EFFECT OF EDUCATION ON FERTILITY IN THE REPUBLIC OF CONGO

BY

MAGAWI PAULINE ATIENO

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DECLARATION

This project is my original work and has not been presented for a degree course in any other University.

PAULINE MAGAWI

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This project has been submitted for examination with our approval as University Supervisors.

DR. ALFRED OTIENO AGWANDA

DR. KIMANI MURUNGARU

DEDICATION

To my late dad B. N Magawi, Dad, you left us when I needed you the most May your soul rest in eternal peace!

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ABSTRACT

The Republic of Congo is one of the least developed countries in the world. Until recently, there has been way to study fertility in the Republic of Congo because of the civil war. This study examines the extent to which education influences fertility in the Republic of Congo, during the early stages of demographic transition. Secondary data from the 2005 Congo Demographic and Health Survey was used. The sample size consisted of 7051 women aged 15-49. Several variables, which were categorized as demographic, socio-economic, and proximate variables, were introduced as control variables.

Fertility decline is viewed as a result of the modernization process, as the latter alters the mechanisms of fertility choices from natural forces to deliberate decisions on the part of individuals or families. Fertility tends to increase, for example, with a small amount of education before falling off at the level of completed primary education. Analyses of the socio-economic/demographic and proximate determinants of fertility in the Republic of Congo indicates that a woman's education constitute the principal factors through which modernization affects fertility. The findings indicated that even after controlling for region and place of residence, occupation, age at first birth and marriage and employment status, an increase in a woman's education is positively associated with the number of children born, i.e., an increase in education decreases the number of children born.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

At the International Conference on Population and Development held in Cairo in 1994, considerable emphasis was placed on the importance of women's educational attainment as a factor critical to promoting women's status and development, and as a factor contributing to fertility decline in developing countries (United Nations, 1995). Further, increased educational attainment more broadly has also been identified as a critical factor promoting economic growth (see, e.g., Mankiw *et al.*, 1992).

National governments and the education policies they pursue clearly play a critical role in facilitating or hindering the growth of schooling and increased educational attainment of women. At the same time, family background characteristics are also very important in this regard. For any given individual, the value that parents attach to schooling, the economic well-being of the family of origin, and family size are among the characteristics that are likely to influence her ultimate educational attainment.

One of the most important factors influencing fertility control behavior has been found to be formal female education. As Yousif et al. (1996) point out, education gives every woman the chance, the knowledge, the ability, and the potential to manipulate and control her environment, basically marriage, work, fertility and so on. Education, according to the authors, provides an

alternative to the vicious circle experienced by many generations of teenage girls, school dropouts, household chores, early marriage, and early and frequent pregnancy.

Education directly affects the demand for children, but also the supply and the regulatory cost of fertility (Easterlin and Crimmins 1985; Cleland and Hobcraft 1985). From the demand side, education tends to reduce the demand for children by shifting tastes in a manner unfavorable to children. Among other things, education may imply changes in lifestyle and may change the standard for having and rearing a child. It may focus on the quality side of having children in detriment of the quantitative one. It has been found that both male and female education negatively impact the number of children, but female education more strongly. Formal education increases the supply of children by improvements in health conditions, by diffusing knowledge, for instance, about personal hygiene, food care and vaccination, and by reductions in the length of breastfeeding and post-partum abstinence.

Education makes information in general more accessible, and in turn it tends to lower the costs of fertility regulation. Easterlin and Crimmins (1985:22) argue that "it may provide information not formally available on various means of fertility control, reducing expense in time and money previously required" and may also alter cultural norms which lower the subjective costs of using contraceptives. Already in the 1960s, Friedlander and Silver (1967) pointed out some negative partial correlations between birth rate and a society's level of education. They argued that education could among other things be interpreted as a proxy for differential knowledge, including contraceptive knowledge.

During most of the colonial period, access to schooling for Congolese women was extremely limited. At the outset, this policy reflected in large part an effort to meet the rapidly growing needs of the colony for (male) office workers in government and in the private sector, as well as the growing demand for skilled and semi-skilled labor (Bolamba, 1949; Hulstaert, 1951; Mukadi, 1979). In the early 1920s, a commission on education established by the Minister of Colonies recognized the importance of providing schooling to females (Mukadi, 1979). Despite this, however, schooling of females continued to lag far behind that of males. The absence of female teachers has also been cited as a factor contributing to the delay in schooling of females (Bolamba, 1949; Hulstaert, 1951).

The provision of schooling to males had, by the end of World War II, resulted in the emergence of a growing class of educated Congolese men (so-called "évolues"). However, the continued imbalance between the schooling of males and that of females began to attract considerable attention. In addition to the factors cited above, several observers have argued that among many Congolese parents there was a lack of interest in sending their daughters to school (Bolamba, 1949; Hulstaert, 1951; Comhaire- Sylvain, 1968). Many parents simply did not see the point. By the early 1950s there were numerous voices, Belgian as well as Congolese, calling for a vastly increased effort on the part of the colonial government to provide schooling for girls as well as for boys (see, e.g., Bolamba, 1949; Bukasa, 1951; Wassa, 1951; Van Bulck, 1956). Many of the calls for educating women were oriented not towards providing training that would equip them to enter the labor market, but rather to give them the opportunity and knowledge to become better mothers and housewives (Bolamba, 1949 and Bukasa, 1951).

Following independence, there was a considerable push to promote schooling throughout the Congo, and with emphasis on provision to girls as well as boys. During the 1960s the country's school enrollments grew at roughly twice the pace of growth of the population at large, and this rapid growth, accompanied by growing proportions of female students, persisted during the 1970s (Kikassa, 1979). After independence, the capital city benefited from its privileged position as capital and hence has consistently had distinctly higher school enrollments and educational attainments than elsewhere in the country. There were sharp reductions in national budgets for education associated with efforts at structural adjustment, and in response to deterioration in the public system private schools (particularly at the primary level) mushroomed.

Education in the Republic of Congo

The Congolese education system consists of formal and the non-formal sectors and is divided into four levels: Optional pre-school education which takes three years; Primary education lasting six years ending with a final diploma called the Certificate of Primary and Elementary Studies; Secondary education, from six to seven years is divided into two cycles: the first lasts for four years, and the second lasts from two to three years; and Higher education is offered at four different universities. Primary school in the Republic of the Congo takes six years, and consists of six grades - two preparatory, two elementary, and two medium classes. At the end of the second medium class, the student is required to take the Secondary School Entry Test, upon which his or her entry to secondary school is hinges. Secondary school takes seven years.

There is high proportion of women who have no education than male. More women have a primary level of education. However, it is evident that more men attain higher education than female. Rural areas are mostly characterized by a large proportion of women with primary level

of education. Urban areas have majority of its population who are literate, as opposed to rural areas where these's mainly a shortage of teachers and poor infrastructure. Looking at the region of residence, it is evident that there are disparities; the Northern and Southern regions are characterized by women with no education. However, in Brazzaville and Pointe Noire, majority of women are well educated. In these towns, more than half of the women have attained secondary level of education

Table 1: Education by socio-demographic characteristics: male and female

Socio-demographic characteristics		Male					Female				
		No educ'n	Prim	Sec Cycle 1	Sec Cycle 2	Higher	No educ'n	Prim	Sec Cycle 1	Sec Cycle 2	Higher
Type of place of residence	Urban	1.4	17.7	40.4	26.3	14.1	2.8	19.7	56.4	16.7	4.4
	Rural	2.4	33.8	46.7	13	4.1	13	44.2	37.8	4.7	0.3
Region of residence	Brazzaville	1.4	14.8	38.9	28.5	16.5	1.9	15.7	58	18.5	5.8
	Pointe Noire	1.3	20.6	43.3	23.5	11.2	3.4	23.9	54.9	14.4	2.4
	South	2.3	37.1	41.9	13.7	5	13,2	41.9	39.7	4.7	0.5
	North	2.5	26.6	53	14.2	3.8	11	45.2	37.9	5.6	0.3
Economic wellbeing	Very poor	4.2	39.8	44	10.1	1.9	17	49.5	31,2	2.3	0
	Poor	1.7	34.4	51.5	9	3.5	11	42.8	42.2	4	0
	Average	1.7	29.8	45.3	18.2	5	6.5	34.5	50.6	7.8	0.7
	Rich	0.5	18.5	44.1	26.1	10.8	2.5	20.8	60.3	14.2	2.2
	Very rich	1.5	8.4	34.1	33.4	22.6	1.6	10.1	3.65	25.7	9.1

Fertility in the Republic of Congo

Despite the primal role that fertility plays in population dynamics, and its repercussions on the mother and child health, no study has been carried out in the Republic of Congo on this topic. The only information that is available is that from the census held in 1974 and 1984. During this study, fertility rates were estimated by bias of questions related to births during the 12 months prior to the census, a method with a relative shortcoming in estimating fertility rates

In the Republic of Congo, the total fertility rate is higher in rural areas with an approximate TFR of 6 children, compared to 3.6 in Brazzaville, 3.8 in Pointe Noire and 4.8 in other towns. TFR's decrease with increase in the level of education, e.g., a woman with higher education has TFR of 2.8. Differences are also observed in the economic well-being of the population; the poorest women have a TFR of up to 6.7 and 2.9 among the very rich. The proportion of women who were pregnant at the time of the survey is higher in the rural areas than in urban areas, and equally high in the Northern and Southern regions.

Table 2: Fertility by socio-demographic characteristics: female aged 15 – 49 years

Socio-demographic characteristics		Total Fertility Rates (TFR)	% of women who are currently pregnant	No. of living children among women aged 40-49
Type of place of residence	Urban	3.8	7.0	4.5
	Rural	6.1	12.2	6.2
Region of residence	Brazzaville	3.6	7.3	4.2
	Pointe Noire	3.8	5.8	4.8
	South	5.9	11.1	6.1
	North	6.2	13.3	6.4
Level of education	No education	6.2	9.9	6.6
	Primary	6.3	10.9	6.2
	Secondary cycle 1	4.4	8.9	4.8
	Secondary cycle 2 or higher	2.8	6.7	3.8
Economic wellbeing	Very poor	6.7	13.1	6.7
	Poor	5.9	11.8	5.8
	Average	5.2	8.6	5.7
	Rich	3.8	7.9	4.5
	Very rich	2.9	6.2	4.2

1.2 Problem Statement

It has been observed that in a number of countries in sub-Saharan Africa, the highest fertility is seen among women with primary schooling, and reduces progressively with secondary or higher education (United Nations, 1986; Jolly and Gribble, 1993; Ainsworth et al , 1995). Particularly beyond the first two years of secondary education, increased education appears to result in sharp decline in fertility. The massive exposure of women to schooling between 1955 and 1975 had

been most heavily concentrated on the primary level, and since women with this level had the highest fertility, it is not surprising that the overall level had failed to decline (Shapiro, 1996).

The impact of socio-economic development on fertility is of utmost importance in determining the effect of education on fertility. In the early stages of socio-economic development, fertility tends to rise. Socio-economic development affects fertility through changes in marital habits, better health facilities and better education which are all conducive to better prenatal and postnatal care. Demand for children, i.e., the number of surviving children parents want, is the outcome of parents balancing the benefits of children against their cost. These benefits include both their production contribution and the enjoyment or satisfaction which parents receive from children. In the African setting, costs of children appear to be low while benefits are much higher. On the other hand, the supply of children is the number of a woman's (surviving) children, which if affected by age at first maternity, age at last maternity and the average interval between births. These in turn are determined by many biological and behavioural factors such as partial sterility, length of lactation period, age at first marriage and marital stability.

The long term transition from high to low fertility in developed countries has generally been attributed to social and economic changes often referred to as modernization. Modernization includes processes such as industrialization, urbanization, spread of education, improvement in health and nutrition, control of epidemic diseases, increase in communication facilities, erosion of traditional customs and emergence of secular values and beliefs. Modernization creates conditions which tend to increase fertility. Fertility change in a modernizing society at any

particular point in time will be positive or negative depending on the relative strengths of conditions favouring and inhibiting fertility at that time.

Education is among the factors that expose a woman to modernization and information, which in turn heightens their perception of the best way to adapt in a particular society. Education improves one's social status in any given society. Education helps women to develop themselves and earn higher income, and thus improve the quality of their lives. Educated women must perceive such benefits from lessons and experiences they receive from their surrounding and put such knowledge and skills in their real lives, especially in their reproductive behaviour. It is for the reasons outlined above that the study examines the extent to which education influence fertility in the Republic of Congo during the early stages of demographic transition.

1.3 Research question

Previous studies indicate that at the beginning of modernization education particularly at primary level tends to increase fertility (Mont Nag, 1980). Considering that the Republic of Congo is at a lower level of demographic transition, does education have a depressing or an increasing effect on fertility?

1.4 Objective of the study

The objective of this study is to examine the extent to which education influences fertility in the Republic of Congo during the early stages of demographic transition

1.5 Justification of the study

The broad goal of a woman spending more years on education is to reduce her fertility by postponing marriage or age at first birth, or by preventing unwanted births through the use of contraceptives. Since the ability of educational attainment to contribute to fertility decline depends on the period spent by the woman in school and continued use of family planning methods, an understanding of effects of educational attainment of fertility is very important to policy makers.

The fact that little is known in the Republic of Congo about the relationship between education and fertility justifies the undertaking of this study. Equally important is the fact that there is limited statistical data and researches undertaken in the Republic of Congo. The findings of this study will increase this knowledge and form a basis for the promotion of female education in order to promote the use of modern methods of family planning that are more effective in monitoring fertility in the Republic of Congo .

1.6 Scope and limitation of the study

Inclusion of sterile women as fertile and current users of contraceptive methods may pose a limitation in the validity of the data. The Congolese levels of education are divided into secondary 1 and secondary 2; however, these two groups will be combined into one to be referred to as secondary education. Data on current use apply to current use at the time of the survey and can yield no direct statement concerning continuity of contraceptive efficacy with which user dependent methods are used. Despite these limitations, the study is expected to arrive at valid conclusions through the use of the available data already mentioned.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Female educational attainment is an important socioeconomic variable found in numerous surveys and studies to be associated with variation in reproductive behaviour. This chapter will review literature by various scholars, look at the theoretical framework and various theoretical perspectives. This will be followed by conceptual statement, hypothesis and model. It is also important to define the study variables that will be used in this paper.

2.2 Linkages between education and fertility

Among the various socioeconomic determinants of fertility, education, especially female education, has received considerable attention from scholars and researchers. Sharma and Ratherford [as described in Jeffery and Basu (Jeffery, Roger and Alaka M. Basu, 1996) have argued that in India, "a 10 per cent increase in the female literacy rate seems to be associated with a 0.5 decline in total fertility rate". If this were true, in order to reduce fertility, it would be necessary to "arrange for 80 per cent female literacy." While this kind of conclusion exemplifies the tendency to overstate the relationship between education and fertility, and to make wild extrapolations, it is a recognized fact (we have evidence from several studies) that female education is an important factor even after controlling for related variables such as place of residence (rural or urban), income levels of households and educational levels of husbands, and that exceptions are rare (Jeffery, Roger and Alaka M. Basu, 1996.

Education, for the most part, operates indirectly through the various channels described by Easterlin, namely, through the supply of and demand for children, as well as through the costs of regulation. Each of these channels is affected by several intervening determinants which are influenced by the extent of women's autonomy -- often considered to be a product of education. Women's autonomy is seen as taking five forms: (1) autonomy through knowledge (exposure of women to the modern world); (2) decision-making autonomy; (3) interaction with a wider social circle; (4) emotional autonomy; and (5) "economic and social autonomy, self reliance, control over economic resources" (Jejeebhoy, Shireen J., 1995).

Abadian (Abadian, Sousan, 1996), in her study of 54 developing countries, finds that female autonomy (operationalized through age at marriage of women, differences in age between spouses and rates of secondary schooling among women) has a negative and significant impact on fertility. The difference between the approach of Jejeebhoy and that of Abadian is that the former views education as operating through autonomy, whereas the latter uses education to operationalize the concept of female autonomy. Abadian, in her study, observes that education acts "directly on fertility rates [and] . . . works through infant mortality rates to decrease fertility."

Female Education and Supply of Children

Education affects the supply of children through four intervening variables. These are: (1) age at marriage; (2) breast feeding, (3) post-partum abstinence; and (4) child mortality.

Age at Marriage. Education tends to increase the age at first marriage, thereby decreasing the number of years that can be devoted to child bearing. This relationship between women's education and age at marriage has been found in almost all fertility studies. Cleland and Jejeebhoy show that in almost every country in South Asia, women with education get married "roughly two to five years later than uneducated women". A study of 26 developing countries sponsored by the United Nations finds that age at marriage invariably increases with the level of education in all of the countries examined, despite the fact that "the age at marriage varies widely across countries". According to Jejeebhoy, age at marriage is affected by education through decision-making autonomy, interaction with a wider world", emotional autonomy and self-reliance.

Besides delaying marriage, female education has been observed to be associated with greater numbers of women not marrying at all. Women with higher education levels are more likely to be able to organize their lives outside the realm of marriage and family. For example, in Thailand, only about 1.9 per cent of women without education do not marry, whereas 14.6 per cent of highly educated women do not marry (United Nations, Department for Economic and Social Information and Policy Analysis, Population Division 1995).

Breast Feeding: Prolonged breast-feeding is one of the traditional practices that serves as a means of contraception. With increases in the levels of education of women, the period of breast-feeding tends to decrease (United Nations, Department for Economic and Social Information and Policy Analysis, Population Division 1995, Jejeebhoy, Shireen J. 1995, Cleland, John and

Shireen Jejeebhoy, 1996). Breast feeding practices are affected by education through knowledge autonomy, decision-making autonomy and emotional autonomy.

Post-Partum Abstinence: The kind of relationship that was observed in the case of breast feeding is also observed when one examines the relationships between post-partum abstinence and fertility. Women's compliance to the traditional norms that encourage prolonged post-partum abstinence tends to decline with increases in the levels of female education (Jeffery, Roger and Alaka M. Basu, 1996, Jejeebhoy, Shireen J. 1995). Cleland and Jejeebhoy (Cleland, John and Shireen Jejeebhoy, 1996) argue that recent research findings suggest that the length of post-partum abstinence and education are unrelated. But in countries where education does have an effect (e.g. sub-Saharan African societies), the effect of education is channelled through knowledge -autonomy, decision-making autonomy and emotional autonomy (Jejeebhoy, Shireen J. 1995)8).

Child Mortality: High rates of child mortality reduce the supply of children, which in turn is likely to increase the demand for children. The existence of a linear relationship between mother's education and child mortality has been well established. With a high rate of child survival, parents can be certain that they need not have many babies in order to maintain their desired family size. Moreover, with the death of an infant, duration of breast feeding and post-partum abstinence is curtailed, which promotes fertility (Cleland, John and Shireen Jejeebhoy, 1996). Thus with the survival of children, intervals between births are likely to be widened. Female education affects child survival through all the five forms of female autonomy described by Jejeebhoy (Jejeebhoy, Shireen J. 1995).

Female Education and Demand for Children

Female education has an impact on the demand for children via these variables: (1) Desired family size; (2) Son preference; (3) Labour contributions of offspring during childhood; (4) Children as old age support; (5) Children as sources of prestige; and (6) Economic, time and opportunity costs of raising children (Jejeebhoy, Shireen J. 1995).

Desired Family Size. With education, women become much less fatalistic regarding their family size. As Cochrane (Cochrane, Susan Hill, 1978) notes in a study of fertility in Nigeria, only 10 per cent of the women with education beyond the primary stage believed fertility to be determined by God', whereas 50 per cent of the totally uneducated women held that belief. In most research studies it has been found that desired family size becomes smaller with the increase in women's educational levels. However, the strength of relationship varies from culture to culture, depending mainly on the degree of gender stratification in the society under study. Education (lower level) has less impact in highly gender- stratified societies than in relatively egalitarian societies. Education affects desired family size through all the five forms of autonomy that it brings about (Jejeebhoy, Shireen J. 1995)

Son Preference In gender-stratified societies, son preference is a common feature. If a couple desires to have two living sons, they will end up having 3.9 children on an average. If parents want at least one daughter and one son, the average would turn out to be 3. Thus son preference increases the family size significantly in the long run. Chowdhury (Chowdhury, Mridul K. 1994) finds that in Bangladesh son preference is so strong that even education above primary level

cannot counteract it. Cleland and Jejeebhoy (Cleland, John and Shireen Jejeebhoy, 1996) suggest that very high levels of education are required in order to counter the preference for sons in such societies. The higher education of women, through providing them self reliance, social and economic autonomy, probably has a negative impact on son preference (Jejeebhoy, Shireen J. 1995)

The Labour Contributions of Offspring during Childhood: Better educated women are more likely to educate their children and to send them to school. Their expectations with regard to their children's labour are not as great as those of uneducated women, who believe that a function of children is to help their parents in economic activities. Jejeebhoy (Jejeebhoy, Shireen J. 1995) cites evidence from a study carried out in Maharastra, India. The study reveals that expected and actual levels of support from sons diminished as women's educational levels increased. For girls the decline is relatively modest, as more emphasis is placed on sons' schooling. Overall, the children of women with secondary education only contribute about 60 per cent of the labour that is contributed by the children of uneducated women. Cleland and Jejeebhoy (Cleland, John and Shireen Jejeebhoy, 1996) also mention several other similar studies. Effects of female education on child labour are channelled through self-reliance, and social and economic autonomy (Jejeebhoy, Shireen J. 1995).

Children as Old Age Support. One of the perceived benefits of children is as providing a means of support in old age. With increasing levels of education, women tend to rely less on their children for support in old age and for economic help and housing (Jejeebhoy, Shireen J. 1995). However, the effect of education varies with the intensity of gender stratification in the society.

In highly gender-stratified societies, a higher level of education is required in order to have a significant impact. As the level of education of women increases, they are more likely to depend on other types of resources (such as personal savings) rather than relying solely on their children (especially their sons) (Cleland, John and Shireen Jejeebhoy, 1996. Women's education affects the extent to which children are perceived as sources of support in old age through social and economic autonomy and self-reliance (Jejeebhoy, Shireen J. 1995).

Economic, Time and Opportunity Costs of Children: Education leads to aspirations for better qualified children. With "higher standards of child care" (Easterlin, Richard A. 1983), other than feeding, housing and clothing children, educated parents perceive costs to be higher because they have to arrange for a better education for their children. Level of education of children tends to have a direct relationship with mother's schooling (Jejeebhoy, Shireen J. 1995). More highly educated women are more likely to be engaged in paid employment outside the home. An educated woman is likely to take into account the loss of income that will result from having more children and may therefore decide not to have large numbers of children. Besides this opportunity cost, better educated women also feel it necessary to spend more time with children and are less likely to leave young children in the care of older siblings. This time cost leads educated women to have fewer children than uneducated women. Education affects the perceptions of mothers in terms of economic, opportunity and time cost of children through knowledge autonomy, decision-making autonomy and self-reliance (Jejeebhoy, Shireen J. 1995.

Children as Means of Enhancing Prestige: In some societies in Africa, a woman's sense of identity, legitimization, recognition, security, and prestige in the family is dependent on her

having children. Although very few studies have been carried out in this area, the evidence suggests that the education of women serves as an alternative means of gaining respect. As an educated person, an educated woman is considered to be knowledgeable. If she earns money by working in an 'honourable' occupation, she is likely to be highly valued. Education brings in prestige for a woman, in spite of not having many children through social and economic autonomy and self-reliance (Jejeebhoy, Shireen J. 1995).

Female Education and the Costs of Regulation (Contraceptive Use)

Studies have overwhelmingly documented positive and significant relationships between female education and contraceptive use (United Nations, Department for Economic and Social Information and Policy Analysis, Population Division, Cochrane, Susan Hill, 1978, Jejeebhoy, Shireen J. 1995, Cleland, John and Shireen Jejeebhoy 1996, Chaudhury, Rafiqul Huda 1978). Female education affects the use of contraception through the acquisition of knowledge regarding contraception and through increased spousal communication.

Knowledge about Contraception: There appears to be a positive relationship between the education of women and contraceptive knowledge. Cleland and Jejeebhoy (Cleland, John and Shireen Jejeebhoy, 1996) argue that "the role of schooling becomes more apparent in terms of detailed knowledge: the number of methods, especially non-terminal methods, known; the correct use of a particular method; and from where a particular method can be acquired." For example, they refer to a study showing that in India, 95 per cent of the women with secondary education knew about the IUD whereas only 39 per cent of the uneducated women had the

knowledge of this method of birth control. In many developing countries, it has been observed that even women who are highly educated do not have an adequate understanding of reproductive physiology -- upon which the success rate of traditional and modern contraceptive methods depend. Moreover, there still exists a large gap between knowledge and actual practice of contraception (United Nations, Department for Economic and Social Information and Policy Analysis, Population Division, 1995).

Communications between Spouses: The education of women (even primary level education) also breaks another barrier to contraception: lack of spousal intimacy -- which restricts free discussion on sexual matters or on issues related to contraception. Education affects spousal communication through emotional autonomy and decision-making autonomy (Jejeebhoy, Shireen J. 1995). The number of unwanted pregnancies is lower among educated women than among uneducated women. Educated women are more likely to use contraception consistently as soon as their desired family size has been completed. The gap between desired family size and actual family size shows the unmet need for contraception among uneducated women. Thus female education, in addition to having many other benefits, also goes a long way in reducing fertility.

To obtain a better understanding of patterns of fertility transition, it is useful to examine the relationship between fertility and socioeconomic indicators. The relationship between TFR and life expectancy is nonlinear. At the lowest levels of life expectancy the TFR is high and there is no significant correlation between the two. In contrast, at high levels of life expectancy the TFR

is strongly and inversely associated with life expectancy. Similar nonlinear patterns of association exist for the other development indicators.

There seems to be no significant effects on fertility of development indicators in countries with the lowest levels of development. Although countries vary in their level of pre-transitional fertility, there is usually little trend up or down before the transition starts. The TFR can therefore be considered largely unresponsive to changes in development until the transition begins. Fertility surveys in pre-transitional countries have confirmed that only a very small proportion of couples practice contraception (Curtis and Neitzel 1996) and differences in fertility are caused primarily by differences in proximate determinants other than contraception (Bongaarts and Potter 1983).

The onset of a transition typically represents a break from the past with the pace of fertility decline sharply higher after than before the onset. In countries for which time series of contraceptive use are available, a rise in contraceptive use from very low levels coincides with the onset of the transition (Bongaarts and Johansson 2002; United Nations 1999). The transition onset occurs after a country's level of development has risen for some time. Once a transition starts it tends to continue. The pace of decline is typically faster immediately after onset than in any other phase of the transition. An earlier study of these trends by Bongaarts and Watkins (1996) concluded that the initial pace of change in fertility was not associated with the pace of development. However, the pace of initial decline was positively associated with the level of development at the time of onset.

An explanation for these trends in fertility in the early phases of the transitions is likely to be found in diffusion and social interaction processes, which interfere with a smooth adjustment of fertility to changing socioeconomic circumstances. Diffusion refers to the spread of information, ideas, and behaviours among individuals, communities, and countries, and social interaction refers to the fact that reproductive attitudes and behaviours of individuals can be influenced by the attitudes and behaviours of others. An extensive literature exists on this subject (Bongaarts and Watkins, 1996; Caldwell, 2001; Casterline, 2001a and 2001b; Cleland, 2001, Cleland and Wilson, 1987; Kohler, 2001; Knodel and van de Walle, 1979; Montgomery and Casterline, 1996; National Research Council, 2001; Watkins, 1986 and 1987).

The first key element of an explanation is an initial resistance to reproductive change in pre-transitional societies with natural fertility. Traditional norms and values tend to support large families and to discourage the deliberate limitation of family size through contraception. This resistance to change leads to a growing gap between actual and desired family size when child mortality and desired family size decline with development, thus building a potential for future fertility decline.

As development proceeds, the desire for reproductive change becomes sufficiently large and widespread that a few innovators adopt contraception – typically first among highly educated and urban couples. Once begun, reproductive change spreads rapidly as diffusion and social interaction processes reinforce rather than inhibit such change. The cost of contraception (broadly defined to include social costs), drops. In addition, diffusion and social interaction can alter couples' evaluation of the costs and benefits of childbearing, thus reducing fertility

preferences. The combination of a substantial (and growing) existing demand for and a reduction in the cost of contraception results in "a sharp acceleration in fertility decline that is a kind of 'catching up' as pent-up desires for limiting fertility are released" (Casterline 2001a: 34). This initial fertility decline is typically more rapid the more developed a society is at the time of onset because higher levels of development are associated with lower desired family size and hence with larger gaps between the actual and desired behaviour. And the more developed a country is, the more extensive the channels for social interaction and diffusion of innovative ideas, information, and attitudes.

Fertility in the Republic of Congo increased between the mid-1950s and the mid 1970s, as a reflection of reductions in sterility and perhaps also some changes in proximate determinants associated with low levels of modernization. In the mid 1970s, factors such as mortality, women's education, socioeconomic development (or in the case of the Republic of Congo, the lack of such development), civil war and economic crisis were seen to be relevant in considering fertility behaviour.

Socioeconomic development in the Congo has been affected, first by several political difficulties in the early 1960s, then by an autocratic regime whose policies effectively promoted under-development, and by civil war for much of the past years. Fertility transition in much of the developed and developing world has been broadly associated with socioeconomic development, presumably in part reflecting increased parental investment in the education of a relatively small number of children as such investments bear the promise of potentially substantial returns (Becker, 1991; Easterlin and Crimmins, 1985). On this ground, the absence of development in

the Republic of Congo may be seen as a factor supportive of maintaining traditional high levels in fertility.

At the same time, an increase in the levels of urbanization that has taken place in Congo has put downward pressure on fertility. Urban places are clearly the loci from which fertility transition in sub-Saharan African is beginning (Shapiro and Tambashe, 2000). They are places where the economic benefits of children to parents are smaller than in rural areas, where living costs are higher, and where opportunities for education of children are also greater. All these factors tend to promote smaller families. Hence, even in the absence of meaningful development, the trend towards increasing urbanization of the Congolese population most likely is exerting some downward pressure on fertility.

There have been some suggestions in the literature about the possibility of crisis-led fertility transitions (Lesthaeghe, 1993; Foster, 1993). Congo has experienced both a longer-term chronic economic crisis (from the mid-1970s until 1990), and then more severe economic dislocations since 1990s (cf., Maton et al., 1999) is likely to have led to delays in marriage and in the onset of the first births in urban places (Foster, 1993). Rural areas have been doubly hit by economic crisis and by ongoing civil war. Outmigration of men to urban places in search of better economic opportunities and evacuation of able-bodied men from villages in war zones are both factors likely to result in lower fertility in rural areas.

Summary of Literature Review

Easterlin et al. (1988) looked at the effects of modernization on the demand and supply side of fertility considering a range of individual-level modernization variables, mainly education level, husband's occupation, and wife's work experience. They found that modernization variables played a more important role in explaining differences in demographic behaviour than cultural variables, and among the modernization variables, education was by far the most important.

The thresholds at which female education has an impact on fertility are often determined by the level of development, the extent of modernization, and the degree of gender stratification. Countries that have achieved relatively high levels of overall development, modernization and egalitarianism (in terms of gender) are likely to find that lower levels of education influence fertility, whereas in the case of countries with lower levels of development and modernization and highly gender-stratified cultural settings, are likely to find that a higher level of education is required. In general, it has been observed that a secondary level of education is likely to influence fertility (United Nations, Department for Economic and Social Information and Policy Analysis, Population Division, 1995, Jejeebhoy, Shireen J. 1995). Almost irrespective of setting, women who have secondary level schooling have fewer children than do women with no schooling at all.

Over a long period of time, the net effect of socio-economic development reduces the number of desired children. The supply characteristics of individual women and their societies dominate the determination of fertility levels and fertility variations in traditional societies as well as during

early stages of socio-economic development, and that demand characteristics will become dominant only after parents experience sufficient excess supply of surviving children that they are prepared to use contraceptives or other practices to successfully prevent future births.

Demand determinants change as a result of socio-economic development but the expected positive relationship between income and actual or desired number of children is weak. As such, development causes relative prices – and perhaps preferences – to shift from additional children to other goods. The net effect of development is an increase in the average number of surviving children and a decrease in the average number of desired children. The initial net effect on fertility could be a rise, a fall or little change, depending on the strength of the relations between various supply variables and fertility and the mix of changes in the supply variables. The long-term effect of development on fertility is a decline in fertility. It is important to specify the stage of socio-economic and demographic change or transition at which the target population is before deciding which type of policy interventions are most suitable for achieving fertility decline

In view of the apparent strength and immediate impact of the various supply variables on fertility, the initial effects of rural socio-economic development on fertility is probably due to the effects of changes in supply variables. Rural development increases the average age at first marriage (partially due to primary schooling for women), a decline in the average length of lactation, a decline in the incidence of polygyny, and a net decrease in infant and child mortality. Rising age at marriage reduces both fertility and number of surviving children. Earlier weaning increase both, except to the extent that it may cause somewhat higher young child mortality

which in turn lowers the number of surviving children. Reduction in average number of children dying reduces fertility but increases the average number of surviving children.

Exposure of girls and women to education has greater influence on fertility behavior of a given society; thus: Education influences fertility by determining the age at first birth and marriage. This in turn determines the number of women who marry at a certain age, which in turns influences the length of marital union and exposure to pregnancy risk. Female education enhances female autonomy status which in turn has greater bearing on reproductive health rights and decision making on ideal family size. Levels of education influence a woman's ideal family size which in turn affects her fertility. Female education equally influences contraception behavior which either postpones or delays the risk of pregnancy.

2.3 Conceptual Framework

The study uses the conceptual framework that was developed by Davis and Blake (1956) and was later modified by Bongaarts (1982) The framework distinguished two types of variables: Socio-economic and demographic variables; and, proximate variables. The characteristic of proximate variables is their direct influence on fertility. The socio-economic and demographic variables only affect fertility indirectly but acting through the proximate determinants, which help improve the understanding of factors on fertility behaviour.

Source Adapted from Bongaarts 1982.

While Davis and Blake (1956) were the first to identify a set of 11 proximate determinants known as "Intermediate Fertility Variables", their classification did not get wide acceptance because it was not easily incorporated in fertility analysis. In view of that, Bongaarts (1978) reclassified this list of determinants into seven variables, including marriage pattern, contraceptive use, induced abortion, lactation infecundability, spontaneous abortion, frequency of coitus and sterility. However, after various studies, Bongaarts realized that some of these factors are more relevant than others in determining the magnitude of fertility change. In fact, only four of them (proportion married, contraceptive use and effectiveness, induced abortion and

postpartum infecundability) are the most important in explaining fertility variation, accounting for up to 96% of fertility change in some populations (Bongaarts, 1982; 1978).

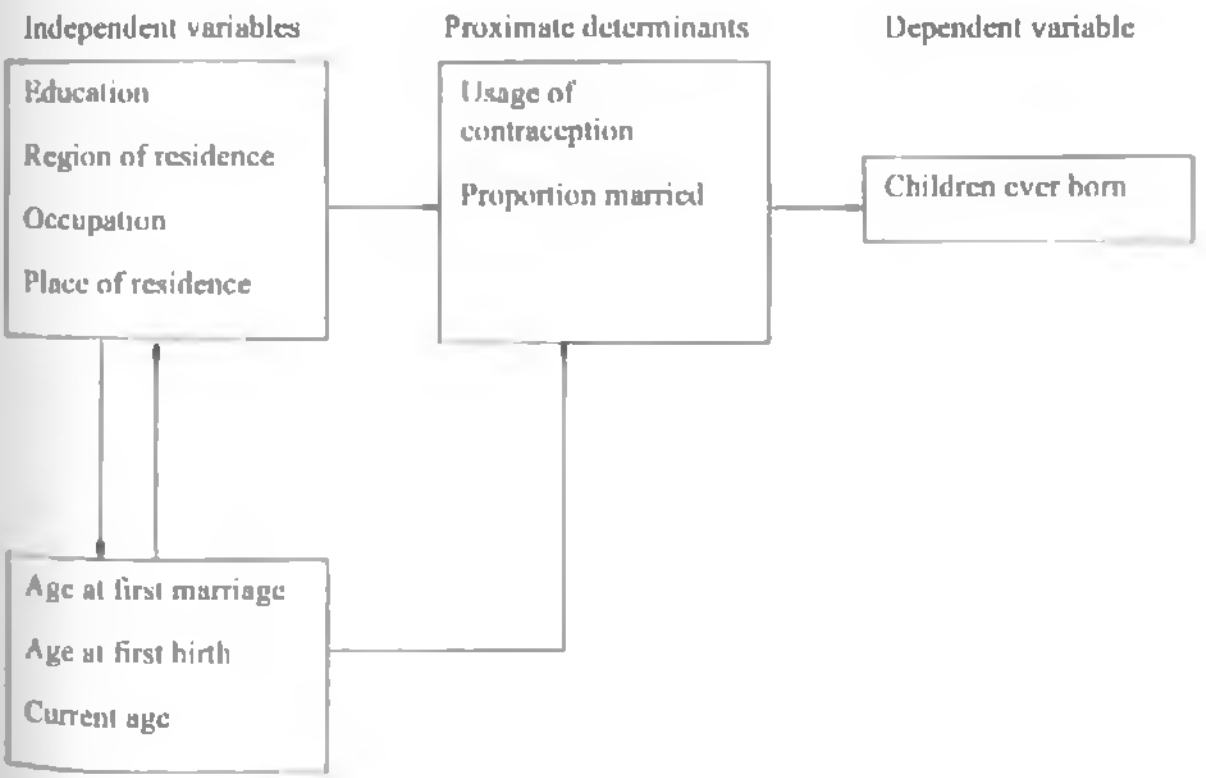
The impact of marriage on fertility has long been recognized in demographic literature (Bumpass et al., 1978, Mosley et al., 1982). The relationship between marriage and childbearing is, however, tenuous in sub-Saharan Africa because exposure to sexual intercourse and childbearing is not restricted to marriage (Ferry and Page, 1984). It is assumed that the number of women of reproductive age married or living with someone determines the proportion of women in a society exposed to the risk of becoming pregnant. The greater the number of women exposed, the higher is the resulting fertility. In sub-Saharan Africa, entry into union has generally occurred at an early age, and although union dissolution is frequent in many regions, remarriage occurs rapidly (Cochrane and Farid, 1989).

Contraception is one of the major intermediate variables having a direct causal link to fertility (Bongaarts, 1978). Indeed, recent fertility declines observed in many developing countries have been partially attributed to increased use and effectiveness of contraception (DaVanzo and Haaga, 1982; Lapham and Mauldin, 1985). Use of contraception to delay or limit the number of children born clearly affects a society's fertility level. Contraceptive use is higher for women who live in urban areas and who are well educated. Contraceptive use is also high among women of higher parity. The practices of breastfeeding and sexual abstinence after the birth of a child reduce a woman's exposure to becoming pregnant. Breastfeeding of long duration and on demand delays the return of a woman's normal pattern of ovulation. Cultural norms often prescribe limiting sexual relations after birth. In sub-Saharan Africa, both of these practices are utilized and are seen as

necessary to protect the health of the child and the mother (van de Walle and van de Walle, 1988).

2.4 Operational Framework

Factors influencing fertility can be classified into two groups, namely intermediate fertility variables, or proximate determinants, and socioeconomic variables. Intermediate or proximate variables have a direct impact on fertility, and consist of a set of biological and behavioral factors through which social, economic and cultural conditions can affect fertility. In other words, in the absence of these determinants, human fertility may reach a theoretical maximum of total fecundity (TF), accounting to an average of 15.3 births per woman. Thus, fertility differentials between regions and across time within the same region can be traced to changes in one or more of the proximate determinants.



2.5 Variables and their measurement

The study analyzes key variables which past literature identified as determinants of a woman's fertility. The dependent variable is children ever born, while the independent variable is the woman's level of education. Fertility outcomes include number of births, age of woman at the time of first birth, usage of family planning methods, etc.

Dependent Variables

The dependent is Children Ever Born (CEB), which is the number of all children that a woman has ever given birth to, including those living, those that live elsewhere and those who may have died

Independent Variables: Woman's level of education

The key independent variable is the education level of respondents. This refers to the formal schooling one undergoes in an educational institution, and is categorized as follows:

No Education

Primary

Secondary and above

Control Variables

Current age: This refers to the current age of women at the time of the survey. This variable is categorized as follows:

Less than 24 years

25 – 34 years

35 years and above

Type of place of residence: Refers to the place where the respondent was residing at the time of the survey. This is categorized as follows:

1 – Urban

2 - Rural

Region of residence: Refers to the province where the respondent lives, and is categorized as follows:

1 - Brazzaville

2 - Pointe Noire

3 - Sud

4 – Nord

Occupation. Refers to whether the respondent is working or not and is categorized as follows:

1 Not working

2 - Working

Age at fist birth: Refers to the age at which a woman gives birth and is categorized as follows:

Less than 20 years

21 – 34 years

35 years and above

Age at first marriage: Refers to the age at which a woman gets married. This variable is categorized as follows:

Less than 20 years

21 34 years

35 years and above

Marital status: This variable defines the current marital status of the woman and is categorized as follows:

0 Never married

1 - Married

2 – Separated/Divorced

Contraceptive usage: Whether a woman has ever used any family planning method. The variable is categorized as follows:

1 Ever used

2 Never used

CHAPTER THREE: SOURCE OF DATA AND METHOD OF DATA ANALYSIS

3.1 Introduction

This chapter explains the source of data and methodology used in this study. To examine the influence of education on women's fertility, we employ data from the most recent national surveys in the Republic of Congo of the Demographic and Health Surveys (DHS).

3.2 Source of data

The study will use data from the 2005 Demographic and Health Survey, Republic of Congo. Funded by the U.S. Agency for International Development, the DHS coordinates with Macro International and developing country-institutions to administer a survey to women (ages 15 to 49) who are drawn from a national sample. The DHS instrument asks respondents to report retrospectively on foetal loss and live birth, type and duration of contraceptive use, and reasons for discontinuing contraception. Information concerning education, family nutrition and health, and other socioeconomic variables are also collected.

The variables used in the study are derived from data on children ever born, level of education, age at first birth, place of residence, age at first marriage, contraceptive usage, marital status among other variables. These variables are used to measure the effect of female education on children ever born.

3.3 Methods of data analysis

Measurements methods and definition of variables are restricted to those used by the available data sets DHS (2005).SPSS version 13 will be used in the analysis to establish the inverse relationship between education and fertility. We will use the same method to inquire about the channels through which this relationship operates. The first level of analysis includes descriptive statistics to determine the respondents various characteristics like education level, age at fist birth, region of residence, type of place of residence, etc. The second level will be to run Logistic and Ordinary Least Square (OLS) regressions are used to analyze the relationship between fertility outcomes and education. At the second level of analysis, the dependent variable is children ever born.

Bivariate Analysis

Bivariate analysis was used to display the relationship between two or more categorical variables. The size of the table is determined by the number of distinct values for each variable, with each cell in the table representing a unique combination of values. Bivariate analysis tables are used to determine the respondents various characteristics such as education level, age at fist birth, region of residence, type of place of residence, among others.

Multivariate Analysis

Regression procedures are used to obtain statistically established causal relationships between variables. A multivariate analysis was conducted to determine whether a woman's education has the anticipated effect on fertility in the Republic of Congo when one controls for other factors, such as region of residence, type of place of residence and wealth index.

The simple linear regression is mainly concerned with the relationship between two variables only, i.e , dependent and the independent variables. The linear regression formula used was $Y=a + B_1X_1+B_2X_2.....+B_KX_K$, where,

Y – Dependent variable (Fertility)

a = Intercept (constant of x and y)

b = coefficient, gives effect of x on y

e – Error component of the model.

Multivariate analysis was conducted to show the effect of education on the number of children born while considering proximate determinants such as type of place of residence, region of residence and occupation. The dependent variable is children ever born and, the independent variable is education level, while we control for age at first birth, age at first marriage and contraception usage.

Assumptions underlying simple linear regression

In simple linear regression, the two variables of interest are X and Y. It is assumed that:

- The variable X is measured without error. This means that since no measuring procedure is perfect, the magnitude of the measurement error in X is negligible
- For each value of X, there is a sub-population of Y values

- The variances of the sub-population of Y are all equal
- The means of the sub-populations of Y all lie on the same straight line. This is known as linearity
- The Y values are statistically independent. It is assumed that the Y values chosen at one point of X values is in no way dependent of the values of Y chosen at another value of X
- The error is normally and independently distributed with mean 0 and variance 02.

CHAPTER FOUR: EFFECT OF EDUCATION ON FERTILITY

4.1 Introduction

This chapter presents the descriptions of the characteristics of the study population. These findings are derived from the univariate and multivariate linear regression conducted to study the effect of educational attainment on fertility among 7051 women aged 15 to 49 years. A multivariate analysis was conducted to determine whether a woman's education has the anticipated effect of fertility in the Republic of Congo when one controls for other factors such as age, region, type of place of residence, occupation, and mother's age among other variables.

4.2 Distribution of the respondents by background characteristics

Table 4.2 shows the percent and number of women distributed by demographic and socio-economic characteristics. The table shows the distribution of respondents by background characteristics such as age, education, region of residence, type of place of residence, mother's age, age at first marriage, age at first birth and contraceptive usage. The aim of this table is to illustrate how the different background characteristics are likely to impact on a woman's fertility.

Table 3: Distribution of respondents by background characteristics

Variable	Frequency	Percent
Dependent Variable		
Children Ever Born		
0-2 Children	4,311	61.1
3-5Children	1,925	27.3
6 + Children	815	11.6
Independent Variable		
Level of Education	461	6.5
No Education	2,051	29.1
Primary	4,539	64.4
Secondary and above		
Control Variables		
Mother's Age		
Less 24 Years	3,024	42.9
25-34 Years	2,213	31.4
35 and above years	1,814	25.7
Region of residence		
Brazzaville	2,165	30.7
Pointe Noire	1,684	23.9
Sud	1,864	26.4
Nord	1,338	19.0
Type of Place of Residence		
Urban	4,878	69.2
Rural	2,173	30.8
Occupation		
Not Working	3,135	44.5
Working	3,906	55.4
Marital Status.		
Never married	2,074	29.4
Currently married	3,993	56.6
Formerly married	984	14.0
Age at First Marriage		
Less than 20 Years	2,938	41.7
21-34 Years	1,999	28.4
35 and above	40	0.6
Age at First Birth		
Less than 20 Years	3,396	48.2
21and above	1,756	24.9
Contraceptive Use		
Never used	822	11.7
Ever Use	6229	88.3

NB: Some of the variables do not add up to 100 percent due to missing cases

Table 3 shows that majority of women in the Republic of Congo have one to two children (61.1%), 27.3% have three to five children while the least percentage of women have more than six children. Majority of the women have attained secondary education and above at 64.4%, this shows that most of Congolese women have a high level of education. 29.1% of women attained primary education while only 6.5% had no education.

Majority of the women interviewed were aged less than twenty four years (48.2%). 31.4% were aged twenty five to thirty four years while 25.7% were aged above thirty five years. Most of the women interviewed were from Brazzaville (30.7%) and the South (26.4%). 23.9% were from Pointe Noire while 19.0% were from the North. Among these, majority were from the urban areas (69.2%) while 30.8% were from the rural areas. With regards to the woman's occupation, 55.4% were in some form of employment, while 44.6% were unemployed.

56.6% of the women were married. 29.4% had never been married while 14% were formerly married. Among the married women, 41.7% were married below the age of twenty years, 28.4% were married at the age of twenty one to thirty four years, while 0.6% were married above thirty five years. Among the women who had ever given birth, 48.2% had their first child at less than twenty years. 24.8% had their first child between age twenty one and thirty four, while 0.1% had children above age thirty five. 88.3% of women had ever used contraceptives showing that contraceptive usage was quite high in the Republic of Congo. Only 11.7% had never used contraceptives.

4.3 Factors affecting fertility

The main objective of the study was to investigate the effect of education on fertility in the Republic of Congo. To assess this, three models were fitted. The first model consisted of education variables. In the second model, I introduced socio-economic variables such as region of residence, type of place of residence and occupation to assess the effect of these variables on children ever born. In the third model, all variables were introduced. With the introduction of the socio-economic variables, the net effect of education on children ever born was further reduced.

Table 4: Results of Bivariate Linear Regression Analysis on children ever born and socio-economic factors and proximate determinants

	B	Std. Error	Sig
Level of Education			
Constant	4.167	0.107	0.000
No Education®	-	-	-
Primary	-1.559	0.118	0.000
Secondary and above	-2.092	0.112	0.000
Region of residence			
Constant	1.921	0.050	0.000
Brazzaville®	-	-	-
Pointe Noire	0.076	0.075	0.313
Sud	0.931	0.073	0.000
Nord	0.958	0.080	0.000
Type of Place of Residence			
Constant	3.026	0.050	0.000
Urban	-	-	-
Rural	-0.953	0.060	0.000
Occupation			
Constant	1.501	0.040	0.000
Not Working®	-	-	-
Working	1.563	0.053	0.000
Mother's Age			
Constant	0.721	0.031	0.000
Less 24 Years®	-	-	-
25-34 Years	1.939	0.048	0.000
35 and above years	4.031	0.051	0.000
Age at First Birth			
Constant	2.239	0.032	0.000
Less than 20 Years®	-	-	-
20-34 Years	0.518	0.065	0.000
35 and above	-0.864	0.830	0.298
Age at First Marriage			
Constant	2.159	0.033	0.000
Less than 20 Years®	-	-	-
20-34 Years	0.698	0.062	0.000
35 and above	1.691	0.370	0.000
Marital Status.			
Constant	0.405	0.044	0.000
Never married®	-	-	-
Currently married	2.813	0.054	0.000
Formerly married	2.640	0.077	0.000
Contraceptive Use			
Constant	1.217	0.081	0.000
Never used®	-	-	-
Ever Use	1.302	0.086	0.000

Education is positively associated with the number of children born by a woman even after socio-economic status and other background variables are accounted for. The three socioeconomic variables, region of residence, type of place of residence and occupation are strongly associated with the number of children born. Education has a negative effect on the number of children born, the higher the level of education a woman has, the fewer the number of children she will have. Women with primary, secondary or higher education were significantly more likely to have fewer children than those with no education.

The coefficient for the region of residence is positive for these three regions indicating that educational attainment has a strong effect in the three regions, i.e., the region of residence greatly affects the number of children a woman has. The type of place of residence is statistically significant. The coefficient is negative indicating that urban women tend to have more children than their rural counterparts. Results from the analysis show that women who are working have more children than those who are unemployed. The coefficient for employment status is statistically significant.

The net effect of education is reduced with the introduction of the proximate variables such as mother's age, age at first birth, age at first marriage, marital status and contraceptive use. Introduction of proximate determinants shows further decrease on the net effect of education on children ever born. This shows that education works through proximate variables to influence fertility. The coefficient for contraception use indicates that women who have ever used contraception tend to have more children ever born than those who have never used contraception.

Women's education is also strongly associated with the number of children that a woman gives birth to A higher level of education is associated with women having less number of children. This association is significant even after controlling for socioeconomic status and other background variables A higher level of education is associated with women bearing their first child at an older age. The association is significant after accounting for economic status and other background variables.

The higher the age at first birth, the fewer the number of children born. A higher age at first birth consequently reduces the number of children that a woman will bear. The number of children born is seen to decrease with an increase in age at first marriage up to age 34. However, women who marry at age 35 and above tend to have more children than their counterparts who marry between age 20 and 34.

The number of children ever born is higher among women who are currently married than those who were formerly married. However, women who have never married have a relatively low proportion of children ever born. The table equally shows that women who have ever used contraception have more children than those who have never used contraception.

Table 5: Multivariate Linear Regression on Children Ever Born and Background Characteristics

	Model 1		Model 2		Model 3	
	B	S.E	B	S.E	B	S.E
Constant	4.167	0.107	2.816	.142	.498	.105
Level of Education						
No Education®	-	-	-		-	-
Primary ***	-1.559	0.118	-1.277	.113	-.372	.078
Secondary and above ***	-2.092	0.112	-1.526	.111	-.832	.077
Region of residence						
Brazzaville®			-	-	-	-
Pointe Noire **			.080	.071	.091	.048
Sud ***			.369	.088	.390	.060
Nord ***			.445	.097	.361	.067
Type of Place of Residence						
Urban			-	-	-	-
Rural ***			-.071	.084	-.180	.058
Occupation						
Not Working®			-	-	-	-
Working ***			1.358	.054	.049	.040
Mother's Age						
Less 24 Years®					-	-
25-34 Years ***					1.596	.049
35 and above years ***					3.582	.054
Age at First Birth						
Less than 20 Years®					-	-
20-34 Years ***					-.434	.047
35 and above **					-2.963	.527
Age at First Marriage						
Less than 20 Years®						-
20-34 Years ***					-.715	.048
35 and above ***					-1.078	.239
Marital Status.						
Never married®					-	-
Currently married ***					1.531	.051
Formerly married ***					1.169	.066
Contraceptive Use						
Never used®					-	-
Ever Use ***					.321	.059

Significance: *** p<0.000; ** p<0.01; *p<0.05;

Table 5 presents the results of the gross effects of education on children ever born. The data show that a woman's educational attainment has a positive and robust effect on the number of children born

Model 1 is looks at the effect of education only on the number of children ever born. Relative to a woman with no education, women with primary education were likely to have 1 to 2 children less, while those with secondary or higher level of education had up to 2 children less than those with no education. The number of children ever born is seen to decrease with an increase in the level of education.

In model 2, we controlled for region of residence, type of place of residence and women's work status. Women living in Pointe Noire, the South and the North are seen to have more children than those living in Brazzaville. The rural coefficient is negative indicating that rural women tend to have fewer children than those from urban areas. Equally, women who are currently working equally have more children than those who are unemployed.

Rural women are seen to have fewer children than urban women. In the context of the Republic of Congo, this can mainly be attributed to the fact that rural areas have low fertility due to outmigration of men to urban areas in search of better economic activities and evacuation of able bodied men from villages in war zones which in turn results to low fertility in rural areas. Rural development equally increases the age at first marriage, decline in lactation which in turn leads to low fertility. Women who are currently unemployed have lower fertility than their employed

counterparts. This is due to the fact that unemployed women spend a lot of time breastfeeding their children; which in turn acts as a contraceptive method. Such women who are seen to have lower level of education, introduce their children to early weaning, this in turns leads to high child mortality resulting to low fertility.

In model 3, we control for mother's age, age at first birth, age at first marriage, marital status and contraceptive use. Fertility tends to be higher among women in urban areas than those in rural areas. Equally, women who are currently working and who use contraceptives are equally seen to have more children. Women aged 25 years and above are seen to have more children than those below 24 years as a result of being at an advanced stage of their reproductive lives.

Increase in age at first birth is seen to reduce the number of children born; women who bear their first child at 35 years and above are seen to have 3 children less than those who have their first child at less than 20 years. Consequently, an increase in age at first marriage equally results to a reduction in the number of children born. Women who marry above 20 years will have up to 1 child less than those who marry below 20 years.

The regression results show that women's education is strongly linked with their fertility. Educated women are more likely to use contraception, have fewer children and delay their first childbirth. The findings are consistent with existing assumptions education and fertility that education is correlated negatively with fertility levels. Women's education is significantly

associated with lower fertility, higher contraceptive usage and delays in childbirth and the significance is consistent across the models.

The coefficient for primary (-1.277) and post secondary education (-1.526) changes with the introduction of socio-economic variables such as region and place of residence and women's work status. This shows that these variables work together with a woman's level of education to further reduce the number of children ever born. In the third model, an additional decrease is observed in the coefficient for primary and post secondary education (-.372 and -.832). This means that education not only affects fertility through contraception, but through other intermediate factors that result in reduced number of children born.

From the above model, a woman with primary education, married and lives in the rural area, is likely to have fewer children as compared to a woman with no education, unmarried and living in urban area. Equally, a woman with secondary plus education, married, living in the South or the North and using contraceptives is likely to have more children as compared to a woman with no education, never married, living in Brazzaville or Pointe Noire and has never used contraceptives.

The model also shows that the difference in the influence of primary and secondary or higher education on children ever born decreases in relation to dependent variable. Introduction of proximate determinants shows further decrease on the net effect of education on children ever born. This shows that education works through proximate variables to influence fertility. We see

a relationship between fertility and education and the proximate determinants to be inversely related to children ever born. All the models importantly show that all the variables are equally important in determining the number of children ever born and are not independent of each other.

In summary, we can conclude that when demographic variables are controlled with education, they have an influence on the number of children ever born. This will depend on the country's level of demographic transition. The Republic of Congo is still at an early stage of demographic transition. In the analysis, we have seen that women who are currently working have more children than those who are unemployed; women in rural areas have fewer children than those in urban areas and those who do not use contraceptives have fewer children than those on contraception. We can equally deduce that older women are motivated to use contraception in order to avert having additional children.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The aim of this study was to establish what influence education has on the number of children a woman gives birth to. This study has attempted to examine the relationship between female education and fertility in the Republic of Congo using data from the Demographic and Health Survey conducted in 2005.

5.2 Summary

The results of the linear regression are presented in the previous chapter. In what follows, we first discuss the results of education on fertility. This is followed by an analysis of the various controls in the model. As one can see from the data, the effects of education on fertility are fairly consistent in the Republic of Congo. The study showed that fertility rate declines with exposure to each additional threshold of formal education.

The number of children born was, therefore, significantly lower for educated women relative to women who had no formal education. Moreover, the higher the educational level of woman, the stronger the effect of educational attainment on the number of children she bears. The study showed that the reason for the different fertility patterns concerns the different educational attainment patterns among women in the Republic of Congo.

The study indicated that education affects fertility through proximate determinants of fertility. Some of the variables studied include mother's age, age at first birth, age at first marriage, marital status and contraceptive use The age at first birth was statistically significant. The coefficient was positive indicating that educational attainment has a strong effect on the age at first birth, i e., it increases the woman's age at first birth

With regards to the age at first marriage, the study indicated that the variable was statistically significant. The coefficient was positive indicating that educational attainment increases the woman's age at first marriage. The number of living children a woman has was statistically significant for women with no children, three and more than four living children. The coefficient was negative meaning that education is related to lower number of living children a woman will have in the Republic of Congo.

Demographic variables equally had an effect on the number of children born. The type of place of residence is statistically significant for urban areas. Its coefficient was positive indicating that educational attainment has a strong effect in urban areas, i.e., women who stay in urban areas attain higher level of education which in turn has an effect on the number of children born. Similarly, the region of residence was found to be statistically significant for the South, Brazzaville and Pointe Noire

The effects of education suggested by the regression results are possibly due to higher earnings' potential that women experience as they acquire more years of schooling. Employers in the

Republic of Congo may use education as a proxy for skill levels and increase wages according to the level of formal education completed by women employees; in this context, as a woman acquires more education, the opportunity costs to having children may rise.

In conclusion, it is important to note that the relationship between education and fertility is an important issue as it is generally argued that an increase in the level of educational attainment of a woman is an important pre-condition of the demographic transition of any country. Postponement of marriage and births, therefore, contribute significantly to reduction in fertility levels by shortening the total reproductive life of women, which in turn reduces the number of children a woman is likely to have and thus reduces the population growth of a country.

5.3 Conclusion

The analysis of frequencies has revealed that there is a significant relationship between education and fertility. From the study, we conclude that women with low education attainment tend to have higher number of children than those with higher levels of education. This could be seen as a result of the fact that only primary level makes women aware of hygienic and medical care and hence don't experience much of pregnancy losses. At the same time, they however cling very much to the cultural values that encourage large family sizes.

Secondary education is probable a prerequisite for a woman to change her attitude towards family size (Ocholla-Ayayo 1991) Women with at least secondary education are likely to use contraception in order to control their fertility behaviour. The results of the study show that

education greatly influences children ever born negatively either directly or indirectly through other factors. The study further shows that the number of children ever born reduces with increase in the level of education, i.e., the higher the level of education, the less the number of children one will have and vice versa. The gap between the least educated and the better in contraceptive use is large. Better educated women have broader knowledge, higher socio economic status and less fatalistic attitudes toward reproduction that the less educated, this may translate to the better educated having less children compared to the least educated.

The results of the regression analysis show that the demographic, socio-economic and proximate variables work with education to influence fertility behaviour. This explains the differences on children ever born in the education levels. Female education influences fertility by altering the demographic and socio-economic characteristics of the women in relation to the number of children ever born.

5.4 Recommendation for Policy

The major policy implication that follows immediately is that more emphasis should be made to educate girls. Increased women's education significantly increased age at marriage, which, in turn, has a strong effect on fertility. In addition, female educational attainment has a direct effect on fertility as well, although this direct effect is significant only if the woman is highly educated. Further, women's education appeared to have a strong inter-generational effect as well. From the policy point of view, all other things being equal, governments should accord a significant priority to female education and, in particular, a higher priority compared to male schooling.

5.5 Research Recommendations

Key recommendations of this study are that, further studies should look into the other aspects like linkages between development index, education and fertility. Further research should be conducted regionally in order to assess the impact of education and fertility in different regions of the country.

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