SECULAR TRENDS AND DETERMINANTS OF ADOLESCENT CHILDBEARING IN GHANA: A REVIEW OF DEMOGRAPHIC AND HEALTH SURVEY DATA (1988-2003)

BY

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UNIVERSITY OF GHANA

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A DISSERTATION SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE MASTERS OF PUBLIC HEALTH DEGREE

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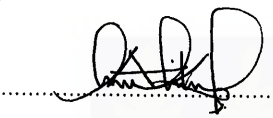
DECLARATION

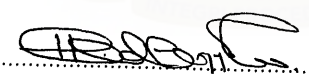
I Franklin Asuo, declare that except for the other people's investigations which have been duly acknowledged, this work is the result of my own original research undertaken under supervision, and that this dissertation, either in whole or in part has not been presented elsewhere for another degree.

SIGNATURE:



(Student)

Dr. Richmond N.O. Aryeetey (Primary supervisor)



Dr. (Mrs.) Henrietta Odoi-Agyarko (Secondary supervisor)

DEDICATION

I dedicate this dissertation to Dr. Richmond N.O. Aryeetey for his amazing support throughout my masters program.

ACKNOWLEDGEMENTS

I am forever grateful to many wonderful people in the School of Public Health, University of Ghana and WHO whose support and encouragement made the completion of this dissertation possible. First, my deepest gratitude goes to my primary supervisor, Dr. Richmond N.O. Aryeetey whose relentless encouragement and guidance impelled me on throughout my masters program. I am also grateful to my secondary supervisor Dr. (Mrs.) Henrietta Odoi-Agyarko. I especially commend Dr. Mary Nana Ama Brantuo of WHO, for her assistance and guidance throughout my internship with WHO and for her positive criticism offered during my research. I owe her much for completing my studies successfully. I am grateful to Mr. d'Amelda Selasie whom I shared office space with while with WHO, Dr. Charles Fleischer-Dzoleto and Ms. Sofie G. Lassen who helped me in diverse ways, and the entire staff of WHO for their encouragement and support throughout my stay with them. I am also grateful to all staff of PFRH Department and School of Public Health.

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Last but not the least, I am grateful to my parents and siblings for their encouragement, understanding and support during this one year of study. Really, am grateful!

ABSTRACT

Introduction

Adolescent childbearing has adverse effects on both mother and child. High fertility and rapid population growth are direct consequences of early childbearing. For intervention targeting, it is crucial to know trends and determinants of adolescent childbearing.

Objectives

The objectives of this study were to: (1) describe the trends in adolescent pregnancy and childbearing in Ghana (2) determine the factors associated with adolescent childbearing and (3) describe the birth outcome characteristics of adolescent pregnancy.

Methods

Using four Ghana Demographic and Health Survey data collected from 1988 to 2003, the proportions of pregnancies and childbearing among adolescents were calculated using frequencies and cross-tabulations. The proportion of deliveries in a health facility, assisted deliveries and low birth weight (LBW) infants was also determined using frequencies and cross-tabulations. Employing a nested case-control study design, preliminary bivariate analyses were done to identify various factors associated with adolescent childbearing. Multiple logistic and linear regression models were used to examine the independent effect of key predictors on adolescent childbearing.

Results

The rate of adolescent childbearing declined from 35% in 1988 to 23% in 2003. The proportion of adolescents that were currently pregnant with their first child decreased from 8% in 1988 to 4% in 2003. From 1993 to 2003, about 41% of adolescent deliveries occurred in a health facility. Over the same period, a slightly higher proportion (1.2%) of

LBW infants was born to adolescents than adult women. Secondary education had the strongest effect on delaying first birth during adolescence. Age at marriage had a strong association with age at first birth. A one year increase in the age at first marriage delays the age at adolescent first birth by at least 5 months.

Conclusion

From 1988 to 2003 the rate of adolescent childbearing declined in Ghana. Age at marriage and secondary education are key predictors of adolescent childbearing. This has policy implications for promoting girls education to at least secondary level and delaying age at first marriage. Majority of adolescents did not deliver in a health facility. This has policy implications for making delivery in health facilities more attractive to adolescents.

TABLE OF CONTENTS

List of tables

List of Figures

List of Figures

List of Figures

List of Figures

List of acronyms

AIDS	Acquired Immunodeficiency Syndrome
DHS	Demographic and Health Survey
DOVVSU	Domestic Violence and Victim Support Unit
EA	Enumeration Area
FCUBE	Free Compulsory Universal Basic Education
FP	Family Planning
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Service
GNPC	Ghana National Population Council
GSS	Ghana Statistical Service
HIV	Human Immunodeficiency Virus
MOH	Ministry of Health
NCCE	National Commission for Civic Education
STI	Sexually Transmitted Infection
UN	United Nations
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
WHO	World Health Organization

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Definition of terms

Adolescent:	Persons aged 10-19 years
Adolescent childbearing:	First birth before age 20
Low birth weight:	Birth weight less than 2500g
Skilled health worker:	Doctor, midwife/auxiliary midwife or nurse
Youth:	Persons aged 15-24 years

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Adolescent childbearing is a critical public health challenge due to its health, social and economic consequences (WHO, 2007). Globally, adolescent childbearing accounts for 11% of all births (WHO, 2008). In sub Saharan Africa, a substantial proportion of pregnancies (22%) among 15-19 year-old females end up in childbirth (Biddlecom et al, 2007). The effect of pregnancy on the individual adolescent depends on her peculiar cultural, familial and community setting. However, the physical or health consequences for both the adolescent and her child are universally problematic (Buvinic & Kurz, 1998; Acsadi & Johnson-Acsadi, 1986). Evidence suggests that due to their physiological immaturity, teenage mothers are more susceptible to premature labor and complications during and after delivery (WHO, 2008; Thekkekkara & Veenu, 2006; Shtarkshall & Xu, 2004; Zabin & Kiragu, 1998).

Globally, complications from pregnancies and childbirth are the leading causes of death among women aged 15-19 years (UNFPA, 2007; Senanayake & Faulkner, 2003). According to the WHO (2008), babies born to adolescent mothers have a higher risk of death compared to their counterparts in their 20s and 30s. Also, studies indicate that children born to teenagers are susceptible to higher incidence of low birth weight (defined as birth weight <2500 g), prematurity (Magadi, 2006), stillbirth, and neonatal mortality (dos Santos et al, 2007; Thekkekkara & Veenu, 2006; Zabin & Kiragu, 1998).

1.2 Problem statement

Early childbearing is common in Ghana (Hurssberg et al., 2007; GSS et al, 2004). In the 2004 National Survey of Adolescents, 42.3% of adolescents aged 15-19 years who were sexually active had been pregnant (Awusabo-Asare et al, 2006). At the time of the survey, among 15-19 year old females in a union, 66% had given birth and another 16% were pregnant. These findings agree with the 2003 Ghana Demographic and Health Survey findings which showed that more than one third of young people aged 20-24 years reported that they had given birth before age 20 (GSS et al, 2004). According to WHO (2004), in Ghana the rate of births per 1000 females 15–19 years of age is 115. This is very high compared to a global average rate of 65 births per 1000 females aged 15-19 years (WHO, 2004).

The adverse effects of early childbearing are well established. According to the WHO (2008), the rate of newborn death is 50% higher among adolescent mothers than mothers in their 20s. In Ghana, births that occur to adolescent mothers (less than 20 years) have the highest infant and child mortality (GSS et al, 2006). Early childbearing has also been shown to have severe adverse effects on the health of adolescents. Maternal conditions in adolescence are associated with 13% of all deaths and 23% of all disability adjusted life years (WHO, 2008). In Sub Saharan Africa, pregnancy and childbearing are the leading causes of death among adolescents (Reynolds et al, 2006; Mayor, 2004). In Ghana, the risk of death per birth is higher for adolescents (15-19 years) and older women (35-44 years) compared with women aged 20-34 years (GSS et al, 2009).

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Adolescent pregnancy and childbearing also has social ramifications. Adolescent mothers are more prone to postnatal depression than older mothers (Schmidt et al, 2006). Adolescent pregnancy and childbearing deprive teenage girls of the opportunity to pursue higher education (Atuyambe et al, 2008), limit their future socioeconomic prospects, reduce ultimate status in society (Nahar & Min, 2008) and often results in intergenerational transmission of social and economic disadvantage (Sloggett & Joshi, 1998).

In spite of Ghana's relatively high adolescent fertility rate and the adverse public health consequences, no study has used nationally representative samples to examine, the trends and determinants of adolescent childbearing. Also, literature on maternal health seeking during delivery is scanty (Nketia-Amponsah & Sagoe-Moses, 2009). Of the limited existing literature on maternal health seeking and birth outcomes which are mainly clinic-based non-representative data, disaggregated information on birth outcome characteristics of adolescent pregnancies such as place of delivery, assistance at delivery and weight of babies at birth is scanty.

1.3 Justification of study

Reducing adolescent pregnancy and childbearing has been a national agenda of the Ghana Government (GNPC, 2000). Many surveys have been done to determine the magnitude and factors associated with teenage pregnancy (Agyei, 2007; Agbemabiasi, 2006; Hutchinson et al, 2005; Kudolo, 2004; Henry & Fayosey, 2002; Asibey, 1998; Dagaadu, 1997). However, no study has described the trends and determinants of adolescent pregnancy, childbearing and birth outcome characteristics using nationally representative data.

Nationally representative survey data provide evidence of the national situation and enable a comparison between places and among several groups of adolescents within the country for intervention targeting. Also, there is the need to understand progress over time in terms of adolescent pregnancies, childbearing, birth outcome characteristics and factors associated with adolescent childbearing. This can be ascertained through analyses of national survey data. Thus, using nationally representative data from Ghana Demographic and Health Surveys conducted from 1988 to 2003, this study presents a description of key adolescent health indicators across places and over time.

Findings from this study should inform programs for reducing adolescent pregnancy and promoting adolescent and child health. The study will also contribute information which will have implications on programs and policies aimed at achieving the following MDGs: a) MDG 2: Achieving universal basic education b) MDG 3: Promoting female

empowerment, c) MDG 4: Reducing child mortality and d) MDG 5: Improving maternal health.

1.4 Study objectives

1.4.1 General objective

To describe the changes in adolescent pregnancy and childbearing and associated characteristics in Ghana over the last two decades

1.4.2 Specific Objectives

- To describe the trends in adolescent pregnancy and childbearing in Ghana
- To determine the factors associated with adolescent childbearing
- To describe the birth outcome characteristics of adolescent pregnancy

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- To determine the factors associated with adolescent childbearing
- To describe the birth outcome characteristics of adolescent pregnancy

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Adolescents/ young people and issues related to their health

According to the World Health Organization (WHO), an adolescent is a person aged 10-19 years (WHO, 2004). Adolescents are further classified into younger (10-14 years) and older adolescents (15-19 years). Persons within ages 10 and 24 years constitute young people and youth fall within ages 15 and 24 years (GHS, 2008). Adolescents constitute about 20% of the world's total population. In Sub Saharan Africa, it is estimated that adolescent population will grow from 14 to 24.6% by 2050. In Ghana, 21.9% of the total population consists of adolescents (GHS, 2008).

The period of adolescence is characterized by rapid physical, cognitive and social changes including sexual and reproductive maturation (UN, 2003; Conard & Blythe, 2003; Sadock & Sadock, 2003). Generally, adolescents are in a healthy population group (UN, 2003). However, due to their relative vulnerability resulting from pressure from society including peers, to adopt risky health behaviors, adolescence poses a great health and developmental challenge (UN, 2003). This challenge involves dealing with one's sexuality and developing an individual identity. A substantial number of adolescents become sexually active (Herssberg et al, 2007; GSS, 2004), lack adequate and correct information on sexuality and contraceptive use (Amuyunzu-Nyamongo et al, 2005) and often, this results in pregnancy and childbearing (Herssberg et al, 2007; Glover et al, 2003).

2.2 Epidemiology of adolescent pregnancy and childbearing

Worldwide each year, an estimated 16 million adolescents aged 15–19 years gave birth (WHO, 2008). This accounts for about 11% of all births worldwide. About 95% of these births occur among adolescents in developing countries. Sub Saharan Africa has the highest incidence of adolescent childbearing (WHO, 2004). Adolescent birth rates range from less than 1% per year in Japan and the Republic of Korea, to over 20% per year in the Democratic Republic of Congo, Liberia and Niger (WHO, 2008). Half of all adolescent births occur in seven countries namely Bangladesh, Brazil, the Democratic Republic of Congo, Ethiopia, Nigeria, India and the United States (WHO, 2008). In Ghana, one in ten (10%) adolescents aged 15-19 years has had a child and another 4% are pregnant with their first child (GSS et al, 2004).

2.3 Adolescent pregnancy and birth outcome characteristics

According to the WHO (2004), pregnant teenagers are more susceptible to premature labor and complications during and after delivery. The likely etiology of preterm delivery in adolescence is multifaceted. One possibility is the immaturity of the reproductive organs of young women (WHO, 2004; Zabin & Kiragu, 1998). Secondly, many girls are deprived socially, some smoke and others are physically abused (WHO, 2004). Pregnancy outcome is known to be adversely affected by such social and behavioral factors (WHO, 2004). Moreover, according to WHO (2004), pregnant adolescents often seek antenatal care late in pregnancy or receive none. Also, in developing countries, the availability, content and quality of antenatal care is often inadequate, especially in countries with high maternal mortality (WHO, 2004). Besides these factors, young

maternal age has been identified as a very important independent causal factor (Woldemicael, 2005; WHO, 2004).

Reviewing the evidence for the effects of early childbearing, many studies pointed to other health consequences including, for the mother, elevated blood pressure, toxaemia, anaemia, bleeding; leading to high morbidity and mortality (dos Santos et al, 2007; Thekkekkara & Veenu, 2006; Zabin & Kiragu, 1998).

In Ghana, the 2007 Maternal Health Survey showed that pregnancy related maternal mortality ratio is high at 226 per 100 000 live births among adolescents aged 15-19 years compared to an overall maternal mortality ratio of 580 (GSS et al, 2009). Among the newborn, births that occur to adolescent mothers have been found to have the highest infant and child mortality (GSS et al, 2006). Many other studies have shown that children born to teenagers are susceptible to higher incidence of low birth weight (Chedraui, 2008; dos Santos et al, 2007; Horgan & Kenny, 2007; Thekkekkara & Veenu, 2006), stillbirth and neonatal mortality (Zabin & Kiragu, 1998). In Ghana, disaggregated data on low birth weight babies born to adolescents is scarce. However, across all age groups, nearly 2 in 5 babies (36.1%) were weighed at birth and approximately 9% of infants were estimated to weigh below 2,500g at birth (GSS et al, 2006).

2.4 Place and assistance at delivery

Literature on maternal health seeking during delivery is scanty (Nketia-Amponsah & Sagoe-Moses, 2009). Also, disaggregated data on adolescents who delivered in a health

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facility is scanty. The recent Ghana Maternal and Health Survey 2007, shows that 54.2% of mothers less than 20 years delivered in a health facility with 42.9% and 11.1% delivering in public and private health facilities respectively (GSS et al, 2009). The survey further showed that 55.1% of deliveries among mothers less than 20 years were assisted by a skilled health worker with a national average of 55.2%.

Of the nearly one in two women who did not deliver in a health facility, 32% mentioned that they did not think it was necessary to deliver in a health facility. Nineteen percent cited money as reason for not delivering in a health facility (GSS et al, 2009).

2.5 Factors associated with adolescent childbearing

Bongaarts (1982) classified factors affecting fertility into proximate and background variables. Proximate variables consist of biological and behavioral factors that act directly to influence fertility. These include marital status, contraception use, induced abortion, lactational infecundability, frequency of intercourse, sterility, spontaneous intrauterine mortality, and duration of fertile period (Bongaarts, 1982). Background variables on the other hand, consist of socioeconomic and environmental factors which influence fertility indirectly, by modifying the proximate variables. This study is focused on both background and proximate variables which are known to affect fertility behavior in general and adolescent pregnancy and childbearing in particular.

2.5.1 Age at first sexual intercourse

In all regions of the world many young people are sexually active (WHO, 2004). In sub-Saharan Africa 80% of girls had experience sexual intercourse before age 20 (WHO,

2008). In Ghana the legal age at sexual consent is 16 years (Act of Parliament of the Republic of Ghana, 1998) and the median age of sexual debut is 18.2 (GSS et al, 2004). In contrast to developing countries, girls in developed countries start sexual activity at an early age (WHO, 2004). Age at first sexual intercourse outside marriage is an important factor that determines the occurrence of adolescent pregnancies (WHO, 2004). Analysis of data from a trial of sex education among female students aged 14-16 years from the East of Scotland showed that young age of self and partner, at first intercourse is strongly associated with pregnancy (Buston et al, 2007).

2.5.2 Age at first marriage

Studies indicate that early marriage is an important determinant of early childbearing (Nahar & Min, 2008; Yagya & Krishna, 2008). In Ghana the legal age at marriage is 18 years (Act of Parliament of the Republic of Ghana, 1998). According to GSS et al (2006), 4% of women aged 15-49 years in marriage or union were married before age 15 years, and 26% of women aged 20-49 years married before age 20.

2.5.3 Contraceptive use

In developed countries, even though sexual activity starts at an early age, the risk of pregnancy is low because adequate contraception is often available for adolescents (WHO, 2004). In Nigeria, a community- based survey of 2,978 women aged 15-19 years in eight states showed that more than 75% of respondents who attempted to terminate their last unwanted pregnancy were not using any contraceptive at the time the pregnancies occurred (Sedgh et al, 2006). Similarly, a study conducted by Newmann et al

(2009) among 50 postpartum adolescents at an urban, public hospital in El Salvador showed that although contraceptive knowledge is high (84%), utilization is low (18%).

In Ghana, studies showed that adolescents either lack or do not use condoms consistently (Hessburg et al, 2007; Awusabo-Asare et al, 2004). During their first sexual intercourse, about 80% of adolescents did not use contraceptives (Awusabo-Asare et al, 2004). In another study to examine the sexual experience of never-married youth aged 12-24 years in three Ghanaian towns (Takoradi, Sunyani and Tamale), Glover et al (2003) indicated that lack of contraceptive use, particularly condoms, puts adolescents at risk of unwanted pregnancies and that one-third of sexually experienced females reported having ever been pregnant.

2.5.4 Women's education

Consistently, analyses of fertility in developing countries have shown a strong relationship between women's level of education and fertility behavior (ORC Macro, 2005). Evidence indicate that girls' educational level has a significant influence on the probability of adolescent birth, with non-schooling adolescents and those with primary school level education being more vulnerable (Nahar & Min, 2008; Were, 2007; Gigante et al, 2004; Gupta & Mahy, 2003). In Ghana, demographic trend analyses indicate that more educated women tend to have fewer children than less educated women (ORC Macro, 2005). According to the study findings, fertility levels are inversely proportional to the number of years of schooling attended and that, although there was a decline in fertility by all educational categories, total fertility rate decline was highest among

women who attended up to middle school/JSS. This pattern is partially explained by the fact that higher education increases women's expectation for their children. Educated women are therefore likely to plan to have fewer children in order to invest in each child's well being and education (ORC Macro, 2005). Women with higher earning potential value their time more and appreciate the high cost of having a large family.

2.5.5 Residence

In Ghana, there is association between place of residence and the likelihood of child birth before age 20 and the trend has shifted over time (ORC Macro, 2005). In 1979-80, there were similar proportions of teenage girls who were mothers or pregnant with their first child in urban (28%) and rural (27%) areas. Between 1979-80 and 1988 however, there was a considerable decrease in the proportion of urban teenage girls who were mothers, and further large decrease between 1993 and 1998. By 2003, the level of teenage childbearing was three times greater in rural areas than in urban areas (ORC Macro, 2005).

In a study using four sets of Bangladesh Demographic and Health Survey data collected during 1993/94, 1996/97, 1999/00 and 2004, Nahar & Min (2008) reported an inconsistent pattern of adolescent childbearing by residence. Whereas the chance of having a first birth is highest among rural residents compared to residents from other areas in all years except one, the finding is not consistent among the three different types of urban areas (i.e. large metropolitan city, small city, and towns) included in the analysis. The findings showed that living in a small town decreases the probability of

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teenage birth compared to living in other urban areas. However, living in a large metropolitan city increases the chance of a first adolescent birth compared to small cities. According to the authors, this was because a large proportion of the population living in metropolitan cities lived in slums that had lower living standards than rural areas and were considered very poor (Nahar & Min, 2008).

2.5.6 Exposure to the media

Media exposure is an important factor in explaining fertility behavior (Nahar & Min, 2008). Through many different media channels including radio, television (Sami et al, 2007) and currently, the Internet (Borzekowski et al, 2006), adolescents especially, receive information on several issues including reproductive health. In an analysis of DHS data from Northeast Brazil, Gupta and Leite (1999) showed that access to media is the most important predictor of fertility among women age 20-30 years. Similar analysis of DHS data from Bangladesh showed that frequent media exposure has a significant delaying effect on adolescent first birth (Nahar & Min, 2008). However, few studies have assessed the association between sexual content in the media and adolescent sexual behavior (Sami et al, 2007).

2.5.7 Religious affiliation

Disparity in fertility behaviors have been reported among different religious and cultural groups throughout the world. Analysis of four successive Bangladesh Demographic and Health Surveys collected between 1993 and 2004 showed that Muslim women have higher probability of giving birth before age 20 compared to women from other religious

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Disparity in fertility behaviors have been reported among different religious and cultural groups throughout the world. Analysis of four successive Bangladesh Demographic and Health Surveys collected between 1993 and 2004 showed that Muslim women have higher probability of giving birth before age 20 compared to women from other religious

teenage birth compared to living in other urban areas. However, living in a large metropolitan city increases the chance of a first adolescent birth compared to small cities. According to the authors, this was because a large proportion of the population living in metropolitan cities lived in slums that had lower living standards than rural areas and were considered very poor (Nahar & Min, 2008).

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groups (Nahar & Min, 2008). Similarly, Indian Muslims were reported to have higher fertility rates compared to other religious groups (Dreze and Murthi, 2001). Yet, another study conducted in North America showed that Catholics have higher fertility rates compared to other religious groups (Gupta & Leite, 1999). Nonetheless, religious affiliations as a determinant of adolescent fertility is not yet clear (Nahar & Min, 2008). In Ghana, literature on religious affiliation and fertility behavior is scanty.

2.5.8 Socioeconomic status

Many studies have shown that the risk of becoming a teenage mother is higher among girls from a lower socioeconomic background compared to those in a higher socioeconomic background (Cater & Coleman, 2006; Gigante et al, 2004; GSS et al, 2004). Whether this is because adolescent girls from low socioeconomic status indulge in sex more in order to earn a living is not clear. In a study using national survey data collected in 2004 in Burkina Faso, Ghana, Malawi, and Uganda with 12–19 year olds, Moore et al (2007) showed that receiving something in exchange for sex is very common among sexually active, unmarried female adolescents and there are no significant differences by household economic status.

Some studies however suggested that parents of adolescents in high socioeconomic status are more likely to have acquired higher education, have high expectations for their children and therefore invest in them by providing them with secondary level or more education (ORC, Macro, 2005), which is known to decrease the probability of adolescent birth (Nahar & Min 2008; ORC Macro, 2005; Gupta & Mahy, 2003).

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2.5.9 Parental connectedness

A study in Ghana among 12-19 year old adolescents showed that adolescent females living with both parents/parent-figures, were less likely to be sexually-active (Kumi-Kyereme, 2007). For males, living with mother/mother-figure only was negatively associated with being sexually-active compared to those living with no parents/parent-figures. The negative relationship between sexual activity and males living with mother/mother-figure could be due to the support and close monitoring that such women may give to their sons. But this association needs further investigation (Kumi-Kyere, 2007). Many other studies have shown that children raised in the absence of a biological father in the household begin sexual activity and become pregnant earlier than children raised in father-present households (Mendle et al, 2008; Neberich et al, 2008; Ellis et al, 2003).

2.6 Methods of measuring adolescent childbearing

Adolescent childbearing can be calculated by two methods namely: (1). the age-specific fertility rate of women age 15-19 years, and (2) the proportion of women who have had a child by a given adolescent age, e.g. by age 15, 16, or 19, based on responses from adolescents aged 15-19 and women 20-24 years who have completed their adolescent years (Nahar & Min, 2008). The first measure gives an account of the incidence of childbearing for women aged 15-19. However, it does not give the complete fertility experience of this group, since they have not completed their adolescent years. The latter measure, on the other hand, presents the complete experience up to age 19 for those aged 20-24 years, and additional information from the 15-19 years age group. This method is

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advantageous because it focuses on younger cohorts and therefore describes more exactly the timing of childbearing (Nahar & Min, 2008), compared to other methods involving various cohorts from one cross-sectional database. Earlier other studies using survey data have shown that the quality of reporting of age-related information is better among younger respondents (Gage 1995; Blanc & Rutenberg, 1990).

2.7 Overview of the DHS MEASURE program

The DHS program MEASUE DHS+ is a nationally representative household survey funded by USAID and administered by ORC Macro (ORC Macro, 2001). The primary purpose is to improve and establish the collection and utilization of data for monitoring host – country population, health and nutrition programs for policy decisions. There are two core questionnaires used by the DHS MEASURE+ program. These include the "A" core for use in countries with high contraceptive prevalence and "B" core for use in countries with low contraceptive prevalence (ORC Macro, 2001). The two versions of the questionnaire are very similar except for the addition of an expanded monthly calendar in the "A" core, which collects more detailed information on recent use of contraception and on marriage (ORC Macro, 2001). In consultation with the host country implementing organization, the type of version to use in a particular country is decided upon early in the survey design process. There are several standardized modules available for use in countries with an interest in these topics. However, countries can add questions on topics of special interest (ORC Macro, 2001).

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2.7.1 The GDHS sampling procedure

The GDHS used a two-stage stratified sample design (GSS et al, 2004). A list of enumeration areas (EAs) from Ghana Population and Housing censuses were used as a frame for the samples. At the first stage of sampling, a number of sample points or EAs were selected, each with probability proportional to the number of households. Next, a complete household listing exercise was carried out within all the selected EAs. The second stage of selection consisted of systematic sampling of households from this list. The sample was selected to allow for separate estimates for key indicators for the country as a whole, for each of the regions in Ghana, as well as for urban and rural areas separately (GSS et al, 2004). The sample selected per EA varied by region depending on the population size.

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CHAPTER THREE

3.0 METHODS

3.1 Type of study

This study is a trend analysis of cross-sectional nationwide surveys. The study is based on four Ghana Demographic and Health Survey (GDHS) data collected in 1988, 1993, 1998 and 2003. Although the GDHS was not specifically designed to examine adolescent childbearing and birth outcome characteristics, each of these surveys collected information on nationally representative samples of about 6,000 women age 15-49 years, of which 37% (Table 3.1) was between 15-24 years.

Table 3.1. Characteristics of Ghanaian women included in the GDHS, 1988-2003

Age group	1988		1993		1998		2003	
	N	%	N	%	N	%	N	%
15-19	849	18.9	803	17.6	889	18.4	1,113	19.6
20-24	867	19.3	829	18.2	887	18.3	997	17.5
15-49	4,488	100.0	4,562	100.0	4,843	100.0	5,691	100.0

3.2 Study area

The Republic of Ghana is in West Africa and has a total land area of 238,537 square kilometers (GSS et al, 2004). It is bordered on the north and northwest by Burkina Faso, the east by the Republic of Togo, and on the west by Côte d'Ivoire as shown in Figure 3.1 below. The Gulf of Guinea lies to the south and stretches across the 560 kilometers of the country's coastline. Ghana's climate is tropical, although there are variations in temperatures and rainfall by distance from the coast and elevation.

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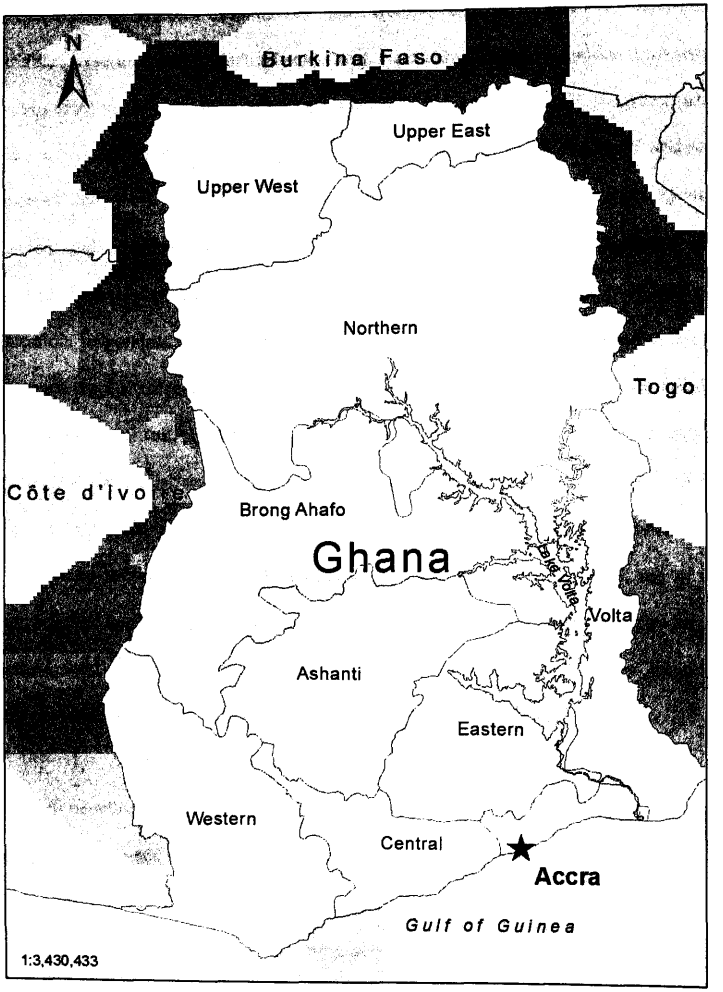
Since independence in 1957, Ghana has undertaken four censuses. The first was conducted in 1960, recording a population of 6.7 million. In 1970 the Census reported Ghana's population as 8.6 million. The 1984 and 2000 censuses reported the population as 12.3 million and 18.9 million, respectively (GSS et al, 2004). Currently, adolescents age 15-19 constitute 21.9 % of the total population (GHS, 2008). Ghana's population is made up of several ethnic groups including the Akans, Mole-Dagbon, Ewe, Ga/Dangme etc. For administrative purposes, Ghana is divided into 10 administrative regions. The regions are further divided into 177 districts to ensure efficient and effective administration at the local levels.

Figure 3.1 Map of Ghana



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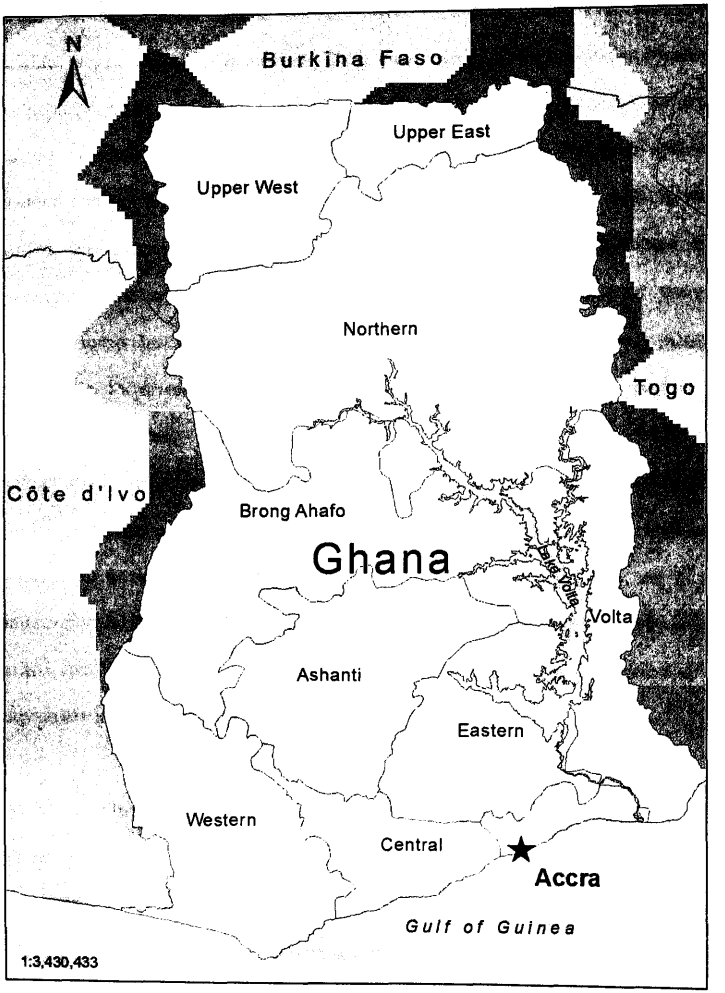

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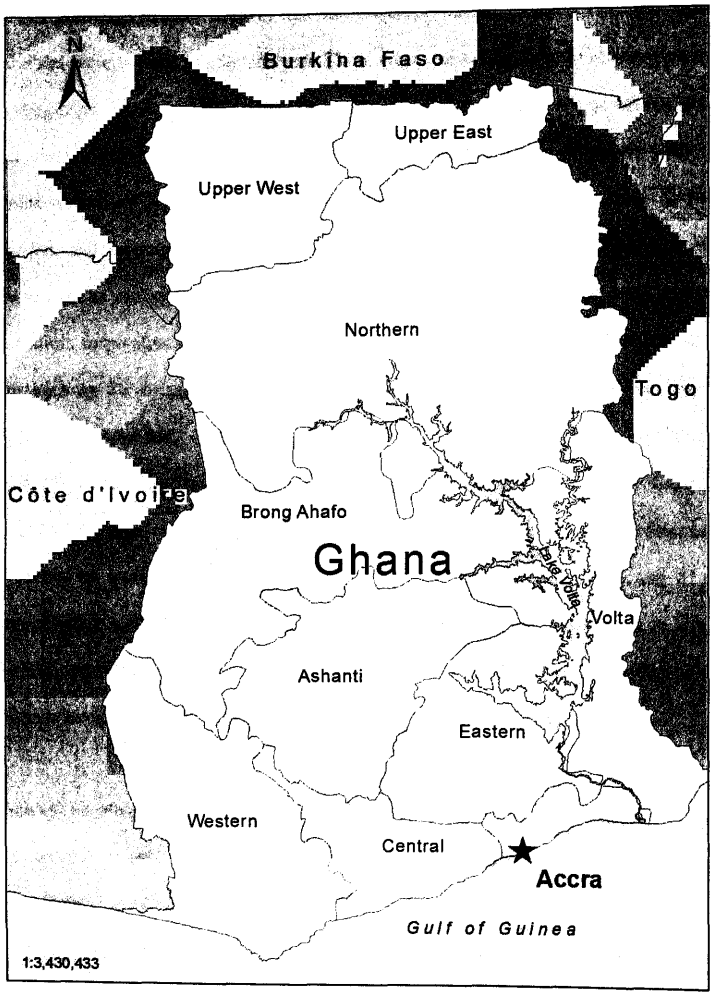

3.3 Variables

In this section, variables used in this study were explained. Twelve (12) independent variables were included in the analysis. These were current age of respondent (measured in completed years), age at first marriage, place of residence (measured as rural or urban) and marital status (measured as never married, married, living together, widowed, divorced and not living together). Marital status was recoded in this study as never married and ever married. Other independent variables include educational level (measured as no education, primary, secondary and higher); number of years of education, respondent currently working (measured as yes or no); heard family planning messages on TV or radio (measured as yes or no), religion (measured as no religion, Catholic, Anglican, Muslim, Methodist, Presbyterian, other Christian, tradionalist/spiritualist and other). Religion was recoded in this study as Christian, Muslim, traditional or no religion. The rest were knowledge of contraceptives (measured as knows no method, knows only traditional and knows modern method), use of any contraceptive method (measured as never used, used only folkloric, used only traditional method, used modern method. Use of any contraceptive method was reclassified in this study as never used, used only traditional and used only modern methods.

Eight (8) dependent variables were included in the analysis. These were age at first birth (measured in years). This was reclassified into a binary outcome (0=not given birth or given birth after age 20 years, 1=given birth before age 20 years) in a logistic regression analysis. Other dependent variables were number of children ever born, number of living children and place of delivery (measured as at respondent's home, other home, TBA's home, government hospital, government health centre, govt. health post, private

hospital/clinic, maternity home and other). Place of delivery was recoded into delivery in public or private facilities. The rest were assistance at delivery (measured as assistance by doctor, assistance by nurse/midwife or assistance by auxiliary midwife), currently pregnant (measured as yes, no, not sure), ever had a terminated pregnancy (measured as yes or no) and birth weight (measured in kilograms).

3.4 Study population

The study population includes women aged 15-24 years included in the GDHS.

3.5 Sample size in this present study

The GDHS sample was selected to allow calculation of childbearing experience of all adolescents aged 15-19 years. In this study, adolescents aged 15-19 years were included in the analysis. However since this group of adolescents have not completed their adolescent years, women aged 20-24 years were included in the analysis to allow for the calculation of the complete fertility experience of adolescents. The calculated sample sizes were 1,716, 1,632, 1,776 and 2,110 in the 1988, 1993, 1998 and 2003 surveys respectively.

3.6 Data collection technique/tools

In the DHS, data collection was by interview. The GDHS used three types of questionnaires namely the Household Questionnaire, the Women's Questionnaire and the Men's Questionnaire (NB: the present study is focused on only women). The content of the questionnaires were based on the model questionnaires designed by the MEASURE

DHS+ program and were developed to provide information required by health and family planning program managers and policymakers. The model DHS questionnaires were modified to suit the Ghanaian situation. As a result, a number of questions relevant to ongoing health, HIV, and family planning programs were added to the model questionnaires.

The Household Questionnaire was used to list all the usual members and visitors in the selected households. Information on the characteristics of each person listed was collected, including the age, sex, education, and relationship to the head of household. The main purpose of the Household Questionnaire was to identify men and women eligible for the individual interview. The Household Questionnaire was used to collect information on characteristics of the household's dwelling unit, such as type of toilet facilities, source of drinking water, flooring materials, ownership of various consumer goods, and ownership and use of mosquito nets (GSS et al, 2004). It was also used to record height and weight measurements of women 15-49 and children below the age of 5, and to record the respondents' consent to hemoglobin and HIV testing.

The Women's Questionnaire was used to collect information from all women age 15-49. Women were asked questions on the following topics: respondent's background characteristics, such as education, residential history, media exposure, fertility preferences, knowledge and use of family planning methods, antenatal and delivery care, breastfeeding and infant and child feeding practices, vaccinations and childhood illnesses, childhood mortality, marriage and sexual activity, woman's work and husband's

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background characteristics, and awareness and behavior regarding AIDS and other STIs (GSS et al, 2004).

The Men's Questionnaire was administered to all men aged 15-59 years in every household in the GDHS sample. The Men's Questionnaire collected similar information as found in the Women's Questionnaire, but did not contain a reproductive history or questions on maternal and child health and nutrition (GSS et al, 2004).

The DHS core questionnaire is continuously being tested and evaluated in the field and is subject to the infusion of new ideas as they arise (ORC Macro, 2006). As such, the questionnaire content is constantly subject to modification as new concerns become apparent in countries and in donor organizations. From 1988 and 2003, there had been modifications in the GDHS questionnaire. For example, from 1993 to 2003 the GDHS questionnaire was modified to collect additional information on educational attainment (i.e. various levels of education; specifying whether completed or not). The 1988 questionnaire collected information on only educational level (i.e. various levels of education without distinguishing completed from incomplete ones). Also the 2003 questionnaire collected information on household possessions that were used to create a composite wealth quintile variable which was not available in the preceding surveys. Similarly, the 1998 and 2003 questionnaires collected information on terminated pregnancy which was not collected in the preceding surveys.

3.7 Quality control

To maximize the quality of data collected, all interviewers were trained in interviewing techniques and the contents of the GDHS questionnaires. The interviewers were trained according to standard DHS training procedures which includes class presentations, mock interviews, and tests using the Household, Women's, and Men's Questionnaires and lasted about three weeks each (GSS et al, 2004).

Secondly, the processing of the GDHS results began shortly after the commencement of fieldwork. Periodically, all completed questionnaires were returned from the field to the GSS headquarters in Accra, where they were entered and edited by data processing personnel who were specially trained for this task. Data entry clerks from GSS were trained for about one week on data entry procedures using CSPro. All data were entered twice. Also, tables were run periodically to monitor the quality of the data collected. The simultaneous processing of the data was advantageous for data quality because field coordinators were able to advise teams of problems detected during the data entry (GSS et al, 2004).

3.8 Data analysis in this study

3.8.1 Trends in adolescent pregnancy and childbearing

Data was analyzed using StataSE 8.0 statistical software. First the proportion of adolescents aged 15-19 years who were pregnant at the time of each survey was calculated using frequencies. Using the same procedure, the proportion of adolescents who had ever terminated a pregnancy was also calculated.

Next, the proportion of women aged 15-24 years who had had a first birth before age 20 was calculated. The proportion of adolescents by number of children ever born, and number of living children was also calculated using frequencies. Then the mean number of children ever born in each survey was calculated.

3.8.2 Determinants of adolescent childbearing

A nested case-control study approach was used to examine the risk of adolescent birth by retrospectively reviewing exposure to certain predictors. Adolescents who had had a first birth before age 20 were used as cases and those who had not given birth or given birth after age 20 as controls. The influences of ten predictors on adolescent childbearing were examined. These include age, marital status, education and residence. The rest were knowledge of contraceptives, use of contraceptives, work status, exposure to family planning messages on radio, exposure to family planning messages on TV and religion.

Multiple logistic regression models were used to calculate the likelihood of first birth before age 20. First, bivariate analyses were done to determine various factors that were associated with adolescent childbearing. In the second stage of the analysis, logistic models were fitted to determine the effect of each predictor on adolescent childbearing, while controlling for other covariates. In the third stage, dummy variables were created to examine the independent effect of each level of predictors with more than two categories. Finally, linear regression models were used to examine the relationship between age at adolescent first birth and age at first marriage, while controlling for the number of years of education.

3.8.3 Birth outcome characteristics of adolescent pregnancy

The study examined deliveries in a health facility, low birth weight babies and assistance at delivery among adolescents. Frequencies and cross-tabulations were used to describe deliveries in any health facility and in private and public facilities; among all, rural, urban, ever- married and never -married adolescents. Frequencies and cross-tabulations were also used to describe deliveries that were assisted by any skilled health personnel and by a doctor and midwife/nurse; among all, ever married and never married adolescents. Finally, the proportion of low birth weight babies born to all adolescents and among rural and urban adolescents were described.

3.9 Ethical consideration

Permission was sought from Macro International to use the GDHS data sets. Ethical clearance was sought from Ghana Health Services Ethical Review Board.

3.10 Study limitations

Considerations should be made in interpreting the results presented in this study. First the study is limited for lack of information on some variables in some surveys. Also, there are known biases in reporting sexual experiences among girls. Young women tend to underreport sexual experiences (Buvé et al, 2001), for example terminated pregnancies.

CHAPTER FOUR

4.0 RESULTS

4.1 Socio-demographic characteristics of respondents

Across the GDHS surveys conducted from 1988 to 2003, adolescents aged 15-19 years constituted 50.6%. Women aged 20-24 years constituted 49.4%.

The samples were predominantly (58.8%) rural. Majority (56.5%) of the adolescent women had never been married. Compared to 1988, the proportion of never married adolescent women increased to 14.7% in 2003. Of women aged 15-24 years who had ever married in 1988, 25.9% got married by age 15. However, by 2003, the proportion of women who married by age 15 years decreased by 3%. From 1988 to 2003 the proportion who married at age 18 years or more increased by 5%.

At the time of the surveys, majority of the women (54.9%) were not working. The proportion that was currently working increased by 15.8% from 1988 to 1998 and remained unchanged from 1998 to 2003. Majority of respondents (92.1%) were affiliated to a religious group with a majority (77%) of them being Christians. Across the surveys 77.2% of respondents had had at least primary school education as shown in Table 4.1.

Table 4.1. Socio-demographic characteristics of women aged 15-24 years in the GDHS, 1988-2003

Characteristic	Ghana Demographic and Health Survey			
	1988 N=1,716	1993 N=1,632	1998 N=1,776	2003 N= 2,110
	% (n)	% (n)	% (n)	% (n)
Age group				
15-19 years	49.5 (849)	49.2 (803)	50.1 (889)	52.8 (1,113)
20-24 years	50.5 (867)	50.8 (829)	49.9 (887)	47.3 (997)
Residence				
Rural	63.1 (1,082)	57.7 (820)	65.8 (1,168)	46.9 (990)
Urban	37.0 (634)	42.3 (691)	34.2 (608)	53.1 (1,220)
Marital status				
Never married	48.3 (838)	56.2 (821)	55.1 (979)	63.0 (1,330)
Ever married	51.1 (877)	43.84 (641)	44.9 (797)	37.0 (780)
Age at first marriage				
≤15 years	25.9 (227)	21.0 (169)	25.6 (204)	23.0 (179)
16-17 years	35.7 (313)	36.3 (292)	31.4 (250)	33.6 (262)
≥18 years	38.5 (338)	42.7 (343)	43.0 (343)	43.5 (339)
Currently working				
Yes	33.5 (574)	50.8 (829)	49.3 (876)	49.5 (1,045)
No	66.4 (1,139)	49.2 (803)	50.6 (898)	50.5 (1,065)
Religion				
None	10.6 (181)	8.6 (141)	4.9 (86)	3.3 (70)
Christian	75.2 (1,291)	78.0 (1,273)	76.7 (1,362)	77.7 (1,640)
Moslem	8.9 (152)	10.4 (169)	14.2 (252)	17.3 (364)
Traditional	5.1 (87)	3.0 (49)	4.3 (76)	1.7 (36)
Educational level				
No education	25.1 (430)	22.2 (363)	24.5 (435)	19.1 (403)
Primary	66.5 (1,141)	66.3 (1,082)	17.0 (302)	22.5 (474)
Secondary	8.2 (141)	10.6 (173)	57.6 (1,022)	56.1 (1,884)
Higher	0.2 (4)	0.9 (14)	1.0 (17)	2.3 (49)

4.2 Trends in adolescent pregnancy and childbearing

4.2.1 Trends in adolescent pregnancy

Overall, from 1988 to 2003, the proportion of adolescents who were pregnant at the time of survey remained unchanged at 4%. Nonetheless, the proportion of adolescents who had terminated a pregnancy decreased by 1% from 3.7% in 1998 to 2.5% in 2003 as shown in Figure 4.1. There was no data on terminated pregnancies in the 1988 and 1993 surveys.

Among nulliparous adolescents aged 15-19 years, the proportion who were pregnant at the time of survey, decreased by 4% from 7.8% in 1988 to 3.7% in 2003 (Figure 4.2). From 1988 and 1993, there was 4% decrease in the proportion from 7.8% to 3.7%. There was no change in the proportion of adolescents who were pregnant with their first child from 1993 to 2003. Also, the proportion that had terminated a pregnancy stayed unchanged between 1998 and 2003 (2%).

4.2.2 Trends in adolescent childbearing

The rate of adolescent childbearing had decreased by 12.3% over the 15-year period from 35.1% in 1988 to 22.8% in 2003. Among adolescents that had a first birth before age 20, 91% had ever married. From 1988 to 2003, of adolescents that had a first birth before age 20 the proportion that were married decreased by 3.3% from 90.9% in 1988 to 87.9% in 2003. However, over the same period, of adolescents who had a first birth before age 20 the proportion that was not married increased by 34.8% from 9% in 1988 to 12.1% in 2003. From 1988 to 1998, the proportion decreased by 2.9%, from 9.0% in 1988 to 6.1% in 1998 but increased by 6.1% from 1998 to 2003.

Of adolescents who had a first birth before age 20, majority (72.1%) were resident in rural areas. In terms of education, from 1988 to 2003, of adolescents who had a first birth before age 20, the proportion that had primary education decreased by 35% from 63.9 in 1988 to 28.5 in 2003. From 1988 and 1998, the proportion increased by 35% from 3.2% in 1988 to 38.1% in 2003. Of adolescents who had a first birth before age 20, only one in the 1998 survey had more than secondary education. With exception in 1988, majority (71%) of women who had a first birth before age 20 were currently working (Table 4.2).

Figure 4.1. Trend in pregnancies among all adolescents aged 15-19 years, GDHS, 1998-2003

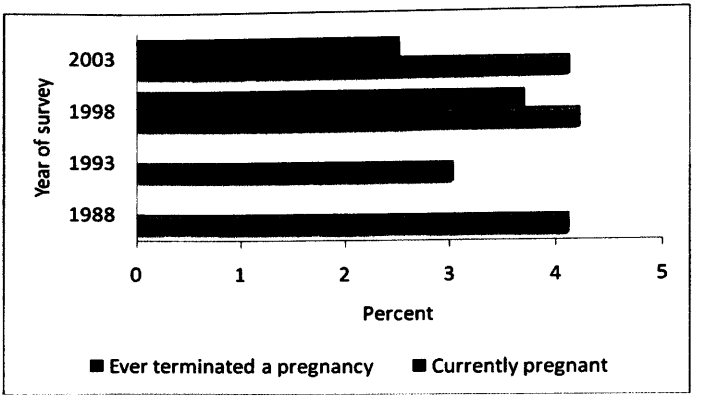

Figure 4.2. Trend in pregnancies among nulliparous adolescents aged 15-19 years, GDHS, 1998-2003

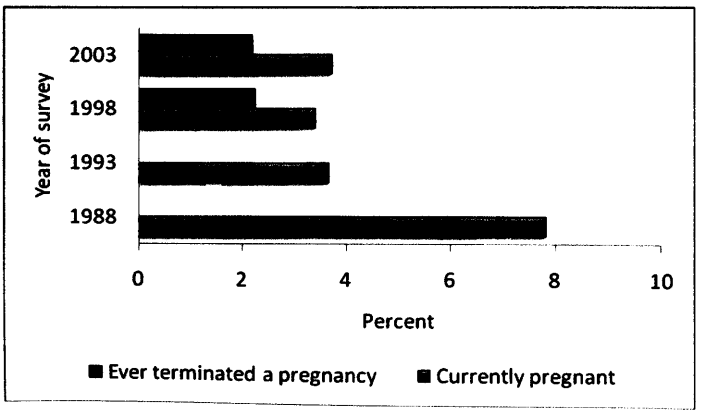

Table 4.2. Women aged 15-24 year who had a first birth before age 20, GDHS, 1988-2003

Characteristic	Ghana Demographic and Health Survey			
	1988 N=603	1993 N=551	1998 N=462	2003 N=480
	% (n)	% (n)	% (n)	% (n)
% who had given birth before age 20	35.1	33.8	26.0	22.8
Age at survey				
15-19 years	27.2 (164)	27.0 (149)	21.7 (100)	25.6 (123)
20-24 years	72.8 (439)	73.0 (402)	78.4 (362)	74.4 (357)
Marital status				
Ever married	90.9 (548)	91.3 (503)	93.9 (434)	87.9 (422)
Never married	9.0(54)	8.7 (48)	6.1 (28)	12.1 (58)
Residence				
Urban	28.5 (172)	31.2 (172)	25.1 (116)	26.3 (126)
Rural	71.5 (431)	68.8 (379)	74.9 (346)	73.8 (354)
Educational level				
None	33.0 (199)	33.8 (186)	34.6 (160)	33.3 (160)
Primary	63.9 (385)	63.3 (349)	20.6 (95)	28.5 (137)
Secondary	3.2 (19)	2.9 (16)	44.6 (206)	38.1 (183)
Higher	-	-	0.2 (1)	-
Currently working				
Yes	44.8 (270)	68.4 (377)	72.5 (335)	72.3 (347)
No	55.1 (332)	31.6 (174)	27.5 (127)	27.7 (133)

In terms of number of children, over the period from 1998- 2003 almost half (47%) of adolescent mothers (women aged 15-24 years who gave birth before age 20) already had 2-5 children. Over the same period there was a decline in multiple adolescent childbearing. A comparison of the mean number of children ever born showed a 10.5% decrease from 1.7 in 1988 to 1.5 in 2003 as shown in Table 4.3.

In terms of living children, majority (59%) of adolescens mothers had only one child. However, many adolescent mothers (41%) had 2-4 living children. In 2003, one adolescent had five living children.

Table 4.3. Adolescent mothers* and number of children, GDHS, 1988-2003

Number of children ever born	Ghana Demographic and Health Survey			
	1988 N=603	1993 N=551	1998 N=462	2003 N=480
	% (n)	% (n)	% (n)	% (n)
1	50.4 (304)	52.09 (287)	52.2 (241)	58.1 (279)
2	32.3 (195)	34.1 (188)	33.6 (155)	31.9 (155)
3 to 5	17.3 (104)	13.8 (76)	14.3 (66)	9.6 (46)
Mean number of children ever born	1.7	1.7	1.7	1.5
Number of living children				
	N=580	N=528	N=441	N=460
	% (n)	% (n)	% (n)	% (n)
1	57.1 (331)	57.8 (305)	59.4 (262)	63.0 (290)
2	31.7 (184)	33.0 (174)	29.3 (129)	30.9 (142)
3 to 5	11.2 (65)	9.3 (49)	11.3 (50)	6.12 (28)

* Include all women aged 15-24 years who gave birth before age 20

4.3 Determinants of adolescent childbearing

Results from multiple logistic regression models examining influences on adolescent childbearing are shown in Table 4.4. Marital status was significantly associated with adolescent childbearing. Ever married adolescents were averagely 23.52 times more likely to have had a first birth before age 20 than never married adolescents ($p<0.001$).

Table 4.3. Adolescent mothers* and number of children, GDHS, 1988-2003

Number of children ever born	Ghana Demographic and Health Survey			
	1988 N=603	1993 N=551	1998 N=462	2003 N=480
	% (n)	% (n)	% (n)	% (n)
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2	32.3 (195)	34.1 (188)	33.6 (155)	31.9 (155)
3 to 5	17.3 (104)	13.8 (76)	14.3 (66)	9.6 (46)
Mean number of children ever born	1.7	1.7	1.7	1.5
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	% (n)	% (n)	% (n)	% (n)
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2	32.3 (195)	34.1 (188)	33.6 (155)	31.9 (155)
3 to 5	17.3 (104)	13.8 (76)	14.3 (66)	9.6 (46)
Mean number of children ever born	1.7	1.7	1.7	1.5
Number of living children				
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	% (n)	% (n)	% (n)	% (n)
1	57.1 (331)	57.8 (305)	59.4 (262)	63.0 (290)
2	31.7 (184)	33.0 (174)	29.3 (129)	30.9 (142)
3 to 5	11.2 (65)	9.3 (49)	11.3 (50)	6.12 (28)

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From the linear regression analysis, a one year increase in the age at first marriage delays the age at adolescent first birth by at least 5 months (Table 4.5). Secondary education had a significant delaying effect on the timing first birth. Adolescents with secondary education were 24-76% less likely to have had a first birth before age 20 compared to their counterparts with no education. Of the four surveys, only 1998 was not significant. Rural dwelling adolescents were 37-59% more likely to give birth before age 20 than their urban counterparts. Of the four surveys, 1993 and 1998 were not significant. There was no significant association between adolescent childbearing and work status.

Except in the 2003 survey, from 1988 to 1998 adolescents who knew about any contraceptive method were at least 71% more likely to give birth before age 20 than their counterparts who did not know about any contraceptive method. In the latest and most recent surveys, adolescents who had ever used modern contraceptives were 91% more likely to have a first birth before age 20 than those who have never used any contraceptives.

There was no data on respondents who have heard family planning messages on TV and radio in 1988 and on TV only in 1993. For the rest of the surveys, exposure to family planning messages on radio or television was not associated with adolescent birth before age 20. Association between religious affiliation and adolescent childbearing was not consistent among all the surveys.

Table 4.4. Determinants of adolescent childbearing, GDHS, 1988-2003

Characteristic	Adjusted odds ratio			
	1988	1993	1998	2003
Age Group				
15-19 years	1.00	1.00	1.00	1.00
20-24 years	1.04	0.94	0.94	1.30
Marital status				
Never married	1.00	1.00	1.00	1.00
Ever married	18.40***	22.66***	36.19***	16.83***
Educational level				
No education	1.00	1.00	1.00	1.00
Primary	0.87	0.71	1.16	0.93
Secondary	0.25***	0.24***	0.76	0.49***
Higher	-	-	0.29	-
Residence				
Urban	1.00	1.00	1.00	1.00
Rural	1.37*	1.03	1.21	1.59**
Currently working				
No	1.00	1.00	1.00	1.00
Yes	1.21	1.19	1.23	1.01
Knowledge about contraceptives				
No	1.00	1.00	1.00	1.00
Yes	1.71**	1.74*	2.44**	1.17
Ever use of any Contraceptive method				
Never used	1.00	1.00	1.00	1.00
Used only traditional method	1.59*	1.12	0.97	1.06
Used modern method	1.91**	1.11	0.92	1.91***
Heard FP message on radio				
No	-	1.00	1.00	1.00
Yes	-	1.07	1.17	1.05
Heard FP message on TV				
No	-	-	1.00	1.00
Yes	-	-	1.00	0.88
Religion				
Christian	1.00	1.00	1.00	1.00
No religion	0.96	0.90	3.61***	1.03
Muslim	0.91	0.84	0.66	0.49***
Traditional	1.52	0.72	1.23	0.53

*p <0.05; **p<0.01; ***p<0.001

Table 4.5. Relationship between age at adolescent first birth and age at first marriage, GDHS, 1988-2003

Parameter	1988	1993	1998	2003
Adjusted Coefficient (years)				
Age at first marriage	0.57***	0.53***	0.43***	0.41***
Number of years of education	0.01	0.02	0.05**	0.04*
R- squared	0.48	0.37	0.32	0.31

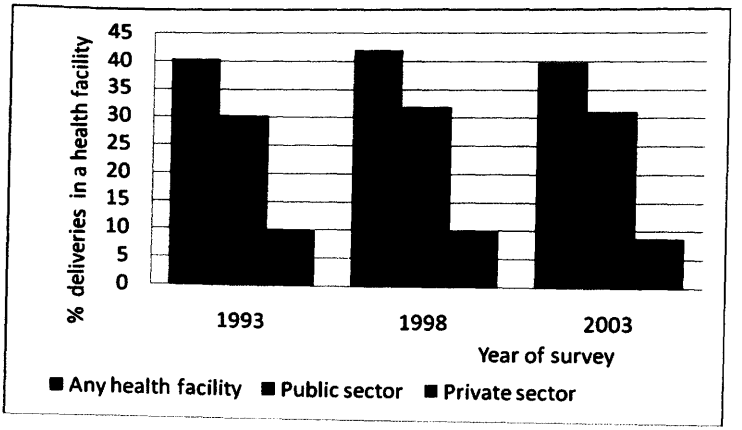
*p<0.05; **p<0.01; ***p<0.001;

4.4 Birth outcome characteristics of adolescent pregnancies

4.4.1 Trend in adolescent deliveries in a health facility

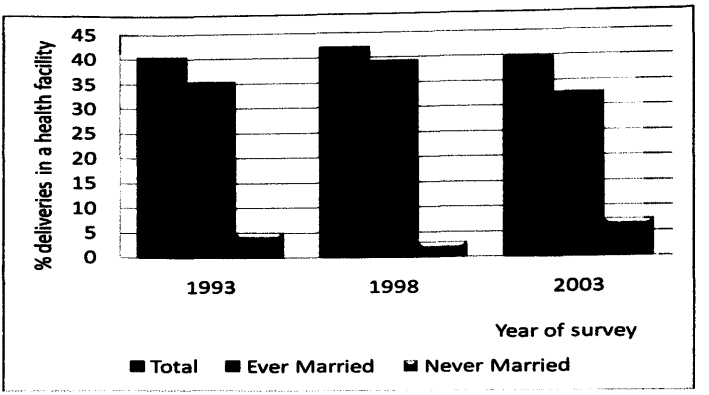
During their latest birth, the proportion of adolescent deliveries that occurred in a health facility is shown in Figure 4.3. In 1993, 40.4% of adolescent deliveries occurred in a health facility. From 1993 to 1998, the proportion of adolescent deliveries that occurred in a health facility increased by 1.7%, from 40.4% to 42.1%. However, from 1998 to 2003, the figure decreased by 2.3% to 39.8%. Therefore, from 1993 to 2003 there was virtually no change in the proportion of adolescent deliveries that occurred in a health facility. In each survey, the proportion of adolescent deliveries that occurred in a public facility was 3 times more than the proportion that occurred in a private facility.

Figure 4.3. Percentage of adolescent deliveries that occurred in a health facility, GDHS 1993-2003



From 1993 to 2003, of all adolescent deliveries in a health facility, the proportion that occurred to ever married adolescents decreased by 2.8% from 35.4 to 32.6%. On the other hand, the proportion that occurred to never married adolescents increased by 2.3% from 5% in 1993 to 7.2% in 2003. In each survey, of all adolescent deliveries in a health facility, the proportion that occurred to ever married adolescents was 4 times more than the proportion to never married adolescents (Figure 4.3).

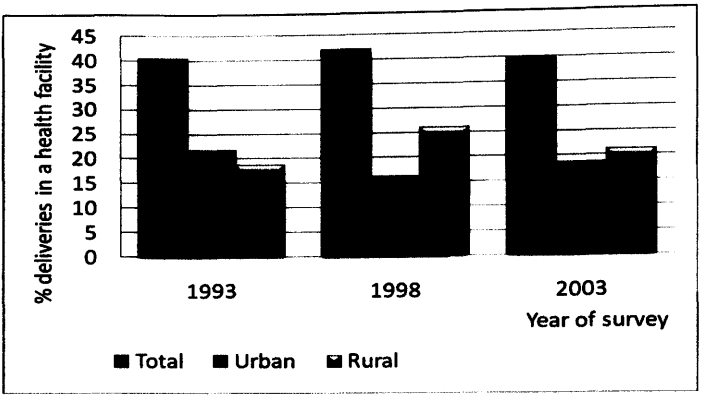
Figure 4.4. Percentage of adolescent deliveries that occurred in a health facility by marital status, GDHS, 1993-2003



From 1993 to 2003, of adolescent deliveries that occurred in a health facility the proportion that occurred to adolescents who were resident in an urban area, decreased by 3.1% from 21.7% to 18.6% (Figure 4.5). However, over the same period, the proportion that occurred to adolescents resident in a rural area increased by 2.5% from 18.7% to 21.2%. In 1993, among adolescents who delivered in a health facility, the proportion that was resident in a rural area was 2.9% less than the proportion that was resident in an urban area. However, by 1998 and 2003, the proportion that was resident in a rural area was 2.6% and 10.2% respectively higher than the proportion that was resident in an urban area.

Of all deliveries that occurred to urban adolescents, 72.2% occurred in a health facility compared to 30.2% among rural adolescents.

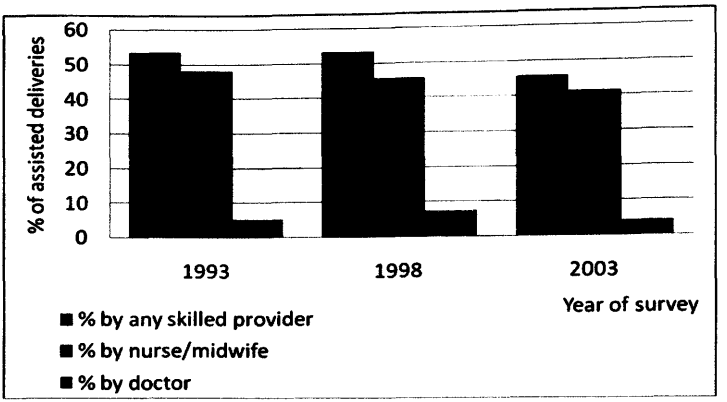
Figure 4.5. Adolescent deliveries in a health facility by residence, GDHS, 1993-2003



4.4.2 Trend in adolescent deliveries assisted by a health worker

The trend in the proportion of deliveries assisted by a health worker is shown in Figure 4.6. From 1993 to 2003 the percentage of assisted deliveries decreased by 8% from 54 to 46%. There was also a decrease in the proportion of assisted deliveries by provider category. From 1993 to 2003, the proportion of deliveries assisted by a nurse/midwife decreased by 7% from 48.3% to 41.4%. Similarly, over the same period the proportion of deliveries assisted by a doctor decreased by 1% from 5.4 to 4.4%. In each survey, the proportion of deliveries assisted by a nurse or midwife is 7 times more than that assisted by a doctor.

Figure 4.6. Proportion of adolescent deliveries assisted by a skilled health worker, GDHS 1993-2003



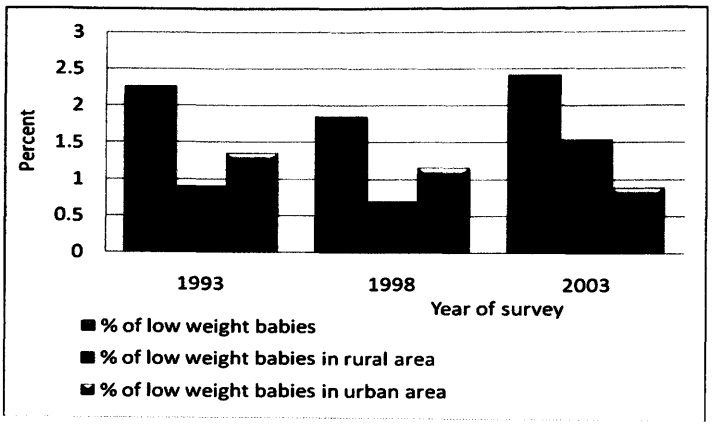
4.4.3 Birth weight of infants born to adolescents

From 1993 to 2003, at their latest delivery, the proportions of babies delivered by adolescents who were low birth weight (LBW) ranged between 2.2 to 2.4% (Figure 4.7). The proportion of LBW infants is slightly higher than the proportion born to women aged 20 years and above. In the 1993 and 2003 surveys the proportion of LBW infants born to adolescents were 1.85 and 1.5 times respectively higher than the proportion of low LBW infants born to women aged 20 years and above. From 1993 to 2003, the proportion of LBW infants born to adolescents fluctuated around 2%.

In 1993 and 1998, of LBW babies born to adolescents, only 0.5% more were born to urban dwelling adolescents than rural dwelling adolescents. From 1993 to 2003, of LBW infants born to adolescents, the proportion that was born to urban dwelling adolescents

decreased by 0.5% from 1.4% to 0.9%. Over the same period, the proportion that was born to rural dwelling adolescents increased by 0.6%, from 0.9% in 1993 to 1.5% in 2003.

Figure 4.7. Percentage of low birth weight infants born to adolescents, GDHS, 1993-2003



CHAPTER FIVE

5.0 DISCUSSION

5.1 Trends in adolescent pregnancy and childbearing

The present analysis shows that there is a decline in adolescent childbearing which is consistent with results of another analysis using the Ghana Fertility Survey and the GDHS data (ORC Macro, 2005). Among all adolescents, there was no change in the proportion that was pregnant at the time of survey over the period 1988 to 2003. In this study a better understanding of the trend in pregnancies would have been to include in the analysis, the proportion of terminated pregnancies in all the surveys. However, there was no data on terminated pregnancies in the 1988 and 1993 surveys. In 1998 and 2003 however, very few (less than 4%) of adolescents reported that they had ever terminated a pregnancy and the proportion had decreased from 3.7% in 1998 to 2.5% in 2003.

In a similar study using Demographic and Health Surveys and AIDS Indicator Surveys conducted between 2001 and 2005 in 38 developing countries including Ghana, Khan & Mishra (2008) found that pregnancy termination among adolescents aged 15-19 years is rare. In the Ghana Maternal Health Survey 2007, 2.8% (n=2,064) of adolescents aged 15-19 years reported having had abortion (GSS et al, 2009). Compared to the 2003 figure of 2.5% in this analysis, there has been virtually no change in the proportion of terminated pregnancies from 2003 to 2007.

Apart from the timing of birth, multiple adolescent childbearing has been shown to have adverse effects on both mother and child. In the present analysis many adolescents (47%)

already had 2 - 5 births. Between 1988 and 2003 there was a decline in multiple births to adolescents. A comparison of the mean number of children ever born to adolescents in each survey showed a decline from 1988 to 2003. In a study to examine trend and differentials in teenage childbearing in Eritrea, using data from 1995 and 2002 Eritrea Demographic and Health Survey, Woldemicael (2005) found that there is a decline in the mean number of children ever born from 1995 to 2003.

The number of living children born to adolescents is a major public health concern due to its social, health and economic implications. This study shows that many adolescents (41%) have 2 to 4 children with 1 adolescent having five living children in 2003. Consistent with other studies (Nahar & Min, 2008; Khan & Mishra, 2008; Ikamari, 2008) majority of adolescent childbearing is among the ever married group. Over the 15 year period from 1988 to 2003, although an increasing proportion of adolescents postponed marriage, the rate of non-marital births among adolescents had increased. This may be a reflection of an increase in the proportion of adolescents with unmet need for family planning over the 15 year period or a demand for children even outside marriage. Further research may be needed to understand better, the factors that predict adolescent childbearing.

5.2 Determinants of adolescent childbearing

Early marriage was found to be strongly associated with adolescent childbearing, which is consistent with findings in earlier studies (Nahar & Min, 2008; Yagya & Krishna, 2008). Although this association is not causal, in Ghana, sexual relation is encouraged

only in the context of marriage. Across the surveys, although in Ghana the minimum legal age at marriage is 18 years, majority (56.6 to 61.6%) of women aged 15-24 years married before age 18.

Except in 1998, the analysis found education up to the secondary level, to be the most significant factor with the strongest and most consistent effect on delaying adolescent childbearing during the period 1988-1993 and in 2003. In an earlier study in Bangladesh, Nahar & Min (2008) also found secondary education to be the most significant factor with the strongest effect on delaying adolescent childbearing. Many other studies that examined determinants of childbearing in developing countries using Demographic and Health Survey data found that adolescents with secondary education are less likely to initiate childbearing before age 20 compared to their counterparts with no education (Asaduzzaman & Khan, 2009; Woldemicael, 2005; Gapta & Mahy, 2003).

Social disparity is observed in the timing of first birth. Except in 1993, the likelihood of having a first birth before age 20 is higher among rural residents compared to urban residents. In a study using four successive Bangladesh Demographic and Health Survey data collected between 1993 and 2004, Nahar & Min (2008) also found that the chance of having a first birth is higher among rural residents compared to urban residents in all years except one. However, the researchers found that the pattern of adolescent childbearing is not consistent among the three different types of urban areas (i.e. large metropolitan city, small city, and towns) included in their analysis.

In other studies, Asaduzzaman & Khan (2009) and Woldemicael (2005) also found that rural dwelling adolescents are more likely to have a first birth before age 20 compared to their urban counterparts.

The present study did not find work status to be significantly associated with adolescent childbearing. In an earlier study in Bangladesh, Nahar and Min (2008) also did not find the effect of economic status on adolescent childbearing consistent among the four Bangladesh Demographic and Health Surveys included in their analysis.

Although the present analysis showed a higher likelihood of first birth among adolescents who knew about any contraceptive method than those who did not, the association may not be causal. Whereas this finding may be an indication that adolescents knowledge about contraceptives did not translate into contraceptive use as reported in some studies (Awusabo-Asare et al, 2004; Glover et al, 2003), it may also be an indication of a reverse causality; implying that adolescents after a first birth learn about contraceptives in order to delay subsequent pregnancies. The latter explanation is also a plausible reason for the higher likelihood of first birth observed in 1988 and 2003 among adolescents who ever used modern contraceptives than those who never used any contraceptive method.

The analysis did not find exposure to family planning messages on TV and radio to be associated with adolescent childbearing even in the most recent survey where majority of adolescents (52.4% and 69.2% respectively) have heard family planning messages on radio and TV. Nahar & Min (2008) examined a broader aspect of media exposure (radio

and TV) than exposure to only family planning messages on TV and radio, and found media exposure as having an effect on delaying first birth especially in the most recent survey. In another study on Bangladeshi women, Islam et al (2009) reported that television was the most significant form of mass media to disseminate family planning messages.

In this present analysis, exposure to family planning messages on TV or radio was not associated with adolescent childbearing because in 1993 and 1998 majority (68.3% and 55.3% respectively) of adolescents have not heard family planning messages on radio. Similarly, majority of adolescents (68.9%) have not heard family planning messages on TV in 1998. However, in the most recent survey the reason may be that adolescents' exposure to family planning messages on radio and TV did not translate into family planning practice for several reasons.

The present analysis did not find a consistent pattern in the timing of first birth by religious affiliation in the surveys. In an earlier study in Bangladesh (a predominantly Islamic nation), Nahar & Min (2008) found that Muslim women have higher probability of having a first birth before age 20.

5.3 Birth outcome characteristics of adolescent pregnancies

In terms of maternal health seeking behavior, the current analysis shows that from 1993 to 2003, only 39.8 to 42.1% of adolescent deliveries occurred in a health facility, with at least three times as many births delivered in a public health facility as in private health

facility in each survey. Literature on maternal health seeking behavior is scanty (Nketia-Amponsah & Sagoe-Moses, 2009). However, the recent 2007 Ghana Maternal Health Survey, shows that 54.2% (n=534) of mothers less than 20 years delivered in a health facility with 42.9% and 11.1% delivering in public and private health facilities respectively (GSS et al, 2009). Nationally, the survey shows that 54.3% (n=4,928) of deliveries occurred in a health facility with 43.3% and 11.0 occurring in public and private sector respectively.

By comparison, whereas there was only a marginal increase (2.3%) in adolescent deliveries in a health facility over the 10 year period from 1993 to 2003, the 4 year period from 2003 to 2007 shows a substantial (12.1%) increase.

The Government of Ghana in September 2003 introduced the policy of exempting all users from delivery fees in health facilities (Penford et al, 2007). This sharp rise in deliveries from 2003 to 2007 may be due to the introduction of the delivery fee exemption in 2003. Recent studies (Witter et al, 2009; Penford et al, 2007) have shown that there has been a substantial increase in deliveries in health facilities after the implementation of the delivery fee exemption in Central and Volta regions.

Four times more deliveries in a health facility occurred to ever married adolescents than never married adolescents. However, over the 10 year period from 1993 to 2003, whereas there was a decrease in deliveries in a health facility among ever married adolescents,

among never married adolescents the trend has increased. This may be due to the fact that there was an increase in trend towards childbearing outside marriage.

Rural-urban disparity is observed in the pattern of deliveries in a health facility. More deliveries among urban dwelling adolescents occurred in a health facility than rural dwelling adolescents (72.2% versus 30.2%). However, there was a declining trend in deliveries in health facilities among urban dwelling adolescents relative to rural dwelling adolescents. The observed decline could be explained by the fact that there was a decrease in the rate of childbearing among urban adolescents compared to rural adolescents.

The proportion of births supervised by skilled health personnel is a key component of maternal health included in the Millennium Development Goal 5 (UNDP, 2003). This present analysis shows 8% decrease in the proportion of adolescent deliveries assisted by skilled health personnel from 54% in 1993 to 46% in 2003. In the Ghana Maternal Health Survey 2007, GSS et al (2009) showed that 55.1% (n=534) of deliveries among mothers less than 20 years were assisted by a skilled health worker with a national average of 55.2% (n=4,928). By comparison, there was a 9.1% increase in the proportion of assisted deliveries among adolescent mothers from 2003 to 2007. However, over the 14 year period from 1993 to 2007 there was only 1.2% increase in the proportion of adolescent deliveries that were assisted by a skilled health worker.

One key indicator of child health is the weight of babies at birth. The present analysis showed that only a small proportion (less than 3%) of babies born to adolescents were low birth weight (LBW). From the period 1993 to 2003, there was an increase in the proportion of LBW babies born to rural dwelling adolescents. Among urban dwelling adolescents, the trend has decreased. This may be due to the fact that the rate of childbearing has declined among urban dwelling adolescents. By comparison, slightly more low birth weight infants were born to adolescents than women aged 20 years and above. This finding is similar to earlier studies on birth outcome of adolescent pregnancies. In a study to examine perinatal outcome among nulliparous pregnant adolescents in Saudi Arabia, Abu-Heija et al (2002) found that the incidence of low birth weight was significantly higher among adolescents than mothers aged 20-24 years ($p < 0.04$). Similarly, in Utah in USA, Fraser et al (1995) found that younger teenage mothers aged 13 to 17 years had a significantly higher risk ($p<0.001$) than mothers aged 20 to 24 years of delivering an infant who had low birth weight.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

This chapter presents conclusions based on the results of the study and indicates policy implications of the results or recommendations to prevent adolescent pregnancies, childbearing and maternal and child mortality.

The study found that the proportion of adolescents who were pregnant with their first child at the time of the survey declined by 4% from 8% in 1988 to 4% in 2003. Among all adolescents, there was no change in the proportions that were pregnant in the time of the surveys from 1988 to 2003. Pregnancy termination in 1998 and 2003 was rare among adolescents. From 1998 to 2003, there was a slight decline in the proportion of terminated pregnancies.

The rate of adolescent childbearing was 35.1% in 1988 and declined by 12.3% to 22.8% in 2003. Majority of adolescent childbearing appear to have occurred within the context of marriage. Although majority of adolescents have postponed marriage, there was an increase in the rate of childbearing outside marriage. Further studies are needed to examine unmet need for family planning among adolescents and community or adolescents demand for children.

The study found that almost half (47%) of adolescent mothers already had 2 to 5 births. Also, 2 in 5 (41%) of adolescent mothers had 2- 5 living children. Programs should

therefore target adolescents with high levels of parity to reduce child and maternal mortality.

Age at marriage has a strong association with age at first birth. A one year increase in the age at first marriage delays the age at adolescent first birth by at least 5 months. Programs should target delaying age at first marriage. In Nepal for instance, increase in the age at first marriage was the second most important factor to contraceptive use that resulted in a rapid decline in fertility over the five year period from 2001 to 2006 (Yagya & Krishna, 2008).

Majority (56.6 to 61.6%) of women age 15-24 years married before the legal age of 18 years. There is therefore the need for the NCCE to intensify its education of the citizenry on the reproductive health laws of the country, especially the age at marriage to ensure that women do not marry before age 18. Also, there is the need for the Social Welfare Department and DOVVSU of the Ghana Police Service to embark on periodic house-to-house visits to identify and prosecute parents/guardians who give their daughters out for marriage before age 18.

Secondary education has the strongest effect on delaying first birth during adolescence. A policy implication of this is to keep girls in school up to at least secondary level. Adequate resources should be channeled into making the FCUBE programme instituted by the GES to ensure that the programme achieves its objectives. There was significant variation in the timing of first birth by residence. Rural dwelling adolescents were more

likely to initiate a first birth before age 20 than urban dwelling adolescents. The study did not find a significant relationship between work status and timing of first birth. There was a significant relationship between knowledge and contraceptive use and adolescent childbearing. Longitudinal studies are needed to understand the direction of the relationship between adolescent contraceptive use and childbearing. Exposure to family planning messages on TV and radio was not significantly associated with the timing of first birth. There is therefore the need for family planning programme managers to modify their programs on TV and radio to make a better impact. Alternatively, FP programme managers should consider disseminating FP messages using other channels and strategies such as peer education and drama performances. The study did not find the effect of religion on adolescent childbearing consistent among all the surveys.

The study found that only a small proportion of adolescent deliveries (40.8%) occurred in a health facility. There is therefore the need for GHS to implement programs aimed at making deliveries in health facilities more attractive to adolescents. More deliveries in a health facility occurred to ever married adolescents than never married adolescents. More urban dwelling adolescents delivered in a health facility than rural dwelling adolescents.

Only a small proportion of babies born to adolescents were low birth weight. Adolescents delivered a slightly higher proportion of low birth weight babies compared to women aged 20 yeas and above. Special healthcare including adequate nutrition should be given to pregnant adolescents to ensure adequate growth of fetus to normal weight. All

adolescent deliveries should be monitored and infants found to be LBW should be given special care.

There is the need for Ghana Statistical Service, ORC Macro and partners to include in subsequent Ghana Demographic and Health Surveys a composite parental connectedness variable that describes the situation of adolescents and young people in relation to their parents or guardians. Like the composite wealth quintile variable, the parental connectedness variable should provide, at a glance, an idea about whether or not an adolescent/young person is well connected to parents/guardians, poorly connected or living alone.

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