

**REGIONAL INSTITUTE FOR POPULATION STUDIES,  
UNIVERSITY OF GHANA, LEGON**

**CHILDLESS WOMEN AND WOMEN WITH CHILDREN:  
AN ANALYSIS OF DETERMINANTS OF FERTILITY IN  
GHANA**

**BY**

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## ACCEPTANCE

Accepted by the Faculty of Social Sciences, University of Ghana, Legon in partial fulfillment of the requirement for the award of Master of Arts in Population Studies.

**Supervisor of thesis**

.....

Prof. Samuel N.A. Codjoe

**Date**

.....



## DECLARATION

I hereby declare that except for references to other people's work which have been duly acknowledged, this is the result of my own research and it has neither in part nor in whole been presented for another degree.

Maame Yaa Ameyaa Owusu-Agyeman

.....

Date

.....



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## DEDICATION

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## TABLE OF CONTENTS

ACCEPTANCE .....	ii
DECLARATION .....	iii
ACKNOWLEDGEMENT.....	iv
DEDICATION .....	v
LIST OF TABLES.....	x
LIST OF FIGURES .....	xii
ABSTRACT .....	xiii
CHAPTER ONE.....	1
INTRODUCTION .....	1
1.2 Statement of the Problem .....	4
1.3 Rationale of the Study .....	7
1.4 Objectives: .....	8
1.4.1 Specific objectives:.....	8
1.5 Organisation of the Study .....	8
CHAPTER TWO.....	10
LITERATURE REVIEW.....	10
2.1 Literature Review .....	10
Medical point of View of Childlessness:.....	10
Medical Causes of Childlessness among Women .....	11
Other determinants of Infertility.....	17

Anthropological and Social View Point of Infertility .....	19
Childlessness by Social Standards.....	19
Beliefs of Culture in Relation to childlessness.....	21
The Social Construction of Childlessness .....	23
2.2 Hypothesis .....	26
CHAPTER THREE.....	27
METHODOLOGY .....	27
3.1 Introduction .....	27
3.2 Sources of data.....	27
3.3 Data Processing and Analysis.....	27
3.4 Unit of Analysis.....	27
3.5 Methods of Analysis .....	28
3.6 Definition of variables .....	28
CHAPTER FOUR.....	31
SOCIO-ECONOMIC CHARACTERISTICS.....	31
4.1 Introduction .....	31
4.2 Age of woman .....	31
4.3 Educational status of respondents.....	32
4.4: Place of Residence.....	33
4.5 The Religious Affiliation of Respondents.....	34
4.5 Age at first Marriage.....	35

4.6	Contraception.....	36
4.7	Ever given birth .....	37
4.8	Ever Had a Miscarriage .....	37
4.9	Abortion.....	38
CHAPTER FIVE.....		39
SOCIO-DEMOGRAPHIC CORRELATES OF CHILDLessNESS .....		39
5.1	Introduction .....	39
5.2	Socio-demographic variables and ever given birth .....	39
5.2.1	Age of woman and ever given birth.....	39
5.2.2	Level of education and ever given birth .....	41
5.2.3	Religion and ever given birth.....	42
5.2.4	Place of residence and ever given birth .....	43
5.2.5	Age at first marriage and ever given birth .....	44
5.2.6	Contraceptives (ever used) and ever given birth.....	45
5.2.7	Abortion and ever given birth .....	46
5.2.8	Ever had marriage and ever given birth.....	47
CHAPTER SIX .....		49
DETERMINANTS OF CHILDLessNESS .....		49
6.1	Introduction .....	49
6.2	Determinants of childlessness among married women .....	50
CHAPTER SEVEN.....		54

SUMMARY, CONCLUSION AND RECOMMENDATIONS .....	54
7.1 Introduction .....	54
7.2 Summary of Main Findings.....	55
7.3 Conclusion.....	57
7.4 Recommendation.....	58
REFERENCES.....	59

## LIST OF TABLES

Table 4.1: Age at first marriage .....	36
Table 4.2: Contraceptive use (ever use).....	36
Table 4.3: Ever given birth .....	37
Table 4.4 Ever Had a Miscarriage .....	38
Table 4.5: Abortion.....	38
Table 5.1: Age of woman and ever given birth.....	40
Table 5.2: Educational level of women and ever given birth .....	41
Table 5.3: Religion of respondents and ever given birth .....	43
Table 5.5: Age at first marriage and ever given birth .....	45
Table 5.6: Ever used contraceptives and ever given birth .....	46
Table 5.7: Abortion and ever given birth.....	47
Table 5.8: Ever had miscarriage and ever given birth .....	48
Table 6.1: Binary Logidtic Regression .....	53

## LIST OF FIGURES

Figure 2.1: Proximate determinants of fertility .....	24
Figure 2.2: Conceptual Framework showing some socio-cultural determinants of childlessness .....	25
Figure 4.1: Age of married women .....	32
Figure 4.2: Educational status of women .....	33
Figure 4.3: Place of residence .....	34
Figure 4.4: Religious affiliation .....	35

## ABSTRACT

Childlessness is a rising social problem. Women who are affected by the experience of childlessness are increasing intensely in recent times and the numbers might continue to increase. Despite the growing need, the occurrence of childlessness has been greatly overlooked by demographers. The contemporary understanding of childlessness is too narrow and has been defined wholly as a medical condition. The demographic perspectives are not adequately addressed within such medical context.

A research from the demographic perspective is required to advance current understanding of childlessness within this broader view. It would also encompass affected population inadequately probed until now. The study was conducted among a sample population of 6,127 married women aged 15-49 from the Ghana Maternal Health Survey, 2007 basically to describe the socio-demographic characteristics of childlessness in Ghana and also to assess the influence of socio-demographic characteristics on childlessness in Ghana. The study showed some socio-demographic characteristics like the age of a woman, level of education, place of residence and ever use of contraceptives as very significant in determining the fertility of a woman. On the basis of the findings of this study, I recommend that there should be more flexible reproductive health policies especially on abortions so that women who are faced with unwanted pregnancies would be able to solicit help from professionals.

A deeper understanding of childlessness in contemporary society can guide public policies and control directions for operative maternal and reproductive health needs.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 BACKGROUND TO THE STUDY**

Fertility, childlessness and family formation patterns in sub-Saharan Africa (SSA) have for a period of time been of interest to sociologists and demographers across the world (Bongaarts et al., 1984; Caldwell et al.1992; Bongaarts and Watkins, 1996; Brockerhoff, 2008). This is as a result of the fact that parenthood is an ultimate human need. Even though women's childlessness has always been of greater research consideration, health care attention, social blame, male conditions are contributory factors to most of all cases of childlessness (Sundby et al.1998; Hollos et al, 2009). Childlessness could stem from some diseases that affect the reproductive system of both men and women with almost equal frequency. Childlessness is a global phenomenon with some percentage of every human population being affected. It is estimated that about 10% of the global reproductive-age population is unable to get pregnant or carry a pregnancy to its full term (Balen, 2008; Ihorn, 1986).

Developing countries experience negative consequences of childlessness to a greater degree when compared with Western societies (WHO1991). Epidemiological studies have revealed that in a normal population of heterosexually active women who are not using birth control, 25% will become pregnant in the first month, 63% within 6 months, and 80% within one

year. By the end of a second year, 85% to 90% will have conceived (Vankatesan, 2013). An estimation of approximately one-third of cases of childlessness are due to male factors, with one-third being female, and the remaining third being a combination of both male and female factors. In 20% of the cases, the root cause of the condition is never known or identified and this is labeled as unexplained (Rowe, 2002).

In Africa, the urge to reproduce is essential. Children are considered as the fabric of the society, without which no meaningful social and economic progress is considered worthwhile, (Yeboah et al, 1992). For many, motherhood is the only way women get to enhance their status in the community. Due to this, childlessness is associated with social stigma which might be detrimental to a woman's position within the family and the community and this has made social status closely tied to childbearing (Dyer, 2007). The psychological and relational impacts of childlessness include a host of distress-associated indicators. This is because women are taught from childhood that womanhood is tied to motherhood so when women cannot speak of their experiences of pregnancy, labor and parenting, they are often excluded from adult conversations (Mogobe, 2005).

Even though there is no universal definition for childlessness, it is clinically defined as the inability of a woman to achieve conception despite frequent, unprotected sexual intercourse for a two year duration (Belsey, 1976). Demographers however define childlessness as the absence of a live birth in a sexually active non-contracepting woman (Larsen, 2005; Collins et al, 1984). To achieve pregnancy is to have regular vaginal intercourse with the intention of getting pregnant). Regular intercourse means at least once or twice around

ovulation each month (Wilcox et al, 1995). By this, there is no use of condoms or any form of contraceptives (Hatcher et al 1995).

According to Beekuizen and Sharma (2009), childlessness is a major public health problem in low-resource countries including sub-Saharan Africa where a prevalence of between 13% and 32% is reported. In some areas, the figure reaches one-third or more of couples. For example in Nigeria, childlessness is the leading reason for gynecological consultations (PATH, 1997). Where childlessness is widespread, couples seeking help place a heavy burden on limited health care resources.

Even though childlessness affects both men and women, particularly in developing countries, women are more likely to bear the sole blame for unfruitful marriages. In many areas within Africa, childlessness is a socially acceptable basis for divorce by the husband (Yeboah et al, 1992). Feldman-Savelsberg (1999), reports that in Cameroon, childlessness is a ground for divorce among the Bangangte, causing a woman to lose access to her husband's land and other valuable properties. Women who are childless are ostracized. In the event of their death, their bodies are buried in the outskirts of the town among the Ekiti Yoruba of Nigeria (Ademola, 1982) and among the Aowin of Ghana (Ebin 1982).

Among the Ewe and the Ashanti of Ghana, a man or woman who has no child is not considered a full adult and after death, he will not be buried with the full adult funeral rituals reserved for only adults (Fortes 1978). Besides this, it gives the couple psychological distress which is, in turn, related to other important predictors of well-being, such as marital eminence and social network

support. Indeed, the strains marital relations contribute may diminish the mental health of childless women. Childlessness has been shown to increase psychiatric morbidity, reduce positive perceptions of the marriage, increase marital conflict and reduce sexual satisfaction (Upkong and Orji, 2006).

## **1.2 Statement of the Problem**

Childlessness is a global health issue. WHO estimates the prevalence of childlessness to about 186 million couples worldwide currently. Childlessness varies from regions of the world and it is estimated to affect 8 to 12% of couples worldwide. WHO estimated that 3 to 5%, of married women are childless due to unknown or unpreventable conditions. It estimated that a total of 186 million women currently suffer from childlessness. In developed countries the causes of childlessness are no demonstrable cause (39%), sexual dysfunction (1%), congenital abnormalities (1%), Tubal factors (27%), Acquired non-tubal factors (10%), Endocrine disturbances (35%).

A large study conducted by the WHO in 25 countries, with over 5800 couple; found that over 85% of the childlessness among African women was attributable to infection, compared to only 33% in women worldwide. Regardless of the prevalence of childlessness in Ghana, there has been very little methodical exposition of the repercussions of childlessness on reproductive health in the country. Previously, it was anticipated that childlessness in Ghana did not merit specific interventions and programmatic efforts since it was assumed that the country had concurrently high rates of fertility. With the paradigm shift that took place after the 1994 International Conference on

Population and Development in Cairo, Egypt, it became evident that a conceptual reconsideration about childlessness in Africa where Ghana belongs is seriously needed.

Recent estimates of the incidence or the prevalence of childlessness in Ghana are difficult to obtain. Measuring the occurrence of childlessness in Ghana is difficult because it focuses on women who are still in their procreative years (women may still deliver a child before their menopause and it's because it requires a delineation of a period of exposure to the risk of pregnancy (Boerma and Mgalla, 2001).

According to Upton (2001), individuals who are considered childless are relatively invisible to policymakers. Local specialists in the field of reproductive health attribute the difficulty in obtaining the prevalence and incidence rates of childlessness to the fact that individuals tend to consult different specialists in private practice and not public institutions where statistical records are usually kept (Futeran, 1989).

Another problem could be due to the fact that Africans also consult with traditional healers where records are not kept (Mabasa, 2002). In 2001, it was estimated that about 3 to 4 million women in sub-Saharan Africa are childless (Boerma and Mgalla, 2001). There is strong evidence that childlessness leads to increased marital instability in SSA (Dyer et al., 2002); childless women in Ghana, for instance, allude to divorce, disinheritance and poor relations with their in-laws as consequences of childlessness (Mgalla and Boerma, 2001), and childless women may face physical abuse by both their partners and their in-laws (Okonofua, 1999; Dyer et al., 2004; McCloskey et al.,

2005). Childlessness does not only subject women to marital instability and dissolution but also diminishes their social standing which adversely affects their mental health and physical wellbeing (Okonofua, 1999; Sundby and Jacobus, 2001). Childless women experience higher levels of psychological distress than fertile couples (Dyer et al., 2005).

In Ghana and SSA at large, childlessness has often been presented as a female issue. It is gender biased. Although male sterility is acknowledged to exist, women report that they are ultimately held responsible for the couple's unproductiveness (Mgalla and Boerma, 2001). Even in finding solutions to childlessness, there appears to be gender disparity. Polygyny or divorce is often sought when the female partner is unable to make babies; a childless man's family may secretly organize for another partner to impregnate the wife to spare the sterile husband disgrace and embarrassment (Gijssels et al., 2001). Dyer and his associates however hypothesize that this gender differential may stem from the fact that women are typically blamed for couple childlessness, leading to stricter social penalties than those faced by men. Husbands are often unwilling to participate in testing procedures, making the source of unproductiveness difficult to pinpoint (Sundby and Jacobus, 2001).

### **1.3 Rationale of the Study**

All around the world, childlessness has become a reproductive health problem for many couples. There is an estimation of about eight to twelve percent of couples who are childless worldwide (Reproductive Health Outlook, 2002). According to Cates, Farley and Rowe (1985), some societies particularly those within Africa have as many as one third of couples who are unable to conceive after several years of trying. WHO (1997) estimates that sixty to eighty million couples experience childlessness. This is a huge problem because there has been repeated documentation on it since 1970. The World Health Organization's group on the Epidemiology of infertility published a report and later followed up with review articles and special editions from various population councils (Frank 1983; Belsey and Mtimavalye 1987; WHO 1991).

Childlessness has been recognized in all the above references as a problem and the prevention of sexually transmitted diseases (STDs) has been mentioned as the most promising strategy to diminish its scope in developing countries (Gerrits et al 1999). The factors causing high rise in childlessness vary in different parts of developing countries of which Ghana is no exception. From a medical viewpoint, childlessness is noted as a problem because it results from some diseases in relation to reproductive health. These complications are often in relation to reproductive tract infections, sexually transmitted diseases, unsafe abortions and complications stemming from the administration of over dose drugs intended to treat STDs (Boonmongkon et al, 1999). According to Bhatti (1992), childlessness has been neglected as a health problem and a subject for epidemiological and social inquiry the world all over. It has rather been studied mostly from clinical perspectives whiles its psychosocial consequences has

failed to receive much scientific attention. Researches from many countries spell the social consequences of childlessness to be divorce, husbands having multiple wives and the diminishing status in the society (Nga 2005; Akhter, 1997). In some countries, particularly pro-natal ones, childless people are separated and in worst cases ostracized. This is because they hold the view that children are needed to replace the older generation when they leave the workforce (Nahar, 1999). The level of pressure from older people, in-laws and the society at large force childless women to spend a lot of money and time to be used for work on their treatment (Bergstrom 1992).

#### **1.4 Objectives:**

The primary objective of this study is to determine the linkage between the causes of childlessness in Ghana from a non-medical point of view.

##### **1.4.1 Specific objectives:**

1. To describe the socio-demographic characteristics of childlessness in Ghana;
2. To assess the influence of socio-demographic characteristics on childlessness in Ghana;
3. To make recommendations to inform policy.

#### **1.5 Organisation of the Study**

The study is organized into seven chapters. Chapter one presents the background to the study, the statement of the problem, the objectives of the study, justification of the study and the organization of the study. Chapter two presents the review of related literature, the conceptual framework and

definition of variables with Chapter three defining the various methods that were employed in the study which comprises the study population, data sources, research design and sample size and methods of analysis. Chapter four presents the description of the determinants of childlessness, whilst chapter five presents the interrelationships between the independent and dependent variables. Chapter six presents the logistic regression analysis of the study. Chapter seven summarises the entire study and further presents conclusions, and recommendations.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Literature Review

The literature review is in three sections. The first part attempts to explain theories and relevant concepts from:

1. A medical point of view
2. An anthropological and social view point

The second part seeks to deal with previous studies pertaining to childlessness in other countries whilst the final part attempts to give an explanation to the conceptual framework.

#### **Medical point of View of Childlessness:**

Bhatti.L, Khan A, Fikree F.F (1999) state that childlessness:

Is when a woman has never conceived after a period of two years of having unprotected and adequately timed sexual intercourse. However, the demographers' definition of not having to achieve a live birth is what will be used for the assessment in this study.

The causes of childlessness are due to 40% male factors, 40% being female and the remaining 20% of the cases, the root cause of the condition is never known or identified and this is labeled as unexplained (Rowe, 2002). In

most developing countries, the causes of childlessness are unsafe abortions, poor maternal delivery systems and sexually transmitted infections (STIs). However, these diseases and others that could end up in childlessness is highly preventable (Erik and Brunette, 1996). From the medical point of view, childlessness can be attributed to both the male and female or either of both. In about 90% of childlessness cases, the causes of the problem are detectable but regardless the technology or mechanisms available, 10% of the couple will never realize the cause of their inability to conceive. However, between 10 to 30 % of the cases of childlessness have more than one causes (Ihorn, 2003).

### **Medical Causes of Childlessness among Women**

The factors that contribute to childlessness vary from region to region. In most instances, reproductive tract infections, particularly sexually transmitted diseases (STDs), are the leading preventable cause of childlessness (Westrom, 1994). Extramarital sexual activity, in combination with polygynous marriage, waning age at first intercourse and a growing age at first marriage, is linked with an increased risk of sexually transmitted infections (STIs) (Boerma and Urassa, 2001; Mayaud, 2001; White et al., 2001). Unlike male sterility, female childlessness is more complex. The world all over, pelvic inflammatory disease (PID) is the major cause of childlessness among women. A variety of infections caused by different bacteria that affect the reproductive organs is what causes Pelvic Inflammatory Disease. The infected areas often have some linkage with the fallopian tubes and this condition is called salpingitis. Different conditions infections may account for PID. To begin with, sexually transmitted diseases which are the causes of most PIDs such as chlamydia trachomatis is an infection that causes 75% of childlessness in the fallopian tubes whereas

gonorrhoea is responsible for the remaining causes. However, these diseases may be severely under-diagnosed and so under-treated (Varma, 2000).

In Africa, schistosomiasis, malaria, and sickle-cell disease are some of the illnesses which contribute to childlessness. Furthermore, some health care practices and policies also contribute to childlessness, most notably unhygienic obstetric practices, which lead to postpartum infection (Flander, 1990).

Another growing global issue is with pelvic tuberculosis. While pelvic tuberculosis is a common cause of childlessness in developing countries and in Asia (India in particular), its rarity as a cause of childlessness in the United States has led to the diagnosis often being missed. However, the condition is definitely on the rise in the United States as a result of the influx of immigrants from Asia and other third world countries where tuberculosis is common. Pelvic tuberculosis is often a silent disease. It may be present for 10 to 20 years without producing any symptoms with the woman remaining in apparent excellent health. Childlessness is often one of the only reasons that women investigate for the presence of the condition. Pelvic tuberculosis usually presents with one or more of the following signs and symptoms:

- Pelvic pain, dysmenorrhoea (pain with menstruation), dyspareunia (pain with intercourse), chronic lower abdominal pain or discomfort, and chronic back pain;
- Abdominal distention, usually due to ascites (collection of free fluid in the abdominal-pelvic cavity);
- Tuberculosis-related infertility is most commonly due to tuberculosis salpingitis (tubal inflammation) which occurs in 75% of cases, ovulation

dysfunction that often presents with absent, excessive or non-cyclical menstruation, largely attributable to ovarian involvement (40% of cases) and uterine (endometrial) tuberculosis (30%);

- Local tuberculosis lesions may appear on the external genitalia, cervix, and/or vagina. The diagnosis is made based on;
- Clinical suspicion: Evidence of concomitant, pulmonary tuberculosis, the detection of calcifications on pelvic X-rays, a typical tubal pattern on hysterosalpingogram (dye X-ray test);
- Findings at laparoscopy or laparotomy and the subsequent pathologic examination of biopsy material obtained during these procedures;
- Blood tests such as a differential blood count and erythrocyte sedimentation rate;
- Microscopic and bacteriologic examination is the primary method for diagnosing pelvic tuberculosis;
- Most commonly a dilatation and curettage (D & C) of the uterus is performed a few days prior to menstruation. The surgeon takes care to avoid using an antiseptic to clean the vagina and cervix while preparing for the D&C; lest the antiseptic kill any tuberculosis bacilli present in the specimen thereby rendering a falsely negative culture result. Instead a physiologic salt solution is used to cleanse the operative field. Upon collection, the specimen of uterine curettings is immediately divided into two parts. The first is placed in a physiologic salt solution and expeditiously delivered to the bacteriologic lab for culturing. A specialized culture medium (e.g., Loewenstein Jensen medium) is used for this purpose. Some of the curettings are also used for Guinea pig

inoculation. While menstrual products can also be cultured, this approach is less effective. The second portion of the specimen is fixed and then stained for the detection of the acid-fast *Bacillus*, *mycobacterium tuberculosis*. The Ziel Nielsen stain is one of the methods used (Cox, Shegal, 2010).

Thirdly is with non-sterile abortions. Infection (sepsis) is the most common complication seen in developing country hospitals. Most cases of infection follow abortions induced by unskilled persons using non-sterile instruments and or leaving products of conception in the uterus. The medical management of septic abortions includes a number of expensive laboratory tests, surgery to "clean out" the infected contents of the uterus, high doses of antibiotics, and careful monitoring of the patient by medical personnel. Incomplete abortion (where some products of conception remain in the uterus) without infection may follow induced abortion or spontaneous miscarriage. The woman suffers heavy or persistent bleeding and an enlarged uterus, and must be treated by surgery or vacuum aspiration. Damage to the cervix, vagina or uterus is usually caused by unqualified persons. When there is internal hemorrhage or intestinal injury, major surgery is required. Toxic reactions to drugs or chemicals can occur when patients use native herbs or caustic chemicals to attempt abortion. Hemorrhage (bleeding) may be heavy or mild and protracted, and can be due to incomplete abortion, injury to the cervix, vagina or uterus, or to caustic chemicals which have been used to cause abortion. Medical management may involve surgery and often necessitates blood transfusion. Several hospital-based studies indicate that complications following abortions account for a majority of gynecological emergency admissions to hospital in a

large number of developing countries. The management of these complications puts a major strain on limited health resources (Oladipo, 1990)

Fourthly is the herpes virus that has been suggested for some cases but not confirmed as a causal agent. Genital herpes is an infection of the genitals which occurs in the vulva and vagina in women and surrounding area of the skin. It is caused by the herpes simplex virus. The buttocks and anus may also be affected. There are two types of herpes simplex virus:

- Type 1 herpes simplex virus is the usual cause of cold sores around the mouth. It also causes up to half of cases of genital herpes;
- Type 2 herpes simplex virus usually only causes' genital herpes.

Genital herpes is usually passed on by skin-to-skin contact with someone who is already infected with the virus. The moist skin that lines the genitals and anus is the most susceptible to infection. This means that the virus is most commonly passed on by having vaginal, anal or oral (mouth-to-genitals) sex, or just close genital contact with an infected person. For example, if you have a cold sore around your mouth, by having oral sex, you may pass on the virus that causes genital herpes (Beauman 2005- ; Kinghorn, 1994). Chronic gastroenterological illnesses may cause fertility problems. Population studies indicate that general fertility rates among females with inflammatory bowel disease (Crohn's disease or colitis ulcerosa) is similar to that in general population. However among those patients who have undergone surgery, fertility rates are poorer (Moscandrew and Kane 2009). Untreated coeliac disease may cause impaired fertility (Soni and Badawry 2010, Ozgor and Selimoglu, 2010).

Common lifestyle factors impairing fertility are obesity and smoking. Obese women are at risk of developing insulin resistance that causes ovulation problems and other indirect fertility problems probably via metabolic, inflammatory and immunological changes. Underweight women too may have some deficiency leading to ovulation problems.

According to Wolf (1995), the fertility of an individual may be influenced by life style choice. Tobacco smoking and alcohol intake contribute to childlessness. Cigarette smoking interferes with folliculogenesis (nicotine and other harmful chemicals in cigarettes interfere with estrogen synthesis), embryo transport, endometrial receptivity, endometrial angiogenesis, uterine blood flow and the uterine myometrium. Some damage is irreversible, but stopping smoking can prevent further damage. Smokers are 60% more likely to be childless than non-smokers. Smoking reduces the chances of In-Vitro Fertilization (IVF) producing a live birth by 34% and increases the risk of an IVF pregnancy miscarrying by 30%. Cannabis smoking, such as marijuana causes disturbances in the end cannabinoid system, potentially causing childlessness. Alcohol intake, on the other hand, is associated with elevated estrogen level and this elevated estrogen level reduces Follicle Stimulating Hormone (FSH) secretions which then suppresses folliculogenesis and results in anovulation. Smoking has negative effects on fertility. Among women, it hastens dissipation of eggs which could have negative effects on the zona pellucida around the egg as well as on the endometrium (Anttila 2008; Dondorp et al. 2010).

According to Tan and Bennet (2007), weight has a lot of relationship with childlessness. Ovarian dysfunction could be caused by weight

loss and excessive weight gain with body mass index (BMI) greater than 27 kg/m<sup>2</sup>. Excess weight has also been found to have effect on treatment efficacy and outcomes of assisted reproductive technique. Estrogen is produced by the fat cells and primary sex organs and thus, state of high body fat or obesity causes increase in estrogen production which the body interprets as birth control, limiting the chances of getting pregnant. Also, too little body fat causes insufficient estrogen production and thus menstrual irregularities with an ovulatory cycle. Proper nutrition in early life had been linked to be a major factor for later fertility.

Increasingly, women in developing countries face exposure to environmental and workplace pollution, which can play a role in their inability to reproduce. According to Chia et al (1994), the etiological importance of environmental factors in childlessness has been stressed by many writers. Toxins such as glues, unstable organic solvents or silicones, physical agents, chemical dusts and pesticides are implicated in childlessness. Other potentially harmful occupational environmental exposures such as chlorinated hydrocarbons and fumicides have also been discovered to be associated with the increased link of spontaneous miscarriage in women. Hence individuals having direct contact with or exposure to such chemicals have high chances of having chronic childlessness as the case may be. Estrogen-like hormone-disrupting chemicals such as phthalates are of particular concern for effects on babies of women.

### **Other determinants of Infertility**

A woman's age and the duration of childlessness are the most significant factors determining fertility (Evers, 2002). The age of a woman,

prior use of oral contraceptives, parity and length of menstrual cycle were significant affective factors and explained 14% of variation in time to pregnancy (Axmon 2006). Woman's age is estimated to have a negative effect on fertility from the late 20's onward. A study investigating the day-specific probability of pregnancy found that the probability of pregnancy was twice as high for women aged 19-26 years compared to that of women aged 35-39 years (Dunson 2002).

A Swedish population survey suggests that childless women are less educated than women with no fertility problems (Wulff et al. 1997). Similar data has been reported from the United States (Jain & Hornstein, 2005, Bitter et al. 2006) where childlessness is significantly more common among women with little education as well as among African Americans and Hispanic women compared with Caucasian women. However, opposite results have been published according to a Norwegian population study where childlessness was more common among highly educated women (Rostad et al. 2006).

Previous research on the factors associated with childlessness by demographers shows an association between childlessness and a number of socio-economic and behavioral factors (Larsen 1989, 1995, 2003; Ruthstein and Shah 2004). The research shows that Muslims tend to have higher childlessness level than Christians in Tanzania, while there is no association between religion and infertility in Kenya, in Nigeria and Cameroon the association varies by region of residence.

The level of schooling did not matter significantly in Nigeria, Cameroon, Kenya and the Sudan in the 1970s. In Nigeria, women with secondary and higher education had higher risk of childlessness in the 1980s,

and in Tanzania women with primary education had higher risks of secondary childlessness in the 1990s. Women married more than once had consistently higher childlessness rate as compared to women married only once. In the 1980s women in polygamous unions had higher rates of childlessness than monogamously married women in Cameroon, while the opposite pattern held in Nigeria.

### **Anthropological and Social View Point of Infertility**

Meaning is given to childlessness by society, not based on how it is pathologically defined; thus its cause being physiologically embedded or it being a biological disorder. When such situations arise, childless women would have to find answers to this problem or accept to remain in the society with it.

### **Childlessness by Social Standards**

What physicians recognize as childlessness is absolutely different from what the society does. Sometime, it is the couples own definition that holds. For example, the inability of a woman to have the desired number of children could be regarded as her being childless by members of her society. Regarding feminine roles available to women, there is a wide discrepancy from society to society. Women have virtually no options to roles of a wife and mother in many different traditional cultures. Among the Tiv of Nigeria, a woman's complete social role is reliant on having children. This is because her place in the patrilineal culture stems from being a mother of a descent member. In many cultures, a woman who is unable to have children or the socially acceptable number of children may be justifiably divorced by her husband (Griel 1991). Based on social implication, a married woman has to reproduce

children to complete their role. Failure to do so may lead to separation or stigmatization by the members of the community. This is prejudiced by beliefs about the prominence or significance of blood relations. This is inherent from ideas about family members' contribution to the process of conception and child raising (Griel, 1991). In some societies, barren women are most of the time downgraded and perceived as people who are unfulfilled and socially incomplete as the blame for childlessness is often placed on the woman.

In many communities globally, a woman's ability to give birth to a child particularly a son is considered to be a public proof of a man's virility as well as his adulthood. According to Mcilvray, among the Tamils in Sri Lanka and throughout most of the south Asian countries, childlessness is considered primarily as a problem with women and not men. Sometimes, there are references of supernatural causes for this problem but barely is the potency of the husband questioned and so men fail to acknowledge their sterility. In such a situation, the very suggestions that they and not their wives are sterile may be very threatening to many men. For example, Palgi, (2009) narrates the incident of a Yemenite man from a traditional background who moved to Israel. When his first wife failed to have a child, he divorced her. When the second was also not able to have a child, the doctors stated that he was sterile. He underwent serious emotional break down with fear, sleeplessness and the feeling of being tortured by evil spirits. Palgi relates this reaction to cultural beliefs in his society that a man's dignity and respect are connected to the number of his progeny, especially sons. Furthermore, a common belief was that biological children should pray for a father's soul after death, if not, his peaceful life after death is highly at risk.

In such a definition however, who is the cause of the childlessness is not static. They often undergo substantial changes during westernization, migration, urbanization and other social changes (Helman, 2001). Childlessness differs from culture to another. For instance, in traditional Taiwan and Korea where sons are required to perform ancestor rituals and to ensure family continuity, a woman's inability to have a son has practically the exact consequences as she not having any child at all. The cultural meaning they give to blood relationships affects childlessness. In Korea, adopted children could be regarded as absolute members of the family and so childlessness could just be solved by the adoption of a son. Whereas in Taiwan, blood types are culturally significant and so the traditional response of not having sons has been to adopt a daughter in the belief that doing so would 'call in a younger brother'. In other cultures like the Hausas of Africa, Iban of Barneo and the Objywa of India, adoption is very common that over half of all households include adopted children. The experiences of childlessness in such societies almost unavoidably vary from cultures where blood ties are regarded paramount (Greil, 1991).

### **Beliefs of Culture in Relation to childlessness**

The Oxford dictionary defines belief as an acceptance that something exist or is true, especially one without proof'. According to the beliefs of people in many society, they have their own ways of are solving their problems. This belief system is presented in their culture and so differs from culture to culture. Most Asian countries have their own beliefs related to childlessness. They see it as a woman's issue and therefore women resort to help more than men. Cultural beliefs about who is predisposed to childlessness almost certainly influence the experiences of childlessness. In many cultural groups including

the Polish Indians and Greeks, childlessness has been viewed exclusively as a physical problem for the wife. On the other hand, the Ashanti in Ghana believe that only men can be sterile. However, other groups such as the Oceanic Ticopia, the Hopi and South Amayra have acknowledged that childlessness could be due to either male or female reproductive impairments.

In some parts of Africa, childlessness is the inability to have the number of children that cultural norms dictate. In other places childlessness may be understood as having no sons, or not becoming pregnant soon after commencing sexual activity (Fortes, 1978). Social norms concerning marriage, divorce, and family organization influence perceptions of childlessness to a large degree. In parts of Tanzania and other east and southern African countries, a woman who has had one or more children can be considered childless because children remain with their father in the case of divorce and every marriage is expected produce children (Gerrits 1997).

Couples often experience pressure from family, friends and community members to obtain a quick pregnancy after marriage; when childlessness is suspected, men are publicly humiliated and women are blamed for failure to achieve pregnancy. In Northern Ghana, it is customary for the families of both the bride and groom to expect the announcement of an expected baby within a year of marriage and any delay in the signs of pregnancy by the woman is unacceptable. The ability of the woman to give birth is generally viewed as a gain to the family of the woman's in-laws for the bride wealth paid to the family of the woman (Barden-O'Fallon, 2005). In a typical traditional African domain, witchcraft, sorcery and evil spirits are considered to be primary causes of childlessness (Schapera 1940; Kielman 1998). In Nigeria for example,

there is a widespread belief in supernatural causes of childlessness “bordering on uniformity” (Okonofua .et al.1997). Further locally attributed causes of childlessness include sexual promiscuity by women (Kielman 1998), non-observance of appropriate behavior (Ebin, 1982), blood incompatibility (Gerrits 1997, Okonofua et al. 1997, Roth 2001), and rebelliousness during ones youth (Okonofua et al. 1997).

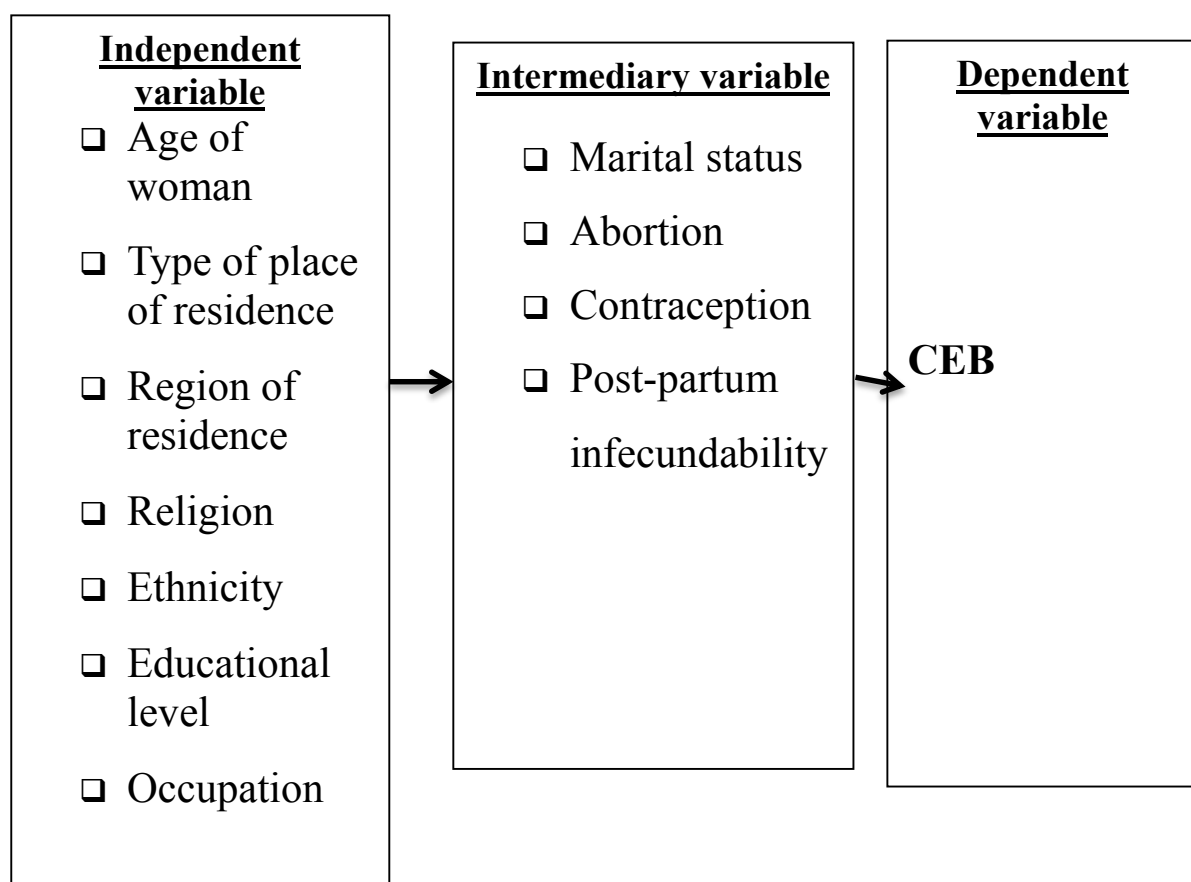
Most societies do not attribute childlessness to a simple cause. Among the Bemba’s, childlessness may be attributed to a curse on the part of the father’s sisters, to an injured spirit returning to punish a descendant at random, to allowing the umbilical cord of a baby to fall on the ground, to adultery or to witchcraft. Spirits of the Aowin’s of Ghana may diagnose childlessness as instigated by witchcraft, non-observance of prescribed behavior, disrupted social relationships or even quarrels between matrilineal kins.

### **The Social Construction of Childlessness**

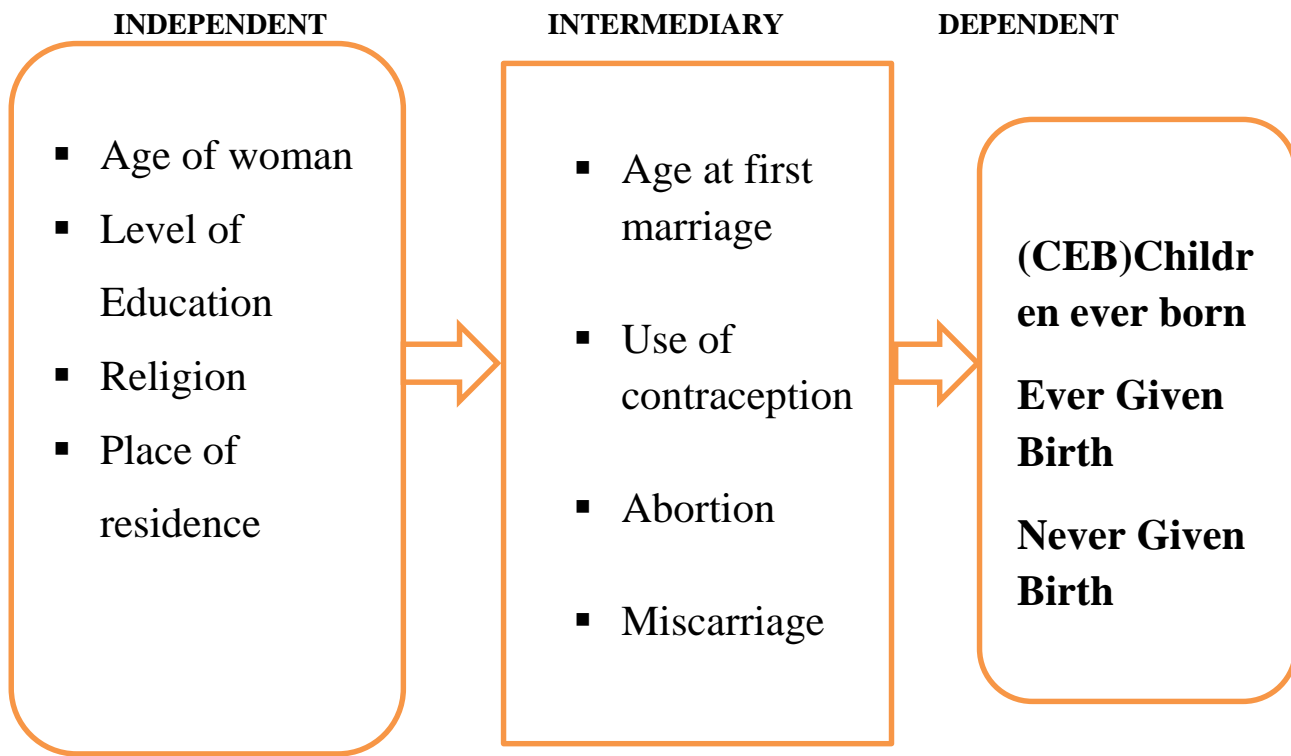
The social construction of childlessness means the way in which people define themselves as ill and who are defined as such. It is the perceptions couples give to their childlessness problem which is seen as not merely a physiological condition. The cultural meanings of childlessness are different from various cultures. The experience of childlessness are socially and culturally fashioned and may be measured to be more valid for some societies but less relevant to our own societies where popular understanding of childlessness are informed by the perspectives of modern scientific medicine.

However, Greil (1991) argues that the opinion of socially constructed childlessness can be practically applied to all societies. There are two main schools of thought on this. The primary one is that, the beliefs of the people in the society are not associated to scientific reason and substantiation. For instance, Americans hold a belief about childlessness that is not much different from views in less complex societies. Just like the Taiwanese, they believe that adopting a child will bring on a biological one. Secondly in societies, the medical and the scientific are not alike, the stance taken by medical institutions in our society are in any means simply determined by scientific necessity. A psychiatrist by name Howard Stein has stated that medicine itself can be best understood as a subculture with shared understanding about what constitutes moral action, the proper role of patients, the value of money, etc.

**Figure 2.1: Proximate determinants of fertility**



**Figure 2.2 Conceptual Framework showing some socio-cultural determinants of childlessness**



**Source:** Adopted from Bongaarts J. and Potter (1983)

Having reviewed related literature in the forgoing section, the study was grounded on the following description. Figure 2.2 represents the conceptual framework of the association between some socio-demographic variables and childlessness. The framework adopted in this study was the model primarily derived from the review of related literature and informed by Bongaarts's and Potter's model. The model stated that specific social and demographic variables like age, religion, place of residence, education, occupation, ethnicity and marital status formed the key determinants of children ever born (CEB).

This framework conceptualises that fertility in general is directly determined by some intermediate variables like marriage, contraception, abortion and post-partum infecundability.

## **2.2 Hypothesis**

- Woman are less likely to be childless between ages 15-19 as compared to women aged 30 - 49;
- Women with higher educational levels are more likely to experience childlessness as compared to women with only primary education;
- Rural women are less likely to be childless compared to urban women.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This section elaborates detailed research methods and design (techniques) that were employed in the study. The outline involves the sources of data, population sample, data processing and analyses.

#### **3.2 Sources of data**

The main source of data is the Ghana Maternal and Health Survey (GMHS) 2007. A sub-sample of households collected information from 10,370 women aged between 15-49 on a wide range of maternal health-related issues pertaining to pregnancies, live births, abortions and miscarriages. This study however focused on 6,127 who are married or co-habiting and were not using any form of contraception at the time of the survey.

#### **3.3 Data Processing and Analysis**

The computer software programme, Statistical Package for Social Sciences (SPSS) was used in data sorting and in the generation of tables, graphs, charts and models.

#### **3.4 Unit of Analysis**

The unit of analysis was at the individual level (married women within ages 15-49)

### **3.5 Methods of Analysis**

Univariate level analysis using simple frequencies, tables, charts was extensively used. This was followed by the bivariate level of analysis which involved cross tabulations amongst the various variables. Binary Logistic Model was used to assess the impact of all the independent variables on the dependent variables. A model was run for the determinants of childlessness among these women.

### **3.6 Definition of variables**

#### **3.6.1 Age of a Woman**

- 15 – 19
- 20 – 24
- 25 – 29
- 30 – 34
- 35 – 39
- 40 – 44
- 45 - 49

#### **3.6.2 Level of Education**

- Primary
- Middle/JHS
- SHS
- Higher

### **3.6.3 Place of Residence**

- Urban
- Rural

### **3.6.4 Religion**

- Catholic
- Protestant
- Methodist
- Presbyterian
- Pentecostal/Charismatic
- Other Christian
- Moslem
- Traditional/Spiritualist
- No religion
- Other

### **3.6.5 Age at first marriage**

- 15 – 19
- 20 – 24
- 25 – 29
- 30 – 34
- 35 – 39

**3.3.6 Contraception (ever used)** Yes No**3.3.7 Abortion** Yes No**3.3.8 Miscarriage** Yes No

## CHAPTER FOUR

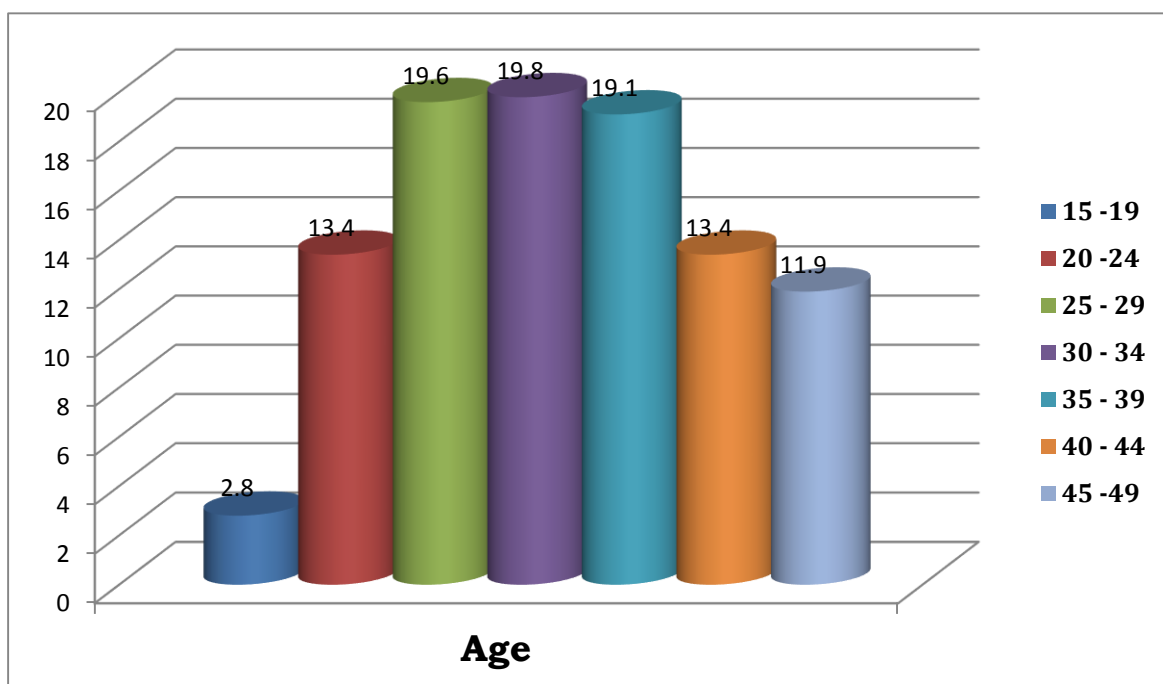
### SOCIO-ECONOMIC CHARACTERISTICS

#### 4.1 Introduction

This chapter presents a description of the various variables as well as information on the basic characteristics of women in the reproductive ages 15-49. A total number of 10,730 women were interviewed in the 2007 MHS of which 6,127 were married. The study used percentage distribution to assess the characteristics of the respondents and their possible influences on childlessness in Ghana as regards the 2007 MHS.

#### 4.2 Age of woman

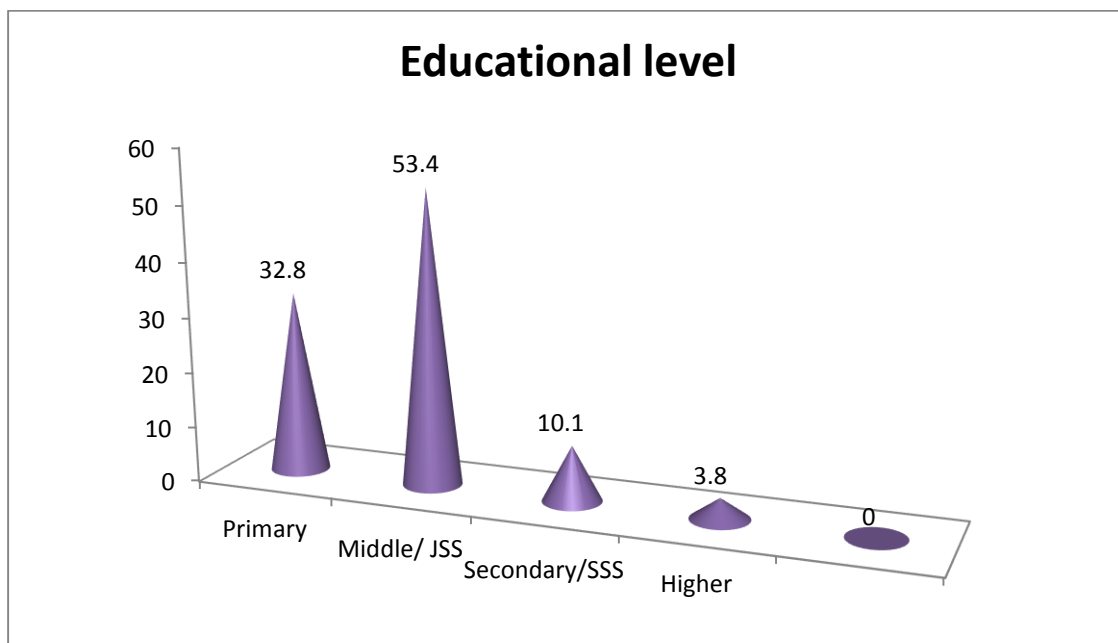
Age as a demographic variable shows an important part in influencing a woman's fertility. From Figure 4.1 below, women within ages 15 – 19 were made up of 172 people representing 2.8 percent of the total sample of women. This is followed by 20 -24 representing 13.4 percent (824), 25 -29 is represented by 19.6 percent (1,199), 30 – 34 is represented by 19.8 percent (1,214), 35 – 39 is also represented by 19.1 (1,169), 40 – 44 is represented by 13.4 percent (820) and 45-49 is represented by 11.9 percent (729). From this, it is evident that age category 25-29 had the highest number of respondents. This is followed by 35 – 39 and thirdly by 35 – 39. Of all the age categories, 15 – 19 is represented by the least value of 2.8 percent.

**Figure 4.1: Age of married women**

**Source: Computed from MHS data, 2007**

### 4.3 Educational status of respondents

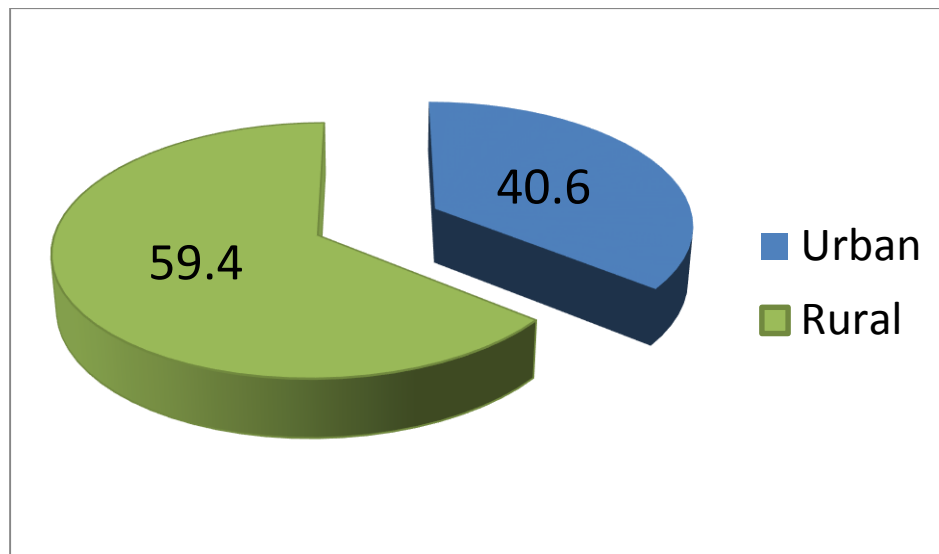
Education is an important variable that impacts strongly on fertility. The educational status of respondents in Figure 4.2 below illustrates that 32.8 percent of the respondents had primary education whilst 53.4 percent had the middle or JSS level of education. Also, 10.1 percent had had Secondary or SSS education. 3.8 percent of the respondents having had post Senior High Education. This reveals that of all the respondents, each of them had some form of education with the Middle or JSS constituting the largest group followed by those with primary education. Of all, the women with post-secondary level of education came least. With this background, it can be assumed that none of the respondents had no education at all but they all had a little knowledge to assimilate the questions asked them regarding their fertility.

**Figure 4.2: Educational levels of married women**

**Source: Computed from MHS data, 2007**

#### **4.4: Place of Residence**

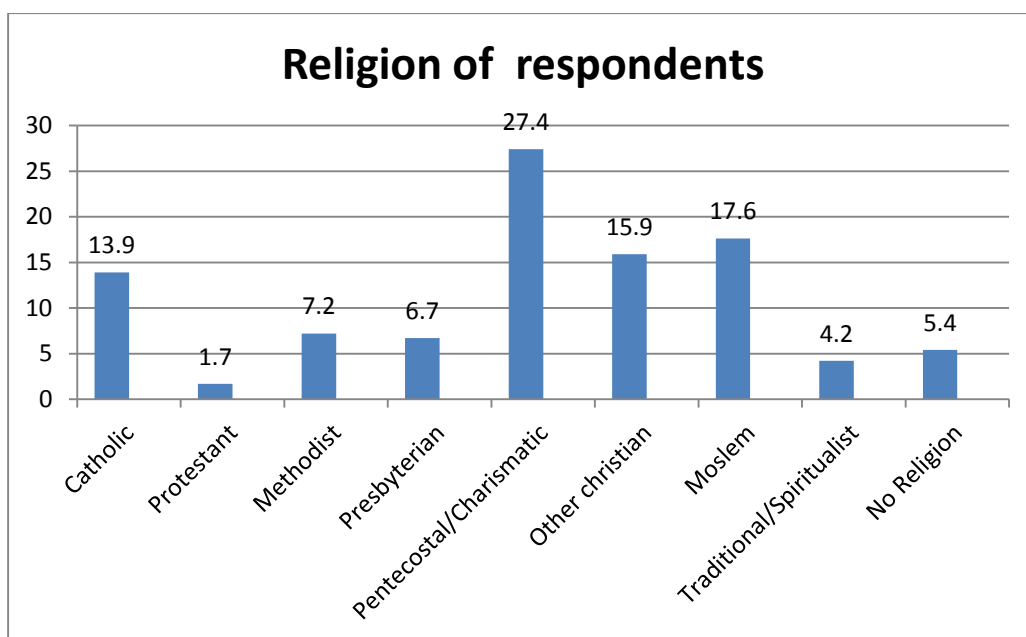
The study employed the use of urban- rural categorization. An area is considered urban if it has an average of five thousand and above and below for rural. The distribution of place of residence of the women from Figure 4.3 gives an indication that majority of the respondents were in rural areas with a value of 59.4 percent of the total whilst those in urban areas accounted for the remaining 40.6 percent. There are reasons why people would like to stay in urban centres. These may include work, access to social amenities like health, education as well as business and the citing of most industries in urban areas. People often live in rural areas to do farming either on subsistence basis or on commercial scale.

**Figure 4.3: Place of residence**

Source: Computed from MHS data, 2007

#### 4.5 The Religious Affiliation of Respondents.

Religious beliefs and practices can influence fertility especially the pattern of age at first marriage. Figure 4.4 gives an illustration of the various religious affiliations of the women. Of all, Pentecostals had the highest value of 27.4 percent. Moslems came second highest with a value of 1079, representing 17.6 percent of a total frequency of 6127. This is followed by Other Christians with a percentage value of 15.9. Catholics came next with 13.9 percent. Among all, Protestants had the least representation of 103 which represents 1.7 percent of the total percentage.

**Figure 4.4: Religious affiliation**

**Source: Computed from MHS data, 2007**

#### 4.5 Age at first Marriage

Age at first marriage is often a reliable determinant of fertility thus when child bearing begins and the number of children a woman will be able to bear in her life time. Table 4.1 gives a description of the ages at which the respondents first got married. From the table, it is evident that ages 15-19 had the highest frequency with a value of 38.3 percent. This is preceded by 20-24 with a percentage value of 32.7. Ages 25-29 comes third with 19.6 percent. The least is 30-34 represented by a percentage 9.4.

**Table 4.1: Percentage of Age at first marriage among married women**

<b>Age at 1<sup>st</sup> marriage</b>	<b>Frequency</b>	<b>Percentage</b>
15 - 19	2, 345	38.3
20 – 24	2003	32.7
25 – 29	1200	19.6
30 – 34	579	9.4
<b>Total</b>	<b>6127</b>	<b>100.0</b>

**Source: Computed from MHS data, 2007**

#### **4.6 Contraception**

Contraceptives are also known to have some effect on a woman's ability to reproduce. Table 4.2 shows the number of married women who have ever used any contraceptives irrespective of the method used. The number of women who have ever used contraceptives are represented by a value of 242 with a percentage of 4.0. Those who have never used any method have a frequency of 5880 with a percentage value of 96.

**Table 4.2: Percentage distribution of Contraceptive use (ever use)**

<b>Contraception</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	242	4.0
No	5880	96.0
<b>Total</b>	<b>6127</b>	<b>100.0</b>

**Source: Computed from MHS data, 2007**

#### 4.7 Ever given birth

From Table 4.3, the number of women who have ever given birth in their lifetime have a total frequency of 5803 with a value of 94.7 percent. However, those who have never achieved pregnancy have a frequency of 324 with a percentage value of 5.3.

**Table 4.3: Percentage Distribution of women ever given birth**

<b>Ever given birth</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	5803	94.7
No	5.3	5.3
<b>Total</b>	<b>6127</b>	<b>100.0</b>

**Source: Computed from MHS data, 2007**

#### 4.8 Ever Had a Miscarriage

Miscarriages can also be referred to as spontaneous abortions. Table 4.4 indicates the number of women who have ever had a miscarriage or not. Out of a total number of 6127 women, 1229 of them had spontaneous abortion and therefore could not carry the pregnancy to term. They are represented by a percentage of 20.1. The remaining 4898 women representing 79.9 percent have never experienced a miscarriage.

**Table 4.4: Percentage Distribution of women who have Ever Had a Miscarriage**

Miscarriage	Frequency	Percentage
Yes	1229	20.1
No	4898	79.9
<b>Total</b>	<b>6127</b>	<b>100.0</b>

**Source: Computed from MHS data, 2007**

#### 4.9 Abortion

Abortion here refers to a deliberate attempt by a woman to end a pregnancy before its full term. Out of a total number of 6127 women, Table 4.5 indicates that 1051 of them have ever deliberately done something to end their pregnancies before its full term. This number is however represented by 17.2 percent. Those who have never had an abortion have a frequency of 5076 which is 79.9 percent.

**Table 4.5: Percentage distribution of married women who have ever had Abortion**

Abortion	Frequency	Percentage
Yes	1051	17.2
No	5076	82.8
<b>Total</b>	<b>6127</b>	<b>100.0</b>

**Source: Computed from MHS data, 2007**

## **CHAPTER FIVE**

### **SOCIO-DEMOGRAPHIC CORRELATES OF CHILDLESSNESS**

#### **5.1 Introduction**

This chapter presents the analysis on the associations and relationships between the individual independent variables and the dependent variable. It uses the Chi-square statistical method in determining whether there is an association between variables or not. However, the Chi-square fails to depict the strength of the association likewise the direction of the association.

#### **5.2 Socio-demographic variables and ever given birth**

##### **5.2.1 Age of woman and ever given birth**

Values from the table 5.1 indicate that, married women within age category 15 – 19 had 73.3 percent of them who had ever given birth as against 26.7 percent who had never given birth as at the time of the survey. Age category 25 – 29 had 92.6 percent of married women who had ever had a child or more during the period as against 7.4 percent. The other age brackets 20 – 24 had 87.1 against 12.9 percent of women who had no children. 35 – 39 and 40 – 44 accounted for 97.9, 99.0 and 98.4 percent as against 2.1 and 1.6 percent respectively. On the whole, women within ages 45 - 49 were the highest to have

children and were represented in value as 99.0 against 1.0 percent of them who had never had a child.

Table 5.1 also showed there is a statistical relationship between age of a woman and ever given birth. This result was expected since married women age 45 – 49 are expected to have completed having children and as such should have more children than all the other age categories. The result further confirms a study by Omar et al, (1994) that women aged 45 and over usually have had between 4 – 5 children by the end of their reproductive years.

**Table 5.1: Age of woman and ever given birth**

Age of woman	Ever given birth		
	Frequency	Yes	No
15 - 19	172	73.3	26.7
20 - 24	824	87.1	12.9
25 - 29	1199	92.6	7.4
30 – 34	1214	96.8	3.2
35 – 39	1169	97.9	2.1
40 – 44	820	98.4	1.6
45 – 49	729	99.0	1.0
<b>Total</b>	<b>6127</b>	<b>94.7</b>	<b>5.3</b>

**Source: Computed from MHS data, 2007**

$\chi^2$  : 3.480      P-value = 0.000

### 5.2.2 Level of education and ever given birth

Table 5.2 indicates that married women with only primary level of education had the highest frequency in terms of number of women who have ever had children. This accounts for 95 percent (those who have ever given birth) as against 5 percent of married women who had never given birth. On the other threshold, women with Junior High/Middle school education who had never had children at the time of the survey accounted for 5.7 percent of the entire responses. Married women with Senior High education and higher levels of education had 12.6 percent and 18.2 percent respectively in terms of those who had never given birth during the period compared to 87.4 percent and 81.8 percent in terms of those women who had ever given birth at a point in time of their lives. The result also shows that there is a significant relationship between educational level of a woman and married women who have ever given birth.

**Table 5.2: Educational level of women and ever given birth**

Educational level of women	Ever given birth		
	Frequency	Yes	No
Primary	1319	95.0	5.0
JHS/Middle	2149	94.3	5.7
SHS	405	87.4	12.6
Higher	154	81.8	18.2
<b>Total</b>	<b>4027</b>	<b>93.4</b>	<b>6.6</b>

Source: Computed from MHS data, 2007       $\chi^2$  : 6.064      P: 0.048

### 5.2.3 Religion and ever given birth

Table 5.3 gives an indication that married women who are traditionalist/spiritualist recorded the highest number of those who had ever given birth. This accounted for 97.0 percent as against 3.0 percent who had never given birth during the period. Those with no religion came next with 97.0 percent of married women who had ever given birth. For those who had never given birth, Protestants, Methodists, Presbyterians and Pentecostals/Charismatics accounted for 6.5, 3.2, 5.4 and 6.4 percent respectively. Also, 94.3 percent of Moslem married women were found to have ever given birth during the survey with only 5.7 being in the never had children group. Other Christians who had ever had children during the period accounted for 95.2 percent with only 4.8 percent of them never having given birth. The data however indicated that married Catholic women had the lowest percentage of 93.5 of them who had ever given birth as against 6.5 percent of them who had never given birth. There is also a statistical significance between religion of a woman and married women who have ever given birth.

**Table 5.3: Religion of respondents and ever given birth**

Religion	Ever given birth		
	Frequency	Yes	No
Catholic	852	93.5	6.5
Protestant	103	94.2	5.8
Methodist	440	96.8	3.2
Presbyterian	408	94.6	5.4
Pentecostal/Charismatic	1678	93.6	6.4
Other Christian	975	95.2	4.8
Moslem	1079	94.3	5.7
Traditional/Spiritualist	256	99.2	0.8
No religion	336	97.0	3.0
<b>Total</b>	<b>6127</b>	<b>94.7</b>	<b>5.3</b>

Source: Computed from MHS data, 2013

$$\chi^2: 25.042 \quad P: 0.005$$

#### 5.2.4 Place of residence and ever given birth

Table 5.4 indicates that there were more married women in urban areas who have never given birth as against married women in rural areas. Married women who had not given birth in the urban areas accounted for 7.2 percent as against 92.8 percent (those who have ever given birth) whilst women who had ever given birth in the rural areas comprised 96.3 percent. The result also shows that there is a kind of correlation between place of residence and married women who had ever given birth.

**Table 5.4: Place of residence and ever given birth**

Place of residence	Ever given birth		
	Frequency	Yes	No
Urban	1435	92.8	7.2
Rural	4692	96.3	3.7
<b>Total</b>	<b>6127</b>	<b>99.3</b>	<b>0.7</b>

Source: Computed from MHS data, 2007

$\chi^2$  : 37.226    P: 0.000

### 5.2.5 Age at first marriage and ever given birth

Table 5.5 depicts that women who married between ages 15 – 19 had the highest never given birth percentage of 60.9 as against 39.1 percent who had ever had children during the period. On the other hand, women who married between ages 30 – 34 had the highest number of women who had ever given birth (97.2 percent) during the period. Married women who first got married between ages 25 – 29 had 78.2 percent representing married women who had ever given birth as against 21.8 percent who had not. Age bracket 20 – 24 (1<sup>st</sup> age at marriage) had 37.8 percent married women who had never given birth as against 62.2 percent who had ever given birth during the period. The findings show there is a relationship between age at first marriage and married women who had ever given birth.

**Table 5.5: Age at first marriage and ever given birth**

Age at 1 <sup>st</sup> marriage	Frequency	Ever given birth	
		Yes	No
15 - 19	1469	39.1	60.9
20 - 24	3146	62.2	37.8
25 - 29	1010	78.2	21.8
30 - 34	491	97.2	2.8
<b>Total</b>	<b>6127</b>	<b>60.0</b>	<b>40.0</b>

Source: Computed from MHS data, 2007

$\chi^2$  : 3.895      P: 0.020

### 3.2.6 Contraceptives (ever used) and ever given birth

Table 5.6 indicates that married women who had ever used contraceptives and had ever given birth during the survey period accounted for 95.3 percent with only 4.7 percent who had ever used any type of contraceptive and had never given birth. On the other hand, married women who had never used any type of contraceptive had 93.4 percent as against 6.1 percent who had never given birth during the period.

However, the results show that there is no significant relationship between contraceptive use (ever used) and ever given birth. This result was not quite expected since women who have never used any contraceptive before were expected to have had more married women who had ever given birth.

**Table 5.6: Ever used contraceptives and ever given birth**

Contraception (ever used)	Ever given birth		
	Frequency	Yes	No
Yes	3648	95.3	4.7
No	2477	93.4	6.1
<b>Total</b>	<b>6127</b>	<b>94.7</b>	<b>5.3</b>

Source: Computed from MHS data, 2007

$\chi^2$ : 0.019      P: 0.990

### 5.2.7 Abortion and ever given birth

Table 5.7 indicates that married women who had had abortion before and had been able to give birth accounted for 94.7 percent likewise those who had never had abortion but had ever given birth in terms of married women who had not experienced abortion before but had never given birth at the time of the interview, their percentage value was 5.3 just as those who had experienced abortion but had never given birth.

There was also no relationship between abortion and married women who have ever given birth. This result was also not expected because those who have ever had abortion were supposed to have had less percentage in terms of those who have ever given birth compared to those who have never had any abortion.

**Table 5.7: Abortion and ever given birth**

<b>Abortion</b>	<b>Ever given birth</b>		
	<b>Frequency</b>	<b>Yes</b>	<b>No</b>
Yes	1051	94.7	5.3
No	5076	94.7	5.3
<b>Total</b>	<b>6127</b>	<b>94.7</b>	<b>5.3</b>

**Source: Computed from MHS data, 2007**

$\chi^2$ : **0.004**      **P: 0.949**

### **5.2.8 Ever had miscarriage and ever given birth**

Table 5.8 gives a clear indication that women who have ever experienced miscarriage recorded 93.2 percent of married women who had ever given birth. On the other hand, women who had never had miscarriage but had ever given birth at the time of the interview accounted for 95.1 as against 4.9 percent who had never had children even in the absence of any miscarriage. There was also a kind of relationship between miscarriage and married women who have ever given birth.

**Table 5.8: Ever had miscarriage and ever given birth**

<b>Miscarriage</b>	<b>Ever given birth</b>		
	<b>Frequency</b>	<b>Yes</b>	<b>No</b>
Yes	1229	93.2	6.8
No	4898	95.1	4.9
<b>Total</b>	<b>6127</b>	<b>94.7</b>	<b>5.3</b>

Source: Computed from MHS data, 2007

$\chi^2$ : 7.344      P: 0.007

## CHAPTER SIX

### DETERMINANTS OF CHILDLINESS

#### 6.1 Introduction

Childlessness comes about due to a number of medical factors which are equally influenced by some social factors as comprehensively deliberated on in the literature review. The findings in the bivariate analysis may be subjected by other unrestrained factors thereby making it challenging to detect the comparative significance of the variables measured. Owing to this fact, the multivariate analysis was used to aid in determining the precise magnitude, clear outcome, strength and bearing of every independent variable on the dependent variable, that is, how demographic characteristics like the age of a woman, her place of residence, her religion and even her level of education can influence her chances of having a child. A binary logistic regression model was employed because the responses for the dependent variable assumed a 'Yes' or 'No' response for childlessness. With each independent variable, one sub-category was chosen as the reference category. The logistic regression analysis then figures out the co-efficient of the remaining categories.

The outcomes are presented in the odds ratio which states the degree of the influence of each category on the reference category. In accessing the findings of the logistic regression, the odds ratios (Expected  $\beta$ ) were used to explain how the variables deviate from the reference category of the independent variables (predictors) or the inverse. A positive  $\beta$ -coefficient depicts how likely it is for a woman to be childless in relation to the reference

category. A negative  $\beta$ -coefficient indicates a reverse of the situation. The variables were tested at the 95 percent (0.05) significance level signifying that any variable being measured is significant if its significance value (P-value) is less than 0.05 and not significant if the P-value is greater than 0.05.

## **6.2 Determinants of childlessness among married women**

The explanatory variables fitted into the model were; the age of woman, level of education, religion, place of residence, age at first marriage, contraceptive use(ever use), abortion and miscarriage for both categories of childlessness. The findings of the estimated parameters are displayed in Table 6.1. As displayed in Table 6.1, women aged 20 - 24 were 34.5 percent times less likely to suffer childlessness than those within ages 15 - 19. Those within ages 24 - 29 were about 26.5 percent less likely as women aged 15 - 19 to suffer childlessness. However, those within ages 45 – 49 were 57.3 percent less likely to suffer childlessness than those within ages 15 – 19. This result confirms the hypothesis that a woman’s age is a significant factor in determining her fertility as stated by Evers (2012) and Dunson (2002) that the probability of pregnancy was twice as high for women aged 19 – 26 as compared to those within ages 30 – 39.

Regarding the level of education of the respondents, women with Junior /Middle were 0.142 times as likely to suffer from childlessness as those with primary education. Women with Higher educational levels were 0.471 times as likely to be affected by childlessness as women with primary level of education. On the whole women with their educational levels beyond the primary are more likely to be affected by childlessness. The level of education

of a woman proves to be very significant in determining the fertility of a woman. This finding however counters the hypothesis by Rostad et al (2006) that childlessness is more common among highly educated women.

Regarding religion, the table depicts that Protestant women were 1.7 times as likely to be affected by childlessness as Catholics. Presbyterian women were 7.6 times as likely as Catholic women to suffer from childlessness. Moslem women were 1.3 times as likely as married women in the Catholic faith to suffer from primary childlessness. Traditional believers/spiritualist were 1.7 times more likely than Catholics to be affected childlessness. Women with no religion were 5.6 times as likely as Catholic women to suffer from childlessness.

Regarding the place of residence of the respondents, those who lived in rural settings were about 80 more likely to suffer from childlessness than their counterparts in the urban areas. This confirms the hypothesis that urban dwellers are at a greater risk of childlessness than rural dwellers as pointed out by Araoye (2003) due to the high prevalence rate and the greater chances of acquiring sexually transmitted diseases that could have an effect on their fertility.

The table further reveals that, with the age at first marriage, women who first got married within ages 20 – 24 were 14.7 times less likely to suffer from childlessness than those who had their first marriages within ages 15 - 19. Those between ages 30 – 34 were 12.9 times less likely to be affected by childlessness than women between ages 15 – 19. The finding contradicts the hypothesis that early marriage can be associated with an increase in the risk of infection which could lead to complications thereby resulting in childlessness (Araoye, 2003).

In relation to the ever use of any contraceptive methods by the women, the findings were that, women who had never used any method of contraception were 2 times less likely to suffer childlessness than those who had ever used. This questions the hypothesis that the prior use of modern methods of contraception has no effect on a woman and her ability to get pregnant as pointed out by Simpson (1995), and Brent (1981). However it confirms, as stated in the book *Contraception and Reproduction* (1989) that contraceptives contain a progestin which often leads a disturbance in the menstrual cycle because the hormones have been altered. This delays conception. Regarding abortion, women who had never had an abortion were 0.025 as less likely to suffer childlessness as those who had ever done it. With this, there is no confirmation to the statement by Kwast et al (1996) that abortions is most likely to be a significant cause of childlessness of due to sepsis.

With miscarriage, married women who had never experienced any miscarriage were 0.018 times less likely to suffer childlessness as those who had ever experienced it. With this the hypothesis that there is a strong link between previous spontaneous abortion and childlessness as authored by Hummel (2012) cannot be refuted when considering childlessness.

In all, the model recorded a Nagelkerke R-squared value of 0.107. It gives an indication that 11 percent of the variation in childlessness is explained by the demographic characteristics (independent variables) whilst the remaining 89 percent might be explained by other factors other than demographic characteristics of which biomedical reason could be the domineering factor.

**Table 6.1: Binary Logistic Regression parameter estimates on Determinants of fertility**

Independent Variables	$\beta$	Std. Error ( $\beta$ )	Significance	Exp. ( $\beta$ )
<b>Constant</b>	-39.218	4.824	0.999	0.000
<b>Age of a woman</b>				
15 – 19 (RC)			0.000	1.000
20 – 24	-3.574	0.505	0.000	0.655
25 – 29	-2.876	0.471	0.000	0.735
30 – 34	-2.226	0.470	0.000	0.263
35 – 39	-1.407	0.486	0.004	0.083
40 – 44	-0.831	0.510	0.104	0.295
45 - 49	-0.356	0.566	0.530	0.427
<b>Level of education</b>				
Primary (RC)			0.000	1.000
JHS/Middle	1.949	0.281	0.000	1.142
SHS	1.675	0.256	0.000	1.187
Higher	0.754	0.279	0.007	1.471
<b>Religion</b>				
Catholic (RC)			0.312	1.000
Protestant	18.930	4.020	0.245	1.664
Methodist	19.132	4.020	0.432	2.037
Presbyterian	18.146	4.020	0.000	4.601
Pentecostals/Charismatics	18.532	4.020	0.674	1.118
Other Christians	18.930	4.020	0.000	1.627
Moslem	18.691	4.020	0.300	1.310
Traditional/spiritualists	18.972	4.020	0.760	1.735
No religion	17.854	4.020	0.325	5.674
<b>Place of residence</b>				
Urban (RC)				1.000
Rural	0.587	0.149	0.000	1.798
<b>Age at 1<sup>st</sup> marriage</b>				
15 – 19 (RC)			0.484	1.000
20 - 24	-18.375	1.293	0.557	0.147
25 - 29	-0.594	0.452	0.729	0.123
30 - 34	-0.043	0.446	0.943	0.129
<b>Contraceptive use (ever use)</b>				
Yes				1.000
No	16.815	2.801	0.000	2.007
<b>Abortion</b>				
Yes				1.000
No	0.025	0.175	0.888	1.025
<b>Miscarriage</b>				
Yes				1.000
No	0.018	0.441	0.968	1.982

Source: Computed from MHS data, 2007

Nagelkerke R square =0.107 RC = Reference category P&lt;0.05

## CHAPTER SEVEN

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 7.1 Introduction

Childlessness has been a serious health issue for most married women across Ghana regardless of the one's ethnicity or social status. The study was to investigate the determinants of primary childlessness among married women in Ghana and this has been realized to be liable to a range of some demographic and social factors. The variables chosen grounded on a number of literature reviewed comprised; the age of woman, educational level, religion, place of residence, age at first marriage, contraception, abortion and miscarriage. The study used the Maternal Health Survey (2007) data set to measure the derived variables. These variables were used in examining how they impacted both primary and secondary childlessness. The conceptual framework developed by Bongaarts and Potter (1983) was adapted to analyze determinants of childlessness among married women. A framework for the study was designed on the basis that relationship between the variables will have a bearing on childlessness. The study hypothesized that older women are more likely to experience childlessness as compared to their younger counterparts; Women with higher education are less likely to experience childlessness; and religion is less likely to measure childlessness.

## 7.2 Summary of Main Findings

Overall, about 33 per cent of the respondents had primary education, 53 per cent and 10 per cent had Junior High School and Senior High school education respectively. Just 4 per cent had post Senior High School education or higher. These results clearly suggest that the respondents had some level of education hence its influence on their fertility.

As far as Place of residence is concerned, majority of the women who lived in rural areas with a proportion of 59.4 whilst their urban counterparts were 40.6 per cent. This clearly indicates that more women were in rural areas as compared to urban. With their religious affiliation, the findings showed that women who belonged to the Orthodox Christians (Catholics, Methodist, Presbyterian, and Protestants) had a highest percentage of 29.5; this was followed by Charismatic/Pentecostal faith with a proportion of 27.4. Those who belong to the Islamic religion were 17.6 per cent and women who belonged to no religion and those who were believe in the traditional/ Spiritual faith were 5.4 and 4.2 respectively.

On the first age at marriage within the specific age groups of women, the findings suggested that women within the age group had the least with just 9.4 per cent and those who had the highest of first age at marriage were those within the age group 15-19 with the percentage of 38.3. Again, the ever use of contraceptives among married women was also computed. The results revealed that majority (96%) of married women had never used contraceptives and just 4 per cent had ever used contraceptives. The study also

found that about 95 per cent of the respondents had ever given birth in marriage and the rest (5%) had never given birth as at the time the survey was conducted. With regard to miscarriages, about 80 per cent of the respondent had never had a miscarriage before as compared to 20 per cent who reported to have had miscarriage. The variable abortion was also computed for; where 82.8 per cent of those married women had no abortion while 17.2 per cent had abortion

A relationship was established between the socioeconomic background of women and whether they have ever given birth or not. Married women between the ages 45-49 who had ever given birth were about 99 per cent with the corresponding 1 per cent who had not given birth. Those in the age group 15-19 who had given birth were 73.3 per cent whilst 26.7 per cent did not give birth. Those who had primary education had the highest number of proportion (95%) who had ever given birth and 5 per cent had never given birth. Also, those with higher level of education had ever given birth were about 82 per cent and the corresponding 18.2 per cent had never given birth.

On the relationship between place of residence and ever given birth, rural married women who reported to have ever given birth had a proportion of 96.3 per cent and 92.8 per cent for those dwelling in urban areas. For those who had never given birth were 3.7 per cent and 7.2 per cent for rural and urban married women respectively. The relationship between age at first marriage and ever given were computed and women whose first age at marriage fell between 30-34 had the highest proportion (97.2%) of those who had ever given birth. For those who had never given birth, the highest proportion was found between those ages 15-19.

Furthermore, women who had ever used contraceptives had the highest proportion of those had ever given birth (95.3%) and those who had never had miscarriage also had the highest proportion of those who had ever given birth.

With the multivariate analysis, 11 per cent of the variation in the ever given birth (primary infertility) is explained by demographic characteristics. However, the significant predictors of the models were; age of a woman(20-24,25-29,30-34), educational level of a woman, place of residence of a woman and contraceptive use (ever use).

### **7.3 Conclusion**

Generally, childless wives undergo deep social trauma be it physical or emotional. Whatever the reasons of childlessness could be, the victims require treatment of some sort to curb the situation; some of which require highly technological expertise and so are expensive to undergo. Granted that health care facilities and other resources are inadequate in Ghana and the fact that the treatment of childlessness is cumbersome and cost involving, efforts should be directed at preventive measures by curbing it at the acute stage before it develops into chronic.

Prevention of involuntary childlessness is very significant for the attainment of health for all. With this, there need to be an enhancement in the maternal health care delivery system as well as family planning services to augment the status of women to help eradicate the traumatizing practices that are meted out to infertile wives by integrating it into other reproductive health care services.

#### **7.4 Recommendation**

The outcomes of this study have important policy repercussions for all Health stakeholders in Ghana. The subsequent suggestions could be beneficial:

There should be more flexible reproductive health policies especially on abortions so that women who are faced with unwanted pregnancies would solicit help from professionals.

Forthcoming research works could try integrating both the medical and social influences in-built in infertility as well as the health seeking behaviours of infertile women in Ghana.

In furtherance to researches not directly addressing women living with childlessness, adequate information is needed to help understand the impact of childlessness on family member, other relations, working colleagues organizations, the community at large as well as the entire social system.

## References

- Adekunle, O.A. and O.A. Ladipo (1992). Reproductive tract infections in Nigeria: challenges for a fragile health infrastructure. In *Reproductive Tract Infections*, ed. A. Germain et al. New York Plenum Press.
- Ademola, A. (1982). *Changes in the patterns of marriage and divorce in a Yoruba town*.
- Adongo, Philip B., James F. Phillips, and Fred N. Binka. 1998. "The influence of traditional religion Africa. In *Women and infertility in sub-Saharan Africa: A multi-disciplinary perspective*, Africa: a Multidisciplinary Perspective. Amsterdam: Royal Tropical Institute
- African Women: A Cross-National Survey of Twenty-Seven Nations." Social Science & Amsterdam: Gordon and Breach Publishers. pp 173–210.
- Anna Axmon (2006). Factors affecting time to pregnancy. *Oxford Journals Vol.27. Issue 7* Anthropological Epidemiology of Blocked Tubes. In: Inhorn MC, Brown PJ.
- Balen, F., van. (2002). The psychologization of infertility. In M. Inhorn & F. Balen, van (Eds.), *Infertility around the globe: New thinking on childlessness, gender, and reproductive technologies*. Berkely: University of California Press.
- Belsey, M.A. (1976). The epidemiology of infertility: a review with particular reference to sub-Saharan Africa. *Bulletin of the World Health Organization* 54:319-341.

- Barden-O'Fallon, J. (2005). Associates of self-reported fertility status and infertility treatment-seeking in a rural district of Malawi. *Human Reproduction*, 20(8), 2229-2236.
- Becker, G. (1990). *Healing the infertile family*. Berkeley, CA: University of California Press.
- Becker G and Nachtigall, D (1994). '*Born to be a mother*': the cultural construction of risk in infertility treatment in the U.S. *Soc Sci Med* 39,507-518.
- Bhatti, L. I., & Fikree, F. F. (2002). Health-seeking behavior of Karachi women with reproductive tract infections. *Social Science & Medicine*, 54(1), 105-117.
- Bhurt AW, Fikree F (1999) Prevalence and risk factors of symptoms of pelvic inflammatory disease in a rural community of Jamshoro, Sindh, Pakistan. *J Pak Med Assoc* 49: 188-94. Collins JA, Burrows EA, Wilan AR. The prognosis for live birth among untreated infertile couples. *Fertility Sterile* 1995; 64:22-28
- Caldwell, J.C. and P. Caldwell. 1983. The demographic evidence for the incidence and cause of abnormally low fertility in tropical Africa. *World Health Statistics Quarterly* 36:2-34.
- Cates, Willard and K.M. Stone. (1993). Family planning: the responsibility to prevent both pregnancy and reproductive tract infections. In *Reproductive Tract Infections; Global Impact and Priorities for Women's Reproductive Health*, ed. A. Germain et al. New York: Plenum Press.

- Cates W, Rolfs RT, Aral SO (1990). Sexually Transmitted Diseases, Pelvic Inflammatory Disease, and Infertility: An Epidemiologic Update. *Epidemiologic Review* 12: 199–220.
- Cates, W., T.M.M. Farley and P.J. Rowe. (1985). Worldwide patterns of infertility: is Africa different? *Lancet* 14 Sept: 596-598.
- Davis, K. and Blake, J. (1956). "Social structure and fertility: An analytic framework". *Economic Development and Cultural Change* 4: 211-35.
- Dyer, S. J. (2007). The Value of Children in African Countries: Insights from Studies on Infertility." *Journal of Psychosomatic Obstetrics & Gynecology* 28(2): 69-77.
- Dyer SJ, Abraham N, Hoffman M, Van der Spy ZM (2004). You are a man because you have children: experiences, reproductive health knowledge and treatment-seeking behaviour among men suffering from infertility in south Africa. *Hum Reprod.* 2004, 19(4):960–967.
- Dyer, S. J., Abrahams, N., & Mokoena, N. E. (2005). Psychological distress among women suffering from couple infertility in South Africa: A quantitative assessment *Human Reproduction*, 20(7).
- Easterlin, Richard A. and Eileen M. Crimmins. (1985). *The Fertility Revolution: A Supply-Demand Analysis*. Chicago: University of Chicago Press.
- Ebin, V. (1982) Interpretations of infertility: the Aowin People of Southwest Ghana. In C. MacCormack (ed.) *Ethnography of Fertility and Birth* London: Academic Press, 147-159).
- Ericksen, K., & Brunette, T. (1996). Patterns and predictors of infertility among African women: A cross-national survey of twenty-seven nations. *Social Science & Medicine*, 42(2), 209-220.

- Feldman-Salvesberg, P. (1999) *Plundered Kitchens and Empty Wombs*. Ann Arbor: University of Michigan Press.
- Feldman-Savelsberg, P. (1994). Plundered kitchens and empty wombs: Fear of infertility in the Cameroonian grassfields. *Social Science and Medicine*, 39(4), 463-474.
- Frank, O. (1983). Infertility in sub-Saharan Africa: estimates and implications. *Population and Development Review* 9,1:137-144.
- Gerrits, T., Boonmongkon, P., Feresu, S., & Halperin, D. (1999). *Involuntary infertility and childlessness in resource-poor countries*. Amsterdam: Het Spinhuis.
- Gijssels, M., Mgalla, Z., and Wambura, L. (2001) 'No child to send': context and consequences of female infertility in northwest Tanzania. In J. T. Boerma and Z. Mgalla (eds.), *Women and infertility in Africa: a multidisciplinary perspective*. Amsterdam: Royal Tropical Institute Press, 204-221.
- Greil, A.L. (1991). *Not yet pregnant: Infertile couples in contemporary America*. New Brunswick, N.J.: Rutgers University Press.
- Helman, C. (1985). *Culture, health and illness: an introduction for health Professionals* Bristol: Wright.
- Hollos M, Larsen U. (2008) Motherhood in sub-Saharan Africa: the social consequences of infertility in an urban population in northern Tanzania. *Cult Health Sex*, 2008; 10: 159–173.
- Inhorn MC, Buss KA (1994). Infertility, Infection, and Iatrogenesis in Egypt:

- The Anthropological Epidemiology of Blocked Tubes. In: Inhorn MC, Brown PJ, eds. *Anthropology of Infectious Disease: International Health Perspectives*. Amsterdam: Gordon and Breach Publishers. pp 173–210.
- Inhorn, M.C. (1994a). Interpreting infertility: medical anthropological perspectives. *Social Science and Medicine* 39,4:459-461.
- Inhorn, M.C. (1994b). *Quest for Conception: Gender, Infertility, and Egyptian Medical Traditions*. Philadelphia: University of Pennsylvania Press.
- Inhorn, M.C. (1994c). Kabsa (a.k.a. Mushahara) and threatened fertility in Egypt. *Social Science and Medicine* 39, 4:487-505.
- Kielman, K. (1998). Barren ground: Contesting identities of infertile women in Pemba, Tanzania. In M. Lock and P. Kaufert (eds.), *Pragmatic Women and Body Politics*. Cambridge: Cambridge University Press.
- Kleinman, A. (1980). *Patients and healers in the context of culture: an exploration of the border land between anthropology, medicine, and psychiatry*. Berkeley/London: University of California Press.
- Larsen, U., and H. Raggars (2001). Levels and trends of infertility in sub-Saharan Africa. In *Women and infertility in sub-Saharan Africa: A multi-disciplinary perspective*, ed. J. Boerma and Z. Mgalla. Amsterdam: The Netherlands: Royal Tropical Institute. 25-70.
- Larsen, U. (2000). Primary and secondary infertility in sub-Saharan Africa. *International Journal of Epidemiology*, 29(2), 285-291.
- Margaret O. Araoye (2003). Epidemiology of infertility's social problem of infertile couples. *WAJM*
- Mayaud, P. (2001). *Infertility in Africa: The Role of Reproductive Tract*

Infections. In: Boerma T, Mgalla Z, eds. *Women and Infertility in Africa: a Multidisciplinary Perspective*. Amsterdam: Royal Tropical Institute Press. pp 71–107.

Mgalla, Zaida and J. Ties Boerma. (2001). *The Discourse of Infertility in Tanzania.* Pp. 189-202 in *Women and Infertility in Sub-Saharan Africa: A Multi-Disciplinary Perspective*, edited by J. T. Boerma and Z. Mgalla. Amsterdam: KIT Publishers.

Mtimavalye, L.A., and M.A. Belsey (1987). *Infertility and sexually transmitted disease: Major problems in maternal and child health and family planning.* Paper presented at International Conference on Better Health for Women and Children through Family Planning, Nairobi, Kenya, October 5-9, 1987.

Okonofua, F. E. (1996). *The case against new reproductive technologies in developing countries.* *British Journal of Obstetrics and Gynaecology*, 103(10), 957-962.

Okonofua, F.E. (1996). *The case against the development of reproductive technology in developing countries.* *British Journal of Obstetrics and Gynaecology* 103:957-962.

Okonofua, F.E. and R.C. Snow (1995). *Prevalence and risk factors for infertility in Ile-Ife, Nigeria.* Technical report submitted to Ford Foundation.

Okonofua, F.E. (1994). *Induced abortion - a risk factor for infertility in Nigerian women.* *Journal of Obstetrics and Gynaecology* 14:272-276.

Okonofua, F.E. and T. Ilumoka. (1992). *Prevention of morbidity from unsafe abortion in Nigeria.* Report of an international seminar presented to the Population Council.

- PATH. (1997). Infertility in developing countries. *Outlook*, 15(3), 1-3.
- Ruthstein, S.O. and Shah, I. H. (2004). Infecundity, infertility and childlessness in developing countries. DHS Comparataive Reports 9. Measure DHS.
- Shapiro, D. and Gebreselassie, T. (2007). "Fertility transition in sub-Saharan Africa: falling and stalling". Paper presented at the 2007 PAA meeting, New York. Vol.22 No. 2
- Snow, R.C., F.E. Okonofua, T. Kane, T.M.M. Farley and A. Pinol . 1995. Prevalence and determinants of infertility in Ile-Ife, Nigeria. *Contraception, Fertility and Sex* 23, Special Supplement No.1:554.
- Sundby, J. (1997). Infertility in the Gambia: Traditional and modern health care. *Patient education and counselling*, 31, 29-37.
- Upton, R. L. (2001). Infertility makes you invisible: Gender, health and the negotiation of fertility in Northern Botswana. *Journal of Southern African Studies*, 27(2), 349-362.
- Vayena, E., P. Rowe, and P.D. Griffin, eds. (2002). *Current practices and controversies in assisted reproduction: Report of a WHO meeting*. Geneva: World Health Organization.
- World Health Organization (2004). *Infecundity, infertility, and childlessness in developing countries*. DHS Comparative Reports No 9. Calverton, Maryland, USA: ORC Macro and the World Health Organization;

Wulff R. (1997). *Verbal and Spatial functions across menstrual cycle in*

*healthy young women*. Psychoneuroendocrinology. Vol.27. Issue 7.

Yeboah ED, Wadhvani JM and Wilson JB (1992). *Etiological factors of male*

*infertility in Africa*. Int J Fertil 37,300–307.