AN EXAMINATION OF THE DETERMINANTS OF SEXUAL BEHAVIOUR AMONG YOUNG PEOPLE AGED 15-24 YEARS IN ZAMBIA USING THE 2005 ZAMBIA SEXUAL BEHAVIOUR SURVEY

By

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DECLARATION

I declare that this dissertation is my own unaided work. All citations, references and borrowed ideas have been duly acknowledged. I confirm that an external editor was/was not used and that my Supervisor was informed of the identity and details of my editor. It is being submitted for the degree of Masters in Population Studies in the College of Humanities, School of Built Environment and Development Studies, University of KwaZulu-Natal, Durban, South Africa. None of the present work has been submitted previously for any degree or examination in any other University.

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ABSTRACT

The health risks of unsafe sexual behaviour among young people aged 15-24, the stage when sexual activity including risky sexual behaviour is likely to begin, has been receiving growing attention. Researchers are attempting to identify factors which influence young people's sexual behaviour so that meaningful prevention and intervention programmes can be developed. Using the 2005 Zambia Sexual Behaviour Survey, this study examines the level and determinants of sexual behaviour measured according to age at first sex, age at first childbearing, and condom use at first sex, among young people in Zambia. A total sample of 2,813 young people, representing 57.16 percent females and 42.84 percent males, was chosen for the analysis. The study employed survival analysis techniques to examine the timing and determinants of first sex and first childbearing. In addition, logistic regression models were used to predict the drivers of condom use at first sex. The analysis established that age at first sex, age at first childbearing, and condom use at first sex among young people in Zambia differ by cohort, gender, urban/rural residence, marital status, educational attainment, and province of residence. The results show that more young women (69.15 percent) than young men (57.84 percent) had initiated sex aged 15-24 years; whereas 47.89 percent of young women aged 15-24 years reported having had a first birth. The level of condom use at first sex was less than a quarter for young men (23.63 percent) and young women (24.34 percent), posing serious health challenges. There was evidence that the strongest predictors of sexual debut among young men were current age, residing in Lusaka or Northern provinces, and living in a household with television; while current age and higher education were positively associated with condom use at first sex among young women. The important determinants of first childbearing were age at first sex, and educational attainment. Finally, being unmarried, with some level of education, residing in Eastern, Luapula, Lusaka or Northern provinces, and living in a household with piped water or flush toilet, were found to be critical predictors of condom use at first sex among young people. It was concluded that although Zambia has shown progress in delaying sexual debut and first childbearing, other areas such as condom use at first sex, show little change – indicating a need for renewed efforts in HIV and AIDS prevention and family planning programmes.

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LIST OF ACRONYMS

AIDS   Acquired Immunodeficiency Syndrome

CSO   Central Statistical Office

Cox Model   Cox Proportional Hazards Model

DHS   Demographic and Health Survey

HIV   Human Immunodeficiency Virus

KM   Kaplan-Meier Product-Limit Estimator

SES   Socioeconomic status

STD   Sexually transmitted disease

STIs   Sexually transmitted infections

TB   Tuberculosis

UNAIDS   Joint United Nations Programme on HIV/AIDS

WHO   World Health Organisation

ZDHS   Zambia Demographic and Health Survey

ZSBS   Zambia Sexual Behaviour Survey

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CHAPTER 1

INTRODUCTION AND BACKGROUND

It seems certain that the AIDS epidemic will continue to outstrip every effort to contain it for as long as the response does not vigorously address aspects in society that make it extremely difficult, if not impossible, for a large proportion of men and women to adopt responsible sexual behaviour.
Michael J. Kelly (2010)

1.0. Introduction

This chapter provides the background, rationale and relevance for studying sexual behaviour among young people in Zambia. The concepts "young people", or "young adults", or "youth" are used synonymously to refer to the combination of respondents aged 15-19 (also known as adolescents) and respondents aged 20-24 (usually considered young adults) (CSO *et al.*, 2006). The chapter further discusses the main objectives and research questions which guided the study. Finally, the chapter outlines the structure of the dissertation.

1.1. Background

In many parts of the world including Zambia, the health risks of unsafe sexual and reproductive behaviour among young people are receiving growing attention. This is largely because young people are at a stage when sexual activity and reproductive activity including risky sexual behaviour, is likely to begin which means they are an important target group in the fight against HIV and AIDS, and the development of family planning programmes (CSO *et al.,* 2009). Risky sexual behaviour among young people can lead to sexually transmitted infections (STIs) including HIV, unintended pregnancy, and unsafe abortions (Kotchik *et al.*, 2001; Warenius *et al.,* 2006).

Part of Zambia's response to these sexual and reproductive health problems, has been to develop an epidemiological surveillance and research system for STIs, programmes for promoting safer sexual behaviour, and social marketing schemes for the distribution of condoms (Banda *et al.,* 1999; Benefo, 2004). Despite such commitments, sexual and reproductive health services remain inadequate and young people's sexual and reproductive health needs are neglected. For example, condom use is still far below the level needed to make a significant dent in the HIV epidemic (Benefo, 2004).

The demand for data on the levels and determinants of sexual behaviour among young people has increased as programmes, many of which focus on promoting safer sexual practices, seek to evaluate and improve themselves. To date, Zambia has collected sexual and reproductive behaviour data through the *Zambia Demographic and Health Survey* (ZDHS) (1992-2009) and the *Zambia Sexual Behaviour Survey* (ZSBS) (1998-2007). Collectively these surveys constitute an enormous potential source of information about the sexual behaviour of young people in Zambia. Based on the 2005 ZSBS, the present study seeks to provide the level and determinants of sexual behaviour measured according to age at first sex, age at first childbearing, and condom use at first sex, among young people in Zambia.

While surveys show that knowledge about STIs and HIV and AIDS in Zambia, as in many other countries, is considerably high, this knowledge has not adequately translated into safer sexual practices, especially among young people. Survey reports between 2000 and 2009 indicate that on average over 80 percent of all adolescents and adults had heard of HIV and AIDS (CSO *et al.*, 2010) and most respondents indicated that HIV infection can be avoided through measures like condom use during sexual intercourse, being faithful to one partner or limiting the number of partners, and sexual abstinence.

Over the years, young people in Zambia have exhibited two distinct sexual and reproductive health behaviours. First, a delay in sexual debut and first childbearing has been observed among young people. Survey data from the ZDHS for the period 1992-2007

and the ZSBS for the period 2000-2009 indicates a rise in age at first sex, age at first childbearing, and an overall reduction in teenage pregnancy. A recent analysis done by CSO *et al.* (2010) shows that median age at first sex has been higher among young men than young women in the period between 2000 and 2009. As Figure 1-1 illustrates, median age at first sex has increased by 2 years among young men aged 15-24, from 17.5 years in 2000 to 19.5 years in 2009; while among young women aged 15-24, it has marginally increased by a year from 16.5 years in 2000 to 17.5 years in 2009.

Figure 1-1: Median age at first sex among young people aged 15-24 years, ZSBS 2000-2009
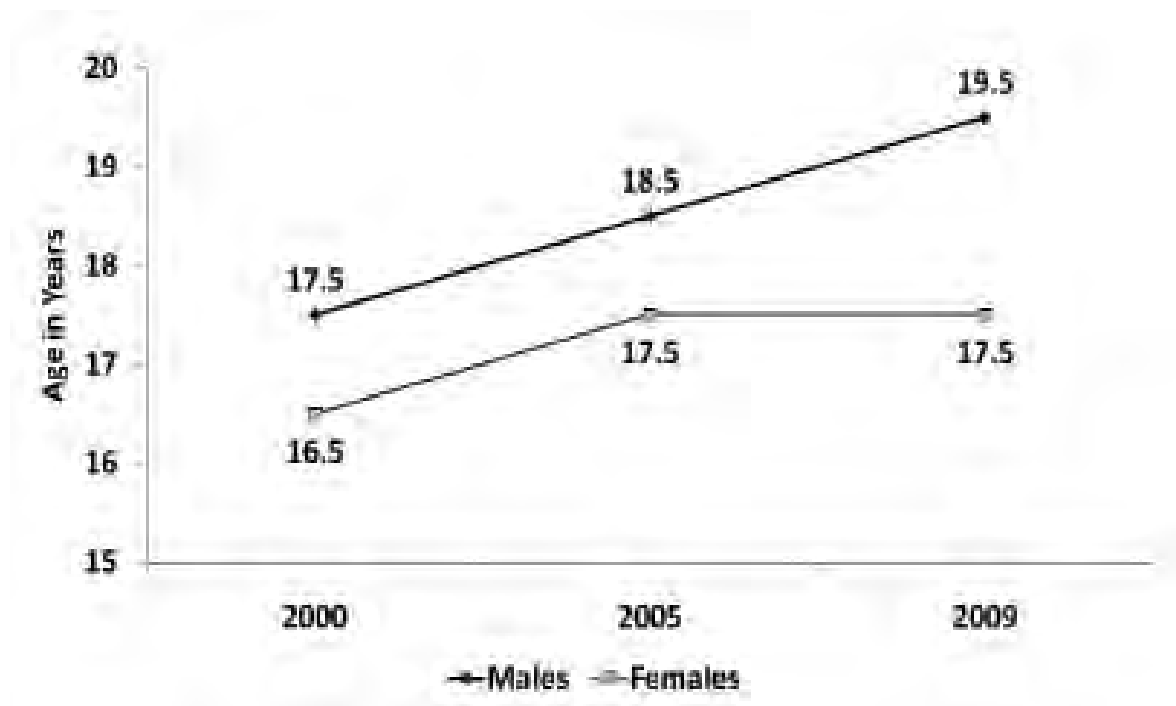
Source: CSO *et al.* (2010:33)

Similarly, recent reports by the Central Statistical Office (CSO) such as the 2007 ZDHS show that median age at first birth has changed from 18.4 years for women aged 45-49 to 19.1 years for women aged 20-24. A reduction in the proportion of women giving birth by age 15 has also been observed. For example, 'whereas 2 percent of women aged 15-19 gave birth by age 15, the corresponding proportion for women aged 45-49 is 10 percent' (CSO *et al.,* 2009:62). According to CSO *et al.* (2009), the reduction in the percentage of women

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giving birth early implies that more young women are postponing childbearing in Zambia. In addition, studies that have investigated factors influencing age at first childbearing among young women highlight differences like age, gender, marital status, place of residence and educational attainment (Singh, 1998; Clark *et al.,* 2006).

Second, Zambia has made minimal success in encouraging young people to use condoms at their first sexual encounter, from avoiding premarital sex, and reducing the number of sexual partners. Condom use at first sexual intercourse remains low among young people, posing health risks of STIs (Benefo, 2004). Across many African countries including Zambia, condom use at first sex still poses challenges. For example, a study by Blanc and Way (1998) among adolescent women using family planning methods such as condoms in sub‐Saharan Africa shows that it ranged from 2 percent in Niger, Rwanda, and Senegal to 23 percent in Cameroon. Some of the factors cited in the literature for low condom use at first sex among young people include: condoms being associated with infidelity and/or promiscuity, difficulties in obtaining condoms openly influenced by cultural mores prohibiting condom use among young people, concerns about side effects, and, inability to negotiate with partners (Lugoe *et al.*, 1996; Blanc and Way, 1998; Banda *et al.,* 1999; Benefo, 2004).

Although marriage remains a highly valued institution in Zambia, there is also evidence of an increase in premarital sex and non‐marital births (CSO *et al.,* 2009). A recent survey by CSO *et al.* (2010) indicates that more than a quarter (26 percent) of young single people 15‐24 had premarital sex 12 months prior to the survey, with more young men than young women reported having premarital sex (28 percent and 23 percent, respectively). In addition, young people have a tendency to engage in risky sexual behaviour (such as inconsistent condom use and sex with multiple partners) which increases their vulnerability to HIV infection and unwanted pregnancies (Clark, 2004; CSO *et al.,* 2009). A recent report in Zambia indicates that male youths are more likely to report more than one on‐going sexual partnership than females (11 percent versus less than 1 percent). Furthermore, about two‐thirds of all multiple sexual partnerships among young people were concurrent (CSO *et al.*, 2010). These statistics underscore the fact that the consequences of young

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people's sexual and reproductive behaviours are of grave concern and immediate efforts are necessary to prevent or understand this behaviour and develop policies that adequately respond to these realities (Kotchik *et al.*, 2001).

As the risks associated with young people's sexual behaviour continue to mount, research is increasingly focusing on the factors influencing young people's sexual behaviour (Singh *et al.,* 2000; Kotchik *et al.*, 2001; Clark *et al.,* 2009; McGrath *et al.,* 2009). The most cited aspects include: demographic factors such as age at menarche, first sex, first childbearing and marriage; socio‑cultural factors such as parental control and the value placed on marriage institutions; and socio-economic factors such as education, gross family income and occupation of head of household (Adler *et al.,* 1994; Zabin and Kiragu, 1998).

It is postulated in this study that the changes noticed in young people's sexual debut and first childbearing age are the result of a number of factors and not entirely limited to the successful implementation of sexual and reproductive health programmes. For example, the importance of social and cultural influences in shaping young people's sexual and reproductive behaviours point to the fact that providing information about safe sex and reproductive health practices, while important, is often not enough to change these behaviours (Marston and King, 2006). It is the contention of this study that other factors such as household socio-economic status (SES), measured by household assets, and province of residence, might also have contributed to the changes. Understanding the factors which regulate sexual behaviour among young people in Zambia is critical to the success of the country's sexual and reproductive health programmes.

1.2. Rationale for the study

The rationale for looking at the sexual behaviour of young people aged 15‑24 in Zambia was driven by the following three factors. First, the youngest age group (less than 18 years old) form a relatively large proportion of the total population in Zambia, and therefore have a key role in the potential growth of the HIV epidemic (CSO *et al.,* 1999). According to the preliminary population results from the 2010 census, about 53 percent of the slightly more

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than 13 million Zambian populations are young people below the age of 18 years (CSO, 2011).

Second, HIV incidence is often highest in the youngest age groups (CSO *et al.,* 1999). Zambia has one of the most devastating HIV and AIDS epidemics in Southern Africa (UNAIDS, 2010). Recent surveillance data from the 2007 ZDHS shows a national prevalence rate of 14.3 percent in the 15-49 age groups, with 16.1 percent among women and 12.3 percent among men (CSO *et al.,* 2009). Although the HIV epidemic has spread throughout Zambia to all parts of its society, young people are especially vulnerable. Available data, as shown in Table 1-1 below, indicate that HIV prevalence is higher among young women in the ages of 15-19 (5.7 percent) and 20-24 (11.8 percent), than among young men at 3.6 percent and 5.1 percent respectively (CSO *et al.,* 2009).

Table 1-1: HIV prevalence among young people aged 15-24, ZDHS 2007

Percentage HIV positive among young people aged 15-24 who were tested for HIV by age and gender

Age	Women age 15-24		Men age 15-24		Total age 15-24	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
15-19	5.7	1,202	3.6	1,162	4.7	2,365
20-24	11.8	1,023	5.2	865	8.7	1,888

Source: CSO *et al.* (2009:241) (adapted)

Third, young people, if properly informed, may be more likely to change their sexual behaviours particularly those who have not yet started to have sex (CSO *et al.,* 2004). Consequently, family planning programmes and HIV prevention efforts are likely to have a large effect on the reduction of teenage pregnancy and curbing the spread of HIV if successful in the youngest age groups (CSO *et al.,* 1999). It has thus been argued that 'positive sexual behaviour and practices, such as delaying their (young people's) sexual debut and avoiding risky sexual behaviour, are cardinal in the fight against HIV/AIDS'

(CSO *et al.,* 2009:69). Hence, the promotion of abstinence, consistent condom use, and delay in sexual debut among young people, has received strong emphasis in sexual and reproductive health programmes in Zambia (CSO *et al.,* 2009).

These varied statistics suggest that changing sexual behaviour among young people is crucial not only in tackling the growing HIV and AIDS pandemic, but also in reducing unwanted pregnancies and unsafe abortion. To effectively achieve this, there is a need to identify and understand the factors that contribute to sexual and reproductive behaviour among young people in Zambia.

1.3. Objectives of the study

The main objective of the study was to examine the determinants of sexual behaviour among young people aged 15-24 in Zambia using the 2005 ZSBS.

More specifically, the study endeavoured:

  i.   to investigate how levels in age at first sex, age at first childbearing, and condom use at first sex among young people in Zambia differ by cohort, gender, urban/rural residence, marital status, educational attainment and province of residence; and
  ii. to examine the determinants of age at first sex, age at first childbearing, and condom use at first sex among young people in Zambia.

1.4. Hypotheses

  i.   The age at which young people start engaging in sex is important in controlling the spread of HIV and STIs, as well as unwanted pregnancies. We expect sexual initiation to be earlier among young women than among young men.
  ii. Teenage pregnancy is a major health concern because of its association with higher morbidity and mortality for both the mother and child. Childbearing during the teenage years frequently has adverse social consequences, particularly on female

educational attainment, because women who become mothers in their teens are more likely to curtail education. We expect first childbearing to be more likely experienced among young women with no education than among young women with some levels of education.

iii. An examination of whether young people use a condom at their first sexual encounter is especially important in HIV and AIDS prevention programmes. We expect condom use at first sex to be more common among urban young people than rural young people.

1.5. Relevance of the study

The relevance of this study is three-fold. One, it is intended to contribute to a better understanding of the determinants of sexual behaviour among young people in Zambia drawing from the 2005 ZSBS. Two, it is intended to generate debate and contribute to existing knowledge about sexual and reproductive programmes targeting young people in Zambia. Three, it is intended to provide valuable disaggregated data on differentials in sexual behaviour among 15-24 year olds. The main contribution of the present study lies in its examination of the effect that age, gender, urban/rural residence, marital status, education, province of residence, and SES have on age at first sex, age at first birth, and condom use at first sex; and in unveiling the determinants of sexual debut, first childbearing and condom use at first sex, among young people in Zambia.

1.6. Organisation of the dissertation

The dissertation is divided into five main chapters. The first chapter gives the background, rationale and relevance for studying the sexual behaviour of young people in Zambia. The second chapter explores the available literature on the levels, trends, and determinants of sexual debut, first childbearing, and condom use at first sex, among young people. It further discusses the theoretical and conceptual framework used in the study to understanding the dynamics of sexual behaviour among young people in Zambia. The third chapter describes the methodology used to analyse the sexual behaviour of young people in Zambia and

outlines the methods of analysis used in the study. The fourth chapter presents the results on the levels and determinants of sexual behaviour of young people measured by age at sexual debut, age at first childbearing, and condom use at first sex. The fifth chapter concludes with a discussion on the main findings obtained from the statistical analysis of the 2005 ZSBS.

CHAPTER 2

LITERATURE REVIEW

2.0. Introduction

This chapter has a two-fold purpose. Firstly, it reviews the literature on the sexual behaviour of young people as measured by age at first sex, age at first childbearing, and condom use at first sex. Secondly, it discusses the theoretical and conceptual framework proposed for analysing the sexual behaviour of young people in Zambia. It is argued that understanding changes in sexual debut, age at first childbearing, and condom use at first sex, is indispensable for targeted intervention aimed at reducing premarital sex, teenage pregnancy, and tackling increased vulnerability to STIs among young people in Zambia.

2.1. Sexual behaviour among young people

Since the second half of the 20th century, there has been growing interest in the sexual behaviour of young people, partly fuelled by concern for their health. Earlier research in the 1960s and 1970s focused on the increasing rates of conception among young unmarried people, whereas in the 1980s and 1990s, the focus shifted to the risk of HIV transmission (Wellings *et al.*, 2001). In recent years, attention has become focused on risk-taking behaviour in the context of both unplanned pregnancies and STIs. There is renewed interest in the identification of the social, cultural and economic factors which contribute to increases and/or changes in early sexual initiation and early childbearing particularly for unmarried women, as well as to the risks of contracting STIs among young people throughout the world. This is increasingly significant for Zambia, given the larger proportion of adolescent females (41 percent) to males (30 percent) who have had sex, as well as the fact that sexual transmission is the main mode of HIV transmission (CSO *et al.*,

2009) and will therefore have an enormous impact on future population growth. An understanding of the determinants of sexual and reproductive behaviour is a significant issue for policy and research.

A systematic review of the literature on young people's sexual behaviour by the World Health Organisation (WHO) reveals that the majority of studies focused on the subpopulation of unmarried youth (Brown *et al.*, 2001). A few studies focused on special groups like pregnant young women, those who had terminated pregnancies, young reproductive health seekers in general, or young clients of health services dealing with STIs. These studies, according to Brown *et al.* (2001), reveal that in many settings, sexual activity begins during adolescence, with frequent risky activities, sometimes forced, and with often erratic contraceptive use. In addition, there are wide gender-based differences in sexual conduct, in the ability to negotiate sexual activity, and in contraceptive use. Relatively few young people believe they are at risk of disease or unwanted pregnancies; awareness of safe sex practices seems to be superficial, and misinformation regarding the risks and consequences of unsafe sex and unsafe abortions is widespread.

The case studies cited in Brown *et al.* (2001) suggest that a considerable proportion of adolescents and youth engage in premarital sexual activities that tend to be unsafe, including having multiple partners, contact with sex workers, and erratic use of contraceptives. However, comparisons between females and males and across regions are difficult to draw because of prevailing cultural norms and gender-related double standards. As many authors have commented, this is mainly because of the tendency among young males to over-report and young females to under-report their sexual experiences, and a greater tendency among young people to withhold information about sexual activities in highly conservative settings which prohibit premarital sexual activity, than in settings where it is more likely to be condoned or accepted.

Variations in young people's sexual behaviour have been observed in different regions of the world (Marston and King, 2006). For example, Brown *et al.* (2001) found that age at sexual debut among young people appeared to be earlier in Latin America (reported at age

15 for both genders) than in Asia and sub-Saharan Africa where median ages at sexual debut were typically reported at 18.20 years among females and 15.20 years among males. Premarital sexual activity is more prevalent among males than among females, although this difference may in part be attributable to over-reporting among males, and under-reporting among females. Despite variations in reference periods (such as 12 months preceding the survey or lifetime measures), findings suggest that large percentages of sexually active youth engage in sexual relations with more than one partner. Condom use is particularly erratic among young people in all regions of the world. There is little indication that condoms are regularly used even with casual partners or sex workers and a few studies point to inconsistent condom use despite the existence of relatively high levels of condom awareness.

In Zambia, consistent data across a number of national surveys indicate that the proportion of young people engaging in sex with non-regular partners has increased, while condom use during sex with non-regular partners has decreased (CSO *et al.*, 2009; CSO *et al.*, 2010). Recent estimates from the 2009 ZSBS show that a substantially larger proportion of young men reported sex with a non-regular partner than young women (72 percent versus 28 percent). Of serious concern is the frequent finding that only a small proportion of sexually active young people use condoms despite vigorous marketing and condom promotions currently in place. Notably, among adolescents and young adults aged 15-24 who have had sex, only 29 percent reported using a condom the first time they ever had sex, and only 30 to 40 percent of young, single, sexually active people aged 15-24 had used a condom at last sex (CSO *et al.*, 2010). These statistics point to the fact that many young people in Zambia are still engaging in risky or unsafe sexual behaviour which may expose them to STIs including HIV, or unintended pregnancies. It is therefore vital that these behaviour indicators and the factors contributing to such risk-taking behaviour are further explored to inform future prevention programmes.

The present review is cognisant of the broadness of the subject of sexual behaviour and specifically addressed three types of sexual behaviour indicators that have received much attention in Zambia namely, age at first sex, age at first childbearing, and condom use at

first sex. The use of age at first sex and age at first birth as proxies for exploring young people's sexual behaviours have also been advanced in other literature (Zaba *et al.,* 2004; McGrath *et al.,* 2009). In addition, these proxies are part of the main indicators used by the Joint United Nations Programme on HIV/AIDS (UNAIDS) to describe the sexual behaviour of young people aged 15-24 in generalised epidemics such as in Zambia (CSO *et al.,* 2009). It is against the above background that this chapter discusses the three proxies of sexual behaviour to uncover the dynamics of sexual behaviour among young people in different geographical settings including Zambia.

2.2. Sexual debut

Early initiation of sexual intercourse and the context within which sexual activity begins are key indicators of young people's potential risk for unplanned pregnancies, abortions and STIs (Singh *et al.,* 2000). In view of this, most recent studies have used age at first sex as a proxy measure of the onset of young people's exposure to HIV infection (Singh *et al.,* 2000; Zaba *et al.,* 2004; Pettifor *et al.,* 2004; McGrath *et al.,* 2009). It has been posited in these studies that age at first sex is a good proxy for understanding sexual behaviour among young people (Zaba *et al.,* 2004). In the context of the AIDS epidemic, as Zaba *et al.* (2004) observe, accurate monitoring of trends of age at first sex has become very important. This is mainly because experiences at sexual debut may be linked to reproductive health later in life (Zabin and Kiragu, 1998; Gómez *et al.,* 2008). It is therefore necessary to analyse changes in trends and the drivers of such changes to understand the health consequences of young people's sexual and fertility behaviours.

2.2.1. Levels and trends in sexual debut among young people

The age at which young people start engaging in sex is important information for controlling the spread of STIs as well as unwanted pregnancies (Cremin *et al.*, 2008). Similarly, median age at first sex is important in abstinence interventions aimed at young people (CSO *et al.,* 2006). In some studies age has often been positively correlated with initiating sex (Clark *et al.,* 2009; CSO *et al.*, 2009). Most qualitative studies that have tried

to explore why older persons are more likely to initiate sex than younger persons, cite, among other reasons, social expectations including rewards and penalties associated with sexual activity as hampering communication about sex among young people. For example, a study by Marston and King (2006:1583) on factors shaping young people's sexual behaviour notes that 'young people often avoid speaking openly to partners about sex, instead using deliberate miscommunication and ambiguity'. It therefore seems that the younger the age, the more rigid and unwilling a young person is to initiate sex. It has been observed that both age at first sex and median age at first sex have increased across many countries in Africa. There is empirical evidence in Zambia that median age at first sex has been increasing over the years, particularly noted between 1998 and 2009. Based on the analyses of the ZDHS (for the period 1992-2007) and the ZSBS (for the period 1998-2009), the CSO *et al.* reports demonstrate that while the proportion of young people who initiate early sex has been decreasing, median age at first sex has been increasing among young people in Zambia.

The 2009 ZDHS indicates that there has been a substantial decline in the proportion of young women and young men engaging in sexual intercourse by age 15 and by age 18, suggesting a decline in age at first sex in Zambia. The decrease is thus especially notable among adolescents, that is, 15-19 year olds. For example, among adolescent girls only 12 percent had had sex by age 15 in the 2007 ZDHS compared to 18 percent in the 2000/2001 ZDHS, while the proportion of adolescent boys who had had sex before age 15 had decreased from 27 percent to 16 percent over the same period (CSO *et al.,* 2010). This means that the percentage of young people not having sex has increased. According to a recent survey by CSO *et al.* (2010), about 42 percent of young people reported not to have initiated sex in 2009 compared to 30 percent in 2000. This represents a 12 percent increase. Differentials by gender show a decline in the proportion of those reporting not to have initiated sex as shown in Table 2-1 below. Such differences were more pronounced among young men (51 percent in 2009 versus 66.4 percent in 2000) than among young women (64 percent in 2009 against 73.8 percent in 2000) (CSO *et al.,* 2010). Consistent with what has generally been observed in other African countries (Banda *et al.,* 1999; Curtis and

Sutherland, 2004), there is evidence in Zambia which clearly indicates that sexual activity among women starts at an earlier age than it does among men.

Table 2-1: Percentage of young people aged 15-24 who ever had sex by age and gender, 2000-2009

Background characteristic	Number 15-24				Ever had sex			
	2000	2003	2005	2009	2000	2003	2005	2009
Male 15-24	557	826	741	732	64.4	63.9	61.3	51.0
Female 15-24	819	1,009	930	862	73.8	74.0	70.2	64.0

Source: CSO *et al.* (2010:69) (adapted)

The increase in age at first sex as observed in these survey results may indicate that efforts to persuade young people to delay sexual debut may be working (CSO *et al.,* 2006). Besides this, delay in age at first sex is also associated with young people practising sexual abstinence (CSO *et al.,* 2009). Apart from these influences, the available empirical evidence does suggest that other factors like age at first marriage have had a great impact on young people' sexual debut.

2.2.2. Sexual initiation and marriage

Almost universally, and particularly in sub-Saharan Africa, the gap between age at first sexual intercourse and age at first marriage has increased across age cohorts. According to a study by Blanc and Way (1998), in sub-Saharan Africa and in the majority of countries in other regions, the gap between first intercourse and first marriage among women has increased across age cohorts. The authors note that this increase is predominantly a result of age at first sex and age at first marriage rising together, but with a larger increase occurring in age at marriage. The consequence of this larger gap, in combination with the overall growth in the number of adolescents, is that a large and increasing number of adolescent women are exposed to the risk of premarital pregnancy that, while not always undesired, is

associated with negative outcomes such as having to leave school or resort to unsafe abortions.

Moreover, an analysis of 31 surveys from 10 countries in sub‑Saharan Africa, Latin America and the Caribbean, by Curtis and Sutherland (2004) exposes fluctuating trends in premarital sex in sub‑Saharan Africa, but consistent increases in Latin America and the Caribbean. Accordingly, these researchers found that the percentage of women who reported premarital sex ranged from 5 percent in the 1991 Dominican Republic Demographic and Health Survey (DHS) to 49 percent in the 1993 Ghana DHS. In general, reporting of premarital sex was more common among women in sub‑Saharan Africa than in Latin America and the Caribbean. The percentage of men who reported having had premarital sex in the year before the survey ranged from 24 percent in the 1998 Ghana DHS to 65 percent in the 1991/92 Tanzania DHS, and there were no regional differences. Trends in reported premarital sex among women generally fluctuated in sub‑Saharan Africa and only in Zambia did there appear to be a consistent trend.

Studies which have examined sexual debut and prevalence of multiple sexual partnerships among young people have observed that more men than women engage in multiple sexual relations. For example, a study by Banda *et al.* (1999) in Lusaka‑Zambia found evidence that the proportion of younger and older men with multiple partners had declined in both urban and rural areas. The analysis by Curtis and Sutherland (2004) confirms these findings; men were consistently more likely to report non‑marital sexual partners than women, and unmarried women were less likely than unmarried men to report casual partners.

Therefore, a good understanding of the relationship between the initiation of first sex and marital status is not only crucial for pointing to the differentials that exist, but also vital for establishing the determinants of sexual debut among young people.

2.2.3. Sexual initiation and condom use

A number of studies have generally observed low levels of condom use among young people during first sexual intercourse (Blanc and Way, 1998; Benefo, 2004). A study by Blanc and Way (1998) found that in most countries in sub-Saharan Africa use levels were higher among sexually active, unmarried teenagers than among married teens, and in half of the countries, unmarried users were more likely to be using modern methods. Another study conducted in the United States of America with sexually active 12-18 year-olds, to assess whether using a condom at adolescent sexual debut is associated with an increased likelihood of subsequent condom use, found that condom use at adolescent sexual debut was associated with a twofold increased likelihood of condom use during most recent sex (Shafil, 2004). Other studies have noted that early sex is often related to subsequent sexual activity, especially "unsafe sex" (Singh, 1998; Zabin and Kiragu, 1998). For example, Singh (1998) found that young unmarried women who have children were generally considered to be at greater risk than young mothers who were married, largely because of traditional values which strongly censure sexual relationships, pregnancy, and childbearing among the unmarried. As argued earlier, the use of condoms at first sex is a protective measure from a number of health related ailments especially STIs. It is therefore vital to investigate gender differences among young people.

2.2.4. Sexual initiation and social, cultural and economic factors

Despite the fact that sexual debut has been used in many countries as an entry point in understanding young people's vulnerability to sexual and reproductive health problems, little attention has been paid to the social circumstances surrounding it (Izugbara, 2001). As such, the specific circumstances under which sexual debut occurs have equally been discussed (Schoepf, 1998; Adegbora and Babatola; 1999; Izugbara, 2001). These studies have posited that young people's sexual debut is largely influenced by the social, cultural and economic factors surrounding them.

In-depth anthropological work in Chiawa, a rural area in Lusaka province (Zambia), has revealed numerous cultural barriers to the use of condoms (Banda *et al.,* 1999). According to Banda *et al.* (1999), these barriers included stigmas due to condoms being associated with disease, and infidelity. Moreover, Simasiku *et al.* (2000) discovered that in Zambia sexual encounter was mostly heterosexual and promoted by pressure, curiosity and economic purposes. For boys, the study noted, the first sexual encounter was voluntary and mostly with house-girls and girls living in their neighbourhoods. For the majority of girls, older boys, "sugar daddies" and relatives were first partners. The authors further noted that most of the boys reported having been infected as a result of their first sexual debuts, while a number of the girls ended up with teenage pregnancies. One of the conclusions made by these authors was that sexual debut leads to many risks which are exacerbated by low use of contraceptives, especially condoms.

2.2.5. Sexual initiation and the risk of HIV

Age at first sexual intercourse is of particular interest in Zambia, because HIV is transmitted primarily through heterosexual contact (CSO *et al.,* 2006). This is why the promotion of abstinence and delay of sexual debut among young people has received strong emphasis in HIV prevention efforts in Zambia (CSO *et al.,* 2009). Evidence from one of the ZSBS surveys confirm that 'early sexual debut is often considered as a risk factor for HIV infection since early timing of first sex, often before marriage, increases the chances of having sexual partners during a life time' (CSO *et al.,* 2004:23). Sexual debut is consequently a good measure for evaluating sexual behaviour among young people. A number of prevention interventions that target young people aim at promoting postponement of first sex or discouraging premarital sexual activity. In Uganda, a rapid increase in age at first sex in urban areas between 1990 and 1995 was considered a major contributing factor in the observed HIV prevalence decline in young pregnant women (Zaba *et al.,* 2004).

It has also been advanced that the younger the age at sexual debut, the longer the potential period of exposure to HIV transmission over one's lifetime (CSO *et al.,* 2009; Cremin *et*

al., 2008). A study by Pettifor *et al.* (2004) on the relationship between early age of coital debut (15 years of age or younger) and the risk of HIV infection among sexually active urbanised Zimbabwean women (aged 18‑35 years), found that women with early coital debut had a significantly higher risk profile, including multiple lifetime partners, and did not complete high school. The study further demonstrates that early coital debut is a significant predictor of prevalent HIV infection independent of other identified factors in the population.

2.3. Age at first childbearing

The age at which a woman first engages in sexual intercourse (within or outside of marital union) usually marks the beginning of the period of her exposure to the risk of childbearing (Blanc and Way, 1998; CSO *et al.,* 2009). It is 'an important determinant of the overall level of fertility as well as the health and welfare of the mother and child' (CSO *et al.,* 2009:62). As Blanc and Way (1998) observe, adolescent pregnancy and childbearing are associated with a range of adverse health outcomes, including elevated risks of pregnancy‑related and unsafe abortion complications, maternal death, and negative educational and economic consequences. Therefore the overall incidence of early childbearing and the proportion of girls who start childbearing during adolescence and young adulthood, are important measures for understanding the implications of the age and timing of childbearing. It has globally been observed that the rates of population growth are more rapid when women have their first children before they are in their twenties (Singh, 1998).

2.3.1. Levels and trends in age at first childbearing

Median age at first birth has gradually been increasing across many African countries. A study by Blanc and Way (1998) found that exposure to the risk of childbearing begins in teenage years for the majority of women in sub‑Saharan Africa. The authors note that more than half of the women aged 15-19 have ever had sex in 11 of the 17 countries in the region. Twenty percent or more of women aged 15‑19 reported as ever having been married in 15 of the 18 countries in sub-Saharan Africa. Namibia and Rwanda were countries with

atypically low proportions of ever‑married adolescents. Conversely, according to these authors, some countries had experienced large declines across cohorts in the proportions of women marrying early. Notably, the proportion of women marrying by age 18 was at least 30 percent lower among women aged 20‑24 years in Kenya, Rwanda, Senegal, and Zambia.

Similarly, a study by Singh (1998) reveals substantial variation across countries and regions on levels of adolescent childbearing in sub‑Saharan Africa. The study notes that declines are beginning to occur in sub‑Saharan Africa, but that levels are still high in most countries, and the proportion of births to unmarried adolescents is increasing in some countries. Countries of sub‑Saharan Africa have the highest levels of adolescent childbearing in the developing world. Typically, rates range between about 120 to about 160 births per 1,000 women aged 15-19. At the extreme, annual age‑specific fertility rates of more than 200 births per 1,000 women aged 15‑19 are found in Mali and Niger. Singh further observes that the proportion of young women who had a child by age 15, while not common in developing countries, was substantial in several sub‑Saharan African countries and ranged from 8 percent to 15 percent; while the number of young women who had a child by age 18 was much higher, ranging between 25 percent to 40 percent in most countries in sub‑Saharan Africa. A study by Curtis and Sutherland (2004) reports that in African countries, premarital fertility has decreased or remained about the same. All the countries they analysed except Haiti showed increases in age at first marriage thereby increasing the period in which young people could engage in premarital sex and consequently unwanted pregnancies and unsafe abortions.

In Zambia, according to CSO *et al.* (2009), the median age at first birth increases with levels of education. That is, women with no education have their first birth at about 19 years, while women who have attained a higher level of education have a median age at first birth of 25 years, representing a difference of six years. Overall, 28 percent of women aged 15‑19 had begun childbearing and 22 percent had a child. A larger proportion of teenagers in rural areas (35 percent) had begun childbearing compared to teenagers in urban areas (20 percent). With regard to provinces, the Western province had the largest proportion (44 percent) of teenagers who had started childbearing, while the Copperbelt (20

percent) and Lusaka (21 percent) had the lowest proportions. The report further notes that the percentage of teenagers who had started childbearing decreased with increasing levels of education. For example, teenagers with no education were more than twice as likely to start childbearing early than those with secondary level education (54 percent and 21 percent, respectively), and teenagers in the lowest wealth quintile were more than twice as likely to have started childbearing than those in the highest wealth quintile (37 percent and 14 percent, respectively).

In sum, the evidence on whether childbearing among never‑married women is increasing, is mixed. As Singh (1998) observes, in some sub‑Saharan African countries, population-based measures of premarital childbearing showed a consistent upward trend, but for the majority of countries, this measure showed small or no increases. Despite this, the proportion of adolescent births to never‑married women showed a more widespread and consistent pattern of increase, and somewhat larger increases in sub‑Saharan Africa. Moreover, a recent survey by CSO *et al.* (2009) indicates that teenage pregnancy is still high in Zambia; about three in ten young women aged 15‑19 have begun childbearing, that is, they have given birth already or are currently pregnant with their first child.

In addition, changing marriage patterns and timing of marriage, increases in premarital sexual relations, and risky sexual behaviour have strongly impacted on first childbearing among young people.

2.3.2. Changing marriage patterns among 15-24 year olds

Marriage is a fundamental social and cultural institution and the most common milieu for bearing and rearing children. It profoundly shapes sexual behaviours and practices (Clark, 2004). Therefore, the distribution of the population by marital status is important in understanding sexual activity within and across marital status categories. In societies where sex outside socially sanctioned marital unions is viewed as delinquent behaviour, young people have usually been encouraged to abstain from having sex until they are in a "socially" sanctioned union (CSO *et al.,* 2009). Just like in other African countries, Zambia

has been experiencing changes in marriage patterns and in the timing of marriage among young people.

The most recent survey results by CSO *et al.* (2009) have revealed a reduction in the percentage of young women who gave birth by 15 years. Notably, 'whereas 2 percent of women aged 15-19 gave birth by age 15, the corresponding proportion for women aged 45-49 is 10 percent' (CSO *et al.,* 2009:62), indicating that more young women are postponing childbearing in Zambia. The report also observed that the median age at first marriage for rural women was 17.8 years against 19.1 years for urban Zambian women aged 15-49 years. In addition, 'a larger proportion of teenagers in rural areas (35 percent) have begun childbearing compared with teenagers in urban areas (20 percent)' (CSO *et al.,* 2009:64).

Similarly, timing of marriage has been changing in Zambia. The age at first marriage is not only an important social or demographic indicator, but is important in health interventions such as family planning and antenatal health provision (Zabin and Kiragu, 1998; CSO *et al.,* 2009). It has been previously advanced that in some cultures the start of marriage is more likely to coincide with the initiation of sexual intercourse and thus represents an exposure to the risk of infection with STIs, and pregnancy (CSO *et al.,* 2009). In Zambia, the age at first marriage among young people has increased over the years. The median age at first marriage on average among women aged 20-49 is 18.7 years compared to 23.2 years for men of the same age (CSO *et al.,* 2009). This means that women in Zambia marry about 4.8 years earlier than men. Therefore, women appear to marry at a much younger age than men.

The observed gender differences are consistent with the literature stating 'a significantly greater proportion of women were married than were men, a difference attributable to women's younger age at first marriage in Zambia' (Agha, 1998:33). It has generally been observed that although sexual activity tends to be intermittent among unmarried compared with married young people, pregnancies among the unmarried are more likely to be unwanted, and their negative consequences may be more severe (Blanc and Way, 1998).

2.3.3. Premarital sexual relations among 15-24 year olds

The changing pattern of sexual relations as marital rates decline has consequently been overshadowed by increases in premarital sexual relations. A study by Singh (1998) found a substantial increase in premarital childbearing in Botswana, Kenya, Liberia, Madagascar, Namibia, and Zambia.

In Zambia, a recent survey by CSO *et al.* (2010) indicates that more than a quarter (26 percent) of young single people 15-24 had had premarital sex 12 months prior to the survey, with more young men than young women having had premarital sex (28 percent and 23 percent, respectively). Moreover, the percentage of adolescent females reporting having had sex with any partner at least 10 years older had increased over the survey period 2000-2009 from 11 percent to 14 percent.

2.3.4. Prevalence of risky sexual behaviour among 15-24 year olds

There is evidence of emerging prevalence of risky sexual behaviour among the 15-24 year olds (particularly exposure to HIV), given the difference in age with their partners, especially among young women. In countries like Zambia where HIV is predominantly transmitted via heterosexual intercourse, differences in sexual practices associated with marriage may substantially affect the likelihood of acquiring HIV infection by either increasing or decreasing certain HIV risk factors (Clark *et al.,* 2006). Most population-based epidemiological studies that report HIV prevalence among ever-married and never-married adolescent girls in various countries typically find higher infection rates among married than among unmarried girls (Nunn *et al.,* 1994). A study by Kelly *et al.* (2003) in Uganda, limited to sexually active females aged 15-29, found an HIV prevalence of 18 percent among married women and 15 percent among never-married women. Among girls aged 15-19, married adolescents comprised a higher fraction of those infected (89 percent) than those not infected (66 percent), suggesting that many of the HIV-positive female adolescents were possibly infected by older husbands.

Similarly, data from two cities, Kisumu in Kenya and Ndola in Zambia (Glynn *et al.*, 2001) indicate that among sexually active girls aged 15-19, HIV infection rates were about 10 percent points higher for married than for unmarried girls (Kisumu: married 33 percent, unmarried 22 percent; Ndola: married 27 percent, unmarried 17 percent). A study by Clark (2004:149) on married and unmarried adolescent girls in the urban centres of Kenya and Zambia found that 'early marriage increases coital frequency, decreases condom use, and virtually eliminates girls' ability to abstain from sex'. The study also observed that husbands of married girls were about three times more likely to be HIV-positive than were boyfriends of single girls. Moreover, although married girls were less likely than single girls to have multiple partners, this protective behaviour was likely to be outweighed by greater exposure via unprotected sex with partners who have higher rates of infection (Clark, 2004).

By and large, the available literature indicates that several behavioural and social factors may increase the vulnerability of married female adolescents to HIV infection (Clark, 2004; Clark *et al.,* 2006). First, these young women engage in frequent unprotected sex. Second, women who marry young tend to have much older husbands (mean age difference, 5-14 years) and, in polygamous societies, are frequently the junior wives; factors which may increase the probability that their husbands are infected and that they have weakened bargaining powers in the marriage. Third, married adolescents have relatively little access to educational and media sources of information about HIV. Finally, the most common AIDS prevention strategies (such as abstinence and condom use) are not realistic options for many married adolescents. Marriage therefore is not a "safe haven" from HIV infection, but one of the high-risk HIV factors among young people (Clark *et al.,* 2006). This study posits that examining the age at first marriage and the marital status of young people could be useful for understanding their vulnerability to HIV infection.

In sum, then, the severity of the social and personal consequences of young people's childbearing ages is likely to be greater the younger the age at first birth. There is evidence that 'the level of schooling a young woman achieves is likely to be lower; she is more likely to be unmarried and to depend on her family for support, if they accept her and the

baby; and she is less likely to have the opportunity to develop her own identity' (Singh, 1998:118). In addition, greater modernisation (that is, living in an urban area or having a higher level of education) is expected to be associated with lower levels of adolescent childbearing – all other factors being equal – compared with living in a less modern setting (Singh, 1998).

2.4. Condom use at first sex

2.4.1. Levels and trends in condom use at first sex

In Zambia, as in many sub-Saharan African countries, condom use is far below the level needed to alleviate serious threats to sexual and reproductive health (Benefo, 2004). For example, a study by Blanc and Way (1998) shows that the proportion of women aged 15-19 who reported using family planning methods such as condoms ranged from 2 percent in Niger, Rwanda, and Senegal to 23 percent in Cameroon. With the exception of Cameroon and Côte d'Ivoire, condom use levels among teens were substantially lower than those among adult women. Aside from adolescents' lower levels of sexual activity, the pattern of low contraceptive use reflects the fact that many of them are just beginning their childbearing stages and are thus less likely to be motivated to delay or avoid pregnancies than are older women. The authors contend that the pattern also reflects the significant barriers to contraceptive use that many adolescents face. These include lack of information about methods, difficulties in obtaining services from providers, cultural mores which prohibit use among young women, concerns about side effects, and inability to negotiate contraception with partners.

Recent data from the 2009 ZSBS shows that condom use at first sex among young people has remained low and a survey by the CSO *et al.* (2010) shows that slightly more adolescent females aged 15-19 (30.6 percent) than males (27.1 percent) reported using condoms at first sex in 2009; while a higher proportion of young male adults aged 20-24 (34.6 percent) than females (25.6 percent) reported using a condom the first time they had sex, during the same year. The report also notes that young people aged 15-24 were much

more likely to report using a condom at first sex than respondents older than 25 years, which might be hinting at progress facilitated by condom promotion efforts aimed at the youth (CSO *et al.,* 2010).

Similarly, condom use at last sex remains low among young people. CSO *et al.* (2010) reports that 37 percent of young people reported using a condom during their last sexual partner in 2009. A higher percentage of males compared to females used a condom at last sex (39 percent and 33 percent, respectively).

2.4.2. Predictors of condom use at first sex among young people

There is evidence that labours to explain factors contributing and/or inhibiting condom use among young people (for example, Lugoe *et al.*, 1996; Juarez and LeGrand, 2005). These studies have generally noted low levels of condom use among young people. Differences have been observed in terms of age, gender, educational levels and place of residence.

2.4.2.1. Age

Studies which analysed age and condom use have noticed that young people are unlikely to use contraceptives the first time they have sex, and the older the age at first intercourse, the more likely they are to practice contraception (Blanc and Way, 1998). In all the countries reviewed, and for both men and women, Blanc and Way (1998) found that the likelihood of using contraceptives at first intercourse increased with age. One possible explanation is that in many parts of the world the stigma attached to the use of condoms (because of its association with infidelity, promiscuity, emotional detachment, and lack of commitment) makes it difficult for people to broach its use with partners, and possibly ensures that the method is used only with partners about whom little is known (Benefo, 2004). A cross-sectional survey by Lugoe *et al.* (1996) to predict the determinants of sexual debut and recent condom use among sexually active secondary school students in Arusha (Tanzania), indicates that late sexual debut prolonged the duration of dating before intercourse.

A study by Meekers and Klein (2002) discovered that parental support, perceptions of personal risk, and self-efficacy were associated with higher levels of condom use. In addition, Hendriksen *et al.* (2007) found that significant predictors of most recent sexual intercourse included high condom use, self-efficacy, optimism about the future, and reported behaviour change, attributable to HIV and AIDS.

2.4.2.2. Gender differences

The available literature also stresses gender differences in the use of condoms at first sex among young people. A study in Brazil by Juarez and LeGrand (2005), which examined boys' age at first sexual intercourse and factors that hinder their use of condoms, found that the boys become sexually active at early ages, and despite their general awareness of HIV, rarely use condoms, especially at ages younger than 15. Another study by Olley and Rotimi (2003) which examined gender differences at a Nigerian university found that the majority of sexually active students do not use condoms. These researchers also observed that when compared to males, females reported greater consistency in the use of condoms.

Other studies point to male resistance to condom use and women's inability to negotiate safer sex, as the major obstacles to the reduction of non-protective sex, especially among young people (Kankasa *et al.,* 2005). Due to these difficulties, especially encountered by women, some researchers contend that condom promotion campaigns have been successful in directly serving men but have left women dependent on their male partners for access (Agha, 1998). Therefore, the differences between women's and men's experiences suggest that these factors should be examined separately for each gender, and that particular attention be paid to identifying the factors which limit women's use of condoms (Benefo, 2004). Gender differences in condom use at first sex are explored in the present study.

2.4.2.3. Educational attainment

Some education has often been associated with condom use at first sex in a number of studies. For example, a study by Lugoe *et al.* (1996) among secondary school students in

Arusha (Tanzania), observed that condom use increased with levels of education, but that gender was not significantly linked to increased condom use. Another study by Kankasa *et al.* (2005) among urban pregnant women in Zambia found that school attendance was not effective for gaining knowledge about sexual transmission or condom use. Similarly, higher education and being in school have been identified as important predictors of condom use at last intercourse in regular and casual relationships (Prata *et al.,* 2005). In addition, more recent studies by Hargreaves *et al.* (2008), Paiva *et al.* (2008), and McGrath *et al.* (2009), report high levels of condom use among the more educated young people.

2.4.2.4. Marital status

Blanc and Way pointed out in 1998 that in most countries in sub-Saharan Africa, the contraceptive use was higher among sexually active, unmarried teens than among married teens. A study by Lugoe *et al.* (1996) found that condom use was particularly infrequent among casual sex partners. Similar findings were observed by Kankasa *et al.* (2005) among women who practised fidelity; their condom use was much lower than among women who were having extramarital affairs. These researchers further found that regular own earnings were significantly effective for condom use in married and unmarried women, irrespective of school attendance. In another study by Paiva *et al.* (2008), it was found that condom use during first sexual intercourse increased significantly in both stable and casual relationships across almost all segments, with notable differences by gender, skin colour, and schooling. Hendriksen *et al.* (2007) also observed that young adults who were married or had been involved in a relationship for six months or more were significantly less likely to have used a condom during their most recent sexual intercourse.

2.4.2.5. Correct and consistent condom use

Correctness and consistency use of condom is cardinal in preventing HIV transmission. The available literature indicates that young people still face many challenges when it comes to the correct and consistent use of condoms. Meekers and Klein (2002) who examined survey data on the determinants of having ever used condoms and on current condom use with

regular and casual partners among unmarried young people in urban Cameroon, found that while most adolescents have tried condoms at least once, use remained inconsistent. An analytical review by Slaymaker and Zaba (2003) on condom use at last high risk sex among young people, concluded that correct and consistent condom use could prevent susceptible people from acquiring HIV infection. Another study by Prata *et al.* (2005) with sexually experienced youth aged 15-24 in Luanda (Angola) observed that for both males and females, consistent condom use was positively associated with higher levels of education. These authors found that females who equated condom use with lack of trust were less likely to use condoms consistently, and males who believed that condoms were safe and who had multiple partners, were more likely to be consistent users.

2.4.2.6. Dual protection of condoms

There is emerging literature in sub-Saharan Africa which investigates the dual protection of condoms, that is, against HIV and AIDS and unwanted pregnancies among young people (Peltzer, 2000; Kaufman *et al.,* 2004; Maharaj, 2006). A recent study among sexually active men and women aged 15-24 years in KwaZulu-Natal found that 'the main reason for use (cited by 64 percent of users) was protection against both pregnancy and HIV infection' (Maharaj, 2006:64). The study also observed that young people who considered pregnancy highly problematic were more likely to use condoms than their counterparts who did not view pregnancy as a problem. In addition, young men and women who perceived themselves as having a medium to high risk of HIV infection were less likely to use condoms than their counterparts who perceived themselves as not being at risk.

Marston and King (2006) in their systematic review of 268 qualitative studies of young people's sexual behaviour published between 1990 and 2004 discovered that key themes emerging from these studies included young people's views of condoms as stigmatising and associated with lack of trust. These authors further note that,

> Carrying or buying condoms can imply sexual experience – undesirable for women, although sometimes desirable for men. Similarly, asking for

condoms can imply inappropriate experience for women. Young people also worry that asking for their partner to use a condom implies that they think their partner is diseased; thus, condom‑free intercourse can be seen as a sign of trust. In South Africa and Uganda, for example, wanting to use a condom can be interpreted as a sign of carrying disease. Paradoxically, despite the stigmatising effect for women in carrying condoms or using other contraception, women, not men, are generally considered responsible for pregnancy prevention (Marston and King, 2006:1581).

The promotion of condom use in countries like Zambia with widespread heterosexual transmission remains one of the key public health prevention strategies. Condoms have produced substantial benefits in countries like Thailand where both transmission and condom promotion are concentrated in the area of commercial sex (Hearst and Chen, 2004). The impact of condoms may generally be limited by inconsistent use, low use among those at highest risk, and negative interactions with other strategies. Therefore, reducing the number of sex partners appears to be another important strategy in addition to promoting the use of condoms.

2.5. Determinants of sexual and reproductive behaviour among young people

The foregoing discussion illustrates the fact that sexual behaviour as measured by age at first sex, age at first childbearing, and condom use at first sex among young people is influenced by a number of factors, some of which enables and inhibits young people's vulnerability to HIV infection and teenage pregnancy. In this section, some of the demographic, socio-cultural and socioeconomic factors are discussed.

2.5.1. Demographic factors

Demographic factors associated with sexual behaviour among young people are well documented and include early menarche (Edgardh, 2000); age at first sex, age at first childbearing, and age at marriage (Zabin and Kiragu, 1998); early school leaving age, family disruption, and disadvantage (Michael and Joyner, 2001); and poor educational attainment (Paul *et al.*, 2000). These factors increase the period of exposure to non‑marital

pregnancy and to infection with STIs, including HIV. In the following section, a number of other factors influencing age at first sex and age at first birth are explored.

2.5.2. Socio-cultural factors

Social and cultural factors such as parental control and the value placed on marriage institutions indirectly affect young people's sexual behaviours. For example, the practice of abstinence and condom use among young people is influenced by views underlying national policies and religious and traditional beliefs. A study by Marindo *et al.* (2003) in Zimbabwe confirms these assertions by noting that young people's decisions to adopt one or the other risk-reduction strategy may not necessarily indicate genuine individual choices. Rather, it may reflect their deference to adults' interests, as young people understand those interests. According to these researchers, there was evidence that young people are aware of the conflict between choices of strategies and sometimes conceal their condom use in order not to disappoint their parents who therefore have a direct influence on the behaviour of their children. In a study by Babalola *et al.* (2005) in Côte d'Ivoire, it was found that three parental factors (living in the same household as the father during childhood, perceived parental disapproval of early and premarital pregnancy, and parent-child communication about sexual abstinence) were positively associated with primary sexual abstinence (defined as yet to experience sexual debut), secondary sexual abstinence (defined as sexual abstinence subsequent to sexual debut), and reduced number of sex partners.

These findings suggest that parental monitoring and control are important predictors of youth's sexual behaviours and underscore the need to target parents and guardians in an effort to promote responsible sexual behaviour among young people. For example, Kotchick *et al.* (2001) found that parental monitoring or supervision of adolescents' social activities has been associated with less frequent sexual behaviour. Other studies have found that lower levels of monitoring have been associated with a higher number of sexual partners and inconsistent use of contraception (Kotchick *et al.,* 2001). Moreover, a study by Gordon and Mwale (2006) in Chipata (Zambia) observed that among the many factors

which make young people vulnerable to HIV, include traditional and emerging gender and sexuality norms which encourage unsafe sexual activity among young people.

According to Marston and King (2006), throughout the world, not only is sexual behaviour strongly shaped by social forces, but these forces are surprisingly similar in different settings. The authors note that women's sexual freedom, for example, is universally restricted compared with men's. Nonetheless, they observe that 'the exact nature of what is deemed inappropriate and the penalties for transgression – from verbal censure to "honour killings", a practice in which a family member kills a female relative as punishment for sexual behaviour considered to have brought "dishonour" to the family vary both within and between societies' (Marston and King, 2006:1582). These authors thus advance that:

> Social rewards and penalties influence behaviour. Complying with gender expectations can raise social status: for men, by having many partners, for women, by chastity or securing a stable, exclusive relationship with a man. While pregnancy outside marriage can be stigmatising, for some women pregnancy can be an escape route from the parental home. Young people may behave in particular ways through fear of being caught in the act. Sex can also be a way to obtain money and gifts from boyfriends: this is particularly well-described for sub-Saharan Africa, but is not exclusive to the region. (Marston and King, 2006:1582)

It is evident that social and cultural forces shape young people's sexual behaviour and consequently how they respond to sexual education information campaigns and condom distribution programmes. As Warenius *et al.* (2006:124) succinctly puts it, 'sexual and reproductive health services [are] at a critical intersection between the norms and values of the community – which advocates sexual abstinence before marriage – and the reality of premarital sex among young people'. Hence, young people are at constant conflict with such societal demands.

2.5.3. *Socioeconomic* factors

Socioeconomic factors such as education, gross family income and occupation of head of household all have a bearing on young people's sexual behaviours. Socioeconomic status (SES) is 'a composite measure that typically incorporate[s] economic status, measured by income; social status, measured by education; and work status, measured by occupation' (Adler *et al.,* 1994:15). The fact that associations between SES and sexual behaviour are found with each of the indicators suggests that a broader underlying dimension of social stratification or social ordering is a potent factor. A study by Juarez and LeGrand (2005) in Brazil found that higher socioeconomic status leads to earlier sexual activity for boys (in contrast with girls), but also to a greater likelihood of using condoms during first intercourse. Other studies have observed that lack of recreation facilities, schooling and unemployment may result in increased sexual activity among young adults (Mathews, 2005).

In addition, socioeconomic change affects the level of adolescent childbearing and the timing of the first birth through factors (the proximate determinants of fertility) which include the timing of first sexual relationship, union or marriage, use of contraceptives, and practice of abortion (Singh, 1998; Zabin and Kiragu, 1998). A study by Singh (1998) confirms these assertions when it notes that declines in adolescent childbearing are clearly more common and larger in size in urban areas than in rural areas, and more common among better-educated women. In general, Singh notes, educated women have lower levels of adolescent childbearing. Therefore, conditions such as socioeconomic living arrangements have an indirect bearing on young people's sexual behaviour.

In sum, since sexual activity is a universal human drive, public health education among young people should focus on pregnancy and disease prevention. Prevention strategies aimed at reducing concurrent multiple partnerships, promoting increased condom use with non-regular sex partners, and education on high risk cultural practices among young people, are crucial to reduce HIV prevalence and high pregnancy levels in Zambia.

2.6. Theoretical and conceptual framework

2.6.1. Theoretical framework

The fight against HIV and AIDS requires an understanding of both individuals' and society's sexual customs, practices and behaviour (CSO *et al.,* 2006). In the past, a number of theories and models have been used to explain sexual behaviour in young adults. The most commonly cited theories and models in HIV-related research have been based on "social cognitive theories", particularly the Health Behaviour Model, Stages of Change Theory, Theory of Reasoned Action, and Social Cognitive Learning Theory (National Institute of Health, 2005). These theories have tended to focus mainly on factors such as behaviour, personal factors, interpersonal factors, and processes. According to the theories, a person's behaviour is primarily seen as a function of beliefs and subjective evaluations (Eaton *et al.,* 2003). Social cognitive theories tend to explain a person's behaviour in the light of vulnerability to risk, perceived health threats and perceptions about social norms.

Criticism against social cognitive theories are based on the fact that they tend to ignore other factors that have the same potential for influencing behaviour namely environmental, social and cultural factors, especially evident in developing countries (Airhihenbuwa *et al.,* 1999; Eaton *et al.,* 2003). Recent studies have suggested that these theories and models do not provide an adequate framework for bringing about behaviour change particularly when applied to the contexts of Africa, Asia, Latin America and the Caribbean (Airhihenbuwa *et al.,* 1999; Parker, 2004). Available evidence, particularly cited in studies by Airhihenbuwa *et al.* (1999), Eaton *et al.* (2003), and Parker (2004), further observe common problems listed below.

One, the theories lack consideration of the variety of political, social, economic and cultural contexts which exist in different regions of the world. Two, the theories mainly focus on the individual rather than the social context within which the individual exists. Three, they disregard the influence of other variables like culture and gender relationships which influence individual behaviour. Four, they assume that decisions about HIV prevention are

based on rational, volitional thinking with no regard to real emotional responses in sexual behaviour. In agreement with earlier studies, Eaton *et al.* (2003) argue that personal factors, proximal and distal contexts interact to encourage HIV risk behaviour in ways that are not fully captured by social-cognitive models. In sum, then, these theories fail to fully unravel the other factors which shape sexual behaviour.

In view of these limitations, the current study draws its insights from the framework developed by Eaton *et al.* (2003), to understand sexual behaviour among young people in Zambia. The framework which was based on research conducted on the sexual behaviour of young adults in South Africa which suggests that behaviour is shaped by the interaction of factors at three levels: within a person's context (personal factor), within a person's proximal context (proximal factor) and within the person's distal context (distal factor) (Eaton *et al.,* 2003).

Personal factors influence sexual behaviour and the environment that intimately impinge on an individual (Mathews, 2005). Proximal factors include interpersonal relationships and the physical and organisational living environment. Distal factors refer to structural elements which influence individual behaviour including cultural factors like traditional beliefs, social expectations, and determinants which encompass particular communities or populations. The sexual behaviour of young people occurs within conditions that are located in and shaped by the broader socio‑economic, cultural and political environment (Dehne and Riedner, 2001).

This study acknowledges that there are several factors that influence sexual interactions among young people in Zambia ranging from emotional, psychological to physiological – all of which may readily overwhelm rational choice making (Parker, 2004). The study is thus constructed within the context of sexual behaviour among young people in Zambia which is influenced by several social, economic, demographic and cultural factors. This assumption has been confirmed by several recent studies namely Kelly and Parker, (2000) and Leclerc‑Madlala (2002) which conceptualise high risk youth sexuality in Africa as

being influenced by environmental, social and cultural factors, which often and effectively disenable young people from practising functional, health-providing, safer-sex behaviour.

2.6.2. Conceptual framework

(a) Understanding of "sexual behaviour"

The present study acknowledges the fact that it is difficult to unravel all the dynamics of sexual behaviour. This is because, as Fenton *et al.* (2001:84) observe, sexual behaviour is 'largely a private activity subject to varying degrees of social, cultural, religious, moral and legal constraints'. Therefore, in this study, whenever the word "sex" is used, it will refer to heterosexual sex. The study excludes all other forms of sex such as anal and homosexual sex. This definition is appropriate for understanding sexual behaviour among young people in Zambia (CSO *et al.,* 2006).

(b) Understanding of "risky-sexual behaviour"

Sexual behaviour is expressed across several dimensions including number of sexual partners, frequency of sex, and condom use (Slaymaker, 2004). For the purposes of this study, the term "risky sexual behaviour" is defined as any behaviour that increases the probability of negative consequences associated with sexual contact, including AIDS or other sexually transmitted diseases, as well as unplanned pregnancies. These behaviours are either: (i) indiscriminate, including having multiple partners; risky, having casual sex with unknown partners; and irresponsible, failing to discuss risk topics prior to intercourse; or (ii) fail to take protective actions, such as using condoms and birth control (Cooper, 2002).

2.7. Conclusion

There is a growing body of knowledge aimed at understanding the sexual behaviour of young people, especially in sub-Saharan Africa. These studies have examined a variety of issues including the relationships between age at first sex, age at first childbearing, and

condom use among young people. Most of the literature reviewed in this chapter has used age at first sex and age at first birth as proxy measures for better understanding sexual behaviours among young people. Overall, in Zambia, evidence from the ZSBS collected between 1998 and 2009 shows an increase in age at first sex and differences between young men and young women have been noted. In general, young men tend to initiate sex later than young women. It has also been observed that young people have a tendency to engage in risky sexual behaviour (such as sex with multiple partners, one of which may be infected with STIs including HIV, and unprotected sex), which increases vulnerability to HIV infection. Low levels of condom use among young people are perhaps the most documented fact in the literature. Evidence accumulated thus far indicates that young people face a number of challenges especially regarding the correct and consistent use of condoms, both with regular and non-regular partners. Finally, a number of factors such as demographic, socio-cultural and socio-economic conditions have been identified as having an influence on young people's sexual behaviour.

CHAPTER 3

METHODOLOGY

3.0. Introduction

The main objective of this study was to examine the determinants of sexual behaviour among young people aged 15-24 years in Zambia. The study therefore used a quantitative approach in analysing data from the 2005 ZSBS to examine the sexual behaviour of young people in Zambia. This chapter describes the methodology used to understand not only the changes in levels of sexual behaviour among young people, but also the drivers of these behaviours. The chapter also outlines the methods of analysis employed in the study.

3.1. Data source

The data used for analysing sexual behaviour among young people was based on the 2005 ZSBS. In Zambia, the first AIDS case was reported in 1984 (CSO *et al.,* 1999). Since then, self-reported data on sexual behaviour and condom use has been available from the ZSBS conducted in 1998, 2000, 2003, 2005 and 2009; and from the ZDHS of 1992, 1996, 2001/2002 and 2007. The rationale for using the 2005 ZSBS is that it provided the most recent data on sexual behaviour among young people in Zambia at the time when the proposal was written. The 2009 ZSBS was only released in June 2010. The ZSBSs offer insights into different facets of young people's sexual behaviours, and most importantly, are useful primary sources for an examination of levels and determinants of the sexual behaviour of young people in Zambia.

The 2005 ZSBS was the fourth in a series of national-level cross-section surveys that have been carried out to monitor knowledge, attitudes, and behaviours regarding HIV and AIDS

in Zambia. It was conducted by the Central Statistical Office in collaboration with the National HIV/AIDS/STD/TB Council and the Ministry of Health Central Board of Health. Technical assistance was offered by MEASURE Evaluation (University of North Carolina) and YouthNet/Family International. The main objective of the 2005 ZSBS (as with the ZSBS 1998, ZSBS 2000, ZSBS 2003 and ZSBS 2009) was to obtain national estimates of a number of key indicators important in monitoring progress of the national HIV/AIDS/STDs programme (CSO *et al.,* 2006). It was a nationally representative sample, designed to produce national, urban and rural estimates by gender of sexual behaviour and health-care seeking behaviour in Zambia. The sample design was based on a total of 105 self-weighted clusters using the 2000 Census sampling frame (CSO *et al.,* 2006). Interviews were completed for a total of 2,330 households, representing 2,174 women and 2,046 men. The response rate from households was 93 percent, with individual response rates of 88 percent for females and 86 percent for males.

The 2005 ZSBS questionnaires were designed around the measurement of international standard indicators, promulgated primarily by UNAIDS and WHO, and adapted to the Zambian context. Three types of research instruments were used in the 2005 ZSBS: a household questionnaire, an individual questionnaire, and a community questionnaire. First, a household questionnaire was administered to the head or another appropriately knowledgeable member of the household to obtain household-level data, including extent of household assets, orphanhood, child fostering, birth registration, schooling, care and support of sick adults, and instances of recent deaths. Second, an individual questionnaire was administered to eligible adults in the household, namely women aged 15-49 years and men aged 15-59 years. The questionnaire sought to obtain individual-level data such as background characteristics (for example, age, residence, education, employment), ethnic affiliation, marital history, sexual behaviour and partnership, partnership characteristics, condom use, knowledge and sources of knowledge about HIV and AIDS transmission and methods of prevention, exposure to and characteristics of voluntary counselling and testing (VCT), pregnancy, births, and use of antenatal care. Third, a community questionnaire was administered to the community leader to obtain data about community-level impact, and assistance available to individuals and families in communities affected by HIV and AIDS.

All three questionnaires were translated into the seven major local languages spoken in Zambia: Bemba, Nyanja, Tonga, Lozi, Lunda, Luvale and Kaonde. The data collected in the 2005 ZSBS provides sufficient insights to allow for an analysis of sexual behaviour among young people in Zambia. This study utilises data from individual and household questionnaires and primarily focused on young men and women aged 15-24 years. A total sample of 2,813 young people aged between 15 and 24 years were chosen for the analysis with a view to understanding their sexual behaviour. The sample was representative of 57.16 percent females and 42.84 percent males.

3.2. Methods of analysis

A STATA 11 statistical software programme was used to analyse the data from the 2005 ZSBS. Three levels of analysis were employed. Firstly, univariate analysis was used to describe the levels in age at first sex, age at first childbearing, and condom use at first sex of young males and young females. In other words, descriptive statistics were created to present the distributions of the key variables in the individual analysis of young women (N = 1,608) and young men (N = 1,205), and the statistical significance of differences in proportions was tested using the chi-square statistic. Secondly, bivariate analysis in the form of Kaplan-Meier Product-Limit Estimators (hereafter referred to as "KM estimators") was used to examine the differentials and timing of age at first sex and age at first birth among young people by selected covariates including urban/rural residence, marital status and educational attainment. Thirdly, multivariate analysis was used to assess the correlation of independent variables and dependent variables. In particular, the Cox Proportional Hazards Models (hereafter referred to as the "Cox Models") were used to assess the relationship of explanatory variables (such as SES and province of residence) to survival time of age at first sex and age first childbearing; and finally, logistic regression models were used for the analysis of the determinants of condom use at first sex among young people in Zambia. Separate grouped models were conducted for young men and young women. The following sections further discuss the methods of analysis used in the present study.

3.2.1. Timing of first sex and first childbearing

The study employed two survival analysis techniques, KM estimators and Cox models, to examine the timing and determinants of first sex and first childbearing. Survival analysis is a statistical method for analysing the occurrence and timing of events (Allison, 1995), such as when people are most likely to experience sexual intercourse for the first time or first childbearing. As Canino (2005:32) notes 'one common problem associated with "when" questions is that respondents may not experience the target event during the period of data collection'. These people then become "censored". With conventional regression analysis, it becomes problematic to include "censored" individuals in the final data, that is, those who did not have sex or give birth. Survival analysis solves this problem by accommodating "censored" cases. In this case, the target event (such as sexual initiation) can only occur once. The event can be experienced in a given time period, such as at age 15, only if the person did not have sex at an earlier age (Canino, 2005). Therefore, an event indicator is created that gives a value of 0 (zero) for each time period (year) that the event did not occur in, and a 1 (one) if the event was experienced at that time (Keiley and Martin, 2005; Canino, 2005).

The main goal of survival analysis is to estimate predictive models in which the risk of an event depends on several covariates, some of which remain constant over time (for example, gender and race) and others which may vary with time (for example, marital status and education level). Survival analysis techniques are able to combine both censored and time-dependent covariates that are difficult to handle with conventional statistical methods to produce consistent estimates of the parameters of interest (Allison, 1995). There are nevertheless some potential limitations associated with survival analysis in terms of retrospective data, i.e., when people are asked to recall the dates of events like first sex, first birth, and first marriage. Respondents may make substantial errors in recalling the times of events or forget some events entirely, may have difficulty in providing accurate information on time-dependent covariates, and the interviewed sample may be a biased

sub-sample of those who may have been at risk of experiencing the event (Allison, 1995; Jenkins, 2005).

Survival analysis was used to examine the timing of first sex with individuals represented as surviving until first sex. The failure event was starting sex and the follow-up time was censored if individuals had not started sex. The proportion of censored young people aged 15-24 for the present study was 35.70 percent (N = 1,004 censored). The 2005 ZSBS asked respondents to state how old they were when they first had sexual intercourse. Similarly, survival analysis was used to examine timing of first childbearing with individuals surviving up to first birth. Failure event was having a first birth and follow-up time was censored if individuals did not give birth. The proportion of censored young women aged 15-24 for the present study was 41.91 percent (N = 505 censored). Respondents in the 2005 ZSBS were asked to state if they have ever given birth or not.

In analysing the survival data for age at first sex and age at first childbearing, the present study utilised the KM estimator and the Cox Model, which are discussed below.

(a) Kaplan-Meier Product-Limit Estimator

The KM estimator is a non-parametric Maximum Likelihood derivation procedure which incorporates information on all observations, censored and uncensored (Allison, 1995). It considers survival to any point in time as series of steps defined by observed survival and censored time (Canino, 2005). It is the most common method for estimating the survival function. The KM estimator failure curves will be plotted to illustrate the cumulative onset of sexual activity (Cremin *et al.,* 2008). The survival function is obtained by multiplying the survival probabilities across for each single observation.

The equation for the KM estimator is:

$$S(t) = \prod_j t = 1[(n\text{-}j)/(n\text{-}j+1)]\delta_{(j)} \qquad (3.1)$$

where:
> *S(t) is the estimated survival function,*
> *n is the total number of cases,*
> $\prod$ *denotes the multiplication (geometric sum) across all cases less than or equal to t,*
> $\delta_{(j)}$ *is a constant that is either 1 if the jth case is uncensored (complete) and 0 if it is censored.*

(b) Cox Proportional Hazards Model

The Cox Model is a survival analysis technique that estimates the relationship between the hazard rate and explanatory variables without having to make any strenuous assumptions about the shape of the baseline hazard function (Bewick *et al.,* 2004; Jenkins, 2005). It is therefore a semi-parametric model (Allison, 1995). The Cox Model analysis was used because it allows the inclusion of individuals who did not initiate sex during the observation period, thereby comparing the number of individuals at risk in each group at multiple points in time rather than excluding those who remain virgins (McGrath *et al.,* 2009).

The Cox Model is computed using the formula:

$$h\{(t), (z_1, z_2, ..., z_m)\} = h_0(t) * exp(b_1 * z_1 + ... + b_m * z_m) \qquad (3.2)$$

where:
> *h(t,...) denotes the resultant hazard, given the values of the m covariates for the respective case ($z_1, z_2, ..., z_m$) and the respective survival time (t);*
> *$h_0(t)$ is called the baseline hazard; it is the hazard for the respective individual when all independent variable values are equal to zero.*

A summarised linearised model is obtained by dividing both sides of the equation by $h_0(t)$ and then taking the natural logarithm of both sides (Hill and Lewicki, 2007):

$$log[h\{(t), (z...)\}/h_0(t)] = b_1 * z_1 + ... + b_m * z_m \qquad (3.3)$$

3.2.2. Predictive models for condom use at first sex

In the analysis of condom use at first sex, the study employed logistic regression models. The logistic regression model (also referred to as logistic model or logit model) is a type of predictive model that can be used when the target variable is a binary or dichotomous categorical variable (Keating and Cherry, 2004). Logistic regression is an important tool widely used to model the outcomes of a categorical dependent variable (Czepiel, 2002). It is one of the most versatile techniques of generalised linear models, which equates the linear component to some function of the probability of a given outcome on the dependent variable. That function, in logistic regression, is the logit transform: the natural logarithm of the odds that some event will occur (Czepiel, 2002).

The categorical target (dependent) variable, condom use at first sex, was coded: 1 if the respondent used a condom at first sex and 0 if the respondent did not use a condom at first sex. Respondents in the 2005 ZSBS were asked to state if they used a condom the first time they had sex or not. The use of multiple logistic regression models to investigate the determinants of condom use at first sex among young people in Zambia was necessitated by the coded nature of the categorical variable.

The logistic regression model formula has the form:

$$ln\ (p/q) = B_0 + B_1X_1 + \ldots + B_kX_k \tag{3.4}$$

where:
p is the probability that a respondent used a condom during sexual debut; q (or 1-p) is the probability that the respondent did not use a condom at sexual debut; B_0, B_1, ... B_k are regression coefficients, and X_1, X_2, ... X_k are explanatory variables (Oyediran *et al.*, 2011).

Odds ratios are thus reported for logistic regressions of the three models which were created. The first model estimated the effect of age, urban/rural residence, marital status and educational attainment on condom use at first sex, while the second model added in a province of residence variable. In the final model, SES variable was included to the model

that controlled for age, urban/rural residence, marital status, educational attainment and province of residence.

3.3. Dependent and independent variables

The study analysed two distinct sets of sexual behaviour outcomes: firstly, demographic measures, that is, age at first sex and age at fist childbearing; and secondly, behavioural measures, particularly condom use at first sex.

3.3.1. Dependent variables

(a) Age at first sex

Age at first sex has been proposed as a good proxy for understanding sexual behaviour among young people in several empirical studies (Singh *et al.,* 2000; Zaba *et al.,* 2004). It is thus a key indicator in determining young people's potential risk for unplanned pregnancies and STIs (Singh *et al.,* 2000). The 2005 ZSBS provided two sources of data: first, based on the questions posed to married respondents who were asked to recall at what age they first had sex; and second, based on questions posed to unmarried respondents who were asked whether or not they have ever had sex and if so how old they were when they first had sex. In the present study, age at first sex is measured using the question "How old were you when you first had sexual intercourse (if ever)?" Age at first sex is given as single ages in the data.

(b) Age at first birth

The start of childbearing is more likely to coincide with the initiation of sexual intercourse and thus represents exposure to the risk of infection with STIs such as HIV (CSO *et al.,* 2006; McGrath *et al.,* 2009). Measures for age at first birth were obtained from married and unmarried respondents between the 15 and 24 year olds. These respondents were asked to

state whether they have ever given birth or not. Just like age at first sex, data for age at first birth is given as single ages.

(c) Condom use at first sex

The correct and consistent use of condoms is critical in preventing STIs and in reducing teenage pregnancy (Slaymaker and Zaba, 2003). In the 2005 ZSBS, all sexually active respondents were asked to state if they used a condom the first time they had sexual intercourse, condom use at last sexual intercourse, and condom use in the 12 months prior to the survey with a regular or non‑regular partner. Condom use in this study is measured by observing all sexually active respondents aged 15‑24 years if they used a condom the first time they had sexual intercourse. That is, young people responded to the question: "The first time you had sexual intercourse was a condom used?"

3.3.2. Independent variables

There are a number of factors that influence young people's sexual behaviour which have received considerable attention and have been explored in the published literature namely gender, educational attainment, rural and urban differentials, ethnic identity, religion, and regional differences. As advanced earlier, it is therefore important to consider the interactive effects of sexual behaviour with different factors at the level of personal, proximal and distal contexts. In this way, both the subjective and objective influences of sexual behaviour are taken into account (Eaton *et al.*, 2003). The awareness of such influences is especially significant in a developing country like Zambia where cultural factors (such as shared beliefs and values on condom use across subgroups and segments of the population) and structural factors (such as the economic benefits around condom promotion campaigns) exert great pressure on young people's sexual and reproductive behaviours. The present study paid particular attention to the following independent variables: age, gender, urban/rural residence, marital status, educational attainment, province of residence and SES.

(a) Age

The influence of age on young people's sexual behaviour has been noted in the available literature. Studies (for example, Blanc and Way, 1998; Peltzer, 2000; Hendriksen et al., 2007) generally note that the older the age at first intercourse, the more likely young people are to practise contraception. Age in the present study was included as a continuous variable from ages 15 to 24. One of the reasons for using age as a continuous variable was to allow for censoring and time-dependent covariates used in the Cox Models and logistic regression models. There was a need to know more than just "who was experiencing an event;" it was also necessary to know "when" the change of the event occurred, that is, situating the event in time. This was vital in the analysis of survival data for first sex or first childbearing. For example, age at first sex may have occurred at age 15, 16, or 17; meaning that not everyone experienced the event at the same time.

(b) Gender

Differences in condom use between men and women have equally been noted in some studies. For example, a study by Olley and Rotimi (2003) found that females reported greater consistency in condom-use than males. Therefore, there is a need to identify gender-specific factors enabling and/or limiting men and women's use of condoms. The 2005 ZSBS disaggregated data according to gender. The present study analysed both separate and combined models for young men and young women.

(c) Residence

Differences in urban/rural settings have an impact on age at first sex, age at first birth and condom use at first sex. Generally, many studies have noted that young people in rural areas are expected to initiate sex earlier than their urban counterparts (Curtis and Sutherland, 2004), to marry at early ages (CSO *et al.*, 2009) and are less likely to use condoms at first sexual intercourse (Blanc and Way, 1998). Urban/rural residence was one

of the necessary indicators used to examine changes in the dependent variables. In this study, residence consisted of two main categories: residing in either an urban or rural area.

(d) Marital status

Marriage is not only an important social or demographic indicator, but is also important in terms of health interventions such as family planning programmes (Clark, 2004). In Zambia, there is evidence that women appear to marry at a much younger age than men, and premarital sex and non-marital births seem to be on the increase despite marriage being a highly valued institution (CSO *et al.,* 2009). Hence, it is necessary to pay special attention to young people's sexual behaviour to avert the negative health consequences of unwanted pregnancies and unsafe abortions. Measures for marital status in the present study were obtained from married and unmarried respondents between 15 and 24 years old. The respondents were asked: "Have you ever been married or lived with a man/woman as if you were married?"

(e) Educational attainment

The influence of education on young people's sexual behaviour is well-documented in the literature. For example, it has been found that higher education and being in school are important predictors of condom use (Prata *et al.,* 2005), and that education generally delays onset of sex and first childbearing (Adler *et al.,* 1994). Zambia has a three-tiered education system: primary education, comprising the first seven years of schooling; secondary, being an additional five years; and post-secondary education or higher education, which includes college and university education (CSO *et al.,* 2006). Educational attainment was measured by the following levels: no education, primary education, secondary education and higher education.

(f) Province

Zambia is administratively divided into nine provinces namely the Copperbelt, Northern, Eastern, Southern, North-Western, Central and Western provinces, Lusaka, and Luapula, Two provinces namely Lusaka and the Copperbelt are predominantly urban, while the seven other provinces are largely rural. About 64 percent of the population live in rural areas and 36 percent in urban areas (CSO *et al.*, 2009).

Observing differences in province of residence is vital for understanding regional variations in young people's sexual behaviour. Ethnic groups in Zambia are concentrated in particular provinces: for example, Bembas are mostly found in Luapula and the Northern provinces; Tongas in the Southern province; Lozis in the Western province; Luvales and Kaondes in the North-Western province; Nyanjas in the Eastern province; and Lenjes and Solis in the Central province. With the exception of the Copperbelt and Lusaka provinces which are predominantly metropolitan provinces, these tribal groupings are likely to share similar beliefs and values, and are therefore expected to reflect similar ways when it comes to social and cultural issues like marriage and sexual initiation.

The 2005 ZSBS collected data from all nine provinces from all the eligible men and women aged between 15 and 59 years. This study only examined the data of young people aged 15-24 years. Differences in age at first sex, age at first childbearing and condom use at first sex among young people in this study were observed within each of the nine provinces of Zambia.

(g) Socioeconomic status (SES) index

The specific conditions and circumstances under which sexual debut, first childbearing and condom use at first sex occur are entry points in understanding young people's sexual and reproductive health problems (Izugbara, 2001). The social and economic conditions measured either in terms of household income or expenditure has thus been examined (Adler *et al.,* 1994). In the absence of either income or expenditure data (as is often the case

in most developing countries including Zambia) the SES index is a good measure or proxy of wealth (Montgomery *et al.,* 2000).

This study employed the statistical method of Principal Components Analysis (PCA) to create a composite index of household wealth following the works of Filmer and Pritchett (2001). The PCA is a technique that transforms a large number of variables that are believed to combine into one measure, and forms smaller numbers of correlated factors that preserve information from these variables. It assigns weights to variables such that the components created explain most of the variations in the original variable and can then be used in representing them (Nzimande, 2011). In sum, the index uses only the scores of the first principal component. For each observation, subtracting the mean and dividing by the standard deviation standardises the variables included in the analysis. The standardised variable is then multiplied by the variable's scoring coefficient obtained from factor analysis. Adding across all the variables selected for inclusion, yields the index for each household (Fernandez, 2011).

The index is computed using the formula:

$$A_j = f_1 \times (a_{j1} - a_1) / (S_1) + \ldots f_n \times (a_{jn} - a_n) / (S_n) \qquad (3.5)$$

where:

A_j is the asset index for household j; f is the scoring coefficient obtained from the factor analysis for each asset included in the index; a_{j1} is the value for that asset for household j and asset n; and the mean and standard deviation for each asset n are represented by a_n and S_n, respectively.

Table 3-1: Factor scoring from principal component analysis, ZSBS 2005

	F loadings	Factor Scores	Mean	SD	FS/SD
Has piped water	0.7280	0.1592	0.4864	0.4999	0.3184
Has flush toilet	0.7475	0.1634	0.1913	0.3934	0.4154
Has electricity	0.8725	0.1908	0.2923	0.4549	0.4193
Has television	0.8453	0.1848	0.3007	0.4586	0.4029
Has telephone	0.7565	0.1654	0.1771	0.3818	0.4331
Has refrigerator	0.8202	0.1793	0.1771	0.3818	0.4696
Safe wall material	0.7485	0.1636	0.5035	0.5001	0.3272
Has car	0.4523	0.0989	0.0434	0.2039	0.4850

Source: Own calculations from ZSBS (2005)

The 2005 ZSBS contains six different household characteristics: main source of water, such as piped water and water from open or covered well; type of toilet facility, such as flush toilet and pit latrine; household amenities such as electricity, radio, television, telephone/cell and refrigerator; main material of the floor, such as natural or rudimentary floor; household assets such as bicycle, motorcycle and car/truck; and whether the household has mosquito nets. An asset index was then constructed by combining the most important durable household goods like television, telephone, refrigerator and car, and the most accessed household social amenities like main source of drinking water, type of toilet facility and safe wall materials. Table 3‑1 above shows factor scores (FS), sample means (SM), and standard deviations (SD), obtained from the eight household characteristics. An asset scoring factor index (FS/SD), which was later used as explanatory variables in the Cox Models and logistic regression models, was calculated by dividing factor scores by standard deviation of each household variable. For example, a household with a car has an asset scoring factor of 0.4850 times higher than a household without a car.

3.4. Data limitations

The present study acknowledges the inherent errors of the 2005 ZSBS, which was a cross-sectional survey, subjecting our results to two common sets of errors. Firstly, *sampling errors* which result from the fact that when a sample is drawn, there is a chance that it may not be representative of the population from which it is taken (Fowler, 1984). Secondly,

non-sampling errors which may result from the interviewer, the questions, and the respondent. It is possible that young respondents do not or cannot always openly or truthfully answer questions dealing with the intimate topic of their sexual behaviour and practices. Understandably adolescents, especially if they are unmarried or live in settings where sexual relationships outside marriage are censured, are probably even more likely than adults to be reticent about their sexual behaviour (Singh *et al.,* 2000). It also possible that very young teenagers who are only just beginning to develop a sense of their own sexuality may be especially unlikely to want to discuss this part of their lives. Finally, there were a number of fluctuations concerning observations made on age at first sex, age at first birth, and condom use at first sex which could be explained by missing data, and which affected the final interpretation of the results. For example, although there were 1,112 young women who ever had sex, only 770 young women had a birth and only 266 young women used a condom at first sex.

3.5. Conclusion

This chapter discussed the methodology used for the analysis of dependent and independent variables for the study of sexual behaviour among young people aged 15-24 years in Zambia. The study used a secondary data set, the 2005 ZSBS which collected information on knowledge, attitudes, and behaviours regarding HIV and AIDS from all eligible adults from the ages of 15 years and above. This data set was used to determine how age at first sex, age at first birth, and condom use at first sex differ by cohort, gender, urban/rural residence, marital status, educational attainment, and province of residence. The following chapter presents the results and discusses the research findings based on an examination of age at first sex, age at first childbearing, and condom use at first sex of young people in Zambia.

CHAPTER 4

PRESENTATION OF RESULTS

4.0. Introduction

This chapter presents the results of the statistical analysis on the quantitative data obtained from the 2005 ZSBS on the sexual behaviour of young people aged 15-24 years. The chapter examines and discusses the levels and determinants of sexual behaviour of young people measured by age at sexual debut, age at first childbearing, and condom use at first sex.

4.1. Age at first sex

4.1.1. Levels in age at first sex

4.1.1.1. The percentage of young men aged 15-24 years who ever had sex

Table 4-1 presents the percentage of young men aged 15-24 years who ever had sex by selected background characteristics. Differences were observed regarding urban/rural residence, marital status, educational attainment, and province of residence. The table shows that there are more rural than urban young men who ever had sex, notably 66.40 percent and 51.71 percent, respectively. These results demonstrate that irrespective of urban/rural residence, more than 50 percent of young men aged 15-24 years were sexually active.

All the married young men had initiated sex, while slightly more than 50 percent of unmarried young men (50.68 percent) had initiated sex. Premarital sex is a common

phenomenon among unmarried young people in Zambia as cited in the available literature (Curtis and Sutherland, 2004; CSO *et al.,* 2010). An analysis of 31 DHS surveys in 10 countries including Zambia found that in general, reporting of premarital sex was more common among women in sub‑Saharan Africa than in Latin America and the Caribbean, although men were more likely than women to report on premarital sex in the 12 months prior to the survey (Curtis and Sutherland, 2004). A more recent survey, the 2009 ZSBS, which measured the percentage of adolescents aged 15‑19 who ever had sex by single year of age, found that in 2009 'more than a third (35 percent) of all adolescents reported having had sex' (CSO *et al.,* 2010:69). The same report further reverals that more than a quarter (26 percent) of young single people aged 15-24 had premarital sex, with more young men (28 percent) than young women (23 percent) reporting having had premarital sex twelve months before the survey.

In terms of educational attainment, sexual initiation was highest among young men with higher education (80.95 percent), followed by those without education (72.31 percent). In addition, more than 50 percent of young men with primary education (61.06 percent) and with secondary education (53.09 percent) had initiated sex. The percentage difference in having had sex observed among young men at different levels of education may be masked by differences in age. The provincial distribution of young men who ever had sex compared to those who did not initiate sex was generally hybrid. More than 70 percent of young men in Luapula (71.05 percent), North-Western (72.86 percent) and Western (73.53 percent) provinces had initiated sex, while between 55 and 60 percent of young men in Central (58.06 percent), Eastern (64.49 percent), Northern (54.67 percent) and Southern (59.86 percent) provinces had initiated sex. Conversely, less than 50 percent of young men in the Copperbelt (47.90 percent) and Lusaka (49.14 percent) provinces had initiated sex. The low levels of sexual activity observed in the Copperbelt and Lusaka provinces could be an indication of the influence that urbanisation and economic activities exert on young men. The two provinces together account for 61 percent of the total urban population (CSO, 2003-a), and all the major economic activities like the mining and manufacturing industries, are concentrated there. Therefore, sexual initiation largely competes with school attendance and prospects of working in commercial and copper mining industries.

Overall, more than 50 percent of young men (57.84 percent) in the surveyed sample had initiated sex. However, recent survey results indicate a gradual decrease in the percentage of young men aged 15-24 years who ever had sex. For example, the percentage of young men who ever had sex had accordingly reduced from 64.4 percent in 2000 to 51.0 percent in 2009 (CSO *et al.,* 2010).

Table 4-1: Percentage of young men aged 15-24 years who ever had sex by selected variables, ZSBS 2005

Background Characteristic	Percent who "had sex"	Total percent	Number of respondents
Place of Residence			
Rural	66.40	100.00	334
Urban	51.71	100.00	363
Marital Status			
Married	100.00	100.00	175
Unmarried	50.68	100.00	522
Education			
No Education	72.31	100.00	47
Primary	61.06	100.00	254
Secondary	53.09	100.00	361
Higher	80.95	100.00	34
Province			
Central	58.06	100.00	36
Copperbelt	47.90	100.00	57
Eastern	64.49	100.00	69
Luapula	71.05	100.00	27
Lusaka	49.14	100.00	171
Northern	54.67	100.00	41
North-Western	72.86	100.00	51
Southern	59.86	100.00	170
Western	73.53	100.00	75
Overall male	57.84	100.00	697
			(N = 1,205)

Note: The chi-square test on sample distributions yielded $p < 0.01$. Total sample size is in parenthesis.

4.1.1.2. The percentage of young women aged 15-24 years who ever had sex

Table 4-2 presents the percentage of young women aged 15-24 years who ever had sex by selected background characteristics. The observed background features were urban/rural residence, marital status, educational attainment, and province of residence. There are many of similarities between young men and young women regarding sexual initiation. As table 4-2 shows, there were more rural than urban young women who had initiated sex. Specifically, more than three quarters of young women (77.87 percent) in rural areas reported having initiated sex, while only 66.65 percent of young women in urban areas had initiated sex. In general, more than 50 percent of young women were sexually active irrespective of urban/rural residential settings.

Just like their male counterparts, all the married young women had initiated sex. However, unlike their male counterparts, less than 50 percent of unmarried young women had initiated sex; that is, 46.38 percent. Moreover, sexual initiation among young women decreased with their levels of education. Sexual initiation was highest among uneducated young women (85.07 percent), followed by young women with primary education (77.15 percent, followed by those with higher education (66.67 percent). It was, however, lowest among young women with secondary education (59.18 percent).

With the exception of the Copperbelt province, there were more young women who initiated sex compared to their counterparts in the other eight provinces. In five of these provinces, more than three quarters of young women initiated sex: 78.63 percent in the Central province, 86.67 percent in the Eastern province, 75.47 percent in the Northern province, 82.19 percent in the North-Western province and 79.43 percent in the Western province. However, more than 50 percent of young women in Luapula, Lusaka and the Southern provinces initiated sex: 73.21 percent in Luapula province, 62.87 percent in Lusaka province and 67.41 percent in the Southern province. The Copperbelt province had less than 50 percent of young women who had initiated sex, that is, 43.75 percent.

Overall, more than 50 percent (69.15 percent) of young women in the surveyed sample had initiated. Just like their male counterparts, the results confirm the decreasing trend observed among young women in Zambia. In particular, there has been a gradual decrease in young women who ever had sex from 73.8 percent in 2000 to 64.0 percent in 2009 (CSO *et al.*, 2010).

Table 4-2: Percentage of young women aged 15-24 years who ever had sex by selected variables, ZSBS 2005

Background Characteristic	Percent who "had sex"	Total percent	Number of respondents
Place of Residence			
Rural	77.87	100.00	535
Urban	62.65	100.00	577
Marital Status			
Married	100.00	100.00	682
Unmarried	46.38	100.00	429
Education			
No Education	85.07	100.00	114
Primary	77.15	100.00	520
Secondary	59.18	100.00	445
Higher	66.67	100.00	30
Province			
Central	78.63	100.00	92
Copperbelt	43.75	100.00	56
Eastern	86.67	100.00	104
Luapula	73.21	100.00	41
Lusaka	62.87	100.00	298
Northern	75.47	100.00	80
North-Western	82.19	100.00	60
Southern	67.41	100.00	242
Western	79.43	100.00	139
Overall female	69.15	100.00	1,112
			(N = 1,608)

Note: The chi-square test on sample distributions yielded $p < 0.01$. Total sample size is in parenthesis.

4.1.2. Differentials in age at first sex by selected covariates

Figure 4-1 presents information on the Kaplan-Meier survivorship for age at first sex of young people aged 15-24 years by age and gender. The figure shows that being a young woman is associated with a lower survivorship probability of first sex (meaning earlier initiation of sex) sex compared to being a young man. The survivorship probabilities are almost identical although young men have higher survivorship probability of first sex. This supports observations made in other studies positing that sexual activity starts at an earlier age among young women than it does among young men (CSO *et al.,* 2009; CSO *et al.*, 2010). Accordingly, median age at first sex in Zambia among young men has increased from 17.5 years in 2000 to 19.5 years in 2009 and among young women from 16.5 years in 2000 to 17.5 years in 2009 (CSO *et al.,* 2010).The same report notes that more young women than young men reported having had sex across all ages between 2003 and 2005.

Figure 4-1: Kaplan-Meier survivorship for age at first sex of young people aged 15-24 years by age and gender
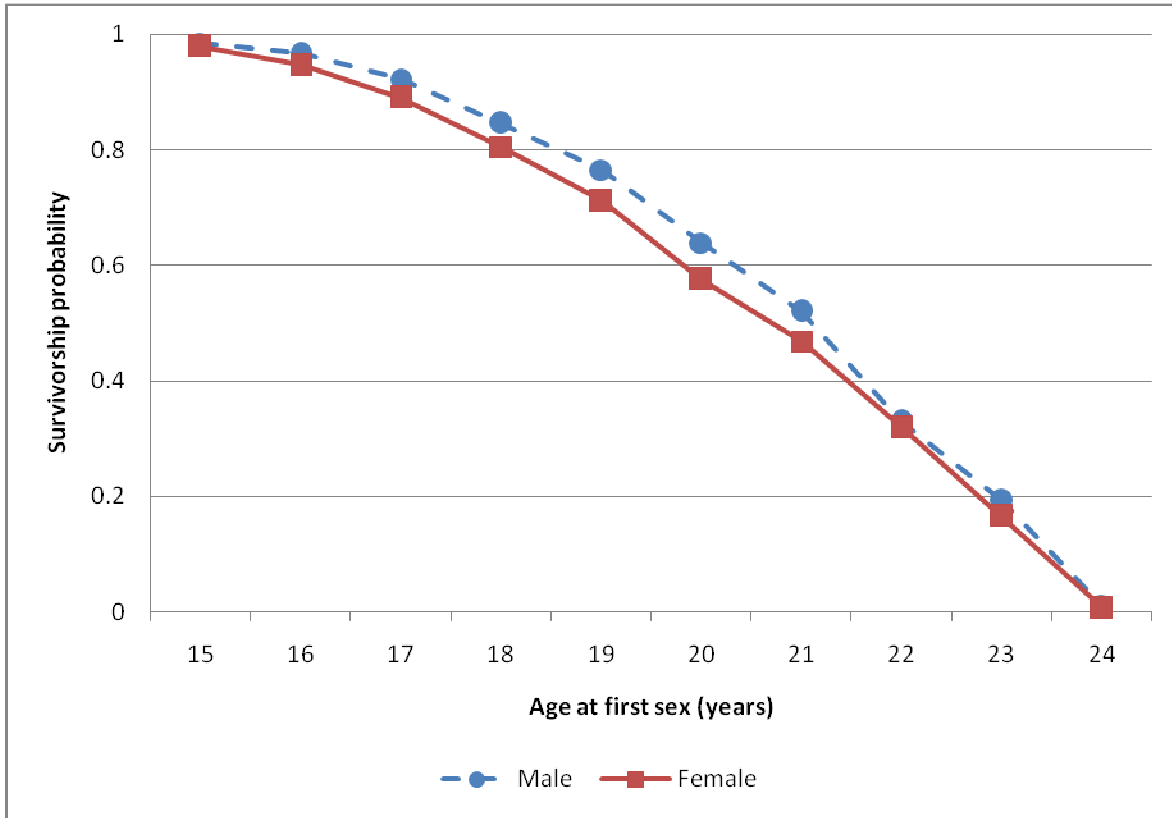
Figure 4-2 indicates the Kaplan-Meier survivorship for age at first sex by gender and place of residence of young men and young women aged 15-24 years. As the figure shows, residing in a rural residence is associated with a lower survivorship probability of first sex compared to residing in an urban setting, for both males and females. Young men in urban areas have a higher survivorship probability of first sex compared to young men in rural areas. Similarly, young women in urban areas have a higher survivorship probability of first sex compared to young women in rural areas. Moreover, rural young men have similar survivorship probabilities of first sex as urban young women between the ages of 15 and 21, although rural young men have generally a lower survivorship probability of first sex compared to urban young women. For rural young men between the ages of 21 and 24, the survivorship probability of first sex is identical to that of rural young women. These rural-urban differences have been equally observed in a number of empirical studies (McGrath *et*

al., 2009; CSO *et al.,* 2009). The studies generally note that young people in rural areas initiate sex earlier than young people in urban areas largely due to early age at marriage - most commonly experienced in rural areas.

Figure 4-2: Kaplan-Meier survivorship for age at first sex of young people aged 15-24 years by gender and place of residence, ZSBS 2005

Figure 4-3 shows the Kaplan-Meier survivorship for age at first sex by marital status of young men and young women aged 15-24 years. The table shows that for both young men and young women, being unmarried is associated with a lower survivorship probability of first sex compared to being married. Unmarried young men have a lower survivorship probability of first sex compared to married young men. Similarly, unmarried young women have a lower survivorship probability of first sex compared to married young women. The present study acknowledges that there is bias associated with the fact that marital status was collected at the time of the survey and that age at first sex was

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retrospective, and therefore it is not known whether the young people were actually married or not when first sex happened. Nevertheless, the survivorship curve for married young men is very distinct. For them the first sexual encounter is delayed by about two years compared to their unmarried counterparts (17 and 15 years, respectively). The majority of young people, that is, unmarried young men, and married and unmarried young women, have identical survivorship probabilities of first sex, although unmarried young women have a lower survivorship probability of first sex compared to unmarried young men and married young women. The results are similar to what Singh *et al.* (2000) found, namely that sexual intercourse during teenage years occurred predominantly outside marriage among men, but largely within marriage among women.

Figure 4-3: Kaplan-Meier survivorship for age at first sex of young people aged 15-24 years by gender and marital status, ZSBS 2005
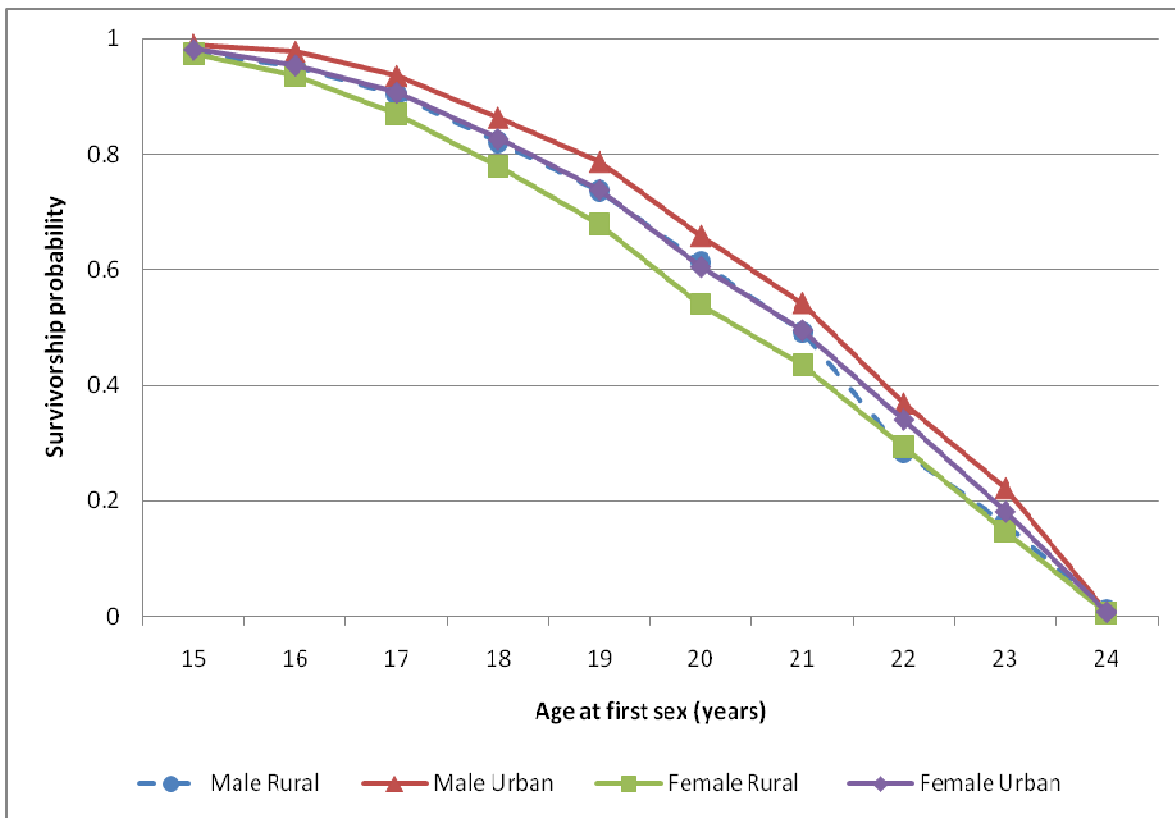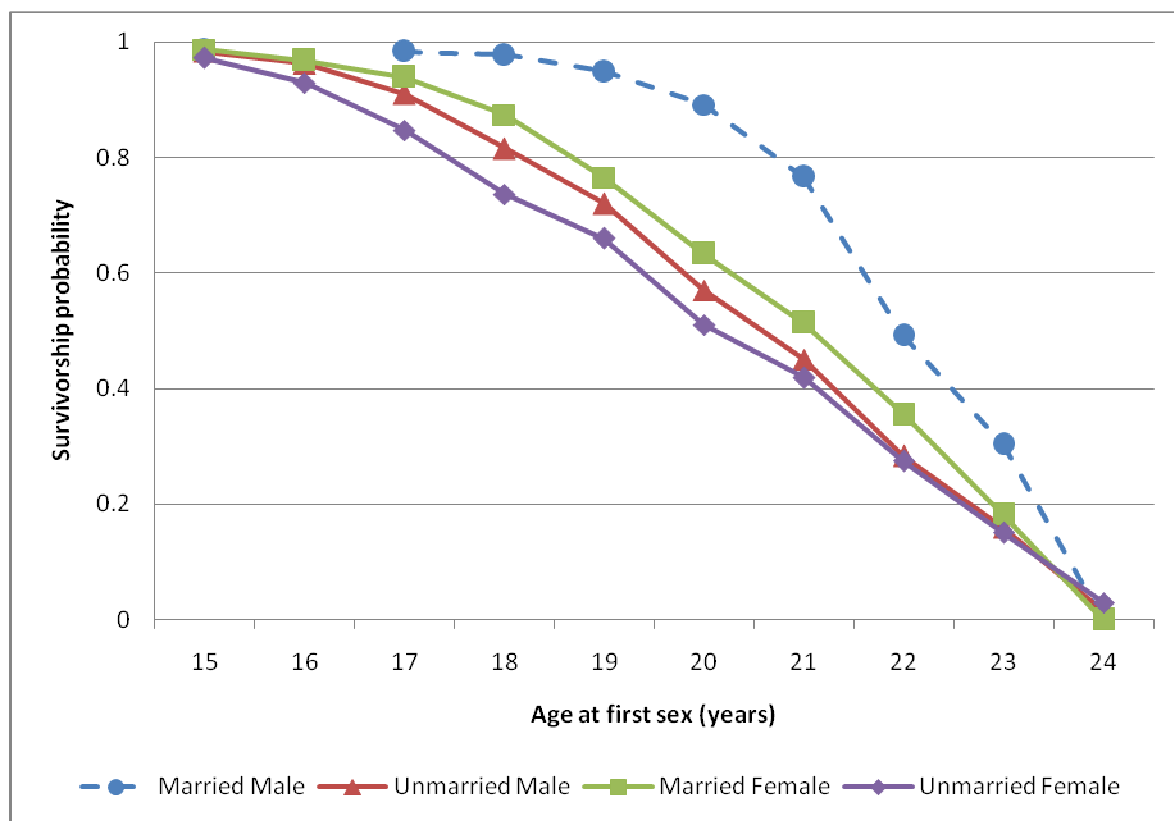
Figure 4-4 presents the Kaplan-Meier survivorship for age at first sex by educational attainment among young men aged 15-24 years. The table shows that young men with higher education are associated with a higher survivorship probability of first sex compared to young men with lower levels of education, most probably due to sexual debut competing with time spent in school. Young men with primary education have a lower survivorship probability of first sex compared to young men with no education or secondary education. In their early years (15-17), young men with no education have a lower survivorship probability of first sex compared to those with secondary education, while during later years (18-21) uneducated young men have a higher survivorship probability of first sex compared to young men with secondary education. These results are rather unusual since higher levels of education are usually associated with lower survivorship probability of first sex. In addition, the curve for higher education shows a slightly different pattern, which could indicate that young men with higher education have lesser exposure to sexual debut. Overall, the results are consistent with other empirical studies positing that age at first sex increases with level of education (Clark, 2004; CSO *et al.,* 2009; *CSO et al.,* 2010).

Figure 4-4: Kaplan-Meier survivorship for age at first sex by educational attainment among young men aged 15-24 years, ZSBS 2005
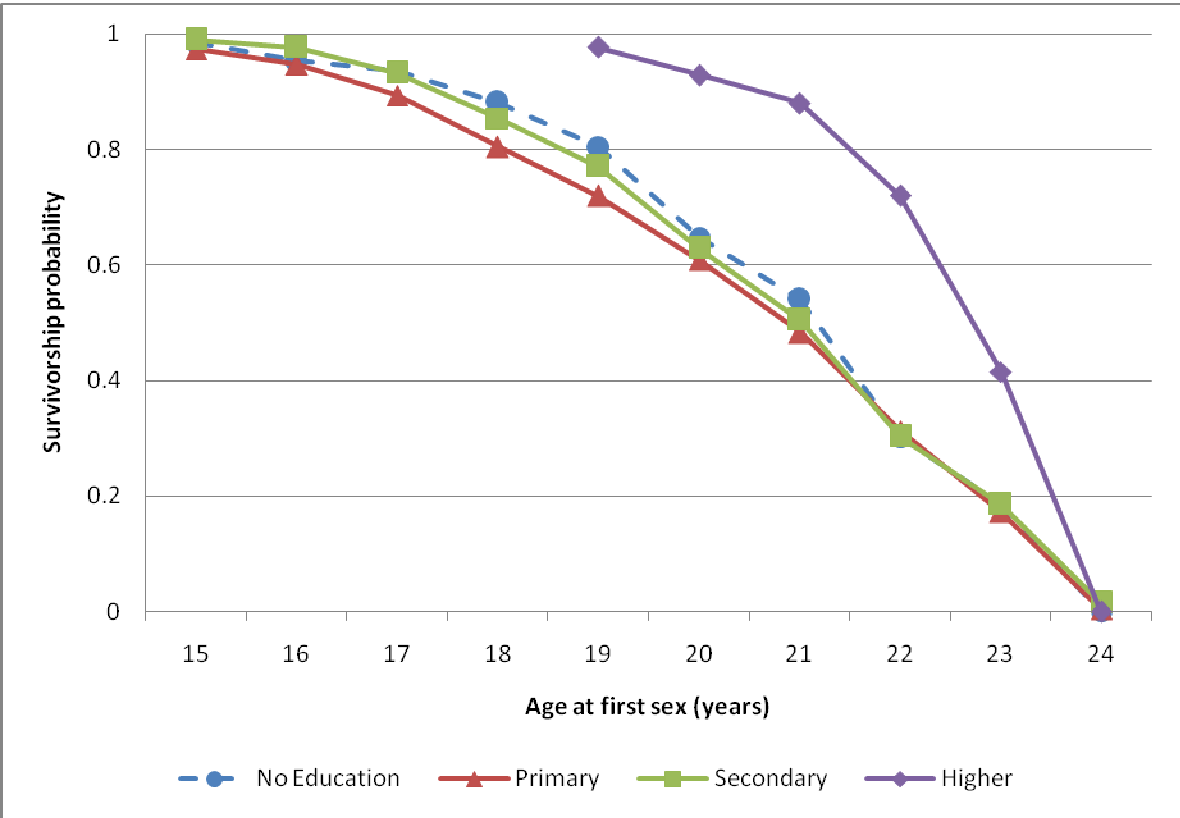
Figure 4-5 shows the Kaplan-Meier survivorship for age at first sex by educational attainment among young women aged 15-24 years. Like their male counterparts, young women with higher and secondary education are associated with a higher survivorship probability of first sex compared to young women with primary education or without education. Uneducated young women and those with primary education have similar survivorship probability of first sex, especially at ages 17, 19, 20, 23 and 24, although young women without education have a lower survivorship probability of first sex. The results confirm common trends of delay in onset of sexual intercourse mainly among young people with secondary and higher education.

Figure 4-5: Kaplan-Meier survivorship for age at first sex by educational attainment among young women aged 15-24 years, ZSBS 2005
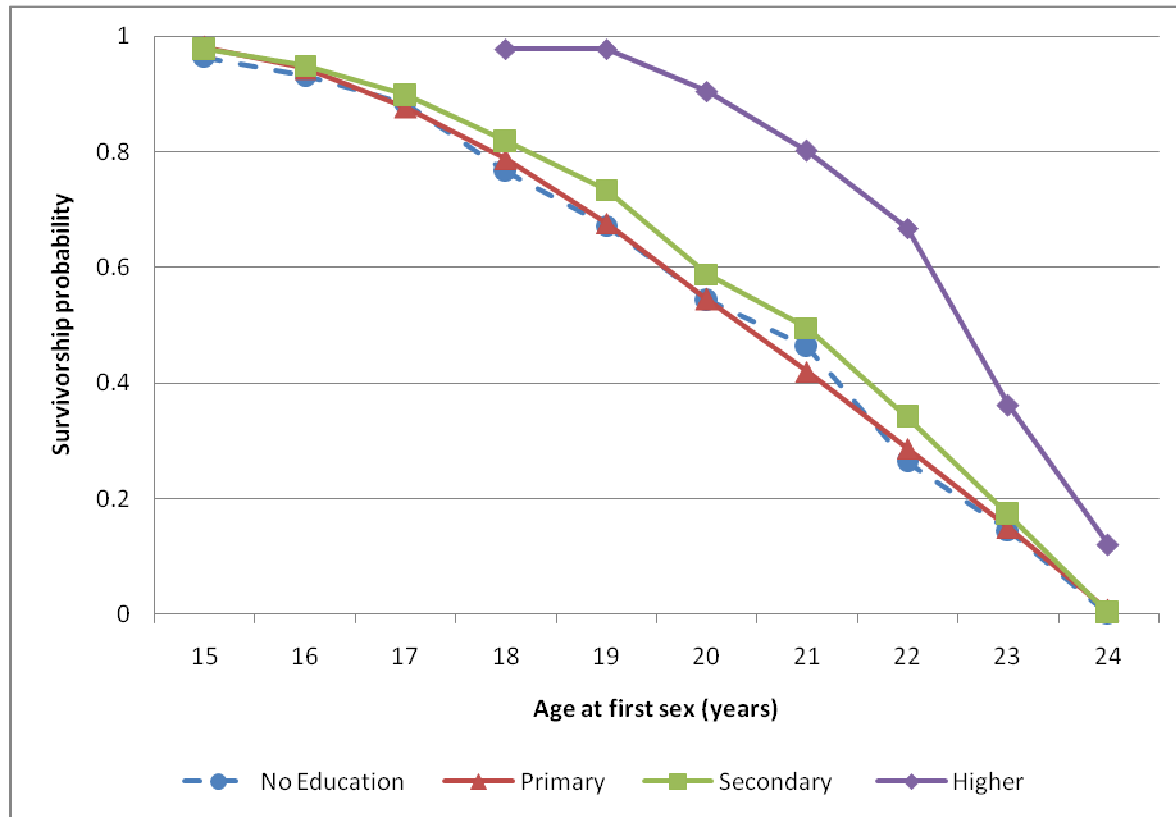
Figure 4-6 presents the Kaplan-Meier survivorship for age at first sex by province of residence among young men aged 15-24 years. Empirical evidence suggests that sexual debut in Zambia differs by province (CSO *et al.,* 2009; CSO, 2003-b). Population-based surveys indicate that the more urbanised provinces, namely the Copperbelt and Lusaka, have lower rates of sexual activity among young people than the rest of the provinces which are typically rural. Some of the reasons advanced for such variations include education and SES. For example, these two provinces have high proportions of young people with some levels of education, and are more likely to live in households with better SES (CSO *et al.*, 2009). Therefore, disaggregated provincial data on sexual debut could provide additional information for targeted STIs prevention programmes aimed at young people in Zambia. As figure 4-5 shows, young men residing in the North-Western or Western provinces have a lower survivorship probability of first sex compared to young

men residing in the other seven provinces. Young men residing in Northern, Lusaka, the Copperbelt and Central provinces are associated with a higher survivorship probability of first sex compared to young men residing in the North-Western, Western, Eastern and Southern provinces. Luapula province displays mixed survivorship probability of first sex. During their adolescent years, young men in Luapula province have a lower survivorship probability of first sex compared to young men in Lusaka, the Northern, Copperbelt, Central, Eastern and Southern provinces; while in later years particularly at the ages of 20, 21 and 23, young men in Luapula province have a higher survivorship probability of first sex compared to the rest of the provinces. The two provinces (the North-Western and Western) which display a lower survivorship probability of first sex, are predominantly rural.

Figure 4-6: Kaplan-Meier survivorship for age at first sex by province among young men aged 15-24 years, ZSBS 2005
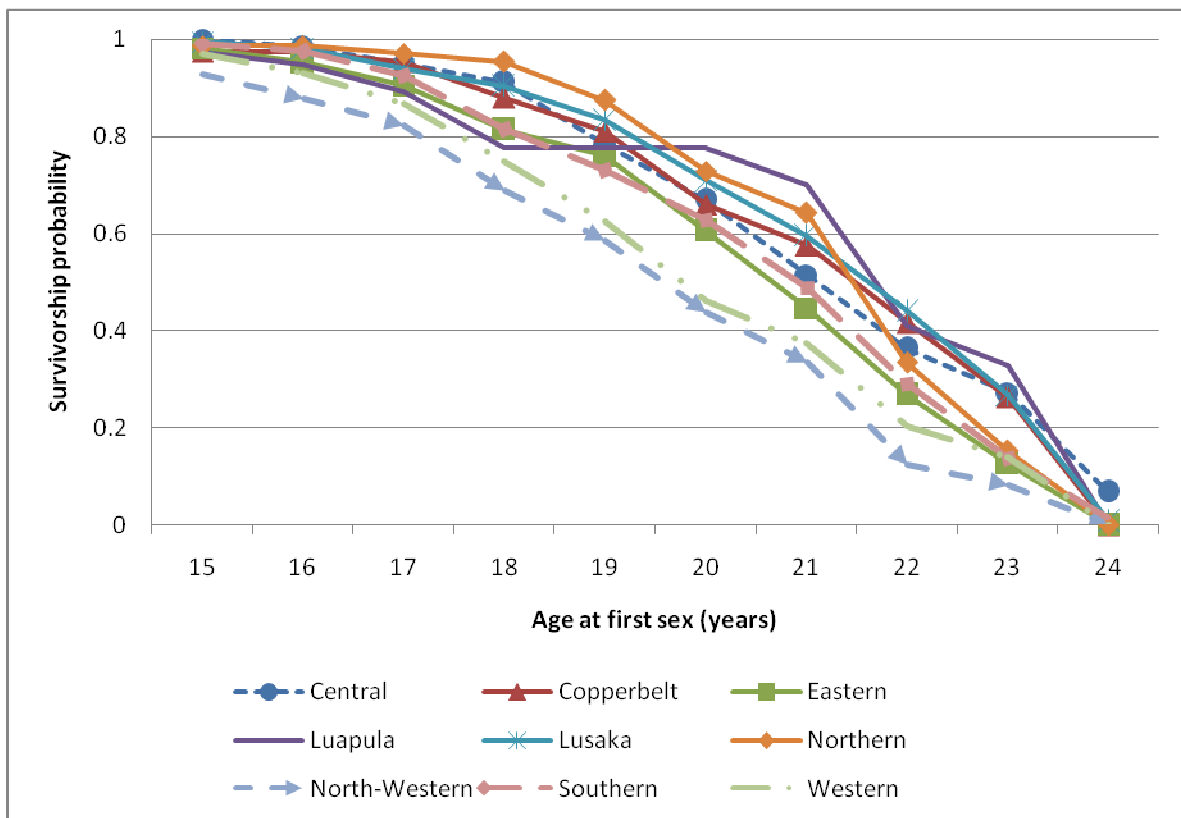
Figure 4-7 indicates the Kaplan-Meier survivorship for age at first sex by province of residence among young women aged 14-24 years. Residing in the Eastern, Western, North-Western and Southern provinces is associated with a lower survivorship probability of first sex compared to residing in the Northern, Central, Lusaka and Copperbelt provinces for young women. Like for their male counterparts, young women residing in Luapula province exhibit mixed survivorship probability of first sex. During the adolescent years, residing in the Eastern and Western provinces is associated with a lower survivorship probability of first sex compared to the other provinces, while during young adulthood the Eastern and North-Western provinces are associated with a lower survivorship probability of first sex compared to the rest of the provinces.

Figure 4-7: Kaplan-Meier survivorship for age at first sex by province among young women aged 15-24 years, ZSBS 2005
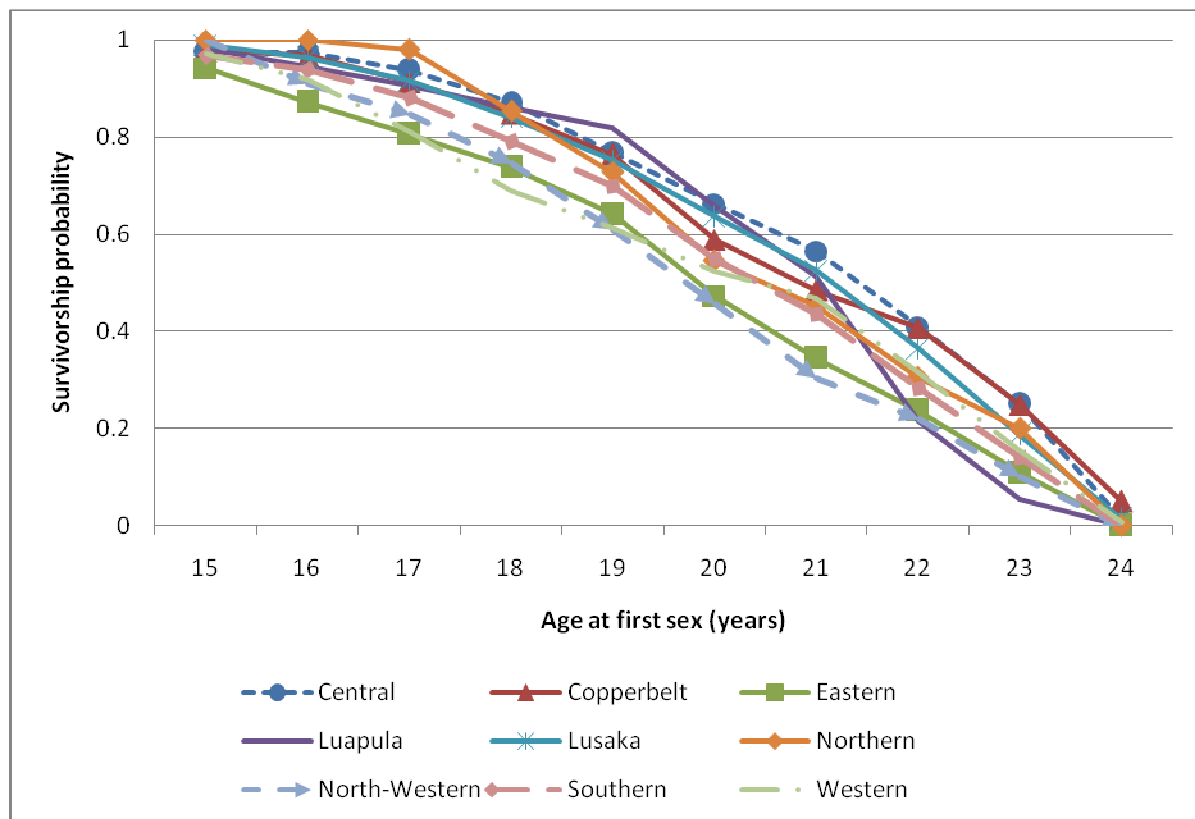
4.1.3. Determinants of age at first sex

4.1.3.1. The determinants of first sex for young men aged 15-24 years

Table 4-3 shows the Cox proportional hazards model of the determinants of first sex among young men aged 15-24 years by selected covariates. Model I in table 4-3 estimates the effect of current age, urban/rural residence, marital status and educational attainment on the hazard rate of first sex. As shown, for young men age has a statistically significant lower hazard rate of first sex. Young men residing in urban settings have a lower hazard rate of first sex compared to their rural counterparts. Unmarried young men have a higher hazard rate of first sex compared to their married counterparts. There is no difference in the probability of having initiated sex between young men with primary education and those with no education after controlling for age, urban/rural residence, marital status and education. Young men with secondary education have a nine percent higher hazard rate of first sex compared to young men without education. Nevertheless, young men with higher education have a lower hazard rate of first sex compared to their uneducated counterparts. It should be noted however that the lack of statistical significance in these hazard ratios for residing in urban locations, being unmarried, and having some form of education (primary, secondary or higher), suggests that there is no difference with the referenced groups.

Model II in table 4-3 introduces the variable province of residence in the model that controls for current age, urban/rural residence, marital status and educational attainment. Adding these covariates does not change the effect of current age observed in model I. There is evidence that for young men, residing in urban areas has a higher hazard rate of first sex compared to residing in rural areas. Similarly, being unmarried is associated with a higher hazard rate of first sex compared to being married, for young men. Although there are no significant interactions, for young men all educational variables have a higher hazard rate of first sex compared to no education. Young men in the Eastern and Luapula provinces have a higher hazard rate of first sex compared to young men in the North-Western province. The rest of the provinces have a lower hazard rate of first sex compared to the North-Western province, with Lusaka and the Northern provinces interacting significantly.

Table 4-3: Cox proportional hazards model of the determinants of first sex among young men aged 15-24 years by selected covariates, ZSBS 2005

Independent Var	Model I (N = 696)		Model II (N = 696)		Model III (N = 653)	
	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.
Age	0.94***	0.02	0.94***	0.02	0.94***	0.02
Residence						
Urban	0.95	0.08	1.11	0.14	1.14	0.21
Marital Status						
Unmarried	1.10	0.11	1.07	0.11	1.04	0.11
Education						
Primary	1.00	0.16	1.05	0.17	0.98	0.17
Secondary	1.09	0.18	1.19	0.20	1.10	0.19
Higher	0.95	0.22	1.12	0.27	1.02	0.27
Province						
Central			0.90	0.20	0.87	0.20
Copperbelt			0.80	0.18	0.90	0.22
Eastern			1.09	0.21	1.07	0.21
Luapula			1.01	0.25	0.98	0.25
Lusaka			0.63**	0.13	0.70*	0.15
Northern			0.60**	0.13	0.58**	0.13
Southern			0.86	0.16	0.86	0.17
Western			0.88	0.16	0.92	0.18
SES						
Piped water					0.93	0.15
Flush toilet					0.80	0.12
Electricity					1.02	0.17
Television					1.37**	0.21
Telephone					0.82	0.11
Refrigerator					1.13	0.18
Safe wall					0.90	0.14
Log likelihood		-4017.20		-4008.13		-3715.44

* Significant at the .10 level
** Significant at the .05 level
*** Significant at the .01 level
Note: Omitted categories are rural male, married male, no education, north-western and car

Model III presented in table 4-3 further includes the SES index in the model which controls

for current age, urban/rural residence, marital status, educational attainment and province of

residence. The effect of young men's current age remains the same as in previous models. Residing in urban areas, for young men, has a higher hazard rate of first sex compared to residing in rural areas. For young men, being unmarried is associated with a higher hazard rate of first sex compared to being married. Again, none of the education variables are statistically significant. Young men with primary education have a lower hazard rate of first sex compared to uneducated young men. For young men, secondary and higher education are associated with a higher hazard rate of first sex compared to no education. The results indicate that young men with some education have a lower hazard rate of first sex compared to their uneducated counterparts. This evidence supports a Brazilian study on adolescents where it was found that the postponement of first sexual intercourse was more frequent among youth with more years of schooling (Paiva *et al.,* 2008). The findings further show that exclusively residing in the Eastern province is associated with a higher hazard rate of first sex compared to residing in the North-Western province, for young men. Like in the previous model, residing in Lusaka and the Northern provinces, though statistically significant, has a lower hazard rate of first sex compared to residing in the North-Western province. Young men living in households with piped water, flush toilets, telephones and safe walls have a lower hazard rate of first sex compared to those living in households with cars, after controlling for current age, urban/rural residence, marital status, educational attainment, province of residence and households' SES. Nevertheless, those living in households with electricity, television and refrigerator shave a higher hazard rate of first sex compared to their counterparts living in households with cars.

On the whole, there is evidence that current age, residing in Lusaka or the Northern provinces, and living in a household with a television, are the strongest predictors of sexual debut for young men.

4.1.3.2. The determinants of first sex for young women aged 15-24 years

Table 4-4 presents the Cox proportional hazards model of the determinants of first sex among young women aged 15-24 years by selected covariates. Model I estimates the effect of current age, urban/rural residence, marital status and educational attainment. As shown

in table 4-3, current age has a statistically significant lower hazard rate of first sex for young women, similar to models for young men. The hazard rates of first sex for unmarried young women are higher compared to married young women and gradually decrease with every level of education. Young women with primary and secondary education have a higher hazard rate of first sex compared to uneducated young women. Both age and higher education have a statistically significantly effect on first sex in this model. The results support the findings by Kaufman *et al.* (2004) in rural South Africa where higher levels of education reduced the probability of having had sex in the 12 months prior to the survey, for girls.

Model II in table 4-4 includes province of residence to the model that controls for current age, urban/rural residence, marital status and educational attainment. As shown, age interacts significantly after controlling for urban/rural residence, marital status and educational attainment. Like their male counterparts, young women's age have a lower hazard rate of first sex. Similarly, residing in urban areas for young women is associated with a higher hazard rate of first sex compared to residing in rural settings. Conversely, being unmarried is associated with having a lower hazard rate of first sex compared to being married, for young women. The hazard rates of first sex for young women with some education interact differently. Young women with secondary and higher education have a lower hazard rate of first sex compared to young women without education. The hazard rate of first sex for young women with secondary and higher education compared to young women without education indicate that the former have the longest survival time to first sex. Young women with primary education have a higher hazard rate of first sex compared to young women without education. After controlling for age, urban/rural residence, marital status and educational attainment, none of the provincial variables interact significantly. Only young women in the Southern and Western provinces have a higher hazard rate of first sex compared to young women in the North-Western province. The rest of the six provinces have a lower hazard rate of first sex compared to the North-Western province.

Table 4-4: Cox proportional hazards model of the determinants of first sex among young women aged 15-24 years by selected covariates, ZSBS 2005

Independent Var	Model I (N = 1107)		Model II (N = 1107)		Model III (N = 1030)	
	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.
Age	0.94***	0.01	0.94***	0.01	0.94***	0.01
Residence						
Urban	1.08	0.08	1.09	0.09	1.03	0.12
Marital Status						
Unmarried	0.99	0.07	0.97	0.07	0.97	0.07
Education						
Primary	1.09	0.12	1.08	0.12	1.12	0.13
Secondary	1.01	0.12	0.97	0.12	1.00	0.13
Higher	0.68*	0.15	0.65**	0.14	0.64*	0.15
Province						
Central			0.98	0.17	1.01	0.18
Copperbelt			0.97	0.19	0.98	0.20
Eastern			0.86	0.14	0.90	0.15
Luapula			0.79	0.16	0.79	0.17
Lusaka			0.92	0.14	0.91	0.16
Northern			0.98	0.17	0.91	0.17
Southern			1.07	0.16	1.07	0.17
Western			1.01	0.16	1.04	0.17
SES						
Piped water					1.04	0.11
Flush toilet					0.99	0.10
Electricity					0.92	0.10
Television					1.00	0.11
Telephone					0.96	0.10
Refrigerator					1.11	0.14
Safe wall					1.08	0.13
Log likelihood		-6898.67		-6895.52		-6341.28

* Significant at the .10 level
** Significant at the .05 level
*** Significant at the .01 level
Note: Omitted categories are rural female, married female, no education, north-western and car

Model III in table 4-4 estimates the effect of current age, urban/rural residence, marital status, educational attainment, province of residence and SES. As shown, current age has a

statistically significant lower hazard rate of first sex. For young women, just like in the previous models, residing in urban areas is associated with a higher hazard rate of first sex compared to residing in rural areas. Education interacts distinctly in this model. While young women with primary education have a higher hazard rate of first sex compared to uneducated young women, there is no difference in the hazard rate of first sex between young women with secondary education and those without education. As observed in the previous models, young women with higher education have a lower hazard rate of first sex compared to uneducated young women. Once again none of the provincial variables are statistically significant. Nevertheless, young women in the Central, Southern and Western provinces have a higher hazard rate of first sex compared to young women in the North-Western province. Among the five provinces with a lower hazard rate of first sex compared to the North-Western province, the Copperbelt province has the longest survival time to first sex while Luapula has the shortest survival time to first sex.

Overall, there is evidence that the strongest predictors of sexual debut for young women are current age and higher education.

4.2. Age at first birth

4.2.1. Levels in age at first birth

Table 4-5 shows the percentage of young females aged 15-24 years who had ever given birth, by selected background characteristics. The background features observed were urban/rural residence, marital status, educational attainment and province of residence. There were more rural than urban young women who had given birth. About 60 percent of young women (59.53 percent) in rural areas reported having given birth. Conversely, less than 40 percent of young women (39.20 percent) in urban areas had given birth.

More than three quarters of married young women (85.48 percent) had given birth compared to less than a quarter of unmarried young women (20.11 percent) who reported having given birth. With regard to educational differences, the percentage of young women

who reported having given birth decreased with every level of education. This could suggest that older cohorts were using contraceptives and abstaining due to competing needs such as education. The percentage of young women having given birth is lowest among those with higher (22.22 percent) and those with secondary education (34.84 percent). It is the highest among uneducated young women (66.42 percent) and those with primary education (60.39 percent).

In terms of provincial distribution, the Central province (70.09 percent) had the highest percentage of young women who reported having given birth, while the Copperbelt province (24.22 percent) had the lowest percentage of young women who had given birth. Overall, less than 50 percent of young women had given birth in Lusaka (40.51 percent) and the Southern province (40.39). In the rest of the provinces, more than 50 percent of young women reported having given birth: 60.83 percent in the Eastern province, 60.71 percent in Luapula province, 68.87 percent in the Northern province, 57.53 percent in the North‑Western province and 56.00 percent in the Western province.

By and large, less than 50 percent (47.89 percent) of young women in the surveyed sample had given birth. The most recent survey results indicate a reduction in the percentage of young women who ever gave birth by the exact age of 15. Notably, 'whereas 2 percent of women age 15‑19 gave birth by age 15, the corresponding proportion for women age 45‑49 is [was] 10 percent' (CSO *et al.,* 2009:62), indicating that more young women are postponing childbearing in Zambia.

Table 4-5: Percentage of young women aged 15-24 years who ever had birth by selected variables, ZSBS 2005

Background Characteristic	Percent who "had birth"	Total percent	Number of respondents
Place of Residence			
Rural	59.53	100.00	409
Urban	39.20	100.00	361
Marital Status			
Married	85.48	100.00	583
Unmarried	20.11	100.00	186
Education			
No Education	66.42	100.00	89
Primary	60.39	100.00	407
Secondary	34.84	100.00	262
Higher	22.22	100.00	10
Province			
Central	70.09	100.00	82
Copperbelt	24.22	100.00	31
Eastern	60.83	100.00	73
Luapula	60.71	100.00	34
Lusaka	40.51	100.00	192
Northern	68.87	100.00	73
North-Western	57.53	100.00	42
Southern	40.39	100.00	145
Western	56.00	100.00	98
Overall female	47.89	100.00	770
			(N = 1,608)

Note: The chi-square test on sample distributions yielded $p < 0.01$. Total sample size is in parenthesis.

4.2.2. Differentials in age at first birth by selected covariates

Figure 4-8 indicates the Kaplan-Meier survivorship for age at first birth of young women aged 15-24 years by place of residence. The figure shows that residing in rural areas is associated with a lower survivorship probability of first childbearing compared to residing in urban areas. The survivorship probability of first birth is identical although there is

evidence that residing in urban locations is associated with a higher survivorship probability of first birth. The analysis confirms other empirical evidence demonstrating that generally more rural women than urban women report having given birth (CSO *et al.,* 2009). In particular, 'a larger proportion of teenagers in rural areas (35 percent) have begun childbearing compared with teenagers in urban areas (20 percent)' (CSO *et al.,* 2009:64).

Figure 4-8: Kaplan-Meier survivorship for age at first birth of young women aged 15-24 years by place of residence, ZSBS 2005
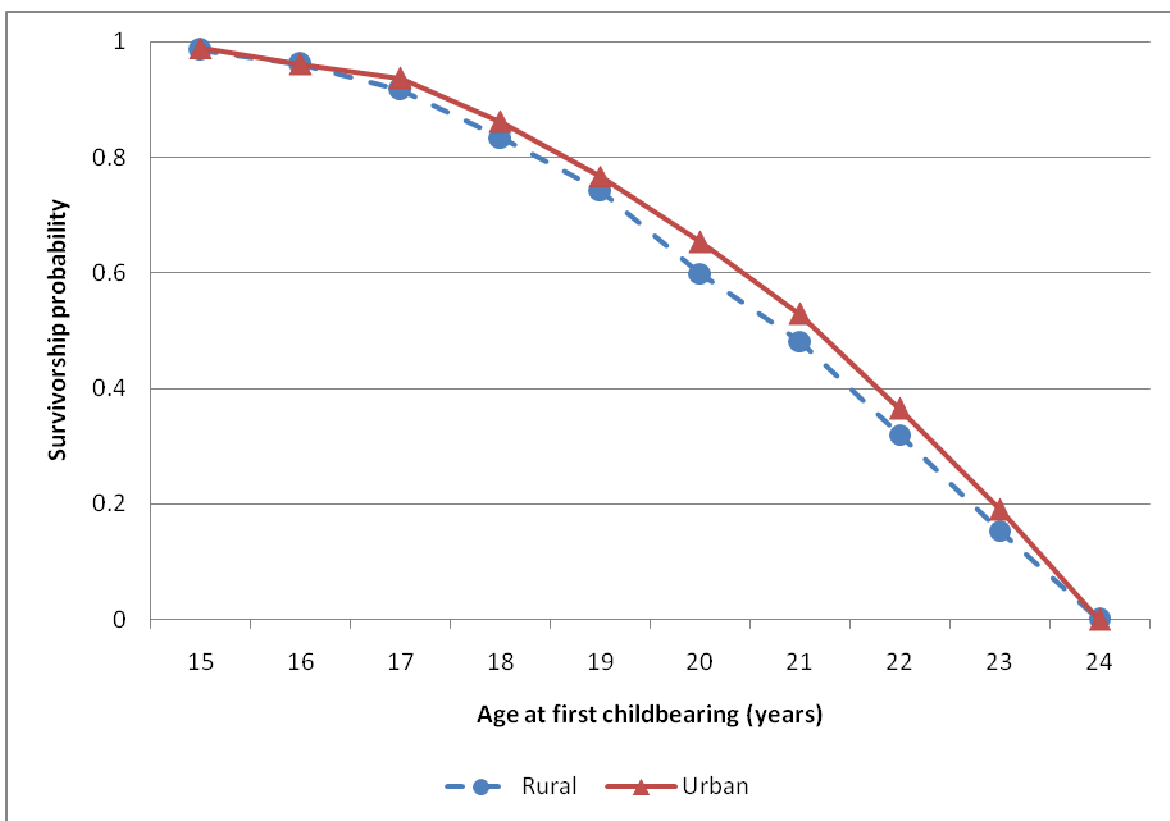
Figure 4-9 shows the Kaplan-Meier survivorship for age at first birth of young women aged 15-24 years by marital status. The table shows that, for young women, being unmarried is associated with having a lower survivorship probability of first birth compared to being married. The curve for married young women is wider between the ages of 17 and 22, which could indicate some delay in first childbearing. The analysis suggests a high prevalence of teenage pregnancy and motherhood. Recent data on adolescent women in

Zambia shows that 'teenage motherhood increases slowly between age 15 and 16 after which the increase is rapid, while first pregnancies increase is slow between age 15 and 17 after which it starts to decrease' (CSO *et al.,* 2009:65). The same survey further notes that marriage is not a prerequisite to childbearing in Zambia, informal unions are common, and many women give birth in the context of such unions.

Figure 4-9: Kaplan-Meier survivorship for age at first birth of young women aged 15-24 years by marital status, ZSBS 2005

Figure 4-10 presents the Kaplan-Meier survivorship for age at first birth of young women aged 15-24 years by educational attainment. As the figure shows, there is evidence that young women with higher educational attainment are associated with a higher survivorship probability of first birth compared to young women with other lower levels of education. Young women with primary education have a lower survivorship probability of first birth

compared to young women with no and with secondary education. This is contrary to some available evidence positing that uneducated women have earlier childbearing compared to women of all educational levels. The findings further show that uneducated young women begin childbearing at age 16 compared to young women with primary or secondary education that started childbearing at age 15. Moreover, young women without education and young women with secondary education portray identical survivorship probability of first birth especially between the ages of 18 and 21. During later young adulthood (22-24), uneducated young women's survivorship probability of first birth resembles that of young women with primary education.

The 2007 ZDHS recently noted that median age at first birth increases with level of education. The report observed that 'women with no education have their first birth at about 19 years, while women who have attained a higher level of education have a median age at first birth of 25 years, a difference of six years' (CSO *et al.,* 2009:63). The analysis confirms the expectation that education tends to delay the onset of childbearing. In most studies, it has been found that educated women tend to have low fertility compared to women with no education (Bledsoe, 1990).

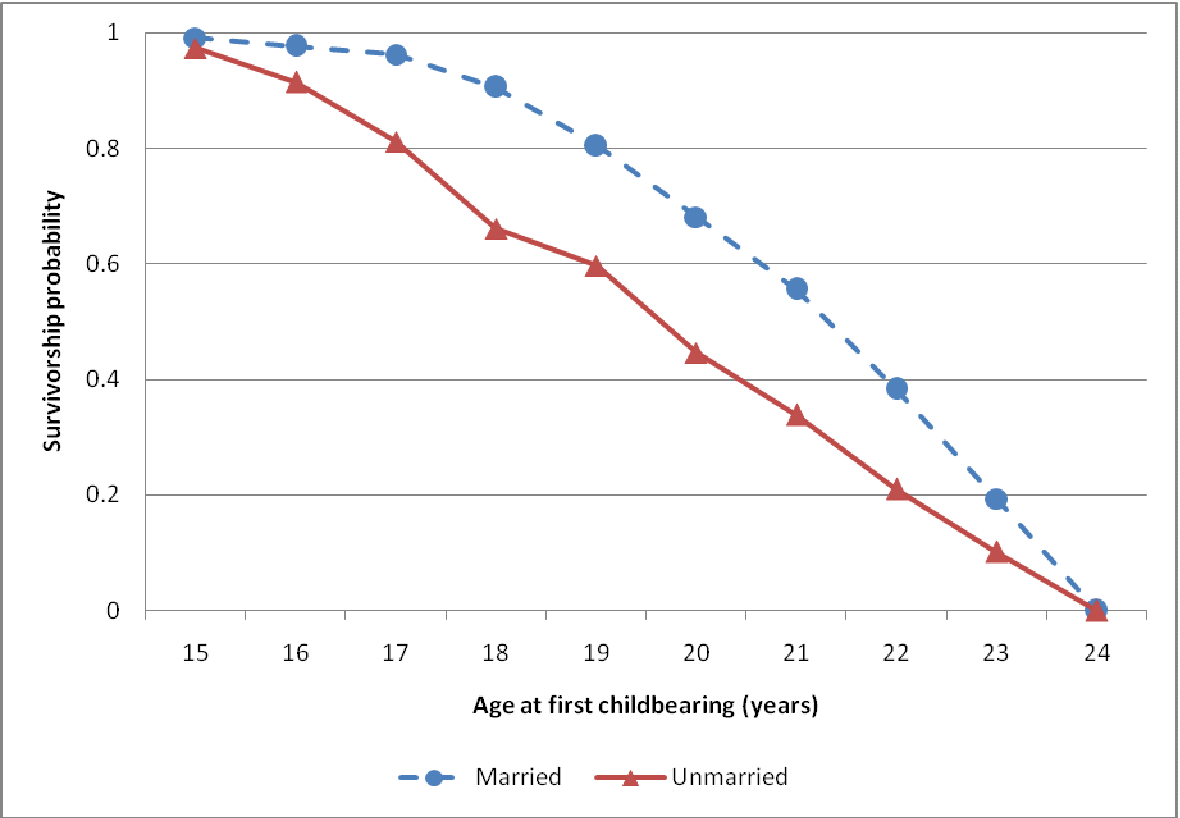**Figure 4-10: Kaplan-Meier survivorship for age at first birth of young women aged 15-24 years by educational attainment, ZSBS 2005**
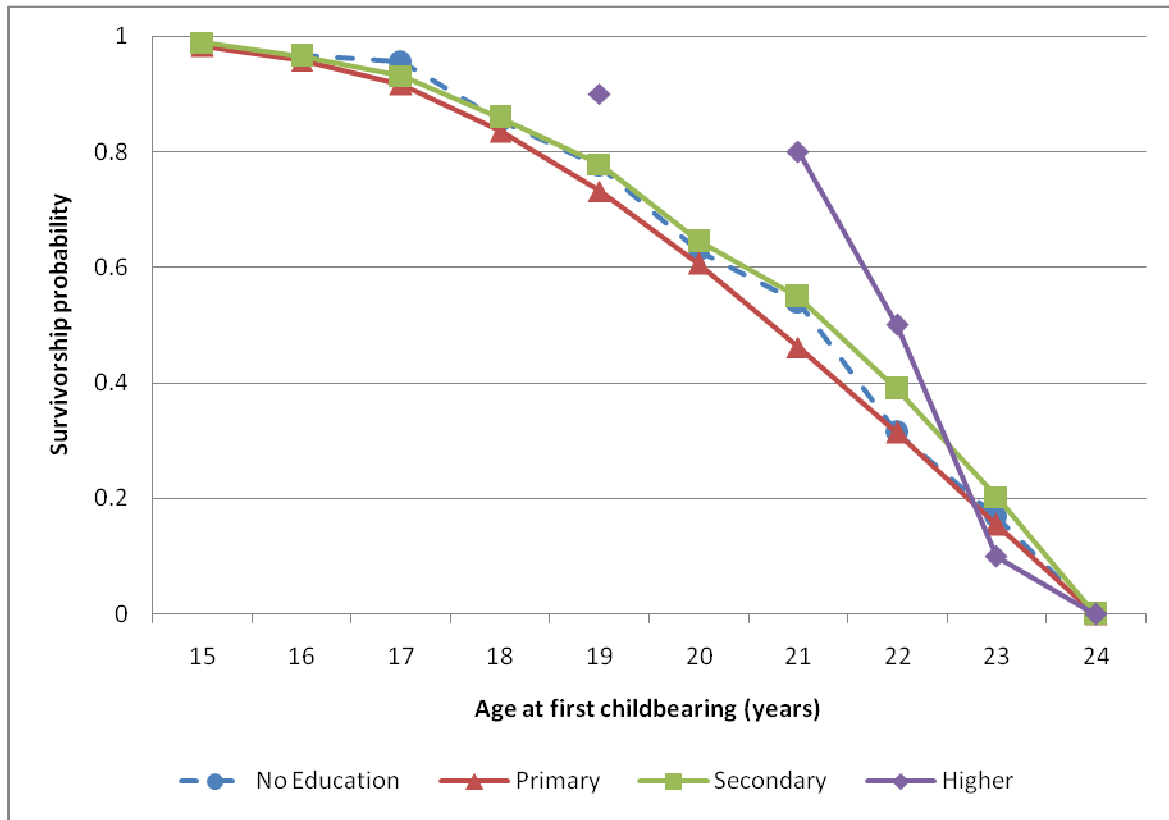
Figure 4-11 shows the Kaplan-Meier survivorship for age at first birth of young women aged 15-24 years by province of residence. During adolescent years, residing in the Western, Eastern, Northern or Central provinces is associated with a lower survivorship probability of first birth compared to residing in the rest of the other provinces. In later years of young adulthood, residing in the Southern or Lusaka provinces is associated with a higher survivorship probability of first birth compared to residing in the other seven provinces. Residing in Luapula province displays a combination of higher and lower survivorship probability of first birth. Notably, between the ages of 15 and 17, young women residing in Luapula province have a lower survivorship probability of first birth compared to the rest of the provinces, while at age 19 they exhibit a higher survivorship probability of first birth and eventually between the ages of 21.5 and 23.5 years they

display a lower survivorship probability of first birth compared to young women in other provinces.

Figure 4-11: Kaplan-Meier survivorship for age at first birth of young women aged 15-24 years by province, ZSBS 2005
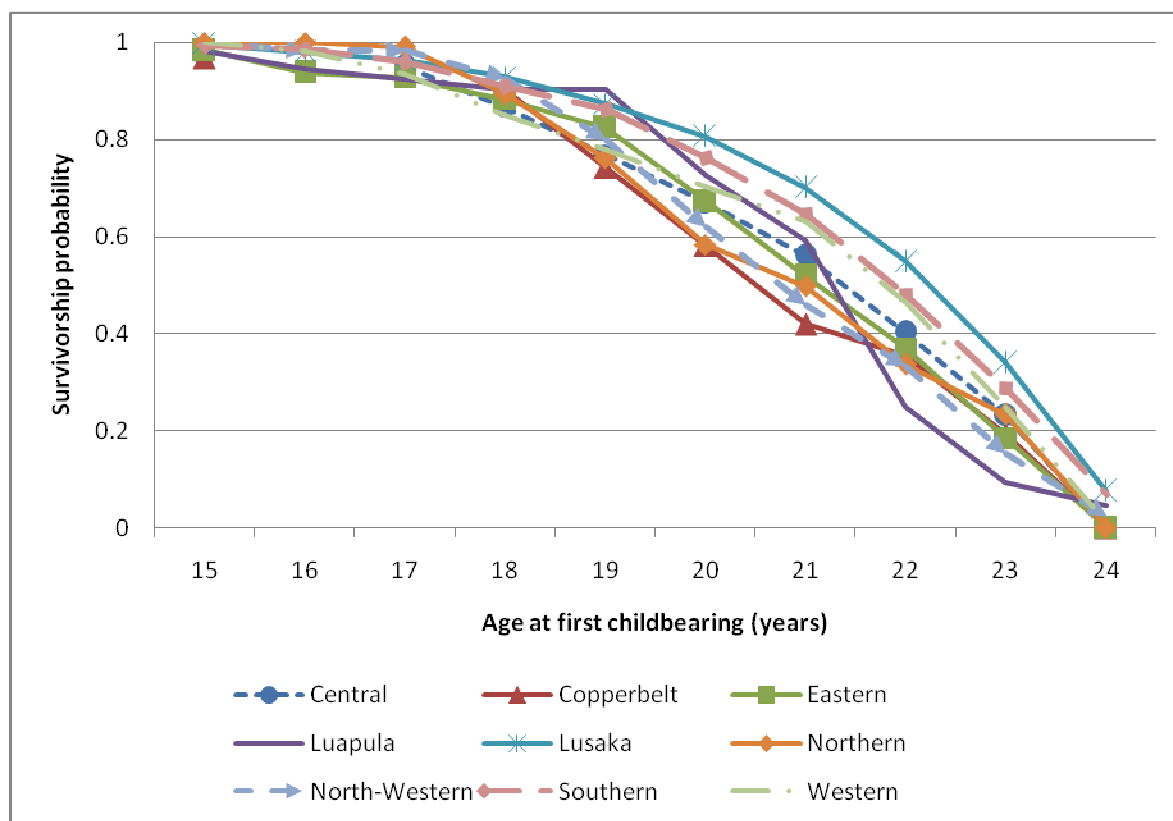
4.2.3. Determinants of first birth

Table 4-6 presents the Cox proportional hazards model of the determinants of first childbearing among young women aged 15-24 years by selected covariates. Model I estimates the effect of age at first sex, urban/rural residence, marital status and educational attainment. As shown, age at sexual debut has a higher hazard rate of first birth for young women. There is evidence that, for young women, residing in urban areas is associated with a lower hazard rate of first birth compared to residing in rural settings. Similarly, being unmarried is associated with a lower hazard rate of first birth compared to being married

for young women. Young women with secondary and higher education have a statistically significant lower hazard rate of first birth after controlling for age at first sex, residence, marital status and education. The hazard rate of first birth for young women with secondary and higher education compared to no education indicate that young women with secondary education have the longest survival time to first birth. Young women with primary education have a higher hazard rate of first birth compared to young women without education. This supports the hypothesis that education has a positive effect on childbearing behaviour (Bongaarts, 1978).

Model II in table 4-6 includes province of residence variable in a model that controls for age at first sex, urban/rural residence, marital status and educational attainment. Like in the previous model, age at first sex has a statistically significant effect on first birth. For young women, residing in urban areas, as in the previous model, is associated with a lower hazard rate of first birth compared to residing in rural areas. Unmarried young women have a lower hazard rate of first birth compared to married young women. The effect of education on first birth is similar to that displayed in model II. Both young women with secondary and higher education have a statistically significant lower hazard rate of first birth compared to young women without education. Young women with primary education have a higher hazard rate of first birth compared to young women with no education. All the provincial variables have no statistical significance on first birth after controlling for age at first sex, urban/rural residence, marital status and educational attainment. In addition, young women in the Copperbelt province have the lowest surviving time to first birth compared to young women in the North-Western province.

Table 4-6: Cox proportional hazards model of the determinants of first childbearing among young women aged 15-24 years by selected covariates, ZSBS 2005

Independent Var	Model I (N = 1603)		Model II (N = 1603)		Model III (N = 1493)	
	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.
Age at first sex	1.05***	0.01	1.05***	0.01	1.05***	0.01
Residence						
Urban	0.96	0.09	0.97	0.09	1.01	0.10
Marital Status						
Unmarried	0.89	0.07	0.98	0.10	1.14	0.16
Education						
Primary	1.02	0.12	1.03	0.12	1.07	0.13
Secondary	0.76**	0.10	0.76**	0.10	0.82	0.12
Higher	0.23***	0.08	0.24***	0.08	0.27***	0.10
Province						
Central			0.84	0.16	0.83	0.17
Copperbelt			0.77	0.19	0.85	0.22
Eastern			0.97	0.19	1.01	0.21
Luapula			0.86	0.20	0.99	0.25
Lusaka			0.80	0.15	0.93	0.20
Northern			0.96	0.19	0.96	0.20
Southern			0.90	0.17	1.02	0.21
Western			0.91	0.17	0.96	0.19
SES						
Piped water					0.92	0.12
Flush toilet					1.10	0.16
Electricity					1.02	0.13
Television					0.91	0.12
Telephone					0.81	0.11
Refrigerator					0.86	0.14
Safe wall					0.92	0.14
Log likelihood		-4717.41		-4715.80		-4281.31

** Significant at the .05 level
*** Significant at the .01 level
Note: Omitted categories are rural female, married female, no education, north-western and car

Model III in table 4-6 estimates the effect of age at first sex, urban/rural residence, marital status, educational attainment, province of residence and SES, on the hazard rate of first childbearing. As shown in the table, young women's age at first sex remains statistically significant. Contrary to previous models, for young women, residing in urban areas is associated with a higher hazard rate of first birth compared to residing in rural locations. Similarly, for young women, being unmarried is now associated with a higher hazard rate of first birth compared to being married. Although the hazard rates of first birth for young women with secondary and higher education increases slightly, they are still associated with a lower hazard rate of first birth. Secondary education in previous models had a statistically significant effect but this relationship becomes insignificant once SES is included in the model. Young women with primary education, like in the previous models, have a higher hazard rate of first birth compared to young women without education. For young women, with the exception of the Eastern and Southern provinces, residing in the rest of the provinces has a lower hazard rate of first birth compared to the North-Western province. None of the SES variables are statistically significant in this model. Moreover, living in a household with a flush toilet or electricity is associated with a higher hazard rate of first birth compared to living in a household with a car.

In general, there is evidence that the strongest predictors of first birth are age at first sex and higher education for young women.

4.3. Condom use at first sex

4.3.1. Levels in condom use at first sex

4.3.1.1. The percentage of young men aged 15-24 years who used a condom at first sex

Table 4-7 presents the percentages of young men aged 15-24 years who used a condom at first sex by selected covariates. The background features that were observed are urban/rural residence, marital status, educational attainment, and province of residence.

As the table shows, there are more rural than urban young men who used a condom the first time they had sex. Moreover, less than a quarter of rural young men (19.22 percent) reported having used a condom at first sex, while slightly more than a quarter (27.70 percent) of urban young men used a condom at their first sexual intercourse.

Condom use at first sex among married young men was very low compared to their unmarried counterparts. There were 10.92 percent married young men who used a condom at first sex, while close to 29 percent of unmarried young men (27.88 percent) used a condom at their sexual debut.

Irrespective of educational background, not more than 50 percent of young men used a condom the first time they had sex. On one hand, less than a quarter of young men with no education (17.02 percent) and with primary education (16.60 percent) used a condom at their first sexual encounter. On the other hand, more than a quarter of young men with secondary education (27.22 percent) and higher education (48.48 percent) used a condom at their first sexual intercourse. In general, condom use at first sex increased with every level of education.

With regard to province of residence, only Luapula and Lusaka provinces reported more than a quarter of young men who used a condom at first sex: 40.74 percent in Luapula province and 39.41 percent in Lusaka province. In the other seven provinces, between 10 percent and 24 percent of young men used a condom at first sex: 10.00 percent in the Northern province, 11.76 percent in the North-Western province, 14.12 percent in the Southern province, 16.67 percent in the Central province, 21.74 percent in the Eastern province, 23.21 percent in the Copperbelt province, and 24.00 percent in the Western province. Therefore, condom use at first sex among young men was highest in Luapula province and lowest in Northern province.

Overall, less than a quarter (23.63 percent) of young men in the surveyed sample used a condom at their sexual debut.

Table 4-7: Percentage of young men aged 15-24 years who used a condom at first sex by selected covariates, ZSBS 2005

Background Characteristic	Percent of condom use at first sex	Total percent	Number of respondents
Place of Residence			
Rural	19.22	100.00	64
Urban	27.70	100.00	100
Marital Status			
Married	10.92	100.00	19
Unmarried	27.88	100.00	145
Education			
No Education	17.02	100.00	8
Primary	16.60	100.00	42
Secondary	27.22	100.00	98
Higher	48.48	100.00	16
Province			
Central	16.67	100.00	6
Copperbelt	23.21	100.00	13
Eastern	21.74	100.00	15
Luapula	40.74	100.00	11
Lusaka	39.41	100.00	67
Northern	10.00	100.00	4
North-Western	11.76	100.00	6
Southern	14.12	100.00	24
Western	24.00	100.00	18
Overall male	23.63	100.00	164
			(N = 694)

Note: The chi-square test on sample distributions yielded $p < 0.01$. Total sample size is in parenthesis.

4.3.1.1. The percentage of young women aged 15-24 years who used a condom at first sex

Table 4-7 presents the percentages of young men aged 15-24 years who used a condom at first sex by selected covariates. The background features that were observed are urban/rural residence, marital status, educational attainment, and province of residence.

As the table shows, there are more rural than urban young men who used a condom the first time they had sex. Moreover, less than a quarter of rural young men (19.22 percent) reported having used a condom at first sex, while slightly more than a quarter (27.70 percent) of urban young men used a condom at their first sexual intercourse.

Condom use at first sex among married young men was very low compared to their unmarried counterparts. There were 10.92 percent married young men who used a condom at first sex, while close to 29 percent of unmarried young men (27.88 percent) used a condom at their sexual debut.

Irrespective of educational background, not more than 50 percent of young men used a condom the first time they had sex. On one hand, less than a quarter of young men with no education (17.02 percent) and with primary education (16.60 percent) used a condom at their first sexual encounter. On the other hand, more than a quarter of young men with secondary education (27.22 percent) and higher education (48.48 percent) used a condom at their first sexual intercourse. In general, condom use at first sex increased with every level of education.

With regard to province of residence, only Luapula and Lusaka provinces reported more than a quarter of young men who used a condom at first sex: 40.74 percent in Luapula province and 39.41 percent in Lusaka province. In the other seven provinces, between 10 percent and 24 percent of young men used a condom at first sex: 10.00 percent in the Northern province, 11.76 percent in the North-Western province, 14.12 percent in the Southern province, 16.67 percent in the Central province, 21.74 percent in the Eastern province, 23.21 percent in the Copperbelt province, and 24.00 percent in the Western province. Therefore, condom use at first sex among young men was highest in Luapula province and lowest in Northern province.

Overall, less than a quarter (23.63 percent) of young men in the surveyed sample used a condom at their sexual debut.

Table 4-8: Percentage of young women aged 15-24 years who used a condom at first sex by selected covariates, ZSBS 2005

Background Characteristic	Percent of condom use at first sex	Total percent	Number of respondents
Place of Residence			
Rural	15.68	100.00	82
Urban	32.28	100.00	184
Marital Status			
Married	14.50	100.00	97
Unmarried	39.95	100.00	169
Education			
No Education	9.91	100.00	11
Primary	16.67	100.00	85
Secondary	35.99	100.00	158
Higher	40.00	100.00	12
Province			
Central	16.67	100.00	15
Copperbelt	29.09	100.00	16
Eastern	17.31	100.00	18
Luapula	10.00	100.00	4
Lusaka	29.93	100.00	88
Northern	5.26	100.00	4
North-Western	22.03	100.00	13
Southern	25.63	100.00	61
Western	77.87	100.00	47
Overall female	24.34	100.00	266
			(N = 1,093)

Note: The chi-square test on sample distributions yielded p < 0.01. Total sample size is in parenthesis.

In general, there is evidence that slightly more young women (24.34 percent) than young men (23.63 percent) used a condom at their first sexual encounter. The high levels of condom use among young women could plausibly be associated with the dual protection of condoms, namely from unwanted pregnancy and from STIs, as advanced in other literature (Peltzer, 2000; Chikamata *et al.,* 2002; Kaufman *et al.,* 2004; Maharaj, 2006).

4.3.2. Determinants of condom use at first sex

4.3.2.1. The determinants of condom use at first sex for young men aged 15-24 years

Table 4-9 shows the logistic regression analysis of the determinants of condom use at first sex among young men aged 15-24 years. Model I controls for current age, urban/rural residence, marital status and educational attainment. As shown, young men's current age is positively associated with having used a condom at first sex. This confirms observations made in other empirical studies that an increase in age is associated with a corresponding increase in condom use. A study by Blanc and Way (1998) found that the older the age at first intercourse the more likely young people are to practice contraception. There is no difference in the odds of having used a condom at first sex between young men who reside in rural areas and young men who reside in urban settings. The odds of having used a condom at first sex are 3.11 times higher for unmarried young men compared to married young men. The use of condoms at first sex is high among unmarried young people compared to married young people. In sub-Saharan Africa, current contraceptive use is higher among sexually active unmarried teens than it is among married teens (Blanc and Way, 1998). Nevertheless, consistent condom use is negatively associated with being married or being in a cohabiting relationship (Prata *et al.,* 2005). In addition, having primary education is strongly negatively associated with having used a condom at first sex for young men. The odds of having used a condom at first sex are 1.48 times higher for young men with secondary education. Young men with higher education have 3.25 times higher odds of having used a condom at first sex than young men who did not use a condom at first sex. In this model, only marital status and higher education have statistically significant effects.

Table 4-9: Logistic regression analysis of the determinants of condom use at first sex among young men aged 15-24 years, ZSBS 2005

Condom use	Model I (N = 693)		Model II (N = 693)		Model III (N = 650)	
	Odds Ratio	Std. Err.	Odds Ratio	Std. Err.	Odds Ratio	Std. Err.
Age	1.05	0.04	1.05	0.05	1.05	0.05
Residence						
Urban	1.00	0.21	0.78	0.24	0.68	0.30
Marital Status						
Unmarried	3.11***	0.90	3.64***	1.12	3.98***	1.30
Education						
Primary	0.96	0.41	1.07	0.48	1.12	0.54
Secondary	1.48	0.64	1.64	0.74	1.84	0.88
Higher	3.25**	1.81	2.66*	1.55	2.86*	1.80
Province						
Central			1.66	1.06	1.26	0.86
Copperbelt			2.25	1.37	1.42	0.95
Eastern			3.11**	1.69	2.83*	1.55
Luapula			7.98***	4.89	7.74***	4.82
Lusaka			4.48***	2.47	3.89**	2.31
Northern			1.12	0.78	0.88	0.65
Southern			1.29	0.69	1.05	0.60
Western			2.18	1.15	1.56	0.87
SES						
Piped water					2.07*	0.86
Flush toilet					1.20	0.41
Electricity					1.07	0.44
Television					0.83	0.31
Telephone					1.02	0.34
Refrigerator					0.96	0.37
Safe wall					0.58	0.25
Log likelihood		-359.71		-341.37		-312.01

* Significant at the .10 level
** Significant at the .05 level
*** Significant at the .01 level
Note: Omitted categories are rural male, married male, no education, north-western and car

Model II in table 4-9 introduces the variable province of residence in the model that controls for current age, urban/rural residence, marital status and educational attainment.

Current age is still positively associated with having used a condom at first sex. Unlike in the previous model, residing in urban areas is strongly negatively associated with having used a condom at first sex compared to residing in rural areas for young men. The odds of having used a condom at first sex are 3.64 times higher for unmarried young men than for married young men. Unlike in model I, having primary, secondary and higher education are all strongly positively associated with having used a condom at first sex, for young men. All the provincial variables are strongly associated with having used a condom at sexual debut. Nonetheless, the Eastern, Luapula and Lusaka provinces have statistically significant effects of condom use at first sex. Notably, the odds of having used a condom at first sex for young men are 3.11 times higher in the Eastern province, 7.98 times higher in Luapula province and 4.48 times higher in Lusaka province than for young men in the North-Western province.

Model III in table 4-9 includes SES in the model that controls for current age, urban/rural residence, marital status, educational attainment and province of residence. Young men's current age remains positively associated with having used a condom at first sex. Similar to model II, residing in urban areas is strongly negatively associated with having used a condom at first sexual intercourse. Being unmarried is strongly positively related to having used a condom at sexual debut for young men. There is evidence that as young men progress in education, their odds of having used a condom at first sex increases significantly. This confirms the findings of a study by Agha (1998) on sexual activity and condom use in Lusaka, Zambia where the use of condoms among men was elevated among those who had an education beyond the secondary level. Similarly, Prata *et al.* (2005) in their study on gender differences on condom use among 15-24 year olds in Angola found that for both males and females, consistent condom use was positively associated with higher levels of education. Moreover, the odds of having used a condom at first sex are 2.86 times high for young men with higher education than for young men without education. The influence of education on condom use among young people has been reported in other literature (Lugoe *et al.*, 1996; CSO *et al.,* 2009). A cross-sectional survey to predict the determinants of sexual debut and recent condom use among sexually active secondary school students in Tanzania found that condom use increased with levels of

education but that gender was not significantly linked to increased condom use (Lugoe *et al.*, 1996). Results from a more recent ZSBS which measured young people aged 15-24 years who used condom at last sexual intercourse shows that condom use increased with the level of education (CSO *et al.,* 2009).

Furthermore, model III demonstrates that with the exception of the Northern province, the odds of having used a condom at first sex are higher for young men in the other seven provinces than for young men in the North-Western province. Finally, for young men, living in a household with television, a refrigerator and safe walls is strongly negatively associated with having used a condom at first sex compared to living in a household with a car. Besides, for young men, living in a household with piped water, a flush toilet, electricity and a telephone is strongly positively associated with having used a condom at first sex, compared to living in a household with a car.

On the whole, the strongest predictors of condom use at first sex for young men is being unmarried, having higher education, residing in the Eastern, Luapula or Lusaka provinces, and living in a household with piped water.

4.3.2.1. The determinants of condom use at first sex for young women aged 15-24 years

Table 4-10 presents the logistic regression analysis of the determinants of condom use at first sex among young women aged 15-24 years. In model I, young women's current age is negatively related to having used a condom at first sex. The odds of having used a condom at first sex are 1.45 times higher for urban young women than their unmarried counterparts. Unmarried young women's odds of having used a condom at first sex are 2.86 times higher compared to married young women. For young women, having primary, secondary and higher education are all positively associated with having used a condom at first sex. The odds of having used a condom at first sex for young women with secondary education are 3.12 times higher, and with tertiary education 3.66 times higher compared to uneducated young women. Urban residence, unmarried status and having secondary or higher education are all statistically significant in this model.

Table 4-10: Logistic regression analysis of the determinants of condom use at first sex among young women aged 15-24 years, ZSBS 2005

Condom use	Model I (N = 1089)		Model II (N = 1089)		Model III (N = 1015)	
	Odds Ratio	Std. Err.	Odds Ratio	Std. Err.	Odds Ratio	Std. Err.
Age	0.97	0.03	0.97	0.03	0.96	0.03
Residence						
Urban	1.45**	0.25	1.74***	0.39	1.42	0.42
Marital Status						
Unmarried	2.86***	0.48	2.72***	0.48	2.63***	0.48
Education						
Primary	1.63	0.57	1.84*	0.65	1.88*	0.70
Secondary	3.12***	1.11	3.72***	1.35	3.93	1.51
Higher	3.66***	1.91	4.41***	2.32	5.33***	3.04
Province						
Central			0.82	0.38	0.86	0.41
Copperbelt			0.66	0.32	0.74	0.39
Eastern			1.12	0.48	1.10	0.49
Luapula			0.77	0.49	0.90	0.58
Lusaka			0.65	0.26	0.64	0.28
Northern			0.27**	0.17	0.16**	0.13
Southern			0.53	0.21	0.51	0.22
Western			1.17	0.46	1.14	0.47
SES						
Piped water					0.95	0.27
Flush toilet					0.57**	0.14
Electricity					1.04	0.28
Television					1.31	0.33
Telephone					1.11	0.25
Refrigerator					1.05	0.29
Safe wall					1.24	0.39
Log likelihood		-540.98		-532.76		-499.88

* Significant at the .10 level
** Significant at the .05 level
*** Significant at the .01 level
Note: Omitted categories are rural female, married female, no education, north-western and car

Model II in table 4-10 introduces the provincial variable in the model that controls for current age, urban/rural residence, marital status and educational attainment. Young women's current age remains strongly negatively associated with condom use at first sex. Unlike their male counterparts in table 4-9, for young women, residing in urban areas is positively associated with using a condom at first sex compared to residing in rural areas. The odds of having used a condom at first sex are 2.72 times higher for unmarried young women compared to married young women. Education has a statistically significant effect on the use of a condom at first sex for young women with primary, secondary and higher education. The odds of having used a condom at first sex are 1.84 times higher for young women with primary education, 3.72 times higher for young women with secondary education and 4.41 times higher for young women with higher education compared to uneducated young women. This is consistent with what has been observed among their male counterparts where condom use increases with levels of education. For young women, with the exception of the Eastern and Western provinces, residing in all the other seven provinces is strongly negatively associated with having used a condom at first sex. Only the Northern province has a statistically significant effect on the use of condom use at first sex for young women.

A SES index is introduced in model III that controls for current age, urban/rural residence, marital status, educational attainment and province of residence. Like in the previous models, for young women, age is negatively associated with having used a condom at first sex. Residing in urban areas initially had a significant effect in the previous models, but this relationship becomes insignificant once SES is accounted for. Residing in urban settings is positively associated with having used a condom at first sex compared to residing in rural areas. The odds of having used a condom at first sex are 2.63 times higher for unmarried young women than for married young women. After controlling for current age, urban/rural residence, marital status, educational attainment, province of residence and SES, as young women progress in their education, the odds of their having used a condom at first sex generally increases significantly. Secondary education has an insignificant effect on condom use at first sex once SES is accounted for in the model. As in the previous model, only the Eastern and Western provinces are positively associated with condom use

at first sex for young women. Similarly, for young women, the Northern province is statistically significant although it is negatively associated with having used a condom at first sex. Living in a household with piped water or a flush toilet, are all negatively associated with having used a condom at first sex compared to living in a household with a car. For young women, living in a household with electricity, television, a telephone, a refrigerator or safe walls are all positively associated with having used a condom at first sex compared to living in a household with a car. Previous studies have generally observed that higher socio-economic status leads to a greater likelihood of using condoms during first intercourse (Juarez and LeGrand, 2005).

Overall, there is evidence that being unmarried, with primary and secondary education, residing in Northern province, and living in a household with a flush toilet, are the strongest predictors of condom use at first sex for young women.

4.4. Conclusion

This chapter presented results from the statistical analysis of sexual behaviour of young people using the 2005 ZSBS. It examined age at first sex, age at first childbearing and condom use at first sex. The analysis established that age at first sex, age at first birth and condom use at first sex among young people in Zambia differ by cohort, gender, urban/rural residence, marital status, educational attainment and province of residence. Firstly, there were more young people who initiated sex for both genders. Notably, there were 57.84 percent of young men in the surveyed sample who had initiated sex. There was evidence that the strongest predictors of sexual debut for young men were current age, residing in Lusaka or the Northern provinces, and living in household with a television. Similarly, 69.15 percent of young women in the surveyed sample had initiated sex. Current age and higher education were important predictors of first sex among young women. Secondly, 47.89 percent of young women in the surveyed sample reported having given birth. The strongest predictors of first childbearing for these young women were age at first sex and higher education. Thirdly, condom use at first sex was less than a quarter both among young women and young men. Only 23.63 percent of young men and 24.34 percent

of young women in the surveyed sample used a condom at their sexual debut. Moreover, the strongest predictors of condom use at first sex for young men was being unmarried, with higher education, residing in the Eastern, Luapula or Lusaka provinces, and living in a household with piped water. Finally, there was evidence that being unmarried, with primary and secondary education, residing in the Northern province, and living in a household with a flush toilet were strongest predictors of condom use at first sex for young women.

CHAPTER 5

DISCUSSION, RECOMMENDATIONS AND CONCLUSION

5.0. Introduction

This chapter discusses the main findings, recommendations and conclusion of the study that was aimed at examining the determinants of sexual behaviour, measured by age at first sex, age at first childbearing and condom use at first sex, among young people in Zambia using the 2005 ZSBS.

5.1. Discussion

There was evidence that age at first sex, age at first birth, and condom use at first sex among young people in Zambia differs by current age, gender, urban/rural residence, marital status, educational attainment and province of residence. The present study confirms the assumption that sexual initiation is earlier among young women than among young men (Banda *et al.*, 1999; Curtis and Sutherland, 2004). The study found that being a young woman is associated with lower survivorship probability of first sex compared to being a young man.

The study further confirms the assertion that premarital sex is a common phenomenon among young men and young women in Zambia (Brown *et al.*, 2001; CSO *et al.*, 2010). It was found that more young men (50.68 percent) than young women (46.38 percent) had premarital sex. A recent survey by CSO *et al.* (2010:69) observed that premarital sex was "more evident among young men (28 percent) than young women (23 percent)", 12 months prior to the 2009 survey. One of the reasons cited for these differences is over‑reporting among males and under‑reporting among females (Brown *et al.*, 2001). This evidence

points to the need for policy intervention aimed at mitigating the adverse effects of premarital sex among young people in Zambia.

The study also confirms the assertion that higher education tends to delay onset of sexual debut (McGrath *et al.*, 2009). It was observed that young people with higher education were associated with higher survivorship probability of first sex compared to young people with lower levels of education. Young people with higher education tend to initiate sex later, probably due to sexual debut competing with time spent in school. Therefore, investment in education is likely to delay onset of sex and it would greatly reduce negative effects such as unintended pregnancies and abortions if more young people are in school.

It was evident that place of residence (whether rural-urban or province) plays a significant role in young people's sexual behaviour (CSO *et al.*, 2009; CSO, 2003-b). It was found that residing in a rural residence was associated with lower survivorship probability of first sex compared to residing in an urban setting for both males and females. Similarly, more urbanised provinces (for example, Copperbelt and Lusaka) were associated with higher survivorship probability of first sex compared to typically rural provinces (for example, the North-Western and Western). One of the key factors contributing to earlier initiation of sex in rural locations is due to early age at first marriage, commonly practiced in rural areas (McGrath *et al.*, 2009).

With regard to age at first childbearing, there was evidence in support of the assumption that residing in rural areas is associated with lower survivorship probability of first birth compared to residing in urban areas (CSO *et al.*, 2009). The study found that there were more rural young women (59.53 percent) than urban young women (39.20 percent) who given birth. More urbanised provinces such as Lusaka and the Copperbelt are associated with higher survivorship probability of first birth compared to predominantly rural provinces like the Eastern and Western. For example, a study by CSO *et al.* (2009) observed that the Copperbelt (4.8) and Lusaka (4.1) provinces had lower total fertility rates (TFR) than the rest of the provinces which are generally rural, with the highest TFR

observed in the Northern Province (7.9), followed by the North-Western with 7.3 and Luapula with 7.2.

The study further confirms evidence that for young women, being unmarried is associated with having lower survivorship probability of first birth compared to being married (Singh, 1998). The analysis also confirms the expectation that education tends to delay onset of childbearing (Bledsoe, 1990). There was evidence that young women with higher educational attainment are associated with higher survivorship probability of first birth compared to young women with other educational levels.

Condom use at first sex remains one of the major challenges confronting young people in Zambia. As observed in other studies (for example, Blanc and Way, 1998; Benefo, 2004), the present study found low levels of condom use among young people during their first sexual intercourse. For example, less than a quarter of young men (23.63 percent) and young women (24.34 percent) used a condom at first sex. The study further confirms available evidence that more young people in urban areas than in rural areas used a condom at their first sexual encounter (Paiva *et al.*, 2008). A recent study by CSO *et al.* (2009:73) observed a similar pattern and noted that 'contraceptive use is higher among women in urban areas than among women in rural areas (48 and 37 percent, respectively)'.

The assertion that condom use is negatively associated with being married or being in a cohabiting relationship (Blanc and Way, 1998; Hendriksen *et al.*, 2007) found support in this study. The study found that more unmarried young people (27.88 percent men and 39.95 percent women) used a condom at first sex compared to their married counterparts (10.92 percent men and 14.50 percent women). Hendriksen *et al.* (2007) also observed that married young people were less likely to use a condom during their recent sexual intercourse.

There was evidence that condom use is positively associated with higher levels of education (Lugoe *et al.*, 1996; Prata *et al.*, 2005). The study found that condom use increased with the level of education for both young men and young women. There were

more young people with secondary and higher education who used a condom at first sex compared to young people with primary education and no education. High levels of condom use among more educated young people have been documented in a number of recent studies (Hargreaves *et al.*, 2008; Paiva *et al.*, 2008; McGrath *et al.*, 2009).

The expectation that more urbanised provinces record high percentages of condom use at first sex compared to more rural provinces due to, for example, high exposure to family planning messages through the media and easy accessibility of condoms in urban provinces, was not supported without contrasting evidence. The use of condom at first sex was more evident in rural provinces (such as Luapula and the Western) than in more urbanised provinces (such as the Copperbelt and Lusaka) suggesting that condom promotion campaigns might have been more successful in rural than in urban areas. More recent empirical research indicates that the 'Eastern province [had] the highest proportion of women currently using a family planning method (53 percent), followed by Copperbelt (48 percent)' and 'the lowest proportion of married women using a family planning method [was] in Luapula (16 percent)' (CSO *et al.*, 2009:73). The erratic use of condoms among young people in Zambia is an indication that they are still engaging in risky or unsafe sexual behaviour which exposes them to STIs and unintended pregnancies.

As advanced earlier, it is evident that young people's sexual behaviour is influenced by factors within a person's context, within a person's proximal context, and within a person's distal context. The present study demonstrates that apart from individual decisions, young people's age, marital status, education, province of residence, and SES play important roles in shaping their sexual behaviour. Firstly, the study found that the determinants of sexual debut for young men were residing in Lusaka or the Northern provinces and living in a household with a television; while current age and higher education were the strongest predictors of first sex for young women. Secondly, for young women in Zambia, age at first sex and higher education were the strongest predictors of first childbearing. Thirdly, being unmarried, with higher education, residing in the Eastern, Luapula or Lusaka provinces and living in a household with piped water, were strongly associated with condom use at first sex for young people; while being unmarried, with primary and secondary education,

residing in Northern province and living in a household with a flush toilet were the strongest predictors of condom use at first sex for young women. It was therefore clear that education, marital status, province of residence and SES exert strong influences in the use of condoms at first sex among young people in Zambia. These findings clearly demonstrate that young people's sexual behaviour is driven by a variety of factors including living arrangements and social expectations. It is therefore important that programmes which target young people take into consideration these personal and external influences. Understanding such factors is crucial in designing health-related programmes for them.

5.2. Recommendations of the study

The identification of age, education, marital status, SES and province of residence as strongest determinants of sexual behaviour among young people in Zambia demands investment in programmes that aim at promoting delay in sexual debut, encouraging condom use at first sex, and addressing the factors that contribute to premarital sex.

First, the promotion of abstinence, and delay of sexual debut remains an effective means of reducing the negative consequences of early sexual initiation such as unwanted pregnancies and abortions among young people. Programmes which encourage young people to abstain should be stepped up.

Second, the promotion of condom use at first sex among young people especially in rural areas should be a priority. All the obstacles faced by rural communities such as in-accessibility and non-availability of condoms should be addressed. Investing in female-led condom initiatives (to compliment male-led condom initiatives) in the fight against HIV and AIDS would equally add value.

Three, the evidence that more unmarried than married young women report ever having given birth suggests an increase in teenage pregnancy and motherhood in Zambia. There should be programmes specifically designed to reduce premarital sex such as family planning programmes targeted at young people. Early engagement with young people on

sexual education could save many lives, and investing in girls' education should be a priority.

5.3. General conclusion

The present study established that age at first sex, age at first birth and condom use at first sex among young people in Zambia differ by cohort, gender, urban/rural residence, marital status, educational attainment, and province of residence. The study further confirmed a number of assumptions namely that sexual initiation is earlier among young women than young men, first childbearing is more likely to be experienced among young women with no education than among young women with some levels of education, and that condom use at first sex is more common among urban than rural young people in Zambia. It was also found that age, education, marital status, province of residence and SES are the strongest determinants of sexual debut, first childbearing, and condom use among young people in Zambia. There is evidence that although Zambia has shown progress in delaying sexual debut and first childbearing, other areas such as condom use at first sex show little change indicating the need for renewed efforts in HIV and AIDS prevention and family planning programmes. Finally, the implications for these findings are that understanding changes in sexual debut, age at first childbearing, and condom use at first sex, is indispensable for targeted interventions aimed at reducing premarital sex and teenage pregnancy, and tackling increased vulnerability to STIs, among young people in Zambia. The present study offers relevant insights into the levels and determinants of sexual behaviour among young people useful for policy formulation and implementation.

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