Factors Associated with Sexual Initiation among High School Female Adolescents in Addis Ababa

A Comparative Study of Government and Private High Schools

By

Mehari Belachew

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Mehari Belachew Mengiste

Demographic Training and Research Center
Institute of Development Research

Approved by the Examining Board

Dr. Assefa Hailemariam Chairman, Department Graduate Committee	Asst Signature
Dr. Assefa Hailemariam Advisor	Asst Signature
Dr. Mengistu Asnake External Examiner	 Signature
Dr. R.B Upadhyay Internal Examiner	R.B Upadhyay Signature

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ACRONYMS AND ABBREVIATIONS

ANC	Antenatal Care
CSA	Central Statistical Authority
DHS	Demographic and Health Survey
IEC	Information Education Communication
MOH	Ministry of Health
PRB	Population Reference Bureau
SPSS	Statistical Package for Social Scientists
STIs	Sexually Transmitted Infections

ABSTRACT

This study assesses the factors that are associated with sexual initiation among female high school adolescents in Addis Ababa by using data collected from 1156 female students in 10 high schools, 5 government and 5 private. The sampling Design employed for this study is two stage stratified sampling. In the first stage the schools to be included in the survey were selected and in the second stage the students to be considered from each selected schools were identified.

The study revealed that 6 percent of the sampled students had initiated sex. A relatively higher proportion of government school students reported to have initiated sex when compared with that of their private school counterparts, i.e. 7 and 3 percent, respectively. According to the study 47 percent of the girls reported that it was against their will that they had sex for the first time. 18.2 percent said that they were forced into having sex, 19.7 percent said that they were tricked into having sex, and 9.1 percent said that they were threatened into having sex.

At the bivariate level the chi-square test revealed the existence of strong association between the dependent variable and various background variables. The findings of the multivariate logistic regression revealed that the chance of initiating sex for adolescent students who were living with their biological parents was found to be almost twice that of those not living with their biological parents. The finding also showed that female students who are in middle adolescence (13-16 years) were three times more likely to initiate sex than female adolescents in late adolescence (above 16 years). With respect to household income, adolescent students from high income households (with an estimated monthly earning of above 800 Birr) were two and half times more likely to initiate sex as compared to low income households (with an estimated monthly earning of below 400 Birr). Adolescent students who did not have an income of their own were also found to be three fold as likely to initiate sex as those who had a regular income.

Since quite a significant proportion of the students were experiencing unsafe sex, the study concludes by suggesting the need for a continuous and strong IEC and intervention programs by all concerned bodies. It further noted the importance of creating a conducive environment for delaying the sexual initiation of adolescents until they have the physical, cognitive, and emotional maturity necessary for sexual relationships.

CHAPTER ONE

1.1 INTRODUCTION

Human Sexuality is a general term referring to various sexually related aspects of human life, including physical and psychological development, and behaviors, attitudes, and social customs associated with the individual's sense of gender, relationships, sexual activity, mate selection, and reproduction. Sexuality permeates many areas of human life and culture, thereby setting humans apart from other members of the animal kingdom, in which the objective of sexuality is more often confined to reproduction (Encarta, Human Sexuality, 2004).

We are sexual from birth, and sexual expression is a basic human need throughout our lives. Sexual expression is an essential component of healthy human development for individuals of all ages (Zimbardo, 1992; Tobias & Ricer, 1998). In fact, making the transition from childhood to a healthy sexual adulthood is considered to bc one of the most important tasks of adolescence (Berman & Hein, 1999).

In general, an adolescent's gender, age, socioeconomic status, family atmosphere, religious commitment, and individual life experience are all factors that can exert an influence on whether, when, and how she or he will be sexually active (AGI, 1994; Tobias & Ricer, 1998; Yarber & Greer, 1986).

We live in a world saturated with images of and messages about sex — from movies, magazines, recordings, television shows, radios, advertisements, etc. Maturing adolescents are exposed to many of these conflicting messages which may help them or confuse them as they learn how to make healthy decisions about sexual behavior.

A healthy society is one that acknowledges and values the fact that we are sexual beings throughout our lives and recognizes that young people require open

communication at home and at school in order to cope with their need for sexual expression and with the physiological processes of maturation. A healthy society is also one that has concern for the social, cultural, and economic forces that shape adolescent lives, supports adolescent growth and development into responsible and fulfilled adulthood through the provision of responsible, medically accurate sexuality information and education.

In a healthy society, adolescents can begin to learn how to meet nonsexual needs in meaningful ways; how to delay the initiation of sexual intercourse until they have the physical, cognitive, and emotional maturity necessary for intimate sexual relationships; how to make decisions that will preserve their physical and emotional well-being as they begin to explore one of the most basic, joyful, and meaningful aspects of existence; how to avoid behaviors that put them at risk for unintended pregnancy and sexually transmitted infections when they decide to become sexually active.

In Ethiopia, however, the issue of sexuality has long been considered a serious taboo and when it comes to adolescents the taboo even gets much stronger. A survey conducted by Save the Children/USA (2000), revealed that parent's interaction on reproductive health issues was found to be very limited. Many students prefer to discuss reproductive health issues with their peers and health proffesionals. Eventhough peers can feel gaps in adolescent's knowledge about reproductive health and support for behavioural change, young people need and desire communication with trusted adults. Peers alone can not fulfill all the roles necessary to ensure a healthy transition from childhood to adulthood in terms of sexual and emotional development.

According to the medium variant projection for the year 2005, adolescents aged 15-24 years (both inschool and out of school) constitute nearly a quarter of the population of Addis Ababa (CSA,1999). In view of their large constituency and also their vulnerability to various social and economic problems, adolescents need to be

given proper attention in every aspect of their life (including reproductive and health issues) so that they can have a balanced and well formed personality which can guarantee fulfilment in their life.

1.2 Statement of the problem and Rationale of the study

In many countries, young women and men are under strong social and peer-group pressure to engage in premarital sex. The average age of marriage has risen in many parts of the world and the age of puberty for women has fallen, giving young people more years "at risk" of having premarital sex (Population Reference Bureau, 2004).

Serious risks and consequences accompany increased premarital sex, particularly when young people do not have access to adequate reproductive health services and information. Specifically, these risks can include STIs, including HIV/AIDS, and unintended pregnancies. When faced with an unintended pregnancy, many young women will seek an abortion, which in many countries is inaccessible, illegal, or unsafe. Unsafe abortions — self-induced or done by an untrained provider — can result in severe illness, infertility, and even death. Complications from unsafe abortion are the leading cause of death among teenagers in some countries. More adolescent girls die from pregnancy-related causes than from any other cause. Because they have not completed their growth, adolescent girls are at greater risk of obstructed labor (when the birth canal is blocked), which can lead to permanent injury or death for both the mother and infant (Population Reference Bureau, 2004).

Young women are particularly vulnerable to STIs, including HIV/AIDS, for biological and cultural reasons. Adolescents in general are at high risk of contracting HIV and other STIs because they often have multiple, short-term sexual relationships, do not consistently use condoms, and lack sufficient information on how to protect themselves from HIV/AIDS. Adolescent women, in particular, are at a biological disadvantage because they have fewer protective antibodies than do older women, and the immaturity of the cervix increases the likelihood that exposure to the

infection will result in the transmission of the disease (Population Reference Bureau, 2004).

Moreover, because women often do not show symptoms of chlamydia and gonorrhea (the most common STIs) and because having another STI increases an individual's susceptibility to HIV, women's risk of contracting and spreading these infections is especially high. In fact, teenage women become infected with HIV/AIDS at twice the rate of teenage men. In addition, sexual violence and exploitation, lack of formal education (including sexuality education), inability to negotiate with partners about sexual decisions, and lack of access to reproductive health services all work together to put young women at especially high risk (Population Reference Bureau, 2004).

The Population Reference Bureau in its 2004 report, citing a 2001 UNAIDS unpublished data stated that out of the 8.5 million adolescents aged 15-24 living with HIV/AIDS in the sub-Saharan Africa, nearly 70 percent are females.

The report "AIDS in Ethiopia" (MOH, 2003) also states that pregnant women aged 15-24 have the highest mean HIV prevalence at national level. According to the report, 8.6 percent of ANC (Antenatal Care) attendees were HIV positive in the 15-24 year old age group as compared with 8.1 and 6.3 percent in the 25-34 and 35-49 year old age groups, respectively (unadjusted for urban/rural population sizes).

This ensuing high rate of HIV/AIDS prevalence among adolescents makes it imperative that, among other things, we understand and identify the factors that are associated with early or late sexual initiation, and we need to critically think how to provide all children and adolescents with responsible, age-appropriate, comprehensive, and medically accurate sexuality education and risk prevention programs. Furthermore, in addition to spotting individual characteristics of adolescents, we need to pay attention to the influence of the environment- the family, the peer group, and the community- to find ways of reducing young people's exposure to high risk settings.

Eventhough many reproductive health researches have been done on high school adolescents in Addis Ababa, it is very crucial to further understand the factors that are associated with their sexual initiation. This study, thus, aims at enriching the existing findings and also filling the gaps that are evident in adolescent sexuality.

1.3 Operational definitions of key terms:

Sex and Gender: At the most fundamental level, sex refers to a person's biological status of being a male or a female. This biological status can be broken down into genetic sex, which is determined by our chromosomal makeup, and anatomical sex, the physical characteristics and features that distinguish females from males. Gender, on the other hand, refers to the social meanings attached to being a female or a male

Puberty: Puberty marks the time when both primary and secondary sexual characteristics as well as adult reproductive capacity develop, and when sexual interest surges. Puberty typically begins in girls from 8 to 12 years of age, whereas boys start about two years later. A girl's breasts grow, her pubic hair develops, and her body grows and takes on the rounded contours of an adult woman. This is followed by the first menstrual period (menarche) at about age 12 or 13 (although ages of onset range from 10 to 16.5), underarm-hair growth, and increased secretions from oil- and sweat-producing glands. It may take a year or two before menstruation and ovulation occur regularly. The hormones primarily responsible for these changes in young girls are the adrenal androgens, estrogens, progesterone, and growth hormone. It is the development of the secondary sexual characteristics that serve as more apparent signals to others that the person is becoming a man or a woman. These signals lead to increasingly differential treatment of adolescent girls and boys by parents or other adults. The changes in hormone levels that occur during puberty may cause boys and girls to perceive the world in different ways, leading them to react differently to situations. Thus, puberty augments behavioral

sex differences between young men and women. In some cultures and religions, puberty is recognized with rituals that mark the transition into adulthood (Encarta, 2004).

Adolescence: Whereas the term puberty refers to the period of physical maturation, the term adolescence typically refers to the socially defined period during which a person adjusts to the physical, emotional, and social changes associated with the transition from childhood to adulthood. Adolescence, which came from the Latin word adolescere, meaning, "to grow into maturity," is the life stage between childhood and adulthood (Turner, 1993).

Adolescence can be categorized into three stages of development: early, middle, and late. Although an individual adolescent will develop at her or his own unique pace, there are recognizable patterns of change in behavior and sexuality that occur from one stage of development to the next (Haffner, 1995).

In early adolescence (ages 9-13), experimenting with sexual behavior is common, although sexual intercourse is usually limited. During this stage, young adolescents begin the process of separating from the family and become increasingly influenced by their peers. Although young adolescents primarily engage in concrete thinking, and it is difficult for them to imagine future consequences, they continue to value their parents' guidance, especially on important life issues (Haffner, 1995).

In middle adolescence (ages 13-16), the ability to think abstractly begins to develop. Separation from the family increases, and the desire to be accepted by one's peers can exert a strong influence on behavior. Sexual experimentation is common, and many adolescents have first intercourse during this stage of life (Haffner, 1995).

In late adolescence (aged 16 years and over) the process of physical maturation is completed. The ability to understand abstract concepts is achieved by many adolescents at this stage, and many of them understand what the results and

consequences of their actions and behaviors may be. There is an increased ability to empathize with others, give and receive intimacy, and define adult roles. There also is greater autonomy from the family as well as from the peer group, and sexuality may become more associated with commitment and planning for the future (Haffner, 1995).

Human Sexuality: Human sexuality is a complex phenomenon having many meanings and purposes. Biological reproduction is one very important aspect of human sexuality. Human sexuality also serves to express deeply felt emotions (a psychological motive). It also serves to bond unrelated individuals in a long-term (often lifelong) commitment to each other and to the care and well-being of their offspring (a social motive). Thus, most scholars regard human sexuality as a complex biopsychosocial behaviour (Byer, 1999)

Sexual Initiation: Sexual initiation refers to the first sexual intercourse encountered by adolescents. It can happen early or late depending on several factors (social economic, cultural, personal, etc.)

1.4 Literature Review

In all cultures of the world, it is normal for people to begin sexual relationships as they get older. The cultural norms of different parts of the world vary, and a range of attitudes about adolescent sexual behaviors from rigidly repressive to openly liberal are sometimes found within the same communities.

Early sexual activity poses health risks for young women and men. Most adolescents, when entering into sexual relations for the first time do not use any form of contraception. This leaves them vulnerable to unplanned parenthood and STIs. Adolescent women who have sex at very early age are biologically more susceptible to a number of STIs, including HIV/AIDS, than adult women. In some

cases, they may also be socially susceptible, encountering difficulties in negotiating safer sex from their partners (Poulation Reference Bureau, 2004).

Young women who initiated sex at very young ages may also have experienced some sort of pressure (either physical or verbal) to have sex against their will. Globally, research suggests that women age 15 and younger are particularly vulnerable to unwanted sexual encounters. A number of factors (social, educational, and economic) may make very young women an "easy target" for coerced sex with their boyfriends, teachers, or other men in authority.

Various studies were undertaken in Ethiopia related to reproductive health and sexuality. The 2000 Demographic and Health Survey was one such remarkable undertaking. According to the survey result, the median age at first sexual intercourse for women aged 25-49 was found to be 16.0 years, which is about three years earlier when compared with that of same cohort of women in Addis Ababa (19.3) . The data also revealed that among female adolescents in Addis Ababa aged 15-19, 13.1 percent acknowledged that they had had sexual intercourse. The percentage of adolescent girls in the specified age group who have used condom during their last intercourse was reported to be about 15 percent.

Another survey conducted by Save the Children/USA (2000) on Adolescent high school students in Government High Schools of Addis Ababa, revealed that 13 percent of the sampled girls acknowledged that they had had sexual intercourse.

Gebre, (1990) in a study conducted among senior high school students in Addis Ababa found that 24 percent of the girls were sexually active, 70 percent had their first sexual encounter between ages 14-16, 70 percent acknowledged having more than one sexual partner.

Fisseha, (1994) in a study conducted among senior high school students in Addis Ababa also found that about 6 percent of adolescent high school female students

admitted to have had coital experience at least once prior to the conduct of the survey. The mean age of first sex was found to be 15.3 years and about 50 percent of the sexually experienced girls had their first sex before the age of 17. Peer pressure was the most often reported factor that led the initiation of first sex among the students (35.2 percent). This was followed by forced sex (21.6 percent), alcohol (11.5 percent), and drugs (10.3 percent). The study further stated that only 18 percent of the students used condom on their first sexual encounter.

Another study by Frehiwot (2000) on Health Problems and Service Preferences of School Adolescentsfound out 21.9 percent of adolescent students to be sexually active. Only 19 percent of the students reported to have used condom during last intercourse.

All the above studies assert that not only a significant proportion of high school adolescents are sexually experienced but also exercise risky sexual behaviour, despite the largc mass media campaign about HIV/AIDS and its consequences, and the availability of condoms. However, it is necessary to note that sexual experience among female adolescents aged 15-19 in Addis Ababa is relatively low, especially when compared with similar cities in other sub-Saharan African countries. For instance, in Cot d'Ivoire, Malli, and Mozambique, the proportion of young women aged 20-24 that first had sex before age 18 is about 80 percent.

According to the Demographic and Health Surveys, 1994-1998, carried out in 11 African countries (Cote d'Ivoire, Ghana, Kenya, Madagascar, Mali, Mozambique, Senegal, Tanzania, Uganda, Zambia and Zimbabwe) in six out of 11 countries, nearly one-fifth of young women aged 15-19 first had sexual intercourse before age 15. The percentage of young women, which were found to have initiated sex before age 15, ranges from 5 percent in Zimbabwe to 32 percent in Cote d'Ivoire.

The DHS report, in the 11 sub-Saharan African countries, also held that a higher proportion of young women first had sex before age 18 than married before this age.

Thus, in many cases sexual experience precedes marriage. The proportion of young women aged 20-24 that first had sex before age 18 ranges from nearly 40 percent in Zimbabwe to about 82 percent in Cote d'Ivoire. Whereas the proportion of young women in the same age group who had married before age 18 ranges from 25 percent in Kenya to 75 percent in Mali.

Various surveys conducted in the USA during the period 1990 to 1999 found out that 50 to 54 percent of students in grades 9-12 had had sexual intercourse. (CDC, 2000; Warren, 1998). The surveys further revealed that among the significant factors associated with delayed onset of sexual activity for both boys and girls are dual-parent families, higher socioeconomic status, parental supervision, and close relationships with parents. Poverty, violence, and lack of parental supervision are among the factors associated with early onset of sexual activity (AGI, 1994; Kirby, 1997; Leigh, 1994; Rosenthal, 1999).

In another study conducted in the US, similar personal and social factors for both girls and boys that influence the early initiation of sex were found to be:

- a perception of being physically more mature than one's peers
- premature desire for and expectation of early autonomy from one's parents
- lower levels of self-restraint, for girls especially (Rosenthal, 1999)

In a study conducted in the US, balanced and realistic sexuality education programs that encourage students to postpone sex until they are older, and also promote safer sex practices for those who choose to become sexually active, have been proven effective at delaying first intercourse and increasing use of contraception among sexually active youth. These programs have not been shown to initiate early sexual activity or to increase levels of sexual activity or numbers of sexual partners among sexually active youth (Berne & Huberman, 1999; Kirby, 1997).

Sexuality education occurs in many settings. One important venue for this education is in schools. While there is some disagreement about the intended outcomes for sexuality education, most professionals agree that it has an intrinsic value in helping young people to acquire information and skills that contribute to the likelihood that they will grow into sexually healthy adults. As with most education, sexuality education provides learners with information, builds skills such as critical thinking and decision making, and provides a context for discussion, values clarification, and exchange of ideas.

The Netherlands, where sexuality education begins in preschool and is integrated into all levels and subjects of schooling, boasts the lowest teen birthrate in the world - 6.9 per 1,000 women aged 15-19 — a rate almost eight times lower than that of the U.S. Likewise, the Dutch teenage abortion rate is more than three times lower than that of the U.S., and its overall AIDS case rate is more than eight times lower. In Germany, where sexuality education is comprehensive and targeted to meet the reading and developmental needs of the students, the teenage birth rate is more than four times lower than that of the U.S., and its overall AIDS rate is 11.5 times lower. France has a nationally mandated sexuality education program that begins when students are 13. Parents are prohibited from withdrawing their teenagers from the program. France's teenage birth rate is approximately six times lower than that of the U.S., its teenage abortion rate is more than two times lower, and its overall AIDS rate is more than three times lower (Berne & Huberman, 1999; Singh & Darroch, 2000)

Parent-Adolescent Relationships/Communication

Parents are the primary and most important sexuality educators of their children. Providing children with sexuality education is an important responsibility of parenthood. According to a study conducted in the US, most young people would prefer learning about sexuality from their parents. Whether they do it well or poorly, parents influence their children's attitudes and provide their basic education about sexuality. Too often, however, parents hesitate to speak directly with their children

about sexuality. It can be uncomfortable to begin the discussion, and some parents may need help in figuring out what to say. Some mistakenly believe you can tell children too much too soon, and therefore harm them. The fact is that parents can't harm their children by giving accurate information about sexuality; Parents can't tell a child too much or too soon. Silence and evasiveness give children the message that they should not come to parents for information about sexuality. The quality of the parent-teenager relationship, and the degree of a parent's openness to and comfort with discussing sex and sex-related topics, cannot be underestimated in terms of their influence on an adolescent's sexual values and behavior (AGI, 1994; Bennett & Dickinson, 1980; Hutchinson & Cooney, 1998).

Parental Education

Many literatures suggest that the educational attainment of parents is related to adolescent sexuality (Thornton and Camburn, 1987; Wu, 1996). According to Thornton and Camburn (1987), the relationship between parental education and adolescent sexuality was explained as follows:

> "Education may reflect exposure to liberalizing ideas that increase acceptance of premarital sexuality. At the same time, however, highly educated parents have greater educational aspirations for their children, and with wide spread recognition of the difficulty of combining educational achievements with early marriage and parenthood, highly educated parents may discourage sexual activity among their children" (Thornton and Camburn, 1987:325).

It is also argued that because of their greater skills and resources, highly educated parents may be able to exercise greater control over their children's activities (Thornton and Camburn, 1987:325). It, thus, appears that parental education influences the sexual attitude and behaviour of their children.

Parental Income Level

Many researchers argue that adolescent girls from disadvantaged economic backgrounds may be more likely to practice early sexual intercourse than those from economically advantaged backgrounds. Wu (1996) in his article hypothesized and supported the idea that the risk of premarital child birth is higher for women from disadvantaged economic background because they possessed fewer or less attractive economic opportunities.

1.5 Objective of the Study

General Objective

The general objective of the study is to examine the factors that are associated with sexual initiation among high school female adolescents in Addis Ababa and to identify the major ones which need policy consideration to ensure a successful transition of female adolescents into responsible and fulfilled adulthood.

Specific objectives

1. To identify the average age at which female high school students begin sexual intercourse.
2. To identify factors that contribute to the initiation of sexual intercourse among female adolescents.
3. To examine the impact of peer group pressure on sexual initiation.
4. To single out the extent of coercive sex among high school female adolescents.
5. To asses the contribution of drug use to sexual initiation.
6. To explore whether there is a basic descrepancy between government and private high school female students with regards to sexuality and related issues.

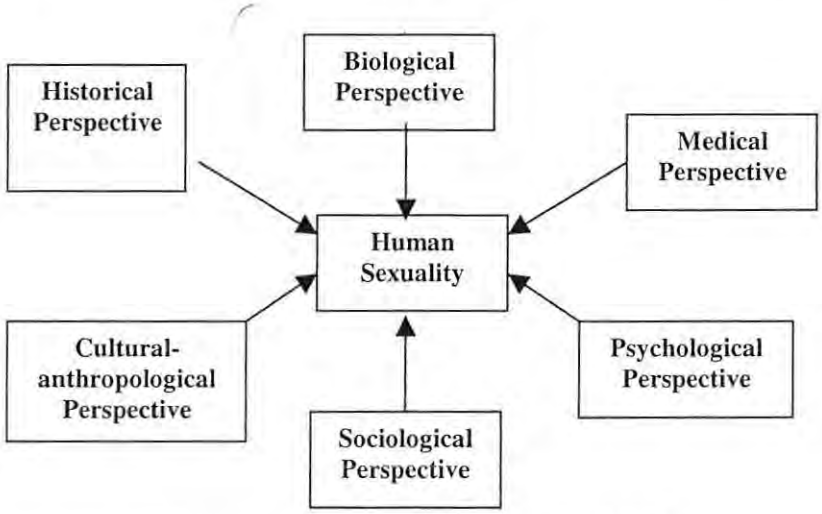
1.6 Hypothesis

1. Sexual initiation is higher among adolescents who currently live with their biological parents.
2. The insidence of sexual initiation is higher among adolescents with low income parents.
3. Adolescents who are currently taking alcohol are more likely to initiate sex.
4. The likelihood of sexual initiation is higher among adolescents who do not have prior knowledge about menarche.
5. Peer pressure exacerbates sexual initiation among adolescents.

1.7 Conceptual Framework:

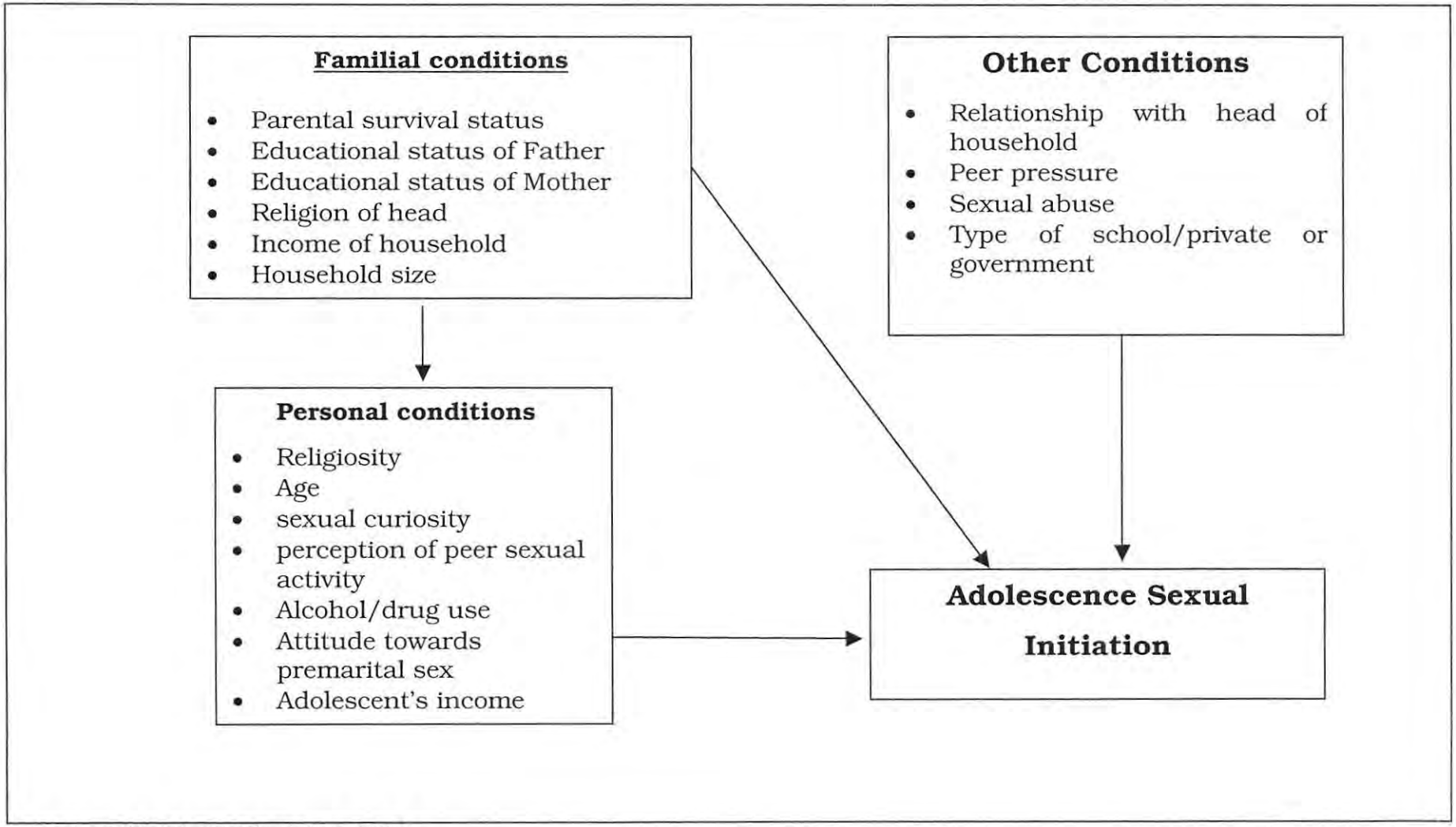
In developing a conceptual framework for the study, we have to consider the various attributes of human sexuality. Human sexuality is not a unitary concept. The major frameworks of human sexuality are the biological, medical, psychological, sociological, cultural antropological, and historical perspectives. From all of these perspectives arise theoretical frameworks that help us to organize our knowledge systematically and to see how concepts are related to one another (Turner, 1993).

Figure 1.1 The Different Perspectives of Human Sexuality



(source: Turner, Jeffrey S.,1993).

Figure 1.2 Anlytical Framework for the study of Factors Asociated with Sexual Initiation Among Female High School Students.



Developed by the Author, Nov. 2004

Chapter Two
Research Design and Methodology

2.1 Study Area

The study was based on data collected from selected high schools in Addis Ababa. According to the Bureau of Education (1996 annual report, Planning Department), there are 10 Government and 16 Private schools in Addis Ababa engaged in providing both Secondary Cycle 1 and Secondary Cycle 2 (high school education from grade 9 to grade 12)

2.2 Sampling Design and Sample Size

The sampling Design employed for this study is two stage stratified sampling. In the first stage the schools to be included in the survey were selected and in the second stage the students to be considered from each selected schools were identified.

The two strata or domains are:

1. Government High Schools, which include 10 High Schools consisting of 22,111 female students
2. Private High Schools, which include 16 High Schools consisting of 4,348 female students

The number of students to be selected from the study domains depend on the size of the two domains and their variability with regard to the study variables.

In the determination of the sample size for the study, sexual practice among high school female students was the variable taken into consideration. Various studies including the Ethiopian Demographic and Health Survey have reported the proportion of sexually experienced adolescents (P) to be very low. In a country where sexuality issue is a taboo, to be based on such a small proportion in

determining sample size will not be wise. The standard error of a proportion is given by:

$$\sigma_P = \sqrt{(P*Q)/n}$$

For any given value of n, σ_P is maximum when P = 0.5. Thus, fixing n when P = 0.5 will ensure the maximum possible sample size which will take care of the maximum possible variability (Cochran, 1999)

As mentioned earlier, adolescents in general lack sufficient information on how to protect themselves from HIV/AIDS and other STIs especially during their first sexual experience. As a result, adolescents may face the risk of contracting the deadly virus during their first sex. Therefore, in estimating the proportion of adolescents who have initiated sex (P), the error to be tolerated must be as low as possible (in this study it is taken to be 0.03). Thus, taking P to be 0.5 and fixing the level of confidence at 95 percent, the sample size was determined as follows:

$$\mathbf{n} = \frac{\{[Z_{\alpha/2}]^2 P*Q\}}{E^2} = \frac{(1.96)^2 *0.5*0.5}{(0.03)^2} = \mathbf{1067}$$

Assuming a 15 percent contingency for non response, our ultimate sample size **n** was taken to be 1230.

To distribute this sample size between the two domains, a power allocation with a compression constant of 1/2 was utilized. This is done to avoid the over representation of the first domain, which has an exteremely large size than the second domain (Cochran, 1999). It is also assumed, here, that variability is more in the second domain than the first domain.

Accordingly, 855 and 375 female students were considered from government and private schools, respectively. If instead of power allocation normal proportional allocation was applied, the sample would have been 1029 and 198 for government and private schools, respectively.

Further to take into account the possible variability due to geographical location of the schools, Addis Ababa was divided into five geographic parts (Northern, Eastern, Sothern, Western and Central), one government and one private school was randomly selected from each of the five geographic areas. Thus, ten schools were selected, five from government and five from private, and their respective sample size is distributed among the schools in each domain. Accordingly, 75 and 171 students from private and government schools, respectively were planned to be covered by the study and it was possible to attain a 95 percent coverage.

Table 2.1 Name of High Schools and their Coverage

Sampled Schools	Coverage	
	Sampled	Covered
Private High Schools		
Akaki Adventist	75	68
Ethio-Parents	75	68
Kokeb	75	67
Lucy Academy	75	65
Miskaye Hizunan	75	69
Sub Total	375	337
Government High Schools		
Bole Secondary School	171	162
Derartu Tulu Secondary School	171	162
Kefitegna 23 Secondary School	171	164
Medhanealem Secondary School	171	164
Menelik II Secondary School	171	167
Sub total	855	819
Total	1230	1156

2.3 Data Collection Instruments

A questionnaire containing various socioeconomic and demographic variobles was used to collect the required information. It had three major parts, i.e. Section I containing household/family background variables, Section II dealing with socioeconomic and demographic characteristics of respondents, and Section III dealing with reproductive and related characteristics of respondents (see Annex 2). The questionnaire was first prepared in English and latter translated into Amharic. To ensure accuracy and flexibility, the questionnaire was pre-tested and modified accordingly.

2.4 Data Collection and Management

Since the study units were female high school students, the data was collected through self-completion approach, where the questionnaire was made self explanatory as much as possible and was distributed among the selected female adolescents to be completed by themselves. The lists of the randomly selected students were given to the unit leaders of the respective schools so that an arrangement could be made to access the students. In each school the selected students were given a brief introduction about the objective of the study and they were also given instructions as to how to fill the questionnaire. In order to give students enough time and privacy in filling up the questionnaire, they were alowed to take it home and bring it back the next day. 10 trained supervisors took part in the data collection process.

2.5 Method of Analysis

The analysis part consists of descriptive ststistics (frequencies and cross tabs) and logistic regression to study the factors that are associated with sexual initiation.

In order to test the effect of each predictor variable on the dependent variable both bivariate and multivariate analysis techniques are employed. At the bivariate stage, chi-square test is employed in order to identify the important explanatory variables

which should be retained in the multivariate analysis for further investigation. At the multivariate stage, logistic regression model is used. Logistic regression is a most widely applied model when the dependent variable is dichotomous taking values 0 or 1.

Logistic regression is based on the concept of odds ratio: p/(1-p), where p is the probability that the event Y occurs, p(Y=1) and (1-p) is the probability that the event Y does not occur, p(Y=0). The logistic regression model is given by the function f(z) = $1/(1+e^{-z})$, where z is the linear combination ($z = \alpha + \beta x + \varepsilon$)

The logit model solves these problems:

$$\ln\frac{p}{(1-p)} = \alpha + \beta X + \varepsilon \qquad \frac{p}{(1-p)} = \exp(\alpha + \beta X + \varepsilon)$$

where:

- ln is the natural logarithm
- p is the probability that the event Y occurs, p(Y=1)
- p/(1-p) is the "odds ratio"
- ln[p/(1-p)] is the log odds ratio, or logit

For example, in our case p would be the probability of ever having sex, where as 1-p would be the probability of never having sex, α is the constant term, and β is the logistic coefficient which can be interpreted as the change in the log odds associated with a one unit change in the independent variable. Or exp(β) is the factor by which the odds change when the independent variable increases by one unit.

2.6 Variables:

2.6.1 Dependent variable

The dependent variable to be measured in this study is sexual practice, that is, whether the respondent has ever had sex or not.

2.6.2 Independent variables

The selection of the explanatory variables is guided by the literature reviewed. The literature suggest that various socioeconomic and demographic factors are likely to influence adolescent's sexual initiation. These include: age of adolescent, religiousity, parental education, family income, adolescent income, peer pressure, perceived knowledge of peers sexuality, knowledge of menarche before having it, current use of alcohol, current use of chat, and living arrangement.

Therefore, the independent variables which are used in this analysis are the followings:

i. Age of student: For the purpose of this study students were grouped into the following two age categorie i.e. 13-16 years, and above 16 years. This grouping is made in line with the developmental stages of adolescence, i.e. midle, and post adolescence.

ii. Household Income: The students were grouped into three categories depending on the monthly income of their respective households i.e. 'Low' if it is less than 400 Birr, 'Medium' if it is between 400 and 800 Birr, and 'High' if it is greater than 800 Birr. The main focus of this grouping is to see the change in sexual practice with the change in income

iii. Adolescent Income: This variable is grouped in to two, i.e. those who have a regular income, and those who don't have.

iv. Knowledge of menarche: This is whether or not the student knew any thing about menstruation before having it for the first time. It is grouped into two, "Yes", and "No". (Menarche is the onset of menstruation)

v. Peer Pressure: This is obtained from the question 'Is there pressure from your friends to have premarital sexual intercourse?'. The response for this variable is grouped into two categories. Those students who said that 'they were facing pressure' are grouped into one ctegory and those who said that 'there was no pressure at all' are grouped into the other category.

vi. Perception about whether or not peers have had sex: Perception of students is divided into two categories, i.e. those with the perception that at least some of their friends have had sex, and those with the perception that none of their friends have had sex.

vii. Living Arrangement: This is grouped into three groups, i.e. those who live with both their biological parents, those who live with either of the biological parents, and those who live with none of the biological parents.

viii. Current Use of Alcohol: This is grouped into those who currently use alcohol and those who do not currently use alcohol.

ix. Current Use of Chat: This is grouped into those who currently use chat and those who do not currently use chat.

x. Father's Education: This variable is grouped into three categories, i.e. those who never attended school, those with "Elementary and Junior" education, and those with "High School & Above" education.

xi. Mother's Education: This variable is grouped into three categories, i.e. those who never attended school, those with "Elementary and Junior" education, and those with "High School & Above" education.

2.7 Limitation of the study:

The fact that the research is based on a questionnaire designed to be completed by the respondents themselves engenders privacy in answeing sex related questions, which are very sensitive. But, at the same time, it denies the possibility of probing in conditions where there is reluctance, which is one of the limitations of the research.

Another limitation of the research is that comparisons between government and private school students were mostly made based on sexual attitiudes and perceptions, instead of actual sexual experience. This is because the cases on actual sexual experience were not large enough to make cross classifications.

CHAPTER THREE

Socioeconomic and Demographic Characteristics of Respondents

In this chapter information on some background characteristics of the students included in the study is presented.

3.1 Age Distribution: Students were classified by age group and the type of school they go to persue their education. The study found out that the overwhelming majority of the students were in the age group 13-16 years, which is about 63 percent. Those aged above 16 years constitute the remaining 37 percent. As can be seen from Table 3.1, the percentage of students below age 16 is higher in private schools than in governmenr schools.

Table 3.1 Distribution of Students by age group and School Type

Age of Students	Private		Government		Total	
	Count	Percent	Count	Percent	Count	Percent
13-16	234	69.4	492	60.1	726	62.8
>16	103	30.6	327	39.9	430	37.2
Total	337	100.0	819	100.0	1156	100.0

3.2 Household Amenities: Students in both private and government schools were asked whether or not their household owns certain basic properties and amenities such as TV set, radio/tape, etc. As can be seen from table 3.2 below, 92.6 percent of the students in the private school reported that their household owns refrigerator; where as it is 37.4 percent for students in government schools. Similarly, 69.7 percent of the students in the private school reported that their household owns car; the figure is only 16.1 percent for students in government schools. When it comes to Tape/radio and TV set ownership, the gap between private and

government schools becomes relatively narrow, i.e. 7.5 and 21.5 percent, respectively.

Table 3.2 Distribution of Students classified by Household Property Ownership and School Type

Type of property	Private		Government		Total	
	Number	Percent	Number	Percent	Number	Percent
Private house	309	91.7	482	58.9	791	68.4
Car	235	69.7	132	16.1	367	31.7
TV set	331	98.2	628	76.7	959	83.0
Refrigerator	312	92.6	306	37.4	618	53.5
Tape/radio	331	98.2	743	90.7	1074	92.9
Sofa	327	97.0	565	69.0	892	77.2

3.3 Parental Survival Status : Nearly 85 percent of private shool students reported that both their mother and father were alive during the interview period, where as it is 68 percent for government school students.

Table 3.3 Distribution of Students by School Type and whether or not their parents are Alive

Parental Survival Status	Private		Government		Total	
	Number	Percent	Number	Percent	Number	Percent
Both alive	285	84.6	553	67.5	838	72.5
Father only alive	8	2.4	47	5.7	55	4.8
Mother only alive	37	11	162	19.8	199	17.2
Both dead	7	2.1	57	7	64	5.5
Total	337	100	819	100	1156	100.0

3.4 Household Income: Students were also asked to report the average monthly income of their households. As can be seen from Table 3.4 below, there is a huge descripancy in income between those households who send their children to private schools and those who send their children to government schools. This can be visualised by comparing the percentage of households with a monthly income of more than 1000 birr, which is nearly 70 percent for households sending their children to private schools and 20 percent for those sending their children to government schools, respectively.

Table 3.4 Distribution of Students by household monthly income and School Type

Household Income	Private		Government		Total	
	Number	Percent	Number	Percent	Number	Percent
<200	8	2.4	175	21.4	183	15.8
201-400	7	2.1	162	19.8	169	14.6
401-600	4	1.2	85	10.4	89	7.7
601-800	8	2.4	88	10.7	96	8.3
801-1000	50	14.8	149	18.2	199	17.2
above 1000	260	77.2	160	19.5	420	36.3
Total	337	100	819	100	1156	100.0

3.5 Living Arrangement: As can be seen from Table 3.5 below, nearly 70 percent of the girls from private schools enjoy living with both their biological parents, whereas only 50 percent of the girls from government schools reside with both parents.

Table 3.5 Distribution of Students by their Living Arrangement and School Type

Currently Residing With	Private		Government		Total	
	Count	Percent	Count	Percent	Count	Percent
Both Father & Mother	230	68.2	420	51.3	650	56.2
Father Only	52	15.4	184	22.5	236	20.4
Mother Only	14	4.2	31	3.8	45	3.9
Others	41	12.2	184	22.5	225	19.5
Total	337	100	819	100	1156	100

3.6 Religious Affilation: With regard to religious affiliation of the study population, in both private and government schools, the overwhelming majority of the students are Orthodox Christians, followed by Protestant Christians. In private schools, however, Muslims constitute the second largest proportion (see Table 3.6).

Table 3.6 Distribution of Students classified by their religion and School Type

Religious Affiliation	Private		Government		Total	
	Number	Percent	Number	Percent	Number	Percent
Orthodox	229	68.0	638	77.9	867	75.0
Catholic	11	3.3	9	1.1	20	1.7
Protestant	39	11.6	95	11.6	134	11.6
Muslim	49	14.5	66	8.1	115	9.9
Others	9	2.7	11	1.3	20	1.7
Total	337	100.0	819	100	1156	100.0

Table 3.7 Distribution of Students by selected background characteristics and School Type

Background Characteristics	Private		Government		Total	
	Number	Percent	Number	Percent	Number	Percent
Educational Status of Father						
Illiterate	3	0.9	63	7.7	66	5.7
Read and Write	4	1.2	77	9.4	81	7.0
grade 1-6	25	7.4	167	20.4	192	16.6
grade 7-8	25	7.4	80	9.8	105	9.1
grade 9-12	61	18.1	173	21.1	234	20.2
above 12	219	65.0	259	31.6	478	41.3
Educational Status of Mother						
Illiterate	11	3.3	150	18.3	161	13.9
Read and Write	3	0.9	73	8.9	76	6.6
grade 1-6	51	15.1	225	27.5	276	23.9
grade 7-8	28	8.3	78	9.5	106	9.2
grade 9-12	56	16.6	157	19.2	213	18.4
above 12	188	55.8	136	16.6	324	28.0
Student's Religiosity						
No participation	34	10.1	70	8.5	104	9.0
A few days in a year	60	17.8	96	11.7	156	13.5
Once or twice a month	86	25.5	121	14.8	207	17.9
Once or more per week	157	46.6	532	65.0	689	59.6
Household size						
<5	44	13.1	187	22.8	231	20.0
6-7	203	60.2	518	63.2	721	62.4
>8	90	26.7	114	13.9	204	17.6
Total	337	100.0	819	99.9	1156	100.0

The data on educational attainment of parents indicates that about 65 of the fathers had attained education beyond high school in the case of private school students, where as in the case of government school students, it is only about 32 percent. The same is true regarding the educational attainment of mothers, except that the proportion of mothers with education beyond high school for private school students is more than three fold that of government school students, i.e. 56 and 17 percent, respectively. The percentage of fathers who were illiterate was found to be eight fold for government school students when compared with that of private school students, i.e. 0.9 and 7.7 percent, respectively. For mothers it is 3.3 percent against 18.3 percent, which is almost six fold.

Chapter Four

Sexual practice, Contraceptive use and Attitude towards Sex related Issues

4.1 Sexual Practice

The study found out that nearly 6 percent of the sampled students had initiated sex. A relatively higher proportion of government school students reported to have initiated sex when compared with that of their private school counterparts, i.e. 7 and 3 percent, respectively.

The proportion of female students who reported to have initiated sex seem to be relatively smaller when compared with other similar studies conducted in Addis Ababa high schools some years back. For example, the finding of the survey can be contrasted with the Adolescent Reproductive Health Survey conducted in government high schools in Addis Ababa by Save the Children USA 5 years ago, in which 13 percent of the girls aknowledged to have initiated sex. This change in sexual initiation encounter may be attributed to many factors. The effort which has been made during the last five years to adress the issue of HIV/AIDS could be one possible factor. The Ethiopian Multi-Sectoral HIV/AIDS Project, can be cited as one such undertaking, whose fundamental objective was to reduce the spread of the HIV/AIDS epidemic, to alleviate its impact, and increase access to treatment, care, and support for those infected and affected by HIV/AIDS. The overall project is premised on the development and expansion of local responses to the epidemic.

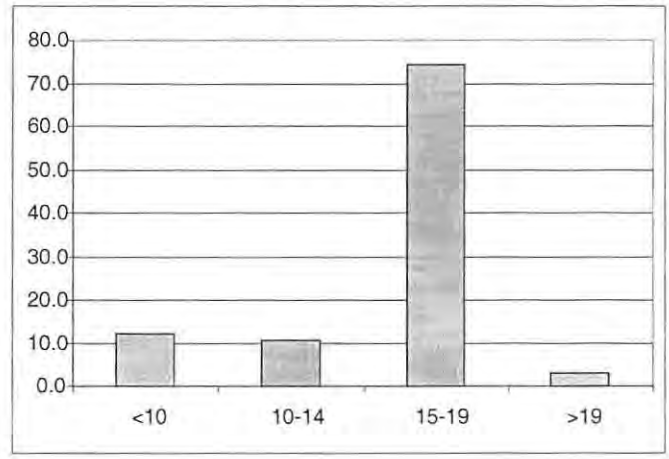
A key informant interview conducted during the survey period, which included girl's club and anti-HIV/AIDS club leaders from four high schools (two private and two government) also depicts that a very promising activity was carried out in the schools to create awareness among adolescent girls and also to ensure a condusive school environment. If we take the girl's club for example, it was found to be one of the very active clubs in the schools. In government schools, the club is composed of two girls from each class serving as a bridge between the club and the rest of the girls. This creates an easy access for a two way communication between the club

and all the female adolescents. As a result of such a set up, any thing which endangers the adolescents (like sexual harrasment) can easily be detected and timely addresses. The club leaders in the two government schools especially noted that a great deal of work had been done in the previous two years when compared with what is being done currently. The club leadrers said that the satelight education program is so tight and is not convenient to arrange meetings and other programs during school hour as frequently as they used to before.

4.1.1 Mean age at first sex

The study revealed that the mean age at first sexual intercourse was 15 years. It was also found out that among the female students who had initiated sex, about 12 percent were of age below 10 years, 11 percent were in the age group 10-14, 74 percent in the age group 15-19, and the remaining 3 percent are of ages 19 years and over.

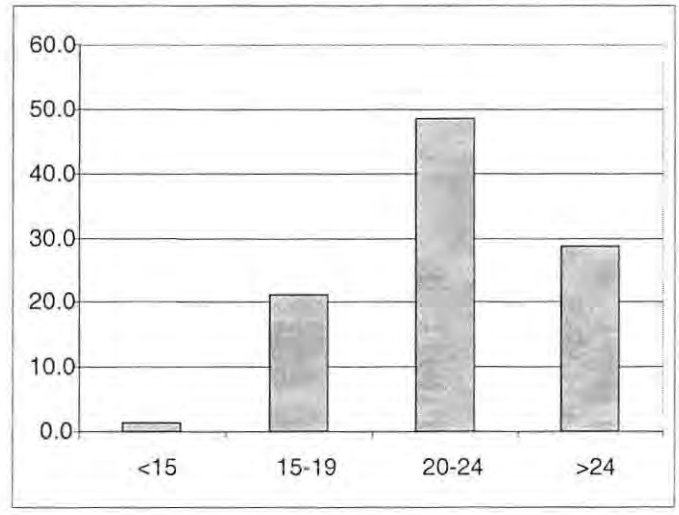
Figure 4.1 Age at which sex started



4.1.2 Mean age of first sexual partners

The mean age of first sexual partners was found to be 23 years and as can be seen from figure 4.2, nearly 75 percent of first sexual partners are of ages 20 years and over. The mean age of sexual partners was also on the average 8 years more than the mean age at which adolescent girls initiated sex.

Figure 4.2 Age of first sexual partner



4.1.3 Relationship with Sexual Partner

When asked about their relationship with the first sexual partner, 7.6 percent responded that it was a friend in the school, 16.7 percent a friend outside the school, 40.9 percent a fiance, 7.6 percent a spouse, 9.1 percent a relative, and 18.2 percent others. The study has also found out that the mean number of sexual partners for those who have had sex during the last twelve months was nearly 2, which is also in line with the findings of Gebre (1990).

4.1.4 Reason for having Sex

Girls who acknowledged to have had sex were also asked to give reason for having sex. Accordingly, 53 percent reported that they willingly had sex with 10.6 percent giving the reason 'I just wanted to have sex', and 42.4 percent giving the reason 'I wanted to express my love to my partner'. 47 percent of the girls, however, reported that it was against their will that they had sex. 18.2 percent said that they were forced into having sex, 19.7 percent said that they were tricked into having sex, and 9.1 percent said that they were threatened into having sex.

4.2 Use of Contraceptive Methods

Girls who reported to have had sex were asked whether or not they had used any kind of contraceptive methods during their first and last sexual intercourse. Accordingly, 39 percent of the girls were found to have used a contraceptive method during their first sexual intercourse, while 44 percent reported that they had done so during their last intercourse. Out of the students who used contraceptive methods during their first sexual intercourse, 42.3 percent, 30.8 percent, and 26.9 percent had used condoms, the rhythm method, and pills, respectively. On the other hand out of the students who used contraceptive methods during their last sexual intercourse, 55.2 percent, 34.5 percent, and 10.3 percent had used condoms, the rhythm method, and pills, respectively.

4.3 Attitude towards Sex related Issues

4.3.1 Perception about Peer's Sexual Encounter

The perception that "most people" practice sexual activity may influence teens' decision to experience it. In the study it was found out that 20 percent of private school students perceived that at least some of thier friends have had sex. In government schools, also, 31 percent of the students believed that at least some of their friends have encountered sexual experience. The chi-square value shows that there is a significant variation in the perception about peer's sexual encounter between private and government school students with a p-value of less than 0.001.

Table 4.1 Perception about peer's sexual encounter classified by school type

Perception about peer's sexual encounter	School Type				Chi-Square
	Private		Government		
They have had Sex	67	19.9	251	30.6	13.9
They have not had Sex	270	80.1	568	69.4	
Total	337	100.0	819	100.0	

4.3.2 Peer Pressure

It was found out in the study that nearly 12 percent of private school students had experienced pressure from their peers to be involved in premarital sexual activity. In government schools, the pressure that students face to be involved in premarital sexual activity is even relatively higher, i.e. 19 percent. The chi-square with a

p-value of less than 0.01 indicates that the extent of peer pressure is significantly higher among government school students than private school students.

Table 4.2 Peer pressure classified by school type

Peer Pressure	School Type				Chi-Square
	Private		Government		
There is pressure	40	11.9	153	18.7	8.0
There is no pressure	297	88.1	666	81.3	
Total	337	100.0	819	100.0	

4.3.3 Attitude about involving in sexual activity before age 20

Students were asked whether or not a girl should have sex before she reaches the age of 20. Accordingly, 84 percent of private school students and 79 percent of government school students reported that a girl should not have sex before age 20. Such an attitude is very valuable in that the ability to understand abstract concepts is achieved by many adolescents by this age, and many of them understand what the results and consequences of their actions and behaviors may be, and sexuality may become more associated with commitment and planning for the future (Haffner, 1995). The chi-square with a p-value of 0.049 depicts that there is a difference in such an attitude between government and private school students

Table 4.3 Attitude about involving in sexual activity before age 20 classified by school type

A girl should not have sex before 20	School Type				Chi-Square
	Private		Government		
Yes	284	84.3	649	79.2	3.9
No	53	15.7	170	20.8	
Total	337	100.0	819	100.0	

4.3.4 Every body does it

About a third of private school students reported that having sex at teen age is what every body else is doing, while the proportion of government school students who gave such an answer is 25 percent. The difference in such an attitude between government and private school students is significant with a p-value of 0.009.

Table 4.4 Perception that every body does sex classified by school type

Having sex at teen age is doing what every body else is doing	School Type				Chi-Square
	Private		Government		
Yes	110	32.6	204	24.9	7.2
No	227	67.4	615	75.1	
Total	337	100.0	819	100.0	

4.3.5 Sexual curiousity

Many adolescents are frequently motivated to have sex for the first time to find out what having sex is all about. In the study 45 and 34 percent of private and government school students believed that teenagers initiate sex as a result of sexual curiosity. And the difference in sexual curiosity between private and government schools is quite significant with a p-value of 0.001.

Table 4.5 Attitude towards sexual curiosity classified by school type

A teenage has sex to find out what having sex is all about	School Type				Chi-Square
	Private		Government		
Yes	150	44.5	276	33.7	12
No	187	55.5	543	66.3	
Total	337	100.0	819	100.0	

4.4 Knowledge of Menarche and source of knowledge

Students were asked whether or not they knew any thing about menstruation before they first had it, and about 90 percent of them reported that they had this knowledge. Private school students were found to have a slightly better knowledge than government school students, i.e. 94 percent against 89 percent, and such a difference is significant with a p-value of 0.017. With regard to the source of knowledge, the majority of private school students have heard about it from their mothers and fathers (47 percent), whereas the majority of government school students have heared about it from their teachers (46 percent). This indicates that the fact that parents are the primary and most important sexuality educators of their children is better observed in the case of private school students than in the case of government school students, The difference in such regard between government and private school students is depicted by the chi-square with a p-value of less than 0.01.

Table 4.6 Knowledge about menarche and source of knowledge classified by school type

Knowledge of Menarche and source of knowledge	School Type				Chi-Square
	Private		Government		
Yes	315	93.5	727	88.8	5.9
No	22	6.5	92	11.2	
Total	337	100	819	100	
Mother and Father	159	47.2	264	32.2	25.5
Siblings	28	8.3	95	11.6	
Relatives and Friends	36	10.7	83	10.1	
Teachers	114	33.8	377	46	
Total	337	100	819	100	

Chapter Five

Factors Associated with Sexual Initiation

An adolescent's gender, age, socioeconomic status, family atmosphere, religious commitment, and individual life experience are all factors that can exert an influence on whether, when, and how she or he will be sexually active (AGI, 1994; Tobias & Ricer, 1998; Yarber & Greer, 1986).

In this chapter, an attempt is made to identify some of the variables that influence the onset of sexual practice among adolescent girls by employing both bivariate and multivariate analysis.

5.1 Bivariate Analysis

5.1.1 Age of adolescents

The cross classification of adolescent age with sexual initiation status revealed that the two variables are significantly associated with one another with a p-value of less than 0.001. According to the data, out of those adolescents who acknowledged to have initiated sex, the overwhelming majority, that is, 71.2 percent were above 16 years, where as the remaining 28.8 percent belonged to the age group 13-16 years.

Table 5.1 Adolescent's age group by their sexual encounter status

Adolescent's Age Group	Ever had sex		Never had sex		Chi-square
	Number	Percent	Number	Percent	
13-16	19	28.8	707	64.9	34.7
>16	47	71.2	383	35.1	
Total	66	100.0	1090	100.0	

5.1.2 Perceived knowledge about peers' sexual encounter

Adolescent students were asked whether or not their friends have had sex. The answer they give to this question was grouped into two, that is, those who said that at least some of their friends have had sex and those who said that none of their friends have had sex. Among all the variables considered at the bivariate stage, perceived knowledge of adolescents about whether or not their peers have initiated sex was found to be significantly associated with the sexual initiation status of the adolescents themselves with a p-value far less than 0.001.

Table 5.2 Perceived knowledge about peers' sexual encounter by ever had sex

Perception that peers have had sex	Ever had sex		Never had sex		Chi-square
	Number	Percent	Number	Percent	
Yes	42	63.6	276	25.3	45.8
No	24	36.4	814	74.7	
Total	66	100	1090	100	

5.1.3 Peer Pressure

The normal process of an adolescent's development involves becoming less dependent on the family and paying more attention to the influence of peers. This is healthy, and in many ways can lead to positive behaviors — especially when the peer influences are positive. The struggle for parents and other caring adults is to give adolescents the skills and the guidance to make healthy choices. This can be challenging, given that young people are exploring their growing autonomy, their developing physical selves, and their relationships with others.

At the bivariate level, peer pressure was found to have a significant association with adolescent's sexual initiation with a p-value of less than 0.001. As can be seen from table 5.3, among those students who have had sex, 38 percent reported to have faced peer pressure to be involved in premarital sexual relationship.

Table 5.3 Peer pressure by sexual encounter status

Peer Pressure	Ever had sex		Never had sex		Chi-square
	Number	Percent	Number	Percent	
Yes	25	37.9	168	15.4	22.6
No	41	62.1	922	84.6	
Total	66	100	1090	100	

5.1.4 Living Arrangement

There are several developmental stages of adolescence through which they pass in order to integrate the elements of their sexual identities and become sexually healthy and sexually responsible adults. Desire for parental guidance is one of the elements in such an integration (Haffner, 1995).

The bivariate result shows that there is a very significant association between living arrangement and whether or not an adolescent has initiated sex, with a p-value far less than 0.001.

The data revealed that those adolescent girls who have had sex are distributed in such a way that 38 percent are living with both their biological parents, 23 percent are living with either of their biological parents, and the remaining 39 percent are living with none of their biological parents.

Table 5.4 Living arrangement by sexual encounter status

Living Arrangement	Ever had sex		Never had sex		Chi-square
	Number	Percent	Number	Percent	
Both Parents	25	37.9	627	57.5	19
Single Parent	15	22.7	266	24.4	
None of the parents	26	39.4	197	18.1	
Total	66	100	1090	100	

5.1.5 Current Use of Alcohol and Chat

As shown in the literature review, the use of alcohol and drugs is strongly linked with early sexual activity among adolescents. The bivariate result indicates that alcohol and chat use are significantly associated with sexual initiation. Table 5.5 displays that among those who have initiated sex, 14 and 8 percent are currently using alcohol and chat, respectively.

Table 5.5 Current Use of Alcohol and Chat by sexual encounter status

Current Alcohol and Chat Use	Ever had sex		Never had sex		Chi-square
	Number	Percent	Number	Percent	
Current Alcohol Use					16.4
Using	9	13.6	38	3.5	
Not Using	57	86.4	1052	96.5	
Total	66	100	1090	100	
Current Chat Use					11.2
Using	5	7.6	18	1.7	
Not Using	61	92.4	1072	98.3	
Total	66	100	1090	100	

5.1.6 Parental Education

Providing children with concrete information, education, and guidance regarding sexuality is an important responsibility of parenthood. Many literatures suggest that there is an association between parental education and sexual initiation among adolescents. For example, according to Thornton and Camburn, highly educated parents have greater educational aspirations for their children. And with wide spread recognition of the difficulty of combining educational achievements with early marriage and parenthood, highly educated parents may discourage sexual activity among their children" (Thornton and Camburn, 1987:325).

The data shows that more than 50 percent of the fathers of those adolescent girls who have initiated sex have secondary and above education, whereas in the case of mothers it is 33 percent. The chi-square value shows that the association between parental education and adolescent's sexual initiation is significant at 99 and 95 percent level, for mothers and fathers, respectively.

Table 5.6 Parental Education by Adolescent sexual encounter status

Parental Education	Ever had sex		Never had sex		Chi-square
	Number	Percent	Number	Percent	
Father's Education					8.5
Never Attended	16	24.2	131	12.0	
Elementary & Junior	16	24.2	281	25.8	
High School & Above	34	51.5	678	62.2	
Mother's Education					9.7
Never Attended	23	34.8	214	19.6	
Elementary & Junior	21	31.8	361	33.1	
High School & Above	22	33.3	515	47.2	
Total	66	100	1090	100	

Economic

5.1.7 Economic Background

It is argued by many researchers that adolescent girls from disadvantaged economic backgrounds may be more likely to practice early sexual intercourse than those from economically advantaged backgrounds. According to an article by Wu (1996) reviewing the effect of economic deprivation on the risk of premarital sexual initiation, he hypothesized and supported the idea that the risk of premarital child birth is higher for women from disadvantaged economic background because they possessed fewer or less attractive economic opportunities.

In this study adolescent students were asked to report the monthly estimate of their parental income, assuming that they will roughly estimate it, given that they are high school students and that the income is put in categories. They were also asked if they have a regular income of their own. In order to see whether or not there is an association between parental income level and adolescent sexual initiation, the students were grouped into three categories depending on the monthly income of their respective households i.e. 'Low' if monthly income is less than 400 Birr, 'Medium' if it is between 400 and 800 Birr, and 'High' if it is greater than 800 Birr.

According to the data, out of those adolescents who acknowledged to have initiated sex, 47 percent belonged to the low income category, where as 33 and 20 percent belonged to the high and medium income category, respectively. The cross classification of hosehold income with adolescent sexual initiation status revealed that the two variables are significantly associated with a p-value of 0.002.

Table 5.7 Parental Income by Adolescent sexual encounter status

Monthly Income Level	Ever had sex		Never had sex		Chi-square
	Number	Percent	Number	Percent	
Low	31	47.0	321	29.4	12.2
Medium	13	19.7	172	15.8	
High	22	33.3	597	54.8	
Total	66	100	1090	100	

On the other hand the cross classification of adolescents sexual initiation status with whether or not they have a regular income of their own also depicts that they are associated with a p-value of 0.003.

Table 5.8 Adolescent's Income by sexual encounter status

Adolescent has a regular income	Ever had sex		Never had sex		Chi-square
	Number	Percent	Number	Percent	
Yes	7	10.6	37	3.4	8.84
No	59	89.4	1053	96.6	
Total	66	100	1090	100	

5.1.8 Knowledge about menarche.

It was found in the study that about 90 percent of the students had knowledge about menarche prior to having it. Further, cross classifying knowledge about menarche prior to having it with whether or not the student has ever had sex indicated that there is significant association between them with a p-value <0.01. As can be seen from table 5.10, among those students who have initiated sex 77 percent said that they had knowledge about menarche prior to having it themselves.

Table 5.9 Knowledge about menarche by Sexual Encounter Status

Knowledge of Menarche	Ever had sex		Never had sex		Chi-square
	Number	Percent	Number	Percent	
There is Knowledge	51	77.3	991	90.9	13
There is no Knowledge	15	22.7	99	9.1	
Total	66	100	1090	100	

5.2 Multivariate Analysis

In the preceeding section, attempt was made to find out whether or not there is an association or a relationship between sexual initiation and various sociodemographic characteristics and family background variables by employing a chi-square test. By doing so, we have been able to identify the explanatory variables that are significantly associated with our response variable, that is, sexual initiation among adolescent girls.

In the multivariate analysis, thus, a multiple regression model containing all the explanatory variables is fit to estimate the net effect of each explanatory variable by controlling the effect of all others. As has been mentioned earlier the binary logistic regression model is used in this study.

At the multivariate stage eleven explanatory variables were included in the model fitting. Even though at the bivariate stage some of the variables were found to have no significant association with the response variable, they were included here to see whether or not they continue to have no effect on the response variable. Similarly those variables, which were earlier found to have significant association with the response variable, might also turn out to have no significant effect on the response variable at the multivariate stage.

The explanatory variables which were included are: perception that peers have had sex (peer sexual encounter), age of adolescent, peer pressure, living arrangement, knowledge of menarche before having it, current use of alcohol, current use of chat, father's education, mother's education, household income, adolescent income, type of school.

Multicollinearity: The first thing to be done in fitting multiple regression models is to assess the existence of multicollinearity among the explanatory variables, that is,

whether or not the explanatory variables are themselves related. In the ordinary least square regression, the Variance Inflation Factor (VIF) is applied to test the existence of multicollinearity in which a high VIF implies that the beta coefficients are unreliable and subject to misinterpretation. Unlike the ordinary least square regression, logistic regression does not assume linearity of relationship among explanatory variables and hence the use of VIF as an indicator of multicollinearity is not evident here. In our case, however, the VIF test is employed assuming that there is linear relationship among the explanatory variables. As presented in annex 2, the VIF values in the multicollinearity test of the model are less than 5, and hence there is no indication of multicollinearity in the model.

Selection of predictor variables: The SPSS logistic regression procedure has several methods available for model selection. One can enter variables at will, one can also use forward stepwise selection or backward stepwise elimination for automated model building.

In forward stepwise selection, at each step, the variable with the smallest significance level for the score statistics (provided that it is less than the chosen cutoff value) is intered into the model. All variables in the foeward stepwise block that have been entered are then examined to see if they meet removal criteria. If a variable is selected for removal and it results in a model that has already been considered, variable selection stops (SPSS for Windows, 1999).

In backward stepwise elimination, on the other hand, it starts with all of the variables. Then at each step variables are evaluated for entry and removal. The score statistic is always used for determining whether variables shold be added to the model (SPSS for Windows, 1999).

In fitting an appropriate model in our case, both forward stepwise selection and backward stepwise elimination have been employed and since both resulted in the

inclusion of similar variables in the models, only the latter is is considered for the sake of describing the results. The likelihood ratio test was also used in the selection process.

Goodness of fit: With respect to the goodness of fit of the model, there are various ways to assess the extent to which the model fits the data. One way to assess how the model fits the data is by using the classification table, which tells us the proportion of cases that are managed to be correctly classified by the model. In our case the model was found to correctly predict nearly 70 percent of the cases.

The Hosmer and Lemishew goodness-of-fit test statistic is also another method used to assess the acceptability of a model in fitting data at an acceptable level. In our case the value of the statistic was found to be 0.125, which is greater than 0.05 as we want it to be for well-fitting models. This does not mean that the model necessarily explains much of the variance in the response variable, only that however much or little it does explain is significant (Hosmer, David and Stanley Lemeshow, 1989).

Table 5.10 Logistic Regression estimate of Factors Associated with Adolescent's Sexual Initiation

Independent Variables	B	S.E	Odds Ratio	95 % C.I for Odds Ratio	
				Lower	Upper
Living Arrangement					
(Living with both parents)					
Living with single parent	8.660	0.360	1.047	0.517	2.121
Living with none of the parents	-0.701*	0.317	0.496	0.267	0.923
Adolescent's Age Group					
(Above 16)					
13-16	1.142**	0.294	3.132	1.761	5.571
Knowledge of Menarche					
(Had no knowledge about menarche)					
Had knowledge about menarche	1.019*	0.337	2.769	1.430	5.361
Current use of alcohol					
(Currently using alcohol)					
Currently not using alcohol	0.816	0.448	2.262	0.940	5.411
Household Income					
(Low Income)					
Medium Income	8.660	0.368	1.262	0.613	2.597
High Income	8.660	0.319	2.430	1.299	4.543
Perception of Peers' Sexual Encounter					
(Perceived that peers have had sex)					
Perceived that peers have not had sex	8.660	0.287	3.308	1.886	5.803
Adolescent's Income					
(Has a regular income)					
Does not have a regular income	1.191*	0.494	3.291	1.251	8.660

* Significant at 95 percent
** Significant at 99 percent

5.2.1 Living Arrangement and sexual initiation

Living Arrangement of female adolescents is divided into three categories, namely, living with both biological parents, living with a single biological parent, and living with none of the biological parents. The first category is chosen to be the reference category.

The logistic regression analysis indicated that the value of the odds ratio for adolescents living with single parents is 1.047, which is greater by about 4.7 percent when compared with the reference category and the difference is insignificant. On the other hand the odds ratio for the last category, i.e. living arrangement with none of the parents was found to be 0.496, which is significant with a p-value of 0.03. This indicates that the chance of initiating sex for adolescent female students currently living with none of their biological parents is half that of those living with both their biological parents.

The possible explanation for this could be that adolescent girls who are not living with their parents may be more rational in considering the likely outcomes of early sexual initiation such as pregnancy, HIV/AIDS infection, etc. as deterrence to life. Their exposure to various sex and related issues may also be better than those who are living with their parents, where there is an intense parental rule and supervision with regard to such issues.

5.2.2 Adolescent age and sexual initiation

In line with the conventional stages in adolescent developmental stages female adolescents were divided into two categories, i.e. 13-16 years (representing middle adolescence), and above 16 years (representing late adolescence). Taking the above 16 years age category as the reference group, the odds ratio was found to be 3.132.

The coefficient is highly significant with a p-value of < 0.01. This shows that female students who are in middle adolescence are three times more likely to initiate sex than the reference category, above 16 years (late adolescence). It has been stated earlier that sexual experimentation is common, and many adolescents have first intercourse during this stage of life (Haffner, 1995).

5.2.3 Knowledge of menarche and sexual initiation

Whether or not adolescent female students had knowledge about menarche before having it, is one of the independent variables considered in the study. It is divided into two categories, i.e. those who had no knowledge and those who had knowledge about menarche, and the first group was taken as the reference category. The odds ratio for this variable is found to be 2.769 and the coefficient is highly significant with a p-value of < 0.01. This shows that sexual initiation is about 2.8 times higher among those adolescents who reported to have knowledge about menarche as compared to those who had no knowledge.

5.2.4 Household income and sexual initiation

To asses the impact of household income on the sexual experience of adolescents, households were divided into three groups depending on their estimated monthly income, namely, those earning less than 400 Birr (Low income households), those earning between 400 and 800 Birr (Medium income households), and those earning above 800 Birr (High income households). Taking those households earning less than 400 Birr as a reference category, the odds ratios for medium and high income households were found to be 1.262 and 2.430, respectively. Accordingly, adolescent students from the high income group are 2.43 times more likely to initiate sex as compared to the reference category. Even though sexual initiation is also higher by about 26 percent among students residing in medium income households, the difference is not significant.

One possible explanation for this could be the better nutrition status that they enjoy which may fasten their physiological development process.

5.2.5 Perception of Peers' Sexual Encounter

It was hypothesized that peer pressure and the perception that peers have had sex exacerbates sexual initiation among adolescent students. Even though the variable peer pressure was not included in the final model, the perception variable indicates that those students with the perception that their friends have not had sex were almost three times more likely to initiate sex when compared with those having the perception that their friends have had sex.

5.2.6 Adolescent's income and sexual initiation

Whether adolescent students have a regular income or not is also one important variable in the study. In order to assess the effect of this variable on sexual initiation, adolescent students having a regular income were taken as a reference group and accordingly the odds ratio was found to be 3.291, which means that adolescent students who do not have an income of their own are almost more than three fold as likely to initiate sex as those who have a regular income.

Chapter Six

Summary, Conclusion and Recommendation

6.1 Summary and Conclusion

Human sexuality is a complex phenomenon having many meanings and purposes. It is a general term referring to various sexually related aspects of human life, including physical and psychological development, and behaviors, attitudes, and social customs associated with the individual's sense of gender, relationships, sexual activity, mate selection, and reproduction. That is why most scholars regard human sexuality as a complex biopsychosocial behaviour (Byer, 1999).

Sexual expression is an essential component of healthy human development for individuals of all ages (Tobias & Ricer, 1998).

Adolescent sexuality is now a days being given due attention all over the world. Various studies show that adolescents in general are at high risk of contracting HIV and other STIs because they often have multiple, short-term sexual relationships, do not consistently use condoms, and lack sufficient information on how to protect themselves from HIV/AIDS (Population Reference Bureau, 2004).

The purpose of this study is to identify the factors that are associated with sexual initiation among high school female adolescents in Addis Ababa.

The study revealed that 6 percent of the sampled students had initiated sex. A relatively higher proportion of government school students reported to have initiated sex when compared with that of their private school counterparts, i.e. 7 and 3 percent, respectively.

The study found out that the median age at first sexual intercourse was 15 years. Among the students who had initiated sex, about 12 percent reported that they had their first sex when they were of ages below 10 years, 11 percent between ages 10 and 14, 74 percent between ages 15 and 19, and the remaining 3 percent when they were of ages 19 years and over.

With regard to the age of first sexual partner, the mean age of first sexual partner was found to be 23 years, which shows that female adolescent students had their first sexual experience with partners that are on the average 8 years older. The age distribution of first sexual partners shows that nearly 75 percent of first sexual partners were of ages 20 years and over.

Among the students who have initiated sex, a sizable proportion, about 9 percent, acknowledged that their partner with whom they first had sex was a 'relative'.

One important finding of the study is that among adolescent students who acknowledged to have had sex, 53 percent reported that they willingly had sex with 10.6 percent giving the reason 'I just wanted to have sex', and 42.4 percent giving the reason 'I wanted to express my love to my partner'. Whereas 47 percent of the girls reported that it was against their will that they had sex. 18.2 percent said that they were forced into having sex, 19.7 percent said that they were tricked into having sex, and 9.1 percent said that they were threatened into having sex.

The study also revealed that among adolescent students who acknowledged to have had sex, 39 and 44 percent reported that they had used contraceptive methods during their first and last sexual intercourse, respectively. In both first and last sexual intercourses, condom was the contraceptive mostly used, 42 and 55 percent, respectively. This indicates that a large proportion of adolescent students did not use any contraceptive method at all. Even among those who reported to have used contraceptive methods, quite a large proportion did not use condom. This implies

that the exposure for STIs and HIV/AIDS is very serious among adolescent students.

The study also found out that 17 percent of the students had faced pressure from their peers to be involved in premarital sexual activity, the figure being 19 and 12 percent for government and private schools, respectively. With regard to perceived knowledge of peers sexual encounter, nearly 26 percent of the students perceived that their friends had initiated sex. This perception was higher in the case of government school students than private school students, 31 against 20 percent.

Nearly 37 percent of the students had the perception that adolescents are motivated to have sex for the first time to find out what having sex is all about. This perception is higher for private school students as compared with government school students, 45 aginst 34 percent.

One other important finding of the study is that about 10 percent of the students experienced their first menstrual encounter with out having any prior knowledge and information about it. With regard to the source of knowledge, the largest proportion of private school students (47 percent) got this knowledge from their parents, whereas teachers were found to be the source of knowledge for the majority of government school students (46 percent).

The most important factors associated with sexual initiation, that emerged from the multivariate analysis were adolescent's age, living arrangement, household income, adolescent's income,

Age of adolescent was one of the most important predictor of sexual initiation. The logistic regression result showed that female students who are in middle adolescence (13-16 years) were three times more likely to initiate sex than female adolescents in late adolescence (above 16 years). This is in line with the finding that

sexual experimentation is common, and many adolescents have first intercourse during this stage of life (Haffner, 1995).

With regard to living arrangement, the chance of initiating sex for adolescent students who were living with their biological parents was found to be almost double that of those not living with their biological parents. The intense parental rule and supervision with regard to sex and related issues might be one possible reason for the higher sexual initiation incidence among adolescent students residing with their biological parents, even though this needs a further investigation.

6.2 Recommendation

In view of the findings presented and discussed it is recommended that:

1. Eventhough the study units were high school students in Addis Ababa where a relatively better expossure regarding information on HIV/AIDS and its consequences is expected, nearly 60 and 56 percent of adolescent students did not use any contraceptive method during their first and last intercourse, respectively. Even among those who reported to have used contraceptive methods, the proportion of students who used condom during first and last intercourse was 42 and 55 percent respectively. Apart from this the average number of sexual partners during the last twelve months was also found to be neary two. This shows that quite a significant proportion of students were experiencing unsafe sex which calls for a continuous and strong IEC and intervention programs by all concerned bodies.
2. In the study 47 percent of the girls reported that it was against their will that they had sex for the first time (18.2 percent said that they were forced into having sex, 19.7 percent said that they were tricked into having sex, and 9.1 percent said that they were threatened into having sex). This

demands for the creation of a conducive and safe environment for the adolescents, which may contribute to the delaying of sexual initiation until they have the physical, cognitive, and emotional maturity necessary for intimate sexual relationships.

3. Considering the fact that nearly 10 percent of sexually active students had their first sex with a 'relative', proper precaution should be taken by parents and guardians to avoid such an incidence.
4. The effort, which is being made in Addis Ababa high schools to create awareness and promote safety among adolescent students, should be encouraged and obstacles which hampers this effort should be timely addressed

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Annex 1

Addis Ababa University

Institute of Development Research

Demographic Training and Research Center

Survey on Factors Associated with Sexual Initiation among High School Female Adolescents in Addis Ababa A Comparative Study of Government and Private High Schools A

Survey Questionnaire

I. Identification

Name of School_____

For office use only

Code of School | | |

Questionnaire ID | | | |

II. Interview Status

1. Completed
2. Partially Completed
3. Postponed
4. Refused
5. Others, Specify _____

Supervisor's Name_____ Signature _____ Date _____

Section I: Household/Family Background

Q101 How many Usual Members are there in the household/ what is the size of your family?

Male ------- Female------ Total -------

Q102 Are any or both of your parents alive or dead?

1. Both alive
2. Mother only alive
4. Father only alive
5. Both dead

Q103 With whom are you currently living?

1. Both biological parents
2. Father and stepmother
3. Mother and stepfather
4. Mother alone
5. Father alone
6. Relatives/Friends
7. Non-relatives

Q104 Does the household own the following items?

Radio/Tape	1. Yes	2. No
TV	1. Ycs	2. No
Fridge	1. Yes	2. No
Car	1. Yes	2. No

Q105 What is the educational Status of your father?

1. Illiterate
2 Literate but not formal
3. Primary (1-6)
4. Junior (7-8)
5. High school (9-12)
6. Above 12

Q106 What is the educational Status of your mother?

1. Illiterate
2 Literate but not formal
3. Primary (1-6)
4. Junior (7-8)
5. High school (9-12)
6. Above 12

Q107 What is the estimated monthly income of your parents? ----------

Q108 What is the religion of your parents?

1. Orthodox
2. Catholic
3. Protestant
4. Muslim
5. Others, Specify ----------

Section II: Socioeconomic Characteristics of Respondents

Q201 How old were you at your last birthday? ---------

Q202 Which grade are you currently attending?

1. 9th grade
2. 10th grade
3. 11th grade
4. 12th grade

Q203 What is your marital status?

1. Single
2. Married
3. Divorced
4. Widowed

Q204 What is your current religion?

1. Orthodox
2. Catholic
3. Protestant
4. Muslim
5. Others, Specify ----------

Q205 How frequently did you attend religious services in the past?

1. Not at all
2. Few times a year
3. One to two times a month
4. Once per week or more

Q206 Do you have a regular income? 1. Yes 2. No

Q207 If yes what is your estimated monthly income? | | | |

Section III: Reproductive and related characteristics of respondents

Q301 Did you know anything about menstruation before you first had it?

1. Yes
2. No (Skip to Q303)

Q302 Where did you first hear/know about it?

1. Father
2. Mother
3. Brother/Sister
4. Friends
5. Relatives
6. School teachers
7. School clubs
8. Media (radio, TV, etc)
9. Books, Magazines,...
10. Other, specify ----------

Q303 Have you ever had sexual intercourse?

1. Yes (Go to Q305)
2. No (Go to Q304)

Q304 What was your main reason for not having sexual intercourse?

1. Religious reason
2. Fear of pregnancy
3. Fear of parents
4. I have not found the right person
5. Fear of HIV/STD
6. Want to stay until married
7. Other, specify ----------

Q305 How old were you when you had sexual intercourse for the first time?

Age in Years ----------

Q306 How old was your first partner? Age in Years ----------

Q307 What was your relationship with your first sexual partner?

1. A friend from school
2. A friend out of school
3. Fiancé
4. A spouse
5. A relative
6. Others, specify ----------

Q308 What was the most important reason for the first sexual intercourse?

1. I wanted to have sex
2. Love
3. I was forced into having sex
4. I was tricked into having sex
5. threatened into having sex
6. I did it to get money/Gift
7. Other, specify ----------

Q309 Did you use any contraceptive method during your first sexual intercourse?

1. Yes
2. No (Go to Q311)

Q310 If yes, which method?

1. Condoms
2. Pill
3. IUD
4. Diaphragm, foam, Jelly
5. Norplant
6. Rhythm method
7. Others

Q311 Did you use any contraceptive method during your recent sexual intercourse?

1. Yes
2. No (Go to Q313)

Q312 If yes, which method?

1. Condoms
2. Pill
3. IUD
4. Diaphragm, foam, Jelly
5. Norplant
6. Rhythm method
7. Others

Q313 How many sexual partners did you have during the last twelve months?

1. One
2. Two
3. Three
4. More than three
5. None

Q314 Which of the following applies to you?	Yes	No
- It is against my values for me to have sex while I am a teenager.	1	2
- Having sex while I am a teenager would just be doing what everybody else is doing	1	2
- One reason to have sex while I am a teenager would be to find out what having sex is all about	1	2

Q315 Is there support among your friends for you to wait until marriage before having sexual intercourse?

1. No support at all
2. A little support
3. A moderate amount of support
4. A lot of support

Q316 Is there pressure from your friends for you to have sexual intercourse?

1. No pressure at all
2. A little pressure
3. A moderate amount of pressure
4. A lot of pressure

Q317 About how many of your friends have had sexual intercourse?

1. None of them
2. A few of them
3. About half of them
4. Most of them
5. All of them

Q318 Have you ever tried the following substances

1. Alcohol	1. Yes	2. No
2. Cigarettes	1. Yes	2. No
3. Chat	1. Yes	2. No
4. Shisha	1. Yes	2. No

Q319 Which ones are you currently using

1. Alcohol	1. Yes	2. No
2.Cigarettes	1. Yes	2. No
3. Chat	1. Yes	2. No
4. Shisha	1. Yes	2. No

Q320 In your current year of high school, which one applies to you?

1. One of the best students in your class
2. Above the middle
3. In the middle
4. Below the middle
5. Near the bottom of the class

Annex 2

Diagnosis of Multicollinearity of the model

Independent Variables	Tolerance	VIF (Variance Inflation Factor)
Living Arrangement	0.928	1.078
Father's Education	0.519	1.927
Mother's Education	0.493	2.030
Peer Pressure	0.813	1.231
Household Income	0.677	1.476
Adolescent's Age Group	0.915	1.092
Peer Sex Encounter	0.763	1.310
Currently using alcohol	0.858	1.166
Currently using chat	0.883	1.132
Knowledge of Menarche	0.974	1.027
Adolescent's Income	0.974	1.027

Tolerance (Regression)

It is a statistic used to determine how much the independent variables are linearly related to one another (multicollinear). The proportion of a variable's variance not accounted for by other independent variables in the equation. A variable with very low tolerance contributes little information to a model, and can cause computational problems. It is calculated as 1 minus R squared for an independent variable when it is predicted by the other independent variables already included in the analysis (SPSS for Windows, 1999).

Variance Inflation Factor (VIF)

It is the reciprocal of the tolerance. As the variance inflation factor increases, so does the variance of the regression coefficient, making it an unstable estimate. Large VIF values are an indicator of multicollinearity. The value of VIF should not exceed 5 (SPSS for Windows, 1999).

DECLARATION

The thesis is my original work and has not been presented for a degree in any other university, and that all sources of materials used for the thesis have been duly acknowledged.

Name Mehari Belachew

Signature

Date July 18, 2005

This thesis has been submitted for examination with my approval as university advisor.

Asseta Hailom		18/7/2005
Advisor	Signature	Date