	
1-5	26.4	29.4	13.3	
6-10	2.8	0.0	0.3	
Total	45.3	36.1	18.6	
Income				5.49
Poor	27.5	23.3	11.4	
Middle	17.8	12.5	7.3	
Rich	0.0	0.3	0.0	
Total	**45.3**	**36.1**	**18.6**	

Source: Author Generated from Survey, 2015

***, indicates 1% significance level, ** signifies 5% and * 10% significance levels.

Age

The descriptive analysis presents the minimum age interviewed as 16 and the highest as 48, thus providing a well representative distribution of target group of women in their reproductive age. The mean age is 29.8 with a standard deviation of 8.6. From the age classification, the group with the most use of contraceptives are those in the 20-29 age brackets who are very youthful and as such sexually active, those with the least use of any method of contraception are those in the 15-19 age categories since most respondent in that group are likely not to be engaging so much in sexual activities. Age was statistically significant with contraceptive use at the bivariate level.

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Education

The distribution of respondents indicates that those with no education account for 13.6%, whilst those with primary, junior, secondary and tertiary are about 16.7%, 32.8%, 23.6%, 13.3% respectively. Thus respondents in the middle/JSS were most interviewed with the least being those in tertiary. From Table 5.2, it can be observed that although those who completed middle school were the most users about (18.6) %, they also had a high record of no use (14.2%). This is because they were the most represented group in the sample, also with the exception of those with no education all the other respondents prefer modern to traditional methods of contraceptives. However with the 2008 GDHS, those in the secondary and above level of education use any method of contraception constituted about 30.4% followed by those in Middle/JSS (27.4%) and then primary (26.6%). Those with no education were about 13.6%. Those in the middle/JSS were the most users of modern methods of contraceptives (19.6%). Education was statistically significant to contraceptive use.

Marital Status

Out of the total respondents, 48.1% are married with the remaining 51.9% unmarried. Most of the married women (22.5%) were within the age group of 30-39, whilst the unmarried are in the 20-29 age category. The unmarried includes those who are divorced or separated. The Contraceptive Prevalence Rate (CPR) which is defined as the percentage of currently married women who are currently using a method of contraception indicates that only 25% are using any contraceptive methods, with 16.1% in favor of modern methods whilst 8.9% are using traditional methods. This could also be

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due to the fact that some of those respondents may be lactating or nursing mothers. For the unmarried, 20% are using modern methods whilst the remaining 9.7% are not using. The 2008 GDHS on the other hand, estimated the number of married women using any method of contraceptive to be about 24%, with those using modern methods constituting 17% and traditional mehods (7%). Marital status was significant with contraceptive use at the bivariate level.

Religion

Out of the total number of respondents sampled, 23.1% were Catholics, 59.7% were all other Christians with the exception of Catholics and the remaining 17.2% were Muslims. The analysis indicates that Muslims and Catholics account for low use of modern contraceptives of about 0.5% and 1.7% respectively. Most of the reasons for the no use of contraceptives were the religious prohibitions attached to such contraceptive practices. However, for traditional methods especially Rhythm, Catholics were the most users (8.9%). Other Christians prefer modern methods of contraception (33.9%) to traditional methods (8.0%). Religion was statistically significant to the use of contraceptives at the bivariate level.

Number of Children

From the total number of respondents, 27.8% had no children, whilst 69.1% had children between 1 and 5, the remaining 3.1% were those who had between 6 and 10 children. Those having children between 1 and 5 are the most users of contraceptives accounting for 42.7%. Those having between 6 and 10 are the least users (0.3%) which is mainly the use of traditional method and these are people who are in the age category of 40-49 and

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may have had the desired number of children. Number of children was statistically significant to contraceptive use at the 1% significance level.

Income

Women with income levels less than GHS300 and were classified as poor, accounted for about 37.8% of respondents who were mainly self-employed in sales and trade, those with income between 300 and 500 were about 32.5% and those earning between 500 to 1000 who are in the middle category constituted about 5%, whilst those on the income level of 1000 to 1500 who were classified as the rich were just about 0.3%. Those who were not earning any income who were mainly students and apprentices and some housewives accounted for 24.4%. It can be noted that those with income less than 300, constitute 14.4% of those who use modern contraceptives and 8.3% of those using traditional methods. Those income earners between 300 and 500 account for 10.8% and 5.6% of modern and traditional use respectively. This is followed by those not earning any income accounting for about 8.9% and 3.0% of modern and traditional use respectively. Those in the higher income brackets use smaller amount of contraceptives and this could be as a result of their low representation in the sample. Income is statistically insignificant at the bivariate level.

5.2 Results from Empirical Analysis

5.2.1 Factors that Affect Contraceptive Use

A logistic regression was estimated in determining the factors that contribute to the use or non-use of contraceptives in the Municipality. The dependent variable thus assumed a value of one (1) if the woman in her reproductive age was using it for the past one year

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and zero (0) if she was not using it. Table 5.3 presents the marginal effects for the various explanatory variables both continuous and categorical estimated from the logistic regression.

Table 5.3: Estimated Marginal Effects from the Logit Model

Variable	Marginal Effect	Standard Errors	Z	P>|Z|
Age	0.129***	0.009	14.38	0.000
Age-square	-0.002***	0.0001	-13.97	0.000
Marital Status				
Married	-0.158***	0.027	-5.74	0.000
Divorced/Separated	-0.544***	0.026	-21.22	0.000
Education				
Primary	0.124***	0.036	3.44	0.001
Middle/JHS	0.046	0.034	1.37	0.170
Secondary	0.003	0.036	0.08	0.937
Tertiary	0.147***	0.043	3.42	0.001
Religion				
Other Christian	0.319***	0.024	12.89	0.000
Muslim	-0.321***	0.024	13.56	0.000
Contraceptive Price	-0.033***	0.004	-8.26	-0.000
Transportation Cost	-0.003**	0.006	-0.51	-0.608
Opportunity Cost	-0.006***	0.002	-2.46	-0.014
Income	0.000	0.000	0.50	-0.615
Children	0.237***	0.024	9.96	0.000
Children Square	-0.046***	0.005	-10.01	0.000

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Number of
Observations = 360
Prob >chi^2 = 0.000
Pseudo R^2= 0.4249
Waldchi2(16)1057.29

Source: Author Generated from Survey 2015

Note: ***, ** and * has been used to represent 1%, 5% and 10% significance levels, approximated at three decimal places.

Price of Contraceptives

The price of contraceptives was found to be significant and negatively related to the probability of using contraceptives. This implies that an increase in the price of contraceptives would result in a 3% points decline in the use of contraceptives. This is significant at 1%. This follows economic theory as Grossman (1972) posits that demand increases as prices of health goods declines. Similarly, Wagstaff (1986) also proved that, a reduction in the price of a unit of health input results in an increased utilisation of health inputs and as a consequence, an improvement in the individual's health status. But thefinding of this study is inconsistent with studies of Levin (2000), who concluded that there was no effect of cash prices on contraceptive use, thus presenting the argument that contraceptive use is not very responsive to a change in price when the change is nominal. Feyisetan and Ainsworth (1996) likewise shared a similar finding of price not constraining the demand for contraceptives. In other studies such as that of Cizewski and Phillip (1995), clients chose to substitute other brands rather than pay higher prices.

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Likewise Oliver (1995) also found a significant effect between price and use of contraceptives.

Transportation Cost

Transport cost was also inversely related to the use of contraceptives. The findings indicated that an increase in the cost of contraceptives would lead to a decline in the use of contraceptives by about 0.3% points but was not significant. This could be attributed to the fact that most of the communities are distributed around health facilities in the municipality and most of the respondents also access their contraceptives in the district thus making transport not a significant cost for them. Studies like that of (van Eijk et al., 2006) found that distance to ANC clinics, transportation cost and waiting time, exert significant negative influence on the utilisation of antenatal care.

Opportunity Cost

Opportunity cost was found to negatively influence the use of contraceptives. From the estimation, the more time people use in accessing contraceptive services particularly the waiting time and time used in travelling, the likelihood of less use of contraceptives. This finding is consistent with the studies of Bosu et al. (1997) and Segall et al. (2000) who concluded that the convenience of opening hours, an indicator of the importance of taking time off work, was found to be important in both Vietnam and Ghana in determining health service use. Oliver (1995) also observed time spent in accessing contraceptives to negatively affects its use.

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Age

One of the important finding from the estimation indicates that an additional year of age increases women's likelihood of using contraceptives. Thus average age of a woman in her reproductive age positively influences her use of contraceptives. This is because most women in that age category are sexually active and thus may be using contraceptives to prevent pregnancy as well as space their births. However this finding is contrary to what Grossman (1972) predicts that as health depreciates through aging, there is the likelihood of accessing healthcare the more. Other works such as that of Okezie et al. (2010) also found age to be inversely related to contraceptive use, although not statistically significant. Moreover, studies such as Nketiah-Amponsah et al. (2012) have also found age to be positive to contraceptive use.

However, age-square has also been used in this analysis to examine the relationship between the use of contraceptives and older women. This was found to inversely affect the use of contraceptives. Thus age increases the use of contraceptives, but at a slower rate with older ages.Both age and age square results were significant at the 1% significance level. This has been confirmed in some age surveys conducted in Africa, which found that the use of modern contraception generally increases, then decreases with age (Bertrand et al., 1993). Older women may also stop using contraception, believing that they are no longer at risk of becoming pregnant (Robey et al., 1992). But this may to a large extent depend on the type of contraceptive, since some particularly the condom are used in the prevention of STDs.

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Marital Status

With reference to women in their reproductive age who were never married, married women were found to be 16% points less likely to use contraceptives. Similarly, those who are divorced or separated are also 54% points not likely to use it. They are both significant at the 5% significance level. The average fertility for women in this study is 1.85. For married women, it could be attributed to the fact that quite a number of Ghanaian women who get married would want to have about 2 or 3 children before they start using contraceptives owing to the difficulty in conceiving when using contraceptives, although it can be argued that they may also use contraceptives for spacing birth. Those who are not married on the other hand, would want to prevent pregnancy until they are married and ready to have children. The divorced or separated may have completed their child bearing and might also not want any more children. This finding is however consistent with that of Frost et al. (2007) who also finds that those who are not in a marital relationship are more likely to use contraceptives compared to those who are married. Other studies such as that of Okech et al. (2011) in a study in Kenya contradicted this finding and concluded that married women were more likely to use contraceptives probably because they were more engaged in sexual activities.

Religion

With the reference being Catholic, other Christians were found to exert positive influence on contraceptives and were 32% points more likely to use contraceptives. Muslims on the other hand, were also 32% points not likely to use contraceptives as compared to Catholics. Both probabilities of use by other Christians and non-use by Muslims were

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significant at 1% significance level. This confirms study of Addai (1999) on whether religion matters in contraceptive use among women, since most Catholic women tend to have a strong opposition against contraceptive use in support of their church doctrine on fertility regulation; likewiseMuslimsalso have low use for contraceptives thus corroborating the study of Stephenson et al. (2007) on the contextual influences on modern contraceptive use in Sub-Saharan Africa, who found that in Malawi, Muslims were less likely to use modern contraception than were Catholics.

Number of Children

The number of children that a woman has was found to be a significant predictor of contraceptive use. Thus, women with children are 24%points more likely to use contraceptives. This is significantat 1% significance level. This suggests that women who have children are most likely to be using contraceptives for spacing or limiting their births and not necessarily using permanent or long-term methods as a means of fertility regulation. This finding has also been confirmed by Nketiah-Amponsah et al. (2012), who attributed this to the fact that women tend to use more contraceptives when they attain their ideal family size, barring other circumstances. However, there is a negative association between the number of children square and contraceptive use. This indicates that the rate of contraceptive use decreases with higher number of children. This suggests that most women who may be using contraceptives are using it for birth spacing. This could also suggest that, women who have children beyond a certain threshold may have already reached their 'in fecund periods' and therefore have less of a need for contraceptives. This result is robust at a 1% significance level.

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Education

Education is one of the socio-economic variables that have always been a significant predictor of contraceptive use. According to Grossman (1972), education has a positive bearing on the demand for health. Thus those highly educated are more likely to access more healthcare services as compared to those not educated. Furthermore, some empirical studies have found that education is closely linked to the use of contraception thus more educated women are more likely to use family planning methods (Kasarda et al., 1986, Robey et al., 1992). The present research findings also confirm this correlation. Using no education as the reference category, those who have primary education and tertiary education have about 12.4% points and 14.7% points chance of using contraceptives respectively and these are significant at the 1% significance level. Middle and Secondary education, although positive were not statistically significant. This could be attributed to the fact that most of the women interviewed in the study were still students especially at the senior high school level. Contrary to this, studies such as that of Jones and Kirigia (2000) found education to be negatively related to the use of sterilization, connoting that the more educated people are, the less likely they are to choose sterilization instead of the do-nothing option.

Income

Although this variable was not significant at any of the significance levels, it was positively related with contraceptive use, thus as income increases the likelihood of using contraceptives would be high and vice-versa. This was consistent with Okech et al. (2011) who also found income to have a positive influence on contraceptives.

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Additionally, Masiye and Rehnberg (2005) found positive income elasticity for willingness to pay in Zambia in addition to socio-economic constraints in the form of education of household head and household size. It is however not consistent with studies of Okezie et al. (2010) who found income to be negatively related to contraception although insignificant.

5.3 Presentation and Discussion of Results for Choice of Contraceptives

The multinomial logistic regression was used in analysing the effect of price/cost on the choice of contraceptives. The choice of contraceptives which is the dependent variable was categorised into modern use and traditional use with no use being employed as the reference point. The multinomial regression model generated coefficients which are log odds, providing an indication of the statistical significance of the explanatory variables on the contraceptive choice outcomes The log-odds ratios depicts how the log of the odds of the outcomes, modern use and traditional use, compared to the reference category of no use of method changes in response to individual characteristics.

Table 5.4: Multinomial Regression Results for the Choice of Contraceptive Methods

Choice of Contraceptives	Modern Use		Traditional Use	
	Marginal Effects	P>|Z|	Marginal Effects	P>|Z|
Age	0.079***	0.000	0.049***	0.000
Age-square	-0.001***	0.000	-0.001***	0.000
Marital Status:				
Married	-0.059**	0.005	-0.154***	0.000
Divorced/Separated	-0.319***	0.000	-0.238***	0.000

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Education:				
Primary	0.022	0.443	-0.014	0.452
Middle/JSS	-0.041	0.144	-0.081***	0.000
Secondary	-0.050*	0.093	-0.099***	0.000
Tertiary	0.021	0.536	-0.051*	0.072
Religion:				
Other Christian	0.349***	0.000	0.013	0.474
Muslim	-0.070***	0.001	-0.221***	0.000
Contraceptive Price	-0.014***	0.000	-0.029***	0.000
Transportation Cost	0.071***	0.000	-0.123***	0.000
Opportunity Cost	-0.002	0.675	-0.018**	0.003
Income	0.001	0.124	0.0003***	0.000
Children	0.145***	0.000	0.052***	0.001
Children Square	-0.036***	0.000	-0.008***	0.000
Number of Observations = 360 **Prob >chi^2 = 0.000** **Pseudo R^2= 0.4249** **LR chi2(32)= 2352.43**				

Source: Author Generated from Survey Data, 2015

Marginal effects for the three choice outcomes have also been estimated. Table 5.4 presents the marginal effects generated from the multinomial logistic model. The Pseudo R^2 of 0.4249 shows a good fit of the model, especially when this study is a cross-sectional one. A lot of emphases have been laid on the p-value and chi^2 values as pertains to the norms of statistics. There was a log ratio chi^2 at 32 degrees of freedom and with its associated p-value, gives the indication that we fail to accept the null hypothesis that the

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regression coefficients in the model are jointly zero. This implies that at least one of the regression coefficients in the model is not equal to zero. Additionally, the IIA results in Appendix C shows that assumption has not been violated, hence the multinomial model is valid.

From table 5.4, price of contraceptive commodity is still robust at 1% significance level, in inversely influencing the contraceptive use outcomes. Thus a percentage increase in prices would result in a 1.4 and 2.9 percentage points decline in the use of modern and traditional contraceptives respectively. It is obvious for modern users that price increases may trigger a decrease in demand, but for traditional users if the calendars or phone devices for tracking fertile periods increases, there is the probability that demand for such method may also reduce. Also, Opportunity cost for obtaining modern use although in an inverse relation with its use, is insignificant as compared to the traditional method which is significant at the 5% significance level. However, transportation cost was found to be positively related to modern contraceptive use and negatively related to traditional contraceptive use, both at the 1% significance level. This could be attributed to the fact that most of the facilities for accessing contraceptives were not far from communities and since the commodities are of very good importance to them, they would access them irrespective of an increase in price.

For the socio-economic variables, it can be observed that age is a significant determinant of both modern and traditional contraceptive choices. Thus age is robust and positively related to the use of modern and traditional methods. Thus, as the age of women increase, the probability of using modern and traditional methods of contraceptives is about 7.9% points and 4.9% points respectively. This is consistent with the studies of

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Dang A. (1995).Meanwhile age square is negatively related to modern and traditional contraceptive use, still indicating that the older people get, the less likely their use of contraceptives.

Education is believed to have the likelihood of increasing an individual's utilisation of accessing health care services. The results from this study indicates that with reference to people with no education, women with primary and tertiary education are 2.2% and 21% are more likely to access modern contraceptives, although this appears to be insignificant. Those with middle and secondary education are less likely to use contraceptives. This situation could be attributed to the fact that most of the respondents (9.7%) were currently students who have almost finished or are still in school. However, there is a negative association between traditional use of contraceptives and education, connoting that people with higher education are less likely to use traditional methods of contraceptives. This finding is consistent witha study of Robinson (2000) who concluded that traditional use does not increase with education, suggesting those with no or lower education are more likely to use traditional methods of contraceptives. Also, Bertrand et al. (1985), in looking at factors that influence the use of traditional and modern methods of contraception concluded that education affectsthe modern use more than it does traditional use.

Married women and those who are divorced or separated are less likely to use both modern and traditional contraceptives. Specifically, compared to the reference group of never married, married women and divorced women are about 6% points and 32% points less likely to access contraceptives significant at 5% points and 1% points respectively. Miller (1986) in his works on why women fail to use contraceptive methods attributed

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this to the fact that most married women have the tendency to conceive their first or second child during first or second interval and therefore place more emphasis in their contraceptive practice on expected family size rather than on timing or spacing. He therefore concluded by recommending that it would prove beneficial to discuss child bearing expectations with married women to discuss how contraceptive vigilance can be influenced by such factors. For traditional contraceptive use, they were 15.4% points and 24% points respectively less likely to be used at 1% significant levels.

Religion also plays a key role in contraceptive. With reference category as Catholics, those who are 'other Christians' have the propensity to use modern contraceptives at about 35% significant at 1% significance level.Traditional use for 'other Christians' is also positive although insignificant. Muslims have less likelihood of using modern methods by 7% and 22% points for modern use and traditional use respectively.

Number of children is also a significant predictor of both modern and traditional use of contraceptives.

5.4 Concluding Remarks

The chapter presented the descriptive and empirical analysis of the study. The descriptive analysis indicates that the total respondents of women not using contraceptives in the municipality accounted for 45.3% whilst users accounted for 54.7%. The fear of side effects was cited as the main reason for the non-use of contraceptives.

The empirical findings on the other hand, have clearly established that price is a significant predictor of contraceptive use. Thus total monetary cost involved in accessing contraceptives could reduce the use of it. All other explanatory variables used as control

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variables were significant with their expected signage but for income which was not significant. The price of contraceptive commodity was highly significant in inversely influencing the use as well as the choice of contraceptives which calls for the need for Government to remove any pricing that is attached on the use of contraceptives in order to ensure universal accessibility as well as meet the reproductive health needs of women in particular.This chapter therefore sets the pace for policy recommendations to be made into the study.

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CHAPTER SIX

SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

6.0 Introduction

This chapter provides the summary of the entire study. The chapter also highlights the summary of findings, which provides the basis for key messages and recommendations for policy makers and stakeholders in the sector. Limitations of this study have also been presented with recommendations for possible areas of research in the future.

6.1 Summary of the Study

Several studies have outlined the key and major determinants of contraceptives in Ghana and the world at large. However, against all the social, economic, cultural and demographic factors that affect the use of contraceptives, price as a variable has not been well captured. Most studies have relied on the use of indirect methods, but not directly observed prices. Hence, this study sought to fill the gap by determining whether price, thus both the direct and indirect prices/cost have an influence on contraceptive use and its choices.

The theoretical literature, particularly focuses on demand theories on health that have been applied to contraceptive usage. Notable among them is the Grossman model and Leibenstein (1957) and Becker (1960) economic models of fertility and contraceptive use. Easterlin (1975) further improves upon these earlier models by providing a simple framework for its application to contraceptive use. In the empirical review, strong

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associations have been established between the use of contraceptives and some of the socioeconomic, socio-cultural and socio-demographic factor. Furthermore, some of the literature on contraceptive use and price have, to a large extent not established a link between the direct price and use but have to a large extent linked the effect of time used and transportation cost as an indirect method for contraceptive use. (Levin, 2000; Feyisetan et al. 1996)

A survey was carried out to collect primary information from the Ga-West Municipality. With the help of a structured questionnaire, interviews were conducted for 360 women in their reproductive ages. Based on the Grossman model and the framework for modelling contraceptive use, which are correlates for the demand for healthcare, logistic and multinomial regression analysis with their marginal effects were used in investigating the study objectives. The descriptive analysis focused on the individual characteristics and their relationship with contraceptive use behavior; for those who were users, investigating whether they were using modern or traditional methods of contraceptives.

With the exception of income, all the other explanatory variables in the study were statistically significant from the descriptive analysis. Similarly, the regression analysis also had most of the variables being significant with the exception of income and transportation cost for the logistic regression. However, for multinomial regression, opportunity cost, although negative for modern contraceptive use, was not significant.

The results obtained from the analysis, largely answered the research questions of the study, thus prices comprising both direct and indirect cost of assessing contraceptives would to a large extent have a negative association with the use of contraceptives.

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The key findings from the study have been outlined as follows;

Monetary cost is a significant determinant of contraceptive usage. The direct cost of methods which was the observed prices of methods was found to have a negative influence on the demand and use of contraceptives. This implies that an increase in the price of contraceptives may lead to a decline in its usage. This finding was consistent for both modern and traditional methods of contraceptives. Thus, if the prices of devices and calendars for tracking fecundity should increase, the use of methods particularly rhythm would also decline.

The indirect cost of assessing contraceptives such as transportation and opportunity cost of time used in assessing contraceptives were also found to have a negative relationship with the use of contraceptives, although transport was not significant.

With the socio-economic variables, age was largely significant to the use of contraceptives and was positive in association with it. However, it was revealed that older people are not likely to use contraceptives since they believe they are not at risk of pregnancy.

The use of contraceptives was higher for unmarried women compared to those who are married, this could be attributed to the enormous pressure to meet societal standards of having a number of children, hence limiting their use of contraceptives.

Education was also found to be positively associated with the use of contraceptives but was very significant for those who have completed primary and tertiary education. For the majority of respondents who were in the middle and the secondary category, they were mostly students who gave reasons for their non use of contraceptives to not engage

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in sexual activities. However, for traditional methods, education was found to have a negative relationship with all the educational levels., connoting that their usage may not be entirely effective to appeal to those who are educated.

Also the rhythm, a traditional method was found to be the most used contraceptive among women in the municipality. Most of the respondents cited the preference for rhythm to the lower side effects associated with its use. Injectables is the most used modern method, although being the second method used in general, the reason for its use was cited by most respondents to be its effectiveness. The major reason cited by those not using contraceptives was as a result of the side effects associated with their use, since most of them have been ever users.

6.2 Contribution of the Study to the Literature

This particular study has unravelled the negative influence of price to contraceptive use. Thus the gap in the literature of not fully exploring the direct and indirect effect of price on contraceptive use and its choice, to a great extent has been filled. This finding would help policy-makers to design appropriate policies to ensure universal access to contraceptives.

Based on these findings, the following recommendations have been made to strengthen key policies being made towards reproductive health outcomes.

6.3 Policy Recommendations

- Although the prices of contraceptives are highly subsidized, a further reduction or total removal of price would help to increase patronage of contraceptive services

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and thereby help in reducing the number of unwanted pregnancies and subsequently reduce complications of such pregnancies that results in maternal mortality.

- Family planning methods should be made readily available within the communities so that distance and time spent would not serve as a barrier to the use of contraceptives. This can be achieved through the use of mobile vans (family planning clinics), providing door to door services.

- One of the key findings that emerged from this study is the high use of rhythm, a traditional method of contraceptive choice among women. It is thus recommended that greater education be made on the effective use of this method.

- There is the need to intensify greater awareness on the side effects of contraceptive use in order to debunk myths/ misconceptions and allay fears which adversely affect patronage of contraceptives, especially modern contraceptives.

- The free maternal delivery policy can be extended to cover the various methods of contraception, which would serve as a check to population growth and avoid all complications associated with pregnancy.

6.4 Limitations

The study is limited to just a segment of the population in Ghana, thus by focusing on a particular municipality, generalisation of recommendations for the entire country may not hold, given the dynamics of socioeconomic determinants that may exist in other regions or districts.

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Using observed prices of contraceptive commodities and leaving out quantity demanded may not reflect the right amount of money spent on contraceptive commodity. Moreover, only public prices of commodities in public institutions were considered, hence may not capture the true prices at which people purchase it in private facilities.

6.5 Recommendations for Future Study

The age of first sexual engagement was not explored in this study, although this could have helped to determine if most of the respondents, particularly those who were students were presenting a true picture of what pertains to their use of contraceptives. Hence, future studies should take this into consideration.

The national health survey data (GDHS) should be made to capture adequately direct and indirect pricing, to explore further the elasticity of price for contraceptive use since its scope would help to present a nationally representative finding for the design of good policy outcomes for contraceptive use.

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APPENDICES

A. Sample Distribution of Respondents in Five (5) Public Health Facilities in the Ga-West Municipality

NAME OF HEALTH FACILITY	NUMBER OF RESPONDENTS OBTAINED
Amasaman Government Hospital	110
Oduman Health Centre	80
Mayera Health Centre	80
Pokuase CHPS	45
Amamorley CHPS	45
Total	**360**

B. Generating Opportunity Cost

The main survey question that helped to obtain opportunity cost are the travel time spent in accessing healthcare as well as the waiting time. The two time lost were added together and monetary value attached to it.Thus an individual is assumed to work to work 20 days in a month, with average working hours of 8 hours. Converting to number of working hours in a month means the individual works 160 hours in a month.Hence to obtain the forgone income in the month of a working Woman, we subtract the total time lost (hours) from 160, divide it with the average monthly income and multiply by 100.

$$Thus; \frac{\text{Average Monthly Income}}{160 \text{ hours} - \text{total time lost in a month}} \times 100$$

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C. Test for Independence of Irrelevant Assumptions (IIA)

	Coefficients (b) partial	(B) full	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
age	1.17073	1.142356	.0283743	.0308725
agesq	-.0163557	-.0157113	-.0006444	.0004538
2bn.mar_st~s	-1.04024	-1.461423	.421183	.0926025
3.mar_status	-5.212489	-5.539294	.3268048	.0299366
3bn.educ	.3551691	.2370928	.1180763	.1455541
4.educ	-.529139	-.7647889	.2356498	.140321
5.educ	-.7149441	-.9369584	.2220142	.1415094
8.educ	.233174	.0872687	.1459053	.144132
3bn.religion	3.89942	3.813112	.0863076	.0689926
4.religion	-1.800523	-1.733484	-.0670394	.
cdty_price	-.2862785	-.2803853	-.0058931	.009615
transp_cost	.3694229	.4389362	-.0695133	.
opp_cost	-.0779762	-.0908725	.0128964	.
income	-.0003957	-.0001189	-.0002768	.
children	1.804964	1.969211	-.1642473	.06224
childrensq	-.4483692	-.477927	.0295579	.0134849
_cons	-21.01744	-20.68859	-.3288499	.4334044

b = consistent under Ho and Ha; obtained from mlogit
B = inconsistent under Ha, efficient under Ho; obtained from mlogit

Test: Ho: difference in coefficients not systematic

chi2(16) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 14.17
Prob>chi2 = 0.5860
(V_b-V_B is not positive definite)

Below are the steps used in calculation of IIA

1. Estimate the full model with all J outcomes included; these estimates are contained in $\hat{\beta}_F$.

2. Estimate a restricted model by eliminating one or more outcome categories; these estimates are contained in $\hat{\beta}_R$.

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3. Let $\hat{\beta}_F^*$ be a subset of $\hat{\beta}_F$ after eliminating coefficients not estimated in the restricted model. The Hausman test of IIA is defined as:

$H_{IIA} = (\hat{\beta}_R - \hat{\beta}_F^*)'\left[\widehat{Var}(\hat{\beta}_R) - \widehat{Var}(\hat{\beta}_F^*)\right]^{-1}(\hat{\beta}_R - \hat{\beta}_F^*)$

H_{IIA} is asymptotically distributed as chi-square with degrees of freedom equal to the rows in $\hat{\beta}_R$ if IIA is true. Significant values of H_{IIA} indicates that the IIA assumption has been violated. Hausman and McFadden (1984:1226) note that H_{IIA} can be negative when $\left[\widehat{Var}(\hat{\beta}_R) - \widehat{Var}(\hat{\beta}_F^*)\right]$ is not semi-definite and suggest that a negative H_{IIA} is evidence that IIA holds.

D. Observed Prices of Modern Contraceptive Methods at Public Sources

METHOD	**PRICE**
Injectables	2
Pills	2
IUD	5
IMPLANTS	Between 5-10
Condoms	3-5
Sterilization	50
Emergency Contraceptives	4

Source: Obtained from family Planning Unit at the Municipal

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E. REMOVAL OF FINANCIAL BARRIER ON CONTRACEPTIVE USE FOR WOMEN; A CASE STUDY OF THE GA-WEST MUNICIPALITY

INTERVIEW GUIDE FOR DATA COLLECTION

DEPARTMENT OF ECONOMICS; UNIVERSITY OF GHANA

IDENTIFICATION

Form Number: ……

Name of Facility: ……...

Location of Facility: ……..

Date of Interview: ……..

Name of Respondent (optional): ……

DEMOGRAPHIC CHARACTERISTICS

1. With reference to your last birthday, how old are you?

   …….

2. How many children do you have?

   …….

3. What is your marital status?

   a. Never marriedb. Married c. Divorced/Separated

   d. Consensual union e. Married but not living together f. Widowed

4. Which Religion do you belong to?

   a. No Religion b. Catholic c. Other Christian

   d. Muslim e. Traditional f. Other (specify) ……

5. Which Ethnic group do you belong to?

   a. Akan b. Ga/Dangme c. Ewe d. Guan

   e. Mole Dagbon f. Grusi g. Other (specify)

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6. Have you ever attended school? a. Yes b. No

7. If Yes, What was the highest educational level you completed?
   a. Primary b. Middle/JSS c. Secondary d. Vocational/Technical
   e. Post Sec/ Nursing g. Tertiary h. Other (specify)

ECONOMIC PARTICIPATION

8. What is your current status of employment?
   a. Self-employed b. In paid work (public) c. In paid work (private)
   d. In paid work (private informal) e. Retired f. Providing unpaid care
   g. Student h. Apprentice i. Unemployed j. Other (specify)

9. What has been your main occupation for the past 12 months?
   a. Professional/tech/mgt b. Clerical c. Sales and Services
   d. Skilled manual e. Agriculture f. unskilled manual
   g. Student h. Retired i. unemployed j. Other (specify)

10. If you are in Agriculture, which of the following activities best describes your Agricultural occupation?
    a. Small scale food crop producer b. Large scale food crop producer
    c. Cash crop producer d. Care-taker e. Migrant farm labourer
    g. Fishing (traditional) h. Other (specify) i. N/A

11. How much is your average monthly income or profits from your main occupation?

    ……

ACCESSIBILITY

12. Have you ever used anything or tried in any way to delay or avoid getting pregnant?
    a. Yes b. No

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13. If Yes, which method?

a. Pill b. Injectables c.IUD d. Female Condom
e. Male Condom f.Female sterilization g. Male sterilization
h.Implants i.Foam/Jelly j. LAM k.Abstinence
l. Rhythm m. Withdrawal n. emergency contraceptive
o.Other (specify)

14. For how long did you use this method.

a.less than a year b. one year c. 2 years d. more than 5 years
e. 2-5 years f. other (specify)

15. Why did you stop using this particular method of contraceptives?

a. Side effects b. expensive c. not easily available
d. not meeting my need e. other (specifiy)

16. If No, what are your reasons for not ever using contraceptives?

a. Not Married b. Not having sex c. fear of side effects
d. lack of access/too far e. cost involved f. inability to have children
g. Religious prohibitions h. Other (specify)

17. Are you currently doing something or using any method to delay or avoid getting pregnant **OR** over the past 12 months are you using any form of contraceptive?

a. Yes b. No

18. If Yes, which method?

a. Pill b. Injectables c.IUD d. Female Condom
e. Male Condom f.Female sterilization g. Male sterilization
h.Implants i.Foam/Jelly j. LAM k. Rhythm
l. Withdrawal m. emergency contraceptives n.Other (specify)

19. What is the most pressing reason why you prefer this particular kind of contraceptives?

a. less expensive b. effective c. less side effect d. easily available e. other

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20. If No, why?

a. fear of partner knowing b. Not having sex c. ready for children
d. fear of side effects e. lack of access/too far f. cost involved
g. fear of inability to have children h. Religious prohibitions
i. Other (specify) not interested

21. The last time you obtained your contraceptives, how much did you pay in total, including the cost of the method and any consultation you may have had?

a. Cost b. Free c. Don't know

22. Are the contraceptives you use always available to meet your need?

a. Yes b. No

23. If No, why not?

a. Distance involved b. Always in short supply
c. Side effects d. Other (specify)

24. Where did you obtain the current method you are using the last time?

a. Gov't Hospital/Polyclinic b. Gov't Health Centre c. Gov't Health Post/CHPS
d. Family Planning Clinic f. Outreach g. Private hosp/Clinic
h. Pharmacy i. Other (specify)

25. How many times do you visit the facility in a month?

a.Once b. twice c. three d. More than five e. less than ten f.Other (specify)

26. Which mode of transportation did you use in your most recent visit to the facility for family planning purposes?

a.PrivateCar b. Motor cycle c. Taxi d. Walking
e. Commercial bus/trotro f. Other (specify)

27. How long does it take to reach the family planning facility by your choice of transport

a. 30 mins b. 1 hour c. 2 hours d. 3 hours e. 4 hours

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28. How much did you spend on transportation in your most recent visit to the facility for family planning purposes?

……

29. How much do you spend on transportation when accessing other health care services like OPD.

……

QUALITY

30. How long do you spend at the health facility when accessing contraceptive services?

a. less than an hour b. 2-3 hours c. 3-4 hours
d .4-5 hours e. 5 hours and above

31. How would you describe the quality of services you receive when obtaining contraceptive services?

a. Very poor b. poor c. average d. good e. very good

32. When you go for family planning, who do you talk to?

a. Doctor b. Nurse c. Family planning health worker
d. Pharmacist e. Other (specify)

FUTURE UTILISATION AND FAMILY SIZE

33. Do you intend to change your current contraceptive in the future?

a. Yes b. No

34. If Yes, which family planning method do you intend to use in the future?

a. Pill b. Injectables c.IUD d. Female Condom
e. Male Condom f.Female sterilization g. Male sterilization
h.Implants i.Foam/Jelly j. LAM k. Rhythm
l. Withdrawal m. emergency contraceptives n.Other (specify)

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35. What is your ideal number of children?

    a. 1 b. 2 c. 3 d. 4 e. 5 f. between 6 and 10 g. Other (specify)

PEER EFFECT AND FAMILY SUPPORT SYSTEMS OF FAMILY PLANNING

36. Do you know anyone who uses contraceptives?

    a. Yes b. No

37. If yes, who?

    a. Friend b. Sibling c. Relative d. Co-workers e. Other (specify)

38. Do you discuss family planning with your partner/husband

    a. Yes b. No

39. If Yes, what has been the reaction of your partner/husband to family planning discussions?

    a. Encouraging b. Discouraging c. Indifferent d. Other (specify)

40. Do you discuss family planning with other members of your nuclear or extended family?

    a. Yes b. No

41. If Yes, what has been the reaction of other members of your nuclear or extended family to family planning discussions?

    a. Encouraging b. Discouraging c. Indifferent d. Other (specify)

INFORMATION

42. Were you ever told by a health or family planning worker about other methods of family planning that you could use?

    a. Yes b. No

43. Were you ever told by a health or family planning worker about the side effects or problems you might have with the method?

    a. Yes b. No

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COST CONTAINMENT

44. Have you ever registered with the NHIS? a. Yes b. No

45. If no, why? (Please tick all that apply)

a. Too expensive b. scheme politicized c. too bureaucratic

d. prefer traditional medicine e. unsatisfactory services f. other (specify)

46. Are you a current paid-up member of the NHIS? a.Yes b. No

47. If no, why?

……

48. Are you satisfied with the services provided under the NHIS?

a. Yes b. No

49. If No, why?

a. Too expensive b. scheme politicized c. too bureaucratic

d. prefer traditional medicine e. unsatisfactory services f. other (specify)

50. Would you like contraceptive services to be free?

If yes why?

……

If No why?

……

If No, how much are you willing to pay for the current contraceptive you use?

……

……

51. Would you like the contraceptive services to be provided by the NHIS?

a. Yes b. No

If Yes why?

……

b. If No, why?

……