

UNIVERSITY OF SOUTHAMPTON
FACULTY OF LAW, ARTS AND SOCIAL SCIENCES
School of Social Sciences

**DYNAMICS OF ABSTINENCE AND CONDOM USE
AMONG UNMARRIED YOUTH AGED 15-24 IN UGANDA
A Case of Mukono and Kabale Districts**

By

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ABSTRACT
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**DYNAMICS OF ABSTINENCE AND CONDOM USE AMONG UNMARRIED
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This thesis establishes the current levels of, and changes in, sexual abstinence and condom use among young unmarried people and determines factors associated with them. Abstinence is considered in two ways: primary abstinence refers to delayed onset of sexual intercourse, whilst secondary abstinence refers to periods during which sexual intercourse did not take place amongst those who had already been sexually active. The study analyses quantitative data from 786 respondents in a stratified cluster survey and qualitative data from focus group discussions and key informants. The survey used both a questionnaire and an Event History Calendar (EHC). Logistic regression is used to analyse the probabilities of abstaining and condom use while piecewise constant hazards models are used to analyse duration of secondary abstinence. Consistency of condom use at both first and latest events is analysed using multinomial logistic regression. Multilevel modelling is used to explore cluster level variation.

The results show that young people are more likely to have never had sex if they reside in Kabale, avoid parties/clubs, avoid alcohol consumption, are not indecently assaulted and have a positive attitude towards abstinence. Being in age group 15-16, not taking alcohol and avoiding parties/clubs are associated with secondary abstinence. Residence in Mukono, being female, being in school, attainment of secondary education, listening to radio, positive attitude to condom use, higher age at first sex and having had two or more relationships are associated with condom use. Condom use level varies by sexual event and relationship. Consistency of condom use is associated with residence in Mukono, secondary education and higher age at first sex. There is a significant random variation in secondary abstinence at village level.

In conclusion, there appear to be dynamic changes in levels of condom use and abstinence among young people in Uganda. An EHC can be reliably used to collect data on sexual abstinence episodes. Some patterns of condom use and sexual abstinence are different from results reported in other studies.

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ACRONYMS AND OPERATIONAL DEFINITIONS

ACRONYM	MEANING
ABC	Abstinence, being faithful to one partner and condom use
ACP	AIDS control programme of the Uganda Ministry of Health
CPR	Contraceptive Prevalence Rate
DFID	Department for International Development
DHS	Demographic and Health Survey
FHI	Family Health International
FP	Family Planning
HRW	Human Rights Watch
LC	Local council
MDG	Millennium development goals
NGO	Non Governmental Organisation
SRH	Sexual and Reproductive Health
TFR	Total Fertility Rate
UDHS	Uganda Demographic and Health Survey

OPERATIONAL DEFINITIONS

TERM	DEFINITION
Consistent condom use	This refers to use of condom at both first and last sex event within a relationship or overall time one has been sexually active
Dynamics	Changes in condom use or abstinence from time to time
Primary abstinence	Delayed first sex or state of having never had sex.
Secondary abstinence	Refraining from sex by those who have already been sexually active. This may be voluntary or involuntary. The study does not distinguish between the two
Sex event	Sex event refers to the event of penile sex
Sexual activities	Refers to activities involving penile sex
Sexual exposure	Having ever had vaginal sexual intercourse
Young people	In the study, the focus is on the age group 15-24

CHAPTER ONE

1. INTRODUCTION

Worldwide, young people's sexual health is a major concern especially in the context of HIV/AIDS, Sexually Transmitted Infections (STIs) and unplanned pregnancies. In the 1994 International Conference on Population and Development (ICPD), nations agreed to make adolescent sexual and reproductive health a priority. ICPD championed a holistic and integrated approach to reproductive health based on the rights of an individual to information and services. The emergence of the Millennium Development goals (MDG) makes the issues of sexual health more critical. In the MDG there is no explicit mention of young people's sexual health but there is a close link between young people's sexual health and poverty, HIV/AIDS maternal and child mortality which are mentioned (Tombros, 2005). More research in sexual health will be required to meet the targets of the ICPD and MDGs.

In June 2001, member states at the United Nations General Assembly Special Session on AIDS (UNGASS) agreed to ensure that by 2005 at least 90 percent of young men and women aged 15-24 have access to information and education necessary to develop the life skills required to reduce their vulnerability to HIV infection (United Nations, 2001). Young people are very vulnerable partly because their social, emotional and psychological development is incomplete, and they tend to experiment with risky behaviour, often unaware of the consequences (Kiragu, 2001). The best protection against sexual health problems for young unmarried people is abstinence or condom use if they cannot manage to abstain. That is why condom use and abstinence are primary goals of current public health efforts to prevent sexually transmitted infections, HIV and unplanned pregnancies (Orr et al., 1992; Simbayi et al., 2004).

Every day nearly 7,000 young people aged 15-24 get infected with HIV worldwide and a third of the infections are in Sub-Saharan Africa (UNAIDS, 2004). HIV Infected men and women are exposed to 9-20 and 15-25 times higher mortality rate than the uninfected men and women respectively (Porter and Zaba, 2004). More than half of new HIV infections occur among young people below 25 years of age (Youthnet and FHI, 2005). Mostly as a

result of unintended pregnancy, nearly 12,000 adolescents undergo abortions each day (UNFPA, 2000). Over 5,000 adolescent women in developing countries have illegal, unsafe abortions each year (UNAIDS, 2004; Scommegna, 1996). Over 40 percent of women in developing countries give birth before the age of 20 (RHO, 2005). Sexual abstinence would prevent all the HIV infections and unplanned pregnancies while consistent and correct condom use would prevent between 90 to 95 percent of HIV infections (Pinkerton and Abramson, 1997). As long as these sexual health problems persist new approaches to tackle them will always be needed as the current ones may have limitations (Katz et al., 2000; Kelley and Kalichman, 1995).

From the literature review carried out, there is limited research on changes in condom use with time within and across relationships. Abstinence or delay/stopping of sexual activity over time are not fully explored either. In many studies, inconsistent condom users are grouped in the same category with non users (Abdullah et al., 2002). There is no study so far reported in the literature that has analysed condom use at first sex in Uganda or had a focus on dynamics of condom use and abstinence among young unmarried people aged 15-24. Most research focuses only on levels of condom use at last sexual intercourse and primary abstinence, and factors that are associated with them among specific sub-groups such as women only, sex workers and clients of family planning clinics.

Uganda is committed to the consolidation and scaling up of interventions for HIV/AIDS using the ABC strategy (ACP, 2002) and attaching equal importance to each component of the strategy. However, the approach has changed with more emphasis on A and B to the detriment of C which has raised concern among researchers and HIV/AIDS programme implementers around the world including Human Rights Watch [HRW] (HRW, 2005). In such situations, policy needs to be advised by good data and rigorous analysis (Zaba et al., 2004b) both of which are lacking in the country (MOH, 2004).

1.1 Objective of the research

The main objective of the study is to investigate the dynamics of sexual abstinence and condom use among young unmarried people aged 15-24 in Uganda with a focus on the two districts of Kabale and Mukono. Specifically, the study establishes the levels of abstinence and condom use, changes in the levels over time and factors associated with both the levels

and the changes. Proportions abstaining over a period of time, rates of discontinuation of abstinence episodes, consistency of condom use at both first and latest sexual events are some of the indices used. The results of the study may shed some light on new strategies to reduce prevalence of HIV/AIDS, sexually transmitted infections and unplanned pregnancies.

1.2 An overview of abstinence and condom use

This section presents understanding of abstinence and consistent condom use by young people used by researchers in other studies and more justification for the study.

Understanding abstinence and consistent condom use

Abstinence refers to primary abstinence (that is refraining from sex by an individual who has never experienced it until some future desired time such as when in a committed relationship before or during marriage) and secondary abstinence, refraining from sex by those who have already been sexually active (Thomas, 2000; Marindo et al., 2003). The period of time a sexually active person takes without sex measures secondary abstinence. There is no defined minimum time for secondary abstinence but in the literature so far searched the minimum used by researchers is one month, as used in a study in Kenya (Office of the President et al., 2004). Secondary abstinence is also called “secondary virginity”. Most faith-based groups view abstinence as a commitment to refrain from sex until marriage (Marindo et al., 2003). For centuries, people have abstained or stopped sexual activity for several reasons but the term secondary abstinence evolved recently as a new concept in the wake of the HIV pandemic to use in prevention programmes.

Researchers measure secondary abstinence in different ways. In Loewenson et al. (2004) abstinence was measured by the proportion of adolescents who had ever had sex but later stopped sexual activity. No information was obtained on the duration of secondary abstinence. This measure suffers from comparability and is not sensitive to change of sexual activity with time. Erulkar et al. (2004) used six months duration prior to survey to reduce on possible recall bias. The most common duration of time used to measure secondary abstinence is 12 months (Uganda HIV_AIDS Partnership et al., 2004; Singh et al., 2003; Pettifor et al., 2004). In some instances, researchers have used three and six

months' abstinence to mean not having sex during the previous three and six month periods respectively.

Reasons for abstaining may be categorised as voluntary and involuntary. The former refers to a deliberate decision to delay or stop sexual activity. The reasons for such a decision include avoiding disease, pregnancy, social problems and wishing to remain a virgin (or reclaim “virginity” if already sexually experienced). Involuntary reasons include lack of opportunity, failed relationship, and separation from partner by distance. A study in South Africa identifies reasons for abstaining as lack of opportunity or personal choice among other factors (Shisana and Simbayi, 2002). A study among girls in twelfth grade in the USA found that the main reasons for primary abstinence were fear of pregnancy (77 percent), STIs (61 percent), and choosing to wait until marriage (59 percent) (Loewenson et al., 2004).

Consistent condom use refers to the use of condom at every vaginal sexual intercourse but, because reported condom use at first and latest sex is likely to be more reliable information, it has been used as a proxy for consistent condom use in the current study. The definition of consistent condom use has varied in other studies to suit the objectives of the study and circumstances. In a behavioural surveillance study in Cambodia, consistent condom use included “frequent” use (Gorbach, 1997) while in a prospective study in Malawi and Zimbabwe it meant use of condoms in 75 percent of sexual acts (Taha et al., 2001). A study in Tanzania defined consistent use of condoms as having used condoms on every occasion during the previous five years (Ao et al., 2003). In Zimbabwe, researchers in one study measured consistent condom use as having used condoms with all partners during the previous two to three months before the study (Adetunji and Meekers, 2001). Five years is a long time to recall clearly in the Tanzania study. A problem with the study in Zimbabwe is that there is likely to be few sexual events since the time period is relatively short. This could exaggerate the assessed level of consistency of condom use (Weisman et al., 1991).

A need for more work on condom use and abstinence

Inconsistent condom use is risky and yet little work has been carried out on its prevalence and associated factors in developing countries. It is one of the major risk factors for STI

among adolescents (Shafer et al., 1993). It increases the condom failure rate at least fivefold in protection against unplanned pregnancy and HIV (Trussell et al., 1991; Shlay et al., 2004; Hatcher and Hughes, 1988). In another study, it was found that only 11 future cases of HIV out of 279 per 10,000 people in Africa can be averted if they use condoms inconsistently (Varghese and Peterman, 2000).

Primary abstinence is one of the major determinants of sexual health and hence research into levels of and changes in abstinence is critical. Adolescents who begin sexual activity late appear less likely to have an unintended pregnancy, sex with high-risk partners or multiple partners and are more likely to use condoms (WHO, 2000; Kelly and Vencatachellum, 2003) and hence less likely to have HIV (Kiwanuka et al., 1996) and other STIs (Forste and Haas, 2002). Early sexual intercourse is also associated with low educational attainment, depression and low self esteem (Harvey and Spigner, 1995; Lammers et al., 2000; Lenaz et al., 1991). The older the women are at first sex, the more likely it is to have been planned or voluntary (Abma and Sonenstein, 2001).

Premarital sexual activity is common and is on the rise in all regions (PRB, 2000) and hence more reason for research into sexual practices. By age 20 at least 80 percent of sub-Saharan African youth are sexually experienced (Noble et al., 1996). Analysis of data from Brazil, Gabon, Haiti, Hungary, Kenya, Latvia, Malawi, Mozambique, and Nicaragua found that 25 percent of the boys had sex before 15 years and the median age at first sex was 16.6 years for girls and 17.4 years for boys (Youthnet, 2003). One reason for failure to abstain is that puberty is occurring earlier in life while the age at first marriage is rising (Youthnet, 2003). Another explanation for early sexual debut is coercion or persuasion into sex. Studies in South Africa and Uganda show that the proportions of women coerced into sex at their first sexual encounter were 25 percent and 20 percent respectively (Manzini, 2001; Ndyanabangi et al., 2003).

Secondary abstinence is beneficial for young people and hence should be monitored through research with the view to promote it. In addition to prevention of HIV, STIs and unplanned pregnancies, secondary abstinence prevents a buffer from psychosocial and emotional harm from failed relationship (Billy et al., 1988; Orr et al., 1991).

When more people use preventive measures against STIs and HIV, dynamics of use and the factors that affect them become increasingly relevant for programme guidance (PRB, 2001). Uganda has achieved a relatively high level of condom use (ACP, 2002) and the next step for programme implementers ought to be maintaining the practices. Hence the need for more research into levels of discontinuation of abstinence and condom use and factors associated with them.

Increased condom use might contribute more to condom use prevalence than an increase in new users especially when there is high inconsistent use. In a study on operations research in family planning, it was found that an increase in continued contraceptive use contributes more to contraceptive prevalence rates than an increase in new users (Bruce and Jain, 1991).

There are indications of high prevalence of inconsistent condom use in Uganda and yet little investigation has been carried out into actual levels and factors associated with it. In a study carried out in 1999 to determine predictors of condom use among patients with STIs, it was found that 59 percent of the patients at Mbarara Hospital had ever used a condom but just 15 percent used a condom during their most recent sexual intercourse (Nuwaha et al., 1999). In a related study conducted among traditional healers in Kiboga district in Uganda in 2002, it was found that 32 percent had ever used a condom but only 2 percent reported always using condoms. Sixty percent of the healers perceived themselves at risk because of having multiple partners and the nature of their healing practices (Ssali et al., 2002). In a randomised controlled community study in Rakai district in Uganda, only 4.4 percent of respondents aged 15-59 reported having used condoms consistently during the previous 12 months (Ahmed et al., 2001).

The levels of abstinence and condom use among young people change with time and with different partners (Gregson et al., 2001; Kordoutis et al., 2004; Kusseling et al., 1995; Ku et al., 1994). Thus, abstinence and condom use among young people appear to follow some form of dynamics. These dynamics are not fully researched (Siegel and Schrimshaw, 2003). The literature search carried out as part of this current study has found few studies on secondary abstinence and changes in condom use. Whatever data are currently available on the dynamics of condom use, there is a need for more since the levels of abstinence and condom use change over time.

Sexual abstinence and condom use are part of the ABC (Abstinence, Being faithful to one's sexual partners and Condom use) anti-HIV strategy which started in Uganda and is being adopted in other parts of the world including Zambia, Cambodia and the Dominican Republic (USAID, 2003). Research on changes in abstinence and condom use in the country that has followed the ABC model since the late 1980s provides light on changes anticipated in countries that are currently adopting the model.

1.3 Achievements of programmes focused on abstinence and condom use

There are many international, national and Non-Governmental Organisation bodies that work on increasing sexual abstinence and condom use and they rely on results from studies similar to the current one to implement their programmes. This section reviews the successes and failures of some of the programmes.

In New York USA, an intervention programme delayed sexual initiation, reduced frequency of sex, increased condom use and contraception (O'Donnell et al., 2002). Students in the study were randomly assigned by classroom to participate in the community youth service (CYS) or not (controls). Students in both intervention and control groups received classroom health lessons for two years. CYS participants were significantly less likely than controls to report sexual initiation. A similarly designed intervention in Boston and Hartford (Sellers et al., 1994) succeeded in increasing age at initiation of sex and reducing the number of sexual partners, and beneficiaries were more likely to have condoms in their possession.

Evidence shows that comprehensive programmes promoting both abstinence and condom use are more effective than abstinence only programs, contrary to the belief in some religious and political circles that they would increase sexual activity. An evaluation of 35 sex education/HIV programmes that include both abstinence and contraception education has not shown these programmes to hasten first intercourse, increase the frequency of sexual activity, or increase the number of sex partners, but may in fact decrease at least one of these outcomes, and increase condom use (Santelli et al., 1999). Comprehensive programmes teach skills for practicing abstinence as well as provide information for sexually active young people about condoms and reducing the number of partners

(Youthnet, 2003). This contrasts with abstinence only programmes that teach only benefits of abstaining (PPFA, 2005).

Introducing a strict way of living to promote abstinence may not be effective in the long term. In a national longitudinal study of adolescent health in the USA it was found that those who had pledged to abstain until marriage were less likely to have premarital sex but also less likely to use condoms when they broke the pledge (Bearman and Brückner, 2001). Sixty percent of college students who had taken virginity pledges during their middle and high school years had broken their vows to remain abstinent until marriage (PSI, 2005). In a related study of young people aged 12-18, 88 percent of those who took virginity pledges broke their vows and on average “pledgers” had sex after 18 months (Bearman and Brückner, 2004). In a country like Uganda, with high HIV prevalence, young people breaking the “pledge” risk HIV infection since the action may not be planned to allow HIV testing or use of condoms.

The ABC approach in Uganda contributed to increased abstinence, delayed and considerably reduced levels of sexual activity by youth, increased faithfulness and partner reduction and increased condom use (USAID, 2003). Among women aged 15-24, median age at first sex increased from 16.5 to 17.3 years between 1989 and 2000 while it increased from 17.6 to 18.3 among men in the same period. The secondary abstinence, measured by not having sexual intercourse in previous 12 months, increased from 18 percent to 27 percent while condom use at last sexual intercourse with non-regular partners increased from 25 percent in 1995 to 44 percent in 2000/1 among unmarried women (Uganda HIV_AIDS Partnership et al., 2004). Programmes in different parts of the country by Non-Governmental organisations have also managed to increase primary abstinence among young people but not secondary abstinence (Bagarukayo et al., 1995; Bagarukayo et al., 1993; Shuey et al., 1999).

Despite successes in sexual health, some few intervention programmes in Uganda have failed to achieve their objectives. Implementation of a comprehensive AIDS education programme in Masaka district of Uganda encountered problems regarding language, programme content, community resistance to teaching about condoms, and several practical issues. The community did not accept the programme even though the teachers

and students had accepted it. The members of the community resisted the programme because they feared it would increase sexual activity (Kinsman et al., 1999).

1.4 Country and district context

This section presents key demographic and reproductive health indicators of the country and districts under study. The contrasts between districts and between national and district level data help to understand the results from the study.

1.4.1 National

Uganda had a population of 24.4 million in 2002 (UBOS, 2004). Nearly half (49 percent) of the population is under 15 years of age and 20 percent are aged 15-24 (UBOS, 2005). Two thirds of women have at least one pregnancy by age 18 (MOFEP and ORC Macro, 1996). Presently in Uganda, 25 percent of all maternal deaths are attributed to abortion, while 50 percent of patients with abortion complications are adolescents (Otalı, 2004). The overall teenage pregnancy rate is 63 percent (ORC Macro, 2002) and the reproductive health services in the country are overstretched. The country's Contraceptive Prevalence Rate (CPR) is 23. The median age at first sex for sexually experienced women aged 20-49 is 16.7 while that of men aged 20-54 is 18.8. The median age at first marriage for women aged 20-49 is 17.8 while that of men aged 25-54 is 22.3. The median age of women at first birth for those aged 20-49 is 18.7. The Total Fertility Rate (TFR) is 6.9 (UBOS and ORC Macro, 2001).

The country has managed to reduce HIV from an estimated prevalence of between 14 and 18 percent in the early 1990s to 6.2 percent at present but this is still above the epidemic threshold. In 2002, there were an estimated 192 HIV infections every day totalling to 70,170 new infections in the whole year (STD/ACP, 2004). Another issue of concern is that the prevalence in areas outside major towns has declined at a lower rate than in major urban areas yet the country is 88 percent rural (UBOS, 2004). HIV prevalence declined from 4.9 percent in 2001 to 4.6 percent in 2002 in rural areas while in major urban areas it declined from 8.4 percent in 2001 to 7.2 percent in 2002 (STD/ACP, 2004). Therefore, the risk in 88 percent of the population has changed little while it has declined substantially among the minority 12 percent. The difference in rate of decline may be due to a difference

in prevalence levels but it can also mean that the rural areas are under-served or existing prevention programmes in rural areas are not as effective as those in urban areas.

Knowledge of HIV/AIDS is universal in Uganda. By 2001, all respondents in the Uganda Demographic and Health Survey within the age group 15-24 had heard of HIV/AIDS. In 1996, 85 percent of women and 90 percent of men aged 15-24 personally knew of someone with HIV. In 2001, 86 percent of women and 96 percent of men had heard of condoms. More than a half (57 percent) of young women and 81 percent of men knew where to obtain condoms. Reported knowledge of condom use was equally high (men, 80 percent; women, 55 percent). Higher levels of knowledge of HIV were associated with lower age group (15-19), higher education, residence in urban areas and the central region. The level of condom use at last sexual intercourse was 58 percent among men and 41 percent among women in 2000 (Uganda HIV_AIDS Partnership et al., 2004).

Information on inconsistent condom use in Uganda is scanty but what is available shows a bleak picture. Analysis of data from a randomised community trial in Rakai district found that 16.5 percent of the study participants had used condoms inconsistently over the previous year (Ahmed et al., 2001). Inconsistent condom use has been reported as one of the major problems faced by young people in the country (Ssengendo et al., 2001).

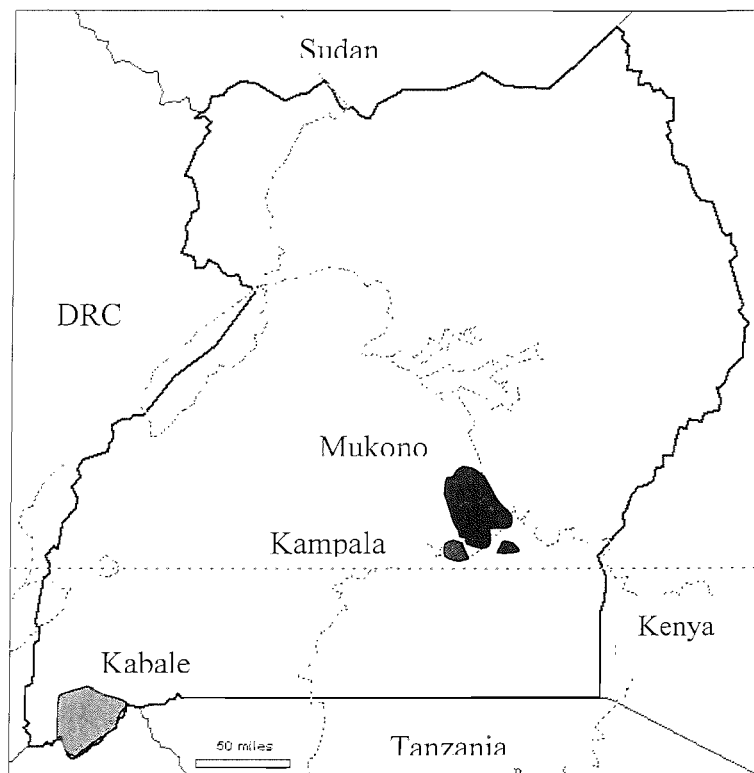
1.4.2 Kabale and Mukono districts

Mukono and Kabale districts were selected for the study because they portray some of the country's health and economic status disparities between regions and districts. The two districts are at different levels of development and have different accessibility to sexual and reproductive health services.

Kabale had a population of 416,974 and density of 281 persons per square kilometre in 2002 (UBOS, 2005). It lies in the extreme south western part of the country (Figure 1.1). Women constitute 53.2 percent of the population. Young people aged 15-24 constitute 20.5 percent of the population. The proportion of the population living in urban areas is 9.0 percent (UBOS, 2005). The Bakiga tribe dominates the district. The main religious affiliations are Protestant (54 percent) and Catholic (44 percent). The main source of income is subsistence farming. The state of family planning use and reproductive health is

poor. According to a survey carried out in 1998, the Contraceptive Prevalence Rate (CPR) for Kigezi sub-region, in which Kabale belongs, was 16.8 percent which is lower than the 22.8 percent for the country (UBOS and ORC Macro, 2001). The total fertility rate for Kigezi sub-region is 5.9. The median age at first birth for women aged between 20 and 49 in western region where Kabale belongs was 19.3 and their median age at first sex was the highest at 17.5. The higher median age at first sex and first birth in comparison to the national level (first sex: 16.7, first birth: 18.7) may explain lower TFR.

Figure 1. 1 Map of Uganda showing Mukono and Kabale districts



Mukono district lies in between the two largest cities in Uganda, Kampala and Jinja. It had a population size of 658,577 and a density of 256 persons per square kilometre in 2002 (UBOS, 2005). The females constituted 50.3 percent of the total population. Young people aged 15-24 constituted 19.5 percent of the population. The main sources of income are crop farming, dairy farming and fishing. The dominant tribe is Baganda. The main religious affiliations are Catholic (37 percent), Protestant (33 percent) and Muslim (21 percent). It is one of the most urbanized (17.2 percent) districts. It shares borders with two large cities, Kampala and Jinja. It lies in the central region that has the highest

Contraceptive Prevalence Rate (CPR) of 37 percent. Mukono has a higher literacy rate and is economically ahead of most other districts (UBOS and ORC Macro, 2001; UBOS, 2005). The TFR for the central region in which Mukono lies is 5.7. Median age at first birth for women aged between 20 and 49 in the region is 18.5 while their age at first sex is 16.5.

Kabale and Mukono present a contrast that characterises Uganda's rural areas. Kabale district is an example of districts that are distant from the centre with cultures that discourage contraceptives and have less access to reproductive health services compared to those centrally located. Like most districts outside the central region, it is relatively poor with low scores on socio-economic indicators. On the other hand, Mukono district represents districts in the central region with greater exposure to family planning and reproductive health services. There are several NGOs in the region that provide family planning and sexual health services. The population in the region is well served with print and electronic media. There are over ten radio stations that cover the whole of the central region.

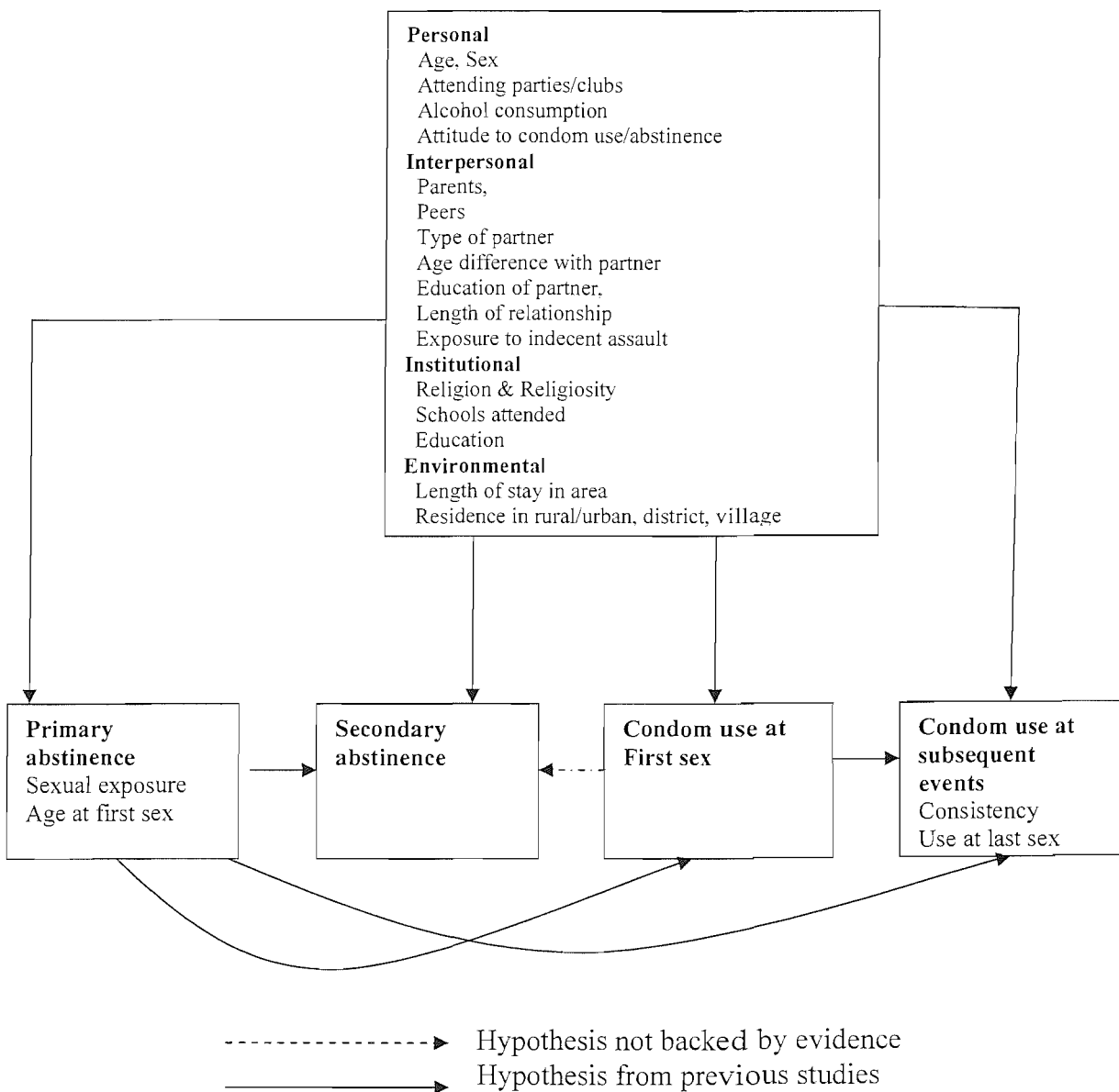
1.5 Conceptual framework

The conceptual framework for this current study draws elements from an ecological perspective of behavioural change (McLeroy et al., 1988). The ecological perspective stresses the importance of approaching public health problems at multiple levels, and assessing the interaction and integration of factors within and across levels. The levels of influence are intrapersonal or individual factors; interpersonal factors; institutional or organisational factors; community factors; and public policy factors. Behaviour is believed to affect or be affected by each of the levels of influence. Another important factor is the environment which may affect or be affected by behaviour of an individual (McLeroy et al., 1988). This current study investigates factors at all the levels mentioned.

The intrapersonal, personal, institutional and environmental factors are thought to be directly associated with primary and secondary abstinence, condom use at first sex and consistent condom use (Figure 1.2). Age at first sex, which is a measure of primary abstinence, has a relationship with secondary abstinence. According to the UDHS 2000/1 the increase in age at first sex coincides with the increase in secondary abstinence (Uganda

HIV_AIDS Partnership et al., 2004). Age at first sex can also have direct association with consistent condom use as well as with condom use at first sexual intercourse. Condom use at first sex has a direct relationship with condom use at subsequent events (Miller et al., 1998b). There is no evidence so far found in the literature to show any relationship of condom use at first sex with secondary abstinence but this current study will explore it. It is tentatively hypothesised that since one may not feel much pleasure when using a condom (George and Stoner, 2000), first time users who already fear HIV/STIs and unplanned pregnancies may opt to abstain since they might find sex less worth risking for.

Figure 1. 2 Interlink of dependent and explanatory factors in the study



1.6 Organisation of the thesis

The first chapter introduces earlier relevant research work on abstinence and condom use. It presents background information, objectives, research questions, conceptual framework and organisation of the thesis. The second chapter presents the literature review. It covers work done on levels of and factors associated with primary abstinence or exposure to sexual intercourse, secondary abstinence, condom use at first sex, condom use at latest event and consistent condom use. The third chapter describes the methods and materials used; the design, sample selection, data management and analysis techniques applied are explained. The fourth chapter describes the characteristics of the sample. The fifth chapter examines the levels of sexual exposure by different background characteristics of the respondents. The sixth chapter examines secondary abstinence and changes with time in a year. The seventh chapter examines condom use at first and latest sex events. The eighth chapter analyses condom use within and between relationships. The ninth chapter is qualitative and presents perceptions of young people about condom use and abstinence. The tenth chapter presents the summary, conclusions, recommendations and future research work.

CHAPTER TWO

2. LITERATURE REVIEW

This chapter critically reviews recent literature on exposure to sex, secondary abstinence, and condom use at first sex, condom use at most recent sex and consistency of condom use.

The review of literature focuses on methods and analysis of data as well as the substantive results. Adequacy of sample size, study design, methods of data collection, analysis of data and applicability of results to young people in Uganda are explored with a view to identifying research gaps. Any inconsistency of results between other studies has been used as an indicator of research gaps.

2.1 Primary abstinence

A lot of research has been carried out on primary abstinence and factors associated with it are well established, albeit with a few inconsistencies. The following section reviews the main literature in this area and also highlights the inconsistencies and methodological limitations that appear in some of the studies.

Research in primary abstinence is important because when and how the abstinence ends is associated with subsequent sexual practices. First, sexual intercourse in many countries takes place at a young age and earlier entry into sexual activity is associated with contraceptive non-use and increased risk of pregnancy (Abma and Sonenstein, 2001; Koenig and Zelnik, 1982; Zabin et al., 1979). The timing of the first sex may be a useful marker for risky behaviour and negative outcomes (Greenberg et al., 1992). Earlier age at first sex is associated with high number of current and life time partners which is also a risk factor for sexually transmitted diseases (Aral, 2001).

2.1.1 Levels of primary abstinence

Worldwide, there is plenty of information on levels of primary abstinence measured by age at first sex and the proportion that has ever had sex. The level of sexual exposure was found to be 46 percent among young people aged 10-24 in Kenya (Erulkar et al., 2004), 52 percent among young people aged 12-24 in Ghana (Glover et al., 2003) and 67 percent among those aged 15-24 in south Africa (Pettifor et al., 2004).

In Uganda, there is a lack of up-to-date data on primary abstinence among young unmarried people. Of the studies reviewed, the most recent population based studies include Uganda HIV/AIDS partnership et al. (2004), Ndyababangi et al. (2003) and Twa-Twa (1997). The study in Ndyababangi et al. (2003) was conducted in 1999 and it found that the 77 percent of males and 69 percent of females aged 15-24 had ever had sex. The study sample comprised young people aged 10-24 in Mukono district, 54 percent of whom were aged 10-14 and 15 percent were either married or divorced/separated. The results of the study are not up-to-date as six years have passed since the study was conducted.

The data on primary abstinence from Uganda HIV/AIDS partnership et al. (2004) were drawn from the Uganda Demographic and Health survey 2000/1 and they show a different pattern of abstinence whereby men abstain longer than women. By age 15, 13 percent of men and 18 percent of women aged 15-24 have had sex. The survey was population based and nationwide but it had many objectives and participants were from a wider age range (females: 15-49 years, males: 15-54). This makes it difficult to extract detailed information for unmarried young people aged 15-24 because the sample gets smaller and biased. In Twa-Twa (1997), data were collected twelve years ago in 1993 in two districts in eastern Uganda and the participants were only those in school aged 10-24. This current research provides up-to-date information on level of primary abstinence in two districts.

2.1.2 Factors associated with primary abstinence

Worldwide factors that are most commonly associated with early initiation of sex include peer pressure (French and Dishion, 2003; Twa-Twa, 1997), low social economic status, higher age, being female (Rwenge, 2000; Toroitich-Ruto, 2001; Santelli et al., 1999; Twa-Twa, 1997), low school achievement (Lammers et al., 2000; Perkins et al., 1998), alcohol

consumption (Santelli et al., 2004) and lack of parental guidance (Lema, 1990; Lema, 1989). Other factors are low religiosity (Miller et al., 1997; Perkins et al., 1998) and poor child-parent communication (Black et al., 1997). However, findings vary across studies and methods used. The correlations are explored in greater detail below.

Socio-demographic characteristics

As young people grow they experience physical, emotional and biological changes in their bodies which contribute to sexual functioning (Tucker et al., 1994; Hansen et al., 2004). These changes appear earlier among girls compared to boys. The normal range of onset of puberty is 8 to 14 years in females and 9 to 15 years in males, with girls generally experiencing physiological growth characteristic of the onset of puberty two years before boys (Forum on Adolescence, 2004). A study in the USA found that boys appear to initiate intercourse earlier than girls, but girls catch up by the late teens (Leigh et al., 1994).

Education tends to delay sexual activity among young people. Women aged 15-24 who have never been to school are nearly four times more likely to be sexually experienced than those who have attained secondary education before controlling for other factors (Uganda HIV_AIDS Partnership et al., 2004). A study in Australia found that those who drop out of school have earlier initiation compared to those that continue (Grunseit and Richters, 2000). In other studies, academic achievement was associated with higher age at first sex but only among females (Murray et al., 1998) while another study of eight countries found that increased education reduced age at first sex only in boys (Gupta and Mahy, 2003). This shows the association between education and primary abstinence varies with gender.

Poor Social Economic Status (SES) of young people tends to make them vulnerable to early sexual exposure (Schvaneveldt et al., 2001; Magnani et al., 1999; Simbayi et al., 2004). In a study of 2,430 young South African people aged 15-24 it was found that the poorer the household the greater the extent of sexual experience among the females but not among males (Simbayi et al., 2004). The same results were found in a USA longitudinal study of 2000 young people in Schvaneveldt (2001) and in Peru in Magnani et al. (1999). Data from the 1988 and 1990/1 waves of the United States National Survey of Adolescent

males show that high family income increased the odds of sexual initiation among teenagers (Forste and Haas, 2002).

Urban residence is associated with earlier sex initiation (Lammers et al., 2000; Shrier and Crosby, 2003; Toroitich-Ruto, 1997). However, a multistate life table analysis of six African countries including Uganda found that urban residence was associated with later sexual exposure (Zaba et al., 2004a). In Lammers et al. (2000) the respondents were under 18 years while in Shrier and Crosby (2003) they were high school students in the USA. In Zaba et al. (2004) the sample was nationally representative but few variables were adjusted for. This shows there is still a research gap in relationship between residence and sex initiation among young people aged 15-24.

Attitudes and risky behaviour

Much research has investigated sexual exposure and attitudes to initiation of sex and there is general consistency on the significance of the association between liberal attitudes and early sexual exposure (Murray et al., 1998; Stallworth et al., 2004; Carvajal et al., 1999). However, there is limited research on how the sexual exposure varies by different characteristics especially in developing countries. A study among high school students in the USA found that girls were more likely than boys to believe that abstinence is good (O'Rourke et al., 2004). Another observation is that many studies investigating the relationship between attitudes and sexual exposure have drawn participants from selected subgroups, an issue which makes inference to the general population difficult. Participants were urban students in Chile in Murray et al. (1998), students aged 13 to 19 years in the USA in Stallworth (2004) and ninth grade students in the USA in Carval et al. (1999).

Alcohol consumption has been associated with early initiation of sex among young people. The relationship between a person's consumption of alcohol and subsequent disinhibition of sexual behaviour is strong. Alcohol seems to have the effects of both enhancing and suppressing sexual responses (George and Norris, 1991). Other studies have found that the relationship between drinking and sexuality is complex. Researchers have found that men expecting to receive alcohol, irrespective of whether they receive it or not, can exhibit greater penile responses (Wilson and Lawson, 1976; Briddell et al., 1978) and subjective arousal (George and Marlatt, 1986).

As the concentration of alcohol in the blood increases, sexual arousal diminishes (Briddell and Wilson, 1976; Farkas and Rosen, 1976; Wilson and Lawson, 1978) and the time to orgasm increases in both men and women (Malatesta et al., 1982; Malatesta et al., 1979). Young people who drink alcohol are more likely to start sex at an earlier time than those who do not (Murray et al., 1998; Graves and Leigh, 1995). While the findings on the relationship between alcohol consumption and sexual activity are robust and clear (George and Norris, 1991) there is still a research gap in relation to possible interaction with other variables such as education and religion.

Parents' influence

Many studies show that good parental care or communication with the parents over sexual matters delays sexual exposure (Twa-Twa, 1997; Lammers et al., 2000; Bearman and Brückner, 1999). Family and school contexts are among the most critical forces that influence adolescent health risk behaviour (Resnick et al., 1997). An analysis of longitudinal data found that communication with parents reduces sexual activity only among females (Miller and Cervantes, 1998). This could partly explain why the youth living with one parent have lower age at first sex than those living with both biological parents (Upchurch et al., 1998). National studies carried out during the 1990s in the USA found that males and female teens living in two parent families had a later age at first sex (Santelli et al., 2000). Surprisingly, parental influence and family rules increased the odds of initiating intercourse in analysis of United States national surveys of adolescent males in 1988 and 1990/1 (Forsythe et al., 2002). What parents discuss with young people may determine whether they have been sexually exposed or not. In a cross-sectional study carried out in Philadelphia it was found that teens who talked with their parents about topics such as biological effects of sexual activity, using and obtaining birth control, how to avoid STIs and how to use condoms were more likely to have experienced first intercourse than teens who did not discuss these topics with parents (Widmer, 1997). However, being just a cross-sectional study, it is difficult to isolate causality since parents might talk to adolescents after they realise that the adolescents have had sexual exposure. In Lammers (2000), the study was carried out in the USA among young people aged 13-18. Association of communication with parents and primary abstinence may be different in Uganda given the different socio-cultural setting.

Peer influence

Many studies have established that involvement with peers who engage in delinquent behaviour is associated with early initiation of sexual intercourse (French and Dishion, 2003; Miller et al., 1997; Costa et al., 1995). Other research has found that having a best friend who is sexually experienced increases the likelihood of sexual experience among adolescent females (Lock and Murray, 1995). Young men and women may engage in sex to attain status or approval among their peers (Little and Rankin, 2001). Related to peer influence is participation in church/school clubs. A study of middle school adolescents in the USA found that young people who get involved in school or church clubs are less likely to have had sex but the same relationship does not hold among those who participated in sports clubs (O'Rourke et al., 2004). There is limited research in the area.

Peer influence can also have a positive effect. A study in the USA found that peers who are more engaged in school and less engaged in delinquent behaviour have a protective influence on sexual initiation among girls (Bearman and Brückner, 1999). In a longitudinal study of youth in Michigan, USA, sexually inexperienced boys were more likely to have peers who are high achievers with better grades and ambitions (Meschke et al., 2000).

In Uganda, studies have found some influence of peer pressure on sexual exposure (Twa-Twa, 1997; Nyanzi et al., 2001) but are still lacking in representation of unmarried young people aged 15-24. In Nyanzi et al. (2001) qualitative methods of data collection used do not allow measurement of strength of the association and may not allow generalisation to a wider community. There is a need for more investigation of the association between peer influence and sexual exposure in developing countries because of different social, economic and cultural environments. In French and Dishion (2003), Miller et al. (1997) and Lock and Murray (1995), the studies were carried out in the USA.

Religion and religiosity

There is plenty of evidence to show the influence of religion and religiosity on delay in initiation of sexual intercourse (primary abstinence) (Dunne et al., 1994; Bearman and Brückner, 1999). Studies in the USA have found that having a religious affiliation reduces the chances of early sexual initiation (Miller et al., 1997; Perkins et al., 1998; Lammers et

al., 2000). Another study in the USA found that being a Catholic and conservative Protestant reduces the likelihood of being sexually experienced (Bearman and Brückner, 1999). A study of 374 students at Brisbane University Australia found also a strong association between being religious and delaying sexual initiation (Dunne et al., 1994).

Some theorists say religion provides positive social support and modelling and may influence adolescents' sexual behaviours through mechanisms of social control (Rostosky et al., 2004). This could explain why young men who attend religious services regularly are less likely than those who do not attend to engage in premarital intercourse (Thornton and Camburn, 1989).

In a study of the impact of HIV/AIDS on sexual behaviour among young people aged 15-24 in Kenya, it was found that the type of religion was a strong determinant of primary abstinence. Compared to Catholics, protestants were more likely while Moslems were less likely to have ever had sex (Toroitich-Ruto, 1997). It is important to investigate the influence of religion on primary abstinence in Uganda using more focused and recent data from young people.

Inconsistencies in the relationship between religion and delay of sexual initiation exist in some few studies. In a review of research work published on religion, religiosity and adolescent sexuality between 1980 and 2001 in the USA, it was found that religiosity delays the sexual debut of adolescent females but, among adolescent males, results are mixed (Rostosky et al., 2004). Most of the studies that have investigated the relationship between sexual exposure and religion and religiosity are in developed countries. More research on similar relationship is needed in developing countries.

School type

Being in school is associated with delayed sexual initiation (Lloyd, 2004). The type and location of schools have an influence on sexual exposure of young people. In a study of five urban secondary schools in Ethiopia, significant differences in initiation of sex were found between schools (Adamu et al., 2003). Studying in religious schools is also associated with later sexual exposure (Feldman et al., 1997; Toroitich-Ruto, 1997; Resnick et al., 1997). Other studies have shown that young people attending independent

or private schools were also less likely to be teen parents (Manlove, 1998) and probably this could be due to a higher socio-economic status. In a study among secondary school students in Kenya, being in a mixed school and being in a private school increased the probability of early initiation of sexual intercourse. Few studies have investigated the relationship of type of school attended and sexual activity.

Media influence

Access to media has an influence on sexual behaviour. Analysis of data from a national longitudinal survey of young people aged 12 to 17 years in the USA found in one year of follow up that adolescents who viewed more sexual content at baseline were more likely to initiate intercourse during the subsequent year (Collins et al., 2004).

2.1.3 Summary

From the review of literature on primary abstinence, it is clear that the designs, sampling techniques and sample sizes in most studies may not allow generalisation of the findings to young unmarried people aged 15-24 in the general population, with and without education, and living in a developing country setting like Uganda. Secondly, some studies, which would have been relevant to Uganda, have been carried out more than four years ago yet reproductive behaviour changes with time.

2.2 Secondary abstinence

The literature on secondary abstinence is limited partly because it is a new concept as explained in the introduction. Concern over the few studies has also been expressed by other researchers (Brown et al., 2004). More research is needed to establish its prevalence, associated factors and reasons why young sexually experienced people abstain (Shisana and Simbayi, 2002) in this era of HIV/AIDS.

2.2.1 Levels of secondary abstinence

A study in Muskegon County, Michigan USA, found that secondary abstinence, measured over three months before the survey time, was 24 percent among students in the 8th, 10th

and 12th grades (Chang, 2001). In a study of 9th and 12th grade adolescents in Minnesota, USA, among sexually experienced youth three percent of males and two percent of females were abstinent at the time of the study (Loewenson et al., 2004). The duration of abstinence was not provided.

In developing countries, nationwide studies in South Africa found secondary abstinence level, measured by not having sexual intercourse twelve months prior to the study, to be 16 percent in 2002 among the 15 to 24 year age group (Shisana and Simbayi, 2002) and 17 percent in 2004 (Pettifor et al., 2004). In an intervention study of 14 to 22 year olds in Durban metropolitan and Mtunzini rural areas of Kwa Zulu Natal province, South Africa, the level of secondary abstinence (defined as not having had sex in the previous twelve months) was three percent at baseline in 1999 (Brown et al., 2004). In Uganda, a study using the same measure, found that the secondary abstinence level among unmarried women aged 15- 24 years was 27 percent while that for men was 34 percent (Uganda HIV_AIDS Partnership et al., 2004). The study in Uganda analysed the Uganda Demographic and Health Survey (UDHS) of 2000/1, which was a nationwide survey. The need for more in country studies on secondary abstinence is crucial if one is to fully analyse the dynamics of secondary abstinence. In South Africa, a study carried out in Kwa Zulu region in 2001 found the prevalence of twelve months' secondary abstinence to be seven percent for females and 12 percent for males (Hallman, 2004; Hallman, 2004) yet at national level it was 18 percent for males and 14 percent for females (Shisana and Simbayi, 2002).

A small proportion of young people practice voluntary abstinence. A study in South Africa found that only 14 percent of the sexually active young people aged 15-24 and who did not have sex in the previous 12 months wanted to abstain to avoid STI/HIV or wait until they get married. Thirty six percent said they did not have a partner while 31 percent said they did not have an opportunity for sexual activity (Pettifor et al., 2004).

2.2.2 Factors associated with secondary abstinence

Factors most commonly investigated for association with secondary abstinence include religiosity, education, age, participation in social organizations, gender, higher socio-

economic status, lower age, attitudes to sexual activity, consumption of alcohol, communication with parents and age at first sex.

Socio-demographic characteristics

There is consistent evidence to show that women are more likely to abstain than men (Klaus et al., 2004; Erulkar et al., 2004). Klaus et al. (2004) conducted a study in the USA as an evaluation of a quasi experimental sex education programme for males and females aged 12-17 and 12-16 years respectively. The aim of the study was to evaluate a programme rather than trying to identify factors associated with discontinuation of sexual activity. In Erulkar et al. (2004) the study was a quasi experiment of a reproductive health programme in Kenya for young people aged 10-24. There is a need to explore how sex is related to secondary abstinence in different populations.

Age is positively associated with secondary abstinence but the evidence is inconsistent. In a study in South Africa, the level of twelve month secondary abstinence significantly increased with age from 16 percent among the 15 to 19 year olds to 19 percent among the 20 to 24 year olds (Pettifor et al., 2004). However, a study in the same country found that age reduced twelve month secondary abstinence among men but not in females (Hallman, 2004) while another found no influence of age (Brown et al., 2004). In Erulkar et al. (2004) no effect of age on five month secondary abstinence was found among young people in Kenya but this could have been due to a different definition of secondary abstinence.

Educational level increases the chances of secondary abstinence among young people (Hallman, 2004). However, there are few studies which have investigated this relationship and, even within these few, there are inconsistencies. In the 2000/1 Uganda Demographic and Health Survey (UDHS) the secondary abstinence incidence was lower among women who had attained secondary education compared to those in primary, while the reverse was found among males (Uganda HIV_AIDS Partnership et al., 2004). A study of secondary abstinence in South Africa did not find any significant relationship between education level and secondary abstinence (Brown et al., 2004). In Hallman (2004), the results could have been different because education level was measured at household level. Research is needed to provide more knowledge on the relationship between education level and secondary abstinence.

There is little research on socio-economic status and secondary abstinence. In a few studies, low socio-economic status reduces secondary abstinence but there is more to be investigated. In one such study in South Africa, it is only among females that this relationship holds (Hallman, 2004). A study in Cameroon found that, among the young people that had had sex, those whose parents were engaged in agriculture were less likely to be sexually active at the time of the survey (Rwenge, 2000), but having sufficient resources and education status were not significant correlates of sexual activity.

Attitudes and risky behaviour

Research into attitudes and abstinence shows that liberal attitudes on sex are associated with shorter primary abstinence (early sexual debut) (Murray et al., 1998; Stallworth et al., 2004). Whether the same relationship holds for secondary abstinence is something not fully known as yet.

Early age at first sex is an indicator of risky behaviour. Research work done on age at first sex and secondary abstinence has found a significant positive relationship. Young people who have first sex at a later age are more likely to abstain (secondary) compared to those who have sex earlier (Langer et al., 2001). The study was conducted among college students in south eastern USA.

There is plenty of research work on alcohol consumption and sexual activity but little specifically investigates secondary abstinence and alcohol consumption. The work available consistently shows that alcohol consumption increases sexual activity (Strunin and Hingson, 1992; Kaljee et al., 2004) but there is no information on how long respondents stayed without sex. In Strunin and Hingson (1992), the study was carried out in Massachusetts in the USA while in Kaljee et al. (2004) it was carried out in Vietnam. Whether the main and interaction effects of alcohol which are significantly associated with first sexual exposure remain strong with secondary abstinence is an issue that needs investigation.

Religion and religiosity

Very few studies have investigated the possible association of religiosity and religion with secondary abstinence. Being religious is associated with higher levels of secondary abstinence or reduced sexual activity among young people who are already sexually active (Brown et al., 2004; Benda and Corwyn, 1996). A few other studies have shown that, among sexually experienced young people, those who are religious are less sexually active than those who are not (Lock and Murray, 1995; Billy et al., 1994). This association is not consistent as there is also evidence to show that there is a positive relationship between religiosity and sexual experience. Analysis of three national surveys in 1979, 1988 and 1975 in the USA showed that, among adolescent males aged 17 to 19 years, those who were more religious were more likely to have had sex in the four weeks prior to the survey after matching for attitudes (Ku et al., 1998).

Parents' influence

Living with parents increases the chances of secondary abstinence (Mensch et al., 1999; Ku et al., 1998) while being an orphan reduces the chances (Hallman, 2004). In Mensch et al. (1999), the study was carried out in Kenya among sexually experienced young people and the results showed that sexually experienced girls who live with both parents are at lower risk of having sex. Hallman's study was carried out in South Africa. In related research, communication with parents reduces the likelihood of sexual activity among the already sexually experienced young people (Lock and Murray, 1995; Miller et al., 1999). However, results across studies that have investigated the relationship are so variable and discrepant that no simple, direct effect is discernable (Miller, 2002). An example is the results in a study which showed that intrusive maternal control is related to early age of first sexual intercourse (Dorius and Barber, 1998) and parents' psychological control is related to high risk behaviour among sexually active daughters (Rodgers, 1999). Another study found that over protection or worry about children's safety and health is associated with early sexual debut (Turner et al., 1993).

An explanation for the positive association of living and communicating with parents is that they monitor (Luster and Small, 1994; Small and Luster, 1994; Upchurch et al., 1999) and control (Hogan and Kitagawa, 1985) young people's sexual behaviour. The same

studies have shown associations between communication and having a later sexual debut, or having fewer sexual partners. An explanation for inconsistent findings in the few studies is that excessive and minimal control of parents is associated with negative outcomes (Barber, 1996; Gray and Steinberg, 1999) thus having an U-shaped relationship between control of parents and positive sexual behaviour.

Being in school

Being in school appears to be associated with secondary abstinence as studies have found that young people were more likely to reduce sexual activity when at school than when not (Gorgen et al., 1998; Lloyd, 2004; Lloyd and Mensch, 1999). In Gorgen et al. (1998), the study in Guinea found that the coital frequency during the previous month for women who were not in school was more than that of those who were in school, but the reverse was true for men. In analysis of data from developing countries, Lloyd (2004) found that young people who were in school had reduced sexual activity levels compared to those who were not.

2.2.3 Summary

Secondary sexual abstinence is a relatively new research area and few studies have been carried out on the topic. A lot of research is needed to fully understand it. Results from the few studies carried out show that the level of secondary abstinence is low among young people. Sexually active women are more likely to stop or delay sexual activity than men. Age is positively associated with secondary abstinence but one study found that secondary abstinence reduced among men but not women. Education level reduces secondary abstinence but a study found that sexually active young women who attained secondary education were less likely to abstain from sex compared to those who had attained primary education. Alcohol consumption is negatively associated with secondary abstinence. Being religious increases secondary abstinence but one study of 17-19 year olds in the USA found that those who were religious were more likely to engage in sexual activity. More research is required, especially in developing countries.

2.3 Condom use at first sex

Condom use at first sex is very important because it is associated with subsequent condom use (Jenkins et al., 2002; Miller and Cervantes, 1998). Teenagers who use condoms at first sex are twice as likely to use them at most recent intercourse, according to a longitudinal study of adolescent health (Shafii et al., 2004) in the USA. In another study, those who used condoms at first sex were 20 times more likely to use condoms all their lifetime and 10 times more likely to use them at most recent event compared to those who did not use condoms at first sex (Miller et al., 1998b). In Jenkins (2002), the study was carried out among vocational students aged 15-21 in Thailand, while in Miller et al. (1998) the study was carried out among adolescents aged 14-17 in New York, Alabama and Puerto Rico.

2.3.1 Levels of condom use at first sex

Levels of condom use at first sex vary by country and level of development. In Northern Ireland, a study carried out among 14 to 25 year olds found a level to be 64 percent in 2000 (Schubotz et al., 2004). In the USA, a nationwide study showed that the level was 70 percent in 1995 (Abma and Sonenstein, 2001). A survey among young people aged 15-18 in France in 1994 found the level of condom use at first sex to be 74 percent among women and 79 percent among men (Toulemon and Leridon, 1998). The level is much lower in developing countries such as Bangladesh where it was found to be less than 25 percent (Bott and Jejeebhoy, 2003), in Peru at 38 percent among boys and 26 percent among girls (Magnani et al., 1999), Suriname at 34 percent among men aged 15-24 (Sarafian, 2001), 33 percent among men in Maseru region of Lesotho (FHI et al., 2002), and 18 percent of males and 27 percent of females in Ghana in the age group 12-24 and unmarried (Karim et al., 2003). No study on condom use at first sex among young people in Uganda has been found so far in the literature. The main source of reproductive health data, the Demographic and Health Survey, does not have a question on condom use at first sex for Uganda.

2.3.2 Factors associated with condom use at first sex

From the literature reviewed, factors most commonly investigated for possible association with condom use include socio-demographic characteristics, alcohol consumption, parental influence, type of sexual partner, rural/urban residence and religiosity.

Socio-demographic characteristics

Women are more likely to report condom use at first sex than men according to studies of young people in the age group 14-17 in New York, Alabama and Puerto Rico (Levin and Robertson, 2004) and among 15 to 24 year old in Lesotho (FHI et al., 2002). In FHI et al. (2002), young women in Lesotho were more than twice as likely to report condom use at first sex than men, but a study in Australia did not find a significant difference between males and females (Grunseit, 1999).

Age at the time of survey and age at first sex are strong factors in predicting condom use at first sex. The older a person is at first sex the higher the chances of condom use. However, the older a person is at survey time the less the likelihood of having used a condom at first sex (Grunseit, 1999). Similar results were found in a study in Switzerland where those aged less than 15 years at first sex were more at risk of having unprotected sex than those older (Narring et al., 2000). More research is needed as a study in Ghana found that this relationship (age and condom use at first sex) holds for males and not for females (Karim et al., 2003).

Studies have found that education increases the likelihood of condom use at first sex in the USA (Abma and Sonenstein, 2001). A study in Brazil found condom use at first sex at 45 percent among young people but the level rose to 71 percent among the more educated people (Latin American and Caribbean Epidemiological Network et al., 2000). However, Karim et al. (2003) found that the relationship holds for females but not for males in Ghana. More research is needed on the interaction of gender and education.

Alcohol consumption

A number of studies have found that alcohol consumption reduces the chances of condom use at first sex (Cooper, 2002; Grunseit, 1999; Leigh, 2002) but there are still inconsistencies. For example, one study using a diary of sexual events found no association between condom use and either drinking before the sexual event or the amount drunk (Morrison et al., 2003). In Cooper (2002), the study was a meta-analysis of studies in the USA while in Leigh (2002) the study was also a meta-analysis of 13 studies from the USA, Norway, Canada and France.

Parents' influence

A study found that adolescents who communicated with their mothers about condom use were three times more likely to use condoms at first sex than those who did not (Miller et al., 1998b). The study was carried out among 372 sexually active adolescents aged 14-17 years in New York, Alabama USA and Puerto Rico. Another study in the USA found that, among females, condom use at first sex was lower among those living with at least one parent (Abma and Sonenstein, 2001). A study in Peru found that boys living with at least one biological parent compared with no biological parent increased the chances of condom use at first sex (Magnani et al., 1999). Whether similar findings would be obtained in Uganda is something this research intends to investigate.

Partner characteristics

There are some studies that have analysed partner influence on condom use at first sex and most of them show that young people are less likely to use condoms at first sex with a casual partner than a partner they have known for some time (Manlove et al., 2001). However, in Ku et al. (1994) it was found that the length of relationship was not associated with condom use at first sex and in Forste and Morgan (1998) it was found that men are more likely to use methods for STI prevention in casual relationships than in more serious committed relationships.

When the age difference with a partner is high the likelihood of condom use at first sex is lower. A study in Switzerland found that an age difference of seven or more years put the

adolescent at more risk of unprotected sex at sexual initiation (Narring et al., 2000). Similar findings were obtained in a study in the USA (Abma et al., 1998). Participants of the study were within the age range 16-20. There is no study on partner characteristics and condom use at first sex in Uganda or neighbouring countries that has been found in the literature so far.

Residence and community connection

Urban residents are more likely to use condoms at first sex than rural ones in Mexico (Gayet et al., 2003). A study carried out in Ghana did not find any significant association of community connection with condom use (Karim et al., 2003). Community connection was measured by having not moved more than once since the age of ten. Similar investigations in Uganda and other neighbouring countries have not been found in the literature reviewed.

Religion and religiosity

Attending religious services more frequently and being Protestant put young people at a higher chance of using condoms at first sex according to a USA study (Abma and Sonenstein, 2001) but they did not have any significant effect in a study in France which is largely Catholic (Toulemon and Leridon, 1998). A study in the USA found that affiliation to Protestant religion increased the probability of adolescents using condom at first sex (Mosher and McNally, 1991). Similar investigations in Uganda and neighbouring countries have not been found in the literature so far.

2.3.3 Summary

Despite a large body of knowledge on condom use at first sex, little is known in Africa and other developing countries. Condom use at first sex is important because it appears to impact on condom use at subsequent sexual events. Factors associated with higher condom use at first sex are being female, older age, higher education level, avoiding alcohol consumption, communication with parents about condoms, urban residence and community connection. However, as is the case with studies on secondary abstinence,

generalization of the results to wider populations in other countries, especially in poorer countries like Uganda, is difficult due to the different contexts and study characteristics.

2.4 Condom use at most recent sex

Condom use at most recent sexual event is often used as an indicator of current condom use. It is a recommended proxy for consistent condom use based on the high correlation between recency and frequency of condom use (Cleland et al., 2004). It is the most commonly used measure of condom use and hence important in evaluation of programmes aimed at reducing the levels of unprotected sex. Another advantage of the indicator is that young people are more likely to remember condom use at the most recent event than at the first event or other event. However, the ability of the indicator to detect change in outcomes of sexual behaviour is limited since it cannot detect trend, duration of partnerships and change of partnerships in a given period. For example, condom use at last sex increased with HIV prevalence in Benin, Zambia and urban Tanzania during 1994-2002 (Slaymaker and Zaba, 2003). Another study has shown that variations in behaviour do not correspond to different HIV prevalences (Slaymaker et al., 2004). There is a fairly large amount of literature on condom use at most recent sexual intercourse.

2.4.1 Levels of condom use at latest sex

The level of condom use at latest sexual intercourse among young people varies by country and region. Recent statistics show that condom use at latest sexual intercourse among young men from grade 9 to 12 who had sex during the previous three months was 69 percent in the USA in 2003 (CDC, 2004). According to Demographic and Health Surveys (DHS), condom use at last sexual intercourse among unmarried men in age group 15-24 was 38 percent in Ghana in 1998 and 43 percent in Kenya in 1998 (Bankole et al., 2004). In Uganda, the level was 58 percent for men and 41 percent for women of the same age group and marital status (Uganda HIV/AIDS Partnership et al., 2004). A study of youth aged 10 to 24 years in Mukono district in 1999 found the level of condom use at most recent sex to be 20 percent (Ndyabangi et al., 2003).

2.4.2 Factors associated with condom use at latest sex

There is a large body of knowledge on condom use at latest sexual intercourse; these point to a fairly consistent pattern but there are a few inconsistencies. Key factors that are associated with condom use are alcohol consumption, perception of condoms and use of other methods (Orr et al., 1992). Demographic, attitudinal, and educational factors have all been associated with condom use (American Academy of Pediatrics and Committee on Adolescence, 2001). Having educated parents, higher age at first sexual intercourse (Sonenstein et al., 1989), being from intact families (Kahn et al., 1990), a belief that condoms can prevent STIs (Hingson et al., 1990) and communication with parents are all associated with higher levels of reported condom use (Miller et al., 1998b). One major observation of studies on condom use at latest sex among adolescents is that most of them are either clinic or school based (Godin et al., 1997). Few studies are population based.

Socio-demographic factors

Associations between demographic factors and condom use at last sexual intercourse are well established. Among young unmarried people, condom use increases with age and men are more likely to report condom use than women (Fadiora et al., 2003; Karim et al., 2003). What is not fully covered is the investigation of the effect of the interaction between demographic factors and other key factors on condom use. The data used in Karim et al. (2003) were nationally representative.

Educational level is associated with increased condom use (Hernandez-Giron et al., 1999; Uitenbroek and McQueen, 1992; Ndyanabangi et al., 2003). The knowledge of the association is well established but still more studies are needed, especially in developing countries. Studies among young people in Ghana and Kenya did not find any strong association between education level and condom use at last sex (Mensch et al., 1999; Karim et al., 2003). In a study in Uganda, post primary education was strongly associated with higher levels of condom use (Najjumba et al., 2003) but the study involved respondents who were mostly aged 35 years and above, married and engaged in subsistence farming. The target population for the study was different from the target of this current study in age group, occupation and marital status.

Connected with education level is enrolment in school. A study carried out in Mukono district in 1999 found that those who were enrolled in school were more likely to have used condoms at their most recent sex event than those who were not (Ndyabangi et al., 2003).

Type of partners and risky behaviour

It is fairly well established that people are more likely to use condoms with casual than with regular partners (Hernandez-Giron et al., 1999; Lansky et al., 1998). The association of partner type and condom use is both consistent and strong (Sheeran and Abraham, 1994; Tanfer et al., 1993) with few inconsistencies; for example, a nationwide study in Zimbabwe in Adetunji and Meekers (2001) found that, among men, the likelihood of condom use at most recent sex with a casual partner was nearly the same as that with a steady partner. The study in Tanfer et al. (1993) was nationally representative but targeted a more mature age group 20-39 in the USA in 1991.

Alcohol consumption has been found in some studies to reduce the likelihood of condom use at most recent sex (Hiltabiddle, 1996; Fenaughty et al., 1994; Hall et al., 1990; Hall et al., 1990). Many studies have found that alcohol consumption decreases the chances of current condom use but a meta analysis of alcohol related studies found that drinking alcohol was not related to condom use at latest sexual intercourse (Leigh, 2002). However, the selection of the respondents leaves doubt as to whether the same association exists among young unmarried people of age 15-24. A study using dairies of sexual events in the USA found that condom use was neither associated with alcohol consumption nor the amount of alcohol consumed (Morrison et al., 2003). In Orr et al. (1992), the study was carried out among young sexually active females aged 12-19 who had come for reproductive health services at a health facility.

Use of other methods of contraception has been found to reduce the likelihood of condom use in many studies (Santelli et al., 1998; Hiltabiddle, 1996) but, in others, no relationship has been found (Orr et al., 1992). In Santelli et al. (1998), the study was carried out among youth aged 14-22 in the USA while in Orr et al. (1992) the study was carried out among the youth aged 12-19 at the time of a visit for reproductive health care in the same country.

Having multiple sexual partners is generally associated with reduced chances of condom use at last sexual event (Hiltabiddle, 1996). However, in a study among Danish high school students, there was no significant difference in condom use between those who reported one lifetime partner and those who reported more than one lifetime partner (Kangas et al., 2004). A study in North America found that condom use at latest sexual intercourse was associated with having multiple sexual partners, aged 15-29 and not speaking the local language, Cree (Myers et al., 1993), but, among sexually active males, the number of sexual partners was not related to condom use at last intercourse in the data from an annual household survey in the USA (Santelli et al., 2001). Tanfer et al. (1993) found that the number of partners was positively related to condom use among men aged 20-39 years in 1991 during four weeks before the survey in the USA.

Age at first sex is another indicator of risky behaviour that can have an effect on condom use at latest sex but few studies have investigated the relationship. The evidence in most of these studies shows that higher age at first sex is associated with higher condom use at last sexual intercourse (Abma and Sonenstein, 2001; Fenaughty et al., 1994; Fadiora et al., 2003; Hall et al., 1990), but an analysis of a Zambian sexual behaviour survey has found that the relationship holds for women but not for men (Benefo, 2004).

Attitudes

Many studies have established the relationship between condom use and attitudes. Perhaps not surprisingly, positive attitudes to condoms are associated with condom use.

Adolescents who do not regularly carry condoms or who believe that condoms reduce pleasure or are embarrassed to buy or use them are highly likely to avoid them (Hingson et al., 1990). Fear of being seen with a condom is another related factor that reduces condom use (Ray et al., 1998; Kinsman et al., 2000). A study of vulnerability to STIs in Accra Ghana found that most (80 percent) of the adolescents who did not use condoms in the previous three months did not like them (Anarfi, 1997).

Despite abundant evidence of the association of attitudes with condom use at last sexual intercourse, few studies examine the interaction with other key variables. In a study on gender responses to HIV/AIDS in Western Uganda, attitudes towards condom use were predictors of condom use only in males (Kabonesa, 1998) which may be linked to male

power. However, the study comprised only 200 men and women in the age group 15-50. The sample was small and the age range was too wide to assume that the same results would apply to young unmarried people in the age group 15-24.

Parental support and peer pressure

Parental support is strongly associated with condom use at latest sex among young people (Meekers and Klein, 2002; Whitaker and Miller, 2000). The strong association between communication with mothers and condom use at first sex (Miller et al., 1998b) and condom use at first and latest sexual encounters (Gruseit, 1999) makes parental support an important factor in current condom use. However, a study in Kenya found that living with parents was not significantly associated with condom use at recent sex (Mensch et al., 1999). One possible reason why the association was not significant in Kenya is that if young people live with parents it does not mean that there is communication between them.

Many studies have established evidence of an association between condom use at latest sexual encounter with peer pressure. Most of the studies are consistent with the finding that negative peer pressure reduces the chances of current condom use (American School Health Association et al., 1989). However, there seems to be inconsistency in some few studies. A study in Ghana did not find a significant association of peer influence with condom use at last sexual intercourse (Karim et al., 2003).

Residence and community connection

Most studies have found an association between current condom use and urban residence (Najjumba et al., 2003; Ndyabangi et al., 2003) but other studies elsewhere such as Karim et al. (2003) have not found a similar association.

Religion and religiosity

Religion and religiosity have been found to be associated not only with condom use at first sex but also with current condom use. In a study in the USA, sexually active male teenagers who never attended religious services were less likely to have used a condom at

last sexual intercourse compared to those attending the services (Abma and Sonenstein, 2001). A lot more research is needed as other studies do not find a similar relationship (Mensch et al., 1999).

2.4.3 Summary

There is much literature on condom use at recent sexual intercourse in both developed and developing countries. Condom use at last sexual intercourse increases with age and men are more likely to report condom use than women. Higher education level is generally associated with more condom use but in some studies no association has been found. Young people are generally more likely to use condoms with casual than with regular partners. Other factors strongly associated with condom use are low alcohol consumption, higher age at first sex, positive attitudes to condom use, parental support, urban residence and being religious. Factors negatively associated with condom use are negative attitudes and use of other contraceptive methods. There is lack of most recent data on the prevalence of condom use among unmarried young people and research on the associations between current condom use with socio-demographic and behavioural factors.

2.5 Consistent condom use

According to the literature review carried out, consistent condom use is less researched compared to current use of condoms. Consistent condom use measures the dynamics of condom use which is one of the main objectives of the current study. It is a goal of many condom promotion programmes to have high consistency rather than occasional use of condoms. Some researchers have used condom use at last sexual intercourse to measure consistency due to recall bias connected with answers to questions on consistency of use (UNDP, 2003). The levels of consistent condom use in different countries and factors associated with them are discussed below.

2.5.1 Levels of consistent condom use

Worldwide, the level of consistent condom use varies by region and subgroup represented in the samples. The level of consistent condom use was found to be between 15 and 17 percent among Hispanics and blacks in Miami, USA (Soler et al., 2000) but much higher

at 27 percent of men and 29 percent of women in Baltimore, USA (Edwards, 1994), and 34 percent among the 16 to 19 year old adolescent males in Massachusetts (Hingson et al., 1990). A six month prospective study of family planning clients in the USA found that only 16 percent consistently used condoms (Weisman et al., 1991). Another study in the USA found the level of consistent use of condoms to be between 10 and 20 percent (Kann et al., 1995). In developing countries, the level of consistent condom use was found to be 14 percent of male urban workers in Zimbabwe (Meekers, 2003) and 31 percent of women and 45 percent of men in urban areas of Cameroon (Meekers and Klein, 2002). A study of bar and hotel workers in Tanzania found consistent use of condoms over a five-year period to be 14 percent (Ao et al., 2003) while a survey of adults in Kenya, Tanzania and Trinidad found the level at 19 percent (Norman, 2003). The level of condom use was found to be much higher (55 percent) among sexual workers in Singapore (Wee et al., 2004). Of the studies mentioned, only Meeker and Klein (2002) investigated consistent use of condoms among young people aged 15-24. The study had sufficient sample size of 1284 and was representative of the unmarried population aged 15-24 but was carried out in only urban areas. Much variation in the levels of consistent condom use calls for further investigation.

The samples in many studies carried out to estimate consistency of condom use are unrepresentative of young people aged 15-24. In Soler et al. (2000) the study was carried out among clients attending STI clinics and other public health and social service centres which make the sample unrepresentative of the young population in general. In Meekers (2003), the study was carried out among workers who had both regular and non-regular partners, while in Ao et al. (2003) the study was carried out among hotel and bar workers.

In Ahmed et al. (2001), consistent condom use in Uganda was found to be at 4.4 percent but it was in a broader perspective with a study population aged 15-59 in a randomised controlled intervention study in Rakai district.

2.5.2 Factors associated with consistent condom use

The factors commonly investigated for association with consistent condom use are socio-demographic characteristics, type of sexual partners, alcohol consumption, communication with parents, age at first sex, condom use at first sex and attitudes to condom use.

Socio-demographic factors

Generally, with increasing age and education, young people tend to use condoms more consistently. They become more aware of the dangers of unsafe sex and they get to know means and ways of obtaining the condoms. They are also more assertive and skilful in negotiating condom use. Several studies have established a positive relationship between consistent condom use and age (Catania et al., 1994; Karim et al., 2003; Klaus et al., 2004; Lau et al., 2004), high education level (Catania et al., 1994; Lau et al., 2004; Klaus et al., 2004; Buchacz et al., 2001) and lower age difference with partner (Kordoutis et al., 2004), but there are still inconsistencies, and the selection of study participants tends to be biased towards people who are more vulnerable to unsafe sex.

Age was not a significant factor in a study of consistent use of condoms among young people aged 15- 24 in Zimbabwe (Adetunji and Meekers, 2001) and in a similar study in Greece (Kordoutis et al., 2004). In Karim et al. (2003) age was predictive of higher likelihood of consistent use of condoms with last/current partner among males while higher education level was predictive for men only. In a study of Hispanic teens in Alabama, New York city and San Juan, Puerto Rico, age was negatively associated with regular condom use (Miller et al., 1999).

A closer look at the studies above shows some limitations and research gaps. Catania et al. (1994) and Lau et al. (2004), which indicate that higher education level and age were positively associated with consistent condom use, may not fully apply among young unmarried people aged 15-24 because of the method of selection of the samples. In the former study both married and unmarried are included. The study was a one year community based prospective study and included the age group 20-44 which is higher than the targeted age group in this current study. In Lau et al. (2004), the sample comprised prostitutes who are at high risk of contracting HIV. The Buchacz et al. (2001) study was carried out among HIV sero-discordant couples in California, USA.

Regarding gender differences in consistent condom use, men are more likely to report consistent condom use than females (Sunmola, 2004). This could be due to power differences between the two. Women are at a disadvantage because they are likely not to

insist on condom use while they are socially and economically dependent on the men (Kabonesa, 1998). The findings are consistent in all studies reviewed although there is still more to explore in terms of interactions with other variables. A study in Nigeria found that, among women, it was those who had between 7 to 12 years of schooling who were more likely to consistently use condoms unlike among men where those with between 12 to 18 years of schooling were the ones that were more likely to use condoms consistently (Sunmola, 2004).

Type of relationship, age at first sex, multiple partners and sexual activity

Many studies have found that consistent use of condoms is higher in casual than in regular partnerships. Condom use changes with time. With a new partner, most people tend to use condoms but, with time, condom use reduces or stops as they get more familiar with the partners, trust becomes more established and other contraceptive methods are preferred (Howard et al., 1999; Plichta et al., 1992; Catania et al., 1989; Seidman et al., 1992; Wingood and DiClemente, 1998). The findings are confirmed by a study carried out in Nigeria which found that men's condom use was highest in commercial sex, inconsistent in casual relationships, and lowest in marriage (Messersmith et al., 2000). A study of 16 countries participating in Demographic and Health Surveys (DHS) found that 56 percent of couples who started off using condoms discontinued within 12 months (Ali et al., 2004).

Age at first sex is strongly associated with consistent condom use (Murphy and Boggess, 1998; Tavares et al., 2002). In Murphy and Boggess (1998), young people who had sex at a later age were more likely to use condoms consistently compared to those who had sex early. The data were drawn from 1988 and the 1995 national survey of adolescent males in the USA. In Tavares (2004), the study was carried out among young people in Portugal.

Multiple sexual partners and frequent sexual intercourse are associated with inconsistent condom use (Catania et al., 1992; DiClemente et al., 1996; Weisman et al., 1991). One would expect people with multiple partners to be using condoms consistently unless one of the partners is a spouse with whom a condom is not used. A study of people aged 16-44 in Britain in 2001 found that consistent condom use was more frequent among men and women with two or more partners in the previous year than those with only one partner

(Johnson et al., 2001). This is what is expected as people with one partner might be in more stable relationship and may not find convincing reason for using condoms.

A Hong Kong study found that those who had sex with strangers were more likely to be inconsistent condom users than others (Abdullah et al., 2002), while in another study, in the USA, there was no relationship between consistent use of condoms and type of partners among young people (Weisman et al., 1991). There was no significant relationship between consistent condom use and number of sexual partners in a study of use of condoms in Zimbabwe (Adetunji and Meekers, 2001). In Abdullah et al. (2002), there was a limitation of low response rate of 50 percent and selection of participants from an STI clinic, while in the latter study they were drawn from a family planning clinic.

The selection of participants in the studies above makes them insufficient sources of data on the dynamics of condom use among young people aged 15-24. In Plichta et al. (1992), participants were drawn from a family planning clinic while in Catania et al. (1989) there were only 114 sexually active young people aged 12-28 which was a wider age range and a small sample. In Wingood and DiClemente (1989), the sample was small, with only 100 African American women in a three month follow-up.

Alcohol consumption

Consumption of alcohol makes a person lose sexual inhibition. Some researchers explain use of alcohol as a deliberate means to lose control, to escape from having to adhere to strict norms and standards such as use of condoms for every sexual encounter (McKirnan et al., 1996).

Several studies investigating alcohol consumption and consistent condom use have found a strong negative association (Ray et al., 1998; Wee et al., 2004; Trigg et al., 1997; Gregson et al., 1998; Gwati et al., 1995; Ehrenstein et al., 2004; Kim et al., 2002). Despite strong evidence, the same relationship did not hold for studies among young people in Zimbabwe (Adetunji and Meekers, 2001), in the USA (Morrison et al., 2003) and in Scotland (Bagnall et al., 1990).

In Wee et al. (2004), the study was conducted among prostitutes and their clients in Singapore. They were older with an average age of 34.7 years. In Gwati et al. (1995), the study was carried out among clients of a clinic and surgeries in Harare while in Gregson et al. (1998) it was carried out in rural area in Zimbabwe. In Ehrenstein et al. (2004), the study was carried out among HIV infected patients with alcohol problems in the USA. In Morrison et al. (2003), the study compared rates of condom use in sexual events before and after alcohol consumption. The data were obtained using diaries of the sexual events. The results of the studies above may not readily apply to the general population because of the difference in characteristics between the selected samples and the general population.

Attitudes

Few studies have investigated the association between attitudes to condom use and consistent use of condoms. Consistent condom use was found to be higher among those with positive attitudes towards condom use in Zimbabwe (Adetunji and Meekers, 2001; Sunmola, 2004). The study comprised 498 unmarried respondents who had sex within two to three months before the survey. Another study of Dutch vocational high school students in 2001 study showed that, among young people who had had sex with a steady partner but had never had casual intercourse, those who used condoms consistently had a more positive attitude towards condom use (Gebhardt et al., 2003).

Communication with parents

When parents make an effort to know their teens' friends and their whereabouts, the young people report fewer sexual partners and fewer coital acts and are more likely to use condoms more often (Jemmot and Jemmot, 1992; Rodgers, 1999). Parent-teen condom discussions are associated with greater lifetime condom use, and greater consistency of condom use (Whitaker and Miller, 2000). Communication with parents is also indirectly associated with consistent condom use. Communication with parents about condom use is strongly associated with condom use at first sex which in turn is strongly associated with condom use on subsequent occasions (Miller et al., 1998b).

Media

The media have power to change the level of consistent condom use. In a study of consistency of condom use in Zimbabwe it was found that programmes that use mass media information, education and communication campaigns to reduce shyness, embarrassment and stigma about condom use can help increase consistent use of condoms in non-marital relations (Adetunji and Meekers, 2001).

2.5.3 Summary

Consistency of condom use is a relatively new research area. The level of consistent condom use varies within and across regions and countries, but is generally low across countries. Factors associated with consistent condom use among young people are being male, higher age group, higher education level, higher age difference with partner, casual type of relationship, few sexual partners, and lower coital frequency. Other factors are low alcohol consumption, positive attitudes towards condom use and communication with parents. Age, number of sexual partners, and alcohol consumption were not significantly associated with consistent condom use in some studies.

2.6 Research gaps

From the literature reviewed it is clear that research on dynamics of condom use and abstinence among young people aged 15-24 is severely lacking in Uganda. Most studies that have been carried out on condom use and abstinence in the country have only explored age at first sex (primary abstinence) and condom use at most recent sex. Little is known about secondary abstinence, condom use at first sex and consistency of condom use. The Uganda Demographic and Health Surveys (UDHS), the main source of reproductive health data on the national level, provides information on condom use at most recent sex, on age at first sex and secondary abstinence, but does not have any information on condom use at first sex. In the literature, there are some factors found to have an association with the measures of dynamics of abstinence and condom use which do not exist in the UDHS; examples are peer and parent influence and type of school attended.

There is lack of research on young people's understanding and perceptions about condom use and consistent condom use in the wake of controversy over condom and abstinence promotions.

Worldwide, secondary abstinence in the context of HIV/AIDS is a new area of research. Despite the existence of several HIV and pregnancy prevention programmes with secondary abstinence as one of the goals, very few studies have investigated its level and the factors associated with it. In Uganda, the "Abstinence, Being faithful to sexual partner and Condom use" (ABC) strategy has been in existence since the late 1980s but few studies have investigated the level of, and factors associated with secondary abstinence.

Literature on condom use at first sex and consistent use in subsequent relationships among young people in Uganda is lacking. A few studies have included consistent condom use but none has been found on condom use at first sex so far. It is evident that little work has been carried out on changes in condom use within and across relationships among young people. Many studies have been carried out on current and ever use of condoms and sexual exposure but they mostly target all people in the reproductive age range. The issues amongst this wider age range are not the same as for those in the age group 15-24.

Most studies carried out on the dynamics of condom use and abstinence were not designed to be generalized to all young people aged 15-24 and hence there is a need for more research. Participants in the studies have been drawn from STI and family planning clinics, urban areas only, schools and other sub-groups who may be different from the general population of young people. For example, in countries where availability of condoms is not a problem, communication with parents may be associated with condom use (Miller et al., 1998a). However, in developing countries such as Uganda where feeling embarrassment and lack of knowledge of where to buy condoms are still prevalent (Kamya et al., 1997), communication with parents may not be strongly associated with condom use because of a lower proportion that use condoms and many more other associated factors.

Some research findings that appear consistent lack further analysis. In many studies on abstinence and condom use, it is not shown whether the interaction effect was investigated yet it is clear from some studies that the variation attributed to gender changes by age and vice versa.

CHAPTER THREE

3. METHODS AND MATERIALS

This chapter explains the design of the study, data collection methods and procedures, data management and analysis, and the theory behind the statistical techniques used in the study. The uniqueness of the data collected and their quality are discussed at the end of the chapter. Methods for both the survey and the qualitative studies are explained. The survey and the qualitative studies were carried out in 2004 and 2005 respectively.

3.1 Design of the quantitative study

The study was designed as a cross-sectional study but with a retrospective period prevalence component. It was cross-sectional because it provided a snapshot of the sexual behaviour and experience of a population at a given time (Higginson and Constantini, 2003) but at the same time retrospective for other aspects of the study since data from recall of previous sexual behaviour over a period (Gay, 1999) were collected. The discontinuation rate of secondary abstinence could be ascertained during the previous twelve months. Another feature of the retrospective component is that both exposures and outcomes of interest had taken place by the time of the study. The respondents were youths within the age group 15-24 resident in rural and urban areas in Mukono and Kabale districts. Two methods of data collection, face-to-face interviews and the Event History Calendar (EHC) method were used. The study was carried out between April and June 2004.

The study design and tools were modified as a result of a pilot study carried out in August 2003. The amendments included:

- Change of recall period from previous 24 months to 13 months. It was found that the data quality drastically reduced with longer time of recall.
- Use of young people's slang and terminology while interviewing. During the pilot it was observed that young people preferred the use of certain sexual terminology. They got "switched on" on use of the terms and became very cooperative during

interviews. This is in agreement with studies which have shown that understanding and preference of sexual terms differ with different people (Binson and Catania, 1998) and incorporating such preference in surveys has been shown to elicit higher reporting of sexual behaviours (Fenton et al., 2001). The commonest of the local terms used were *edemu* and *okupanga* to mean a *girl* and *seducing* respectively.

- Addition of more questions while restructuring others. An example of the questions that were added is the number of partners during the previous six and three months. In the pilot study the question on sexual partners had been asked for previous 12 months without specifying the number of partners in previous three or six months.

3.2 Data collection tools

This sub-section describes the tools used to collect the data. They are structured questionnaires, EHC and guides for Focus Group Discussion (FGD) and Key Informant Interview (KII).

3.2.1 Structured questionnaire

Structured questionnaires were used to collect data on background characteristics and sexual behaviour information. The questions were adapted from the Uganda Demographic and Health Survey (UDHS) 2000/2001, the ESRC social surveys question Bank (University of Surrey et al., 2003) and HRP-UNDP/UNFPA/WHO/ research instruments (Cleland et al., 2000). Questions on other topics were included based on earlier findings regarding their potential to affect dynamics of condom use or abstinence such as coercion (Parker et al., 2000), education level, age (Catania et al., 1994; Klaus et al., 2004; Lau et al., 2004), partner age difference (Kordoutis et al., 2004) and type of relationship (Misovich et al., 1997).

The questionnaire had eight sections. The first section comprised background characteristics, the second, general information on recent sexual behaviour while the third, fourth and fifth sections sought information on sexual behaviour with most recent, next recent and first sexual partners respectively (See Appendix 1a). The remaining sections covered pressure from friends and relatives to engage in sex activities, knowledge and

attitudes towards abstinence and condom use and prevention of pregnancy. The questionnaire was translated into local languages and reviewed with the field staff.

3.2.2 Event History Calendar

The Event History or Life History Calendar (EHC/LHC) method is a useful technique for collecting retrospective event history data. During data collection, respondents are helped to recall events back in time, and the events are placed in order of occurrence against the dates on a calendar. For example, to help respondents recall sexual abstinence during the previous year, they are given a calendar grid comprising columns for each month cross-cut by rows for contexts that help to recall sexual events.

The calendar method is flexible enough to collect continuous measures of complex sequences of personal events (Freedman et al., 1988) and provides better quality data compared to question list methods without increasing operational costs (Belli et al., 2001). The method encourages a narrative style of interviewing in which events from the respondents' past experiences are used as cues to facilitate the recall of other related events (Belli, 2000). A respondent is provided with ample time to recall and accuracy is emphasized. The method encourages the correction of earlier answers as newly recalled information qualifies (Schwarz and Oyserman, 2001) or disqualifies earlier responses. For example, if a person said he started sexual activity when he had gone to a party five months prior to the survey date on the calendar, this should also be reflected on questions about age at first sex, date of start of relationship and number of sexual partners. The EHC method has been used mainly for long-term recall of major events such as employment and criminal histories but it can be adapted to shorter time periods to investigate other behaviours (Schwarz and Oyserman, 2001).

Research into the reliability of the EHC method has shown that the data are reliable when carefully designed. Freedman et al. (1988) compared the quality of EHC data collected in 1985 with data from interviews conducted among the same people in 1980 in the USA and found a strong correspondence. The EHC had a recall period of nine years and the respondents were aged 23 years in 1985. In another study, data from contraceptive calendars of a panel of Moroccan women gathered three years apart were found to be reliable at the aggregate level but produced unstable individual level estimates (Strickler et

al., 1997). Strickler et al. (1997) found that reporting consistency was determined to a large extent by the number of events reported, implying that with fewer events the consistency is higher. The quality of reporting with EHC methods on social and economic events is quite good for retention intervals of three to five years (Caspi et al., 1996). A study in the USA found that respondents were able to recall events over a twelve-month recall period and could date event occurrence with good consistency (Kessler and Wethington, 1991). Most of the studies using the EHC method use recall time longer than one year but for the current study the duration was restricted to 13 months.

The EHC used in this study is characterized by fourteen columns and eight rows (Table 3.1). The first column is a list of common events including condom use and abstinence. The rest of the columns are for months starting from April 2003 to April 2004. The calendar was attached to the end of the questionnaire. The events of main interest were condom use and abstinence. However, data on condom use were only used to cross-check information on the main questionnaire due to inaccuracies and failure to remember as found in the pilot survey. The rest of the events were used to help the respondents recall, and they included seasons, village events, change in residences, occupation and relationships, and other personal events. From the pilot survey, the events which the respondents remembered quite well were deaths, births, parties and harvest times for vanilla, sorghum and coffee. The EHC used in this study is different from those of the Demographic and Health Surveys (DHS) in format. While columns in the DHS represent events and rows represent the dates, it is the reverse in the design of the EHC in this study (Appendix 1c) (National Council for Population and Development et al., 1999). The Demographic and Health Survey for Uganda (UDHS) 2000/1 had only one column for events. Both DHS surveys sought recall of five years while in this study it was just 13 months.

The interviewers were trained to first ask the respondents which events they could easily recall. In the situation where the respondent could not easily recall, the interviewer assisted him/her by citing some events in the locality. The research assistants knew some major events that occurred in the areas of study through the area guides.

The example EHC in Table 3.1 shows that the respondent remembered the vanilla harvest, rainy and dry seasons, and the coffee harvest. Other events remembered were the birth of a

Table 3. 1 Event History Calendar

INSTRUCTIONS:

1. YOU CAN USE OTHER CODES BUT DEFINE THEM
2. DON'T LEAVE ANY COLUMN UNFILLED
3. PUT A STAR * ON ANY INFORMATION YOU GET AFTER PROBING
4. DON'T ASK BEYOND 13 MONTHS

Event History Calendar for Respondent number 10

EVENTS	2003									2004				
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	
	1	2	3	4	5	6	7	8	9	10	11	12	13	
1. SEASONS e.g V=VANILLA HARVEST S=SORGHUM HARVEST R - RAINY SEASON D - DRY SEASON C - COFFEE HARVEST	R	R	R						D	D			R	R
2. VILLAGE EVENTS e.g. D-DEATHS B-BIRTH											B			
3. RESIDENCE e.g. S=Same residence U=went to town V=Went to village SC=Went to school	S	S	S	S	S	S	S	S	S	S	S	S	S	S
4. PERSONAL e.g. A=Attended party D=Drunk alcohol									A			A		
5. IN RELATIONSHIP Tick appropriately	Yes	→												
	No													
6. USED CONDOM Tick appropriately	1.Consistent	→												
	2.Inconsistent													
	3.Never used													
	4.Can't recall													
7. ABSTAINED Tick appropriately	1.Consistent													
	2.Inconsistent													
	3.Never used													
	4.Can't recall													

child, and attending parties in the months of December 2003 and March 2004. The person had not changed residence in the previous 13 months. By April 2003 the respondent was in a relationship (temporary or steady), but abstained from sex in December and January, and resumed sexual activity in February 2004.

3.2.3 Focus group discussions and key informant interview guides

The Focus Group Discussion (FGDs) and Key Informant Interview (KII) guides had three sections covering delayed sex, secondary abstinence and condom use (Appendix 1b and 1c). Regarding delayed sex, the discussion centred on what young people understand as abstinence, practices that expose them to early sex, levels of indecent assault, difference in early sex exposure between men and women, dating and pressure to have sex. Indecent assault in the current study refers to touching private parts or other body parts of a person of the opposite sex without his/her consent. While young women are commonly assaulted by their male peers, in less common instances young men are assaulted by older women. For example, when in company with older women in activities such as collecting firewood and grazing animals, the women tease young men by fondling them. This sometimes leads to coerced sex. In Kenya, a study among young people aged 10-24 found that 22 percent of young men who had been coerced had had much older first partners, compared to those who were not coerced (Erulkar et al., 2004).

Topics on secondary abstinence centred on the practicability of abstaining, promotion of secondary abstinence, ways of getting sexual satisfaction while maintaining abstinence and myths and beliefs about abstinence.

Discussion on condom use focused on practicability of consistent condom use, barriers to condom use, determinants of changes in time and source of condoms.

The KII guide had the same items for discussion as the FGD guide but differed in emphasis and probing. The issues probed in the KII guide centred on published work vis-à-vis preliminary findings in this study. More time was also spent discussing their recommendations.

3.3 Data collection processes

This sub-section describes procedures of data collection. They include training of field staff, ethical issues, sampling, sample size, field work, quality control mechanism and problems encountered.

3.3.1 Training, protocol and logistics

The data collection process was preceded by rigorous training of field workers for three days including a pre-test in each of the two districts. Recruitment criteria for the field workers were being in age group 19-24, a minimum education of advanced level (12-13 years of schooling), fluency in the local language and usual residence in the area of study. Five of them had just completed the advanced level of education while the rest had attained higher education and had participated in research data collection before. The field workers had to be fluent in both English and the local language. The local language in Mukono is *Luganda* while in Kabale it is *Rukiga*. The field workers were trained to interview respondents of the same sex and same age range so that they could create rapport faster although this may raise concern over confidentiality. In a planning phase of a study in Kenya, young people said they distrusted the accuracy of information they received from peers and had concerns over confidentiality (Erulkar et al., 2004).

In each district, ten male and ten female field workers were trained. To improve supervision and the quality of data, the best field worker was selected after training and trained further to help the investigator with supervision. The targeted number of people to interview was set at five per field worker per day. Two coders were also trained. Their duty was to code and check the consistency and validity of the data as they were collected in the field. Four days after training, work started in Mukono district and Kabale soon after. At times it was not possible to assign respondents to field workers of the same age group since most of the field workers were aged 20-24.

Four research assistants, two men and two women, were trained to assist in collecting the data from FGDs and KIIs. The training focused on orienting them to sexual and reproductive health, note taking and translation of expressions used. There was a pre-test of the tools and skills prior to data collection. The research assistants were selected from several experienced data collectors after assessing their ability.

3.3.2 Ethical issues

The study was approved by the Division of Social Statistics, University of Southampton and the Uganda National Council of Science and Technology (Appendix 2). Makerere University provided funding for the survey after approving the ethics of the study. The

qualitative component of the study was approved by the school of Psychology Ethics committee and received funding from the Safe Passages to Adulthood Programme (DFID funded).

According to the World Medical Association declaration of Helsinki, the right of the research subject to safeguard his or her integrity must always be respected and every precaution should be taken to respect the privacy of the subject and to minimize the impact of the study on the subject's physical and mental integrity and on the personality of the subject (World Medical Association, 1964). In accordance with the declaration, consent was requested from the respondents before interviews (Appendix 1a) and approval of the study was sought from the above-mentioned sources. The field workers were trained to explain the purpose and future benefits for society of the study to the participants. The participants were assured of confidentiality of the information they would give and were informed they were free to stop the interview at any stage if they wanted to.

3.3.3 Sampling

Prior to the sampling process, a list of all villages in parishes, sub-counties and counties were obtained from the district population office. There is only one urban health sub-district in Kabale and another in Mukono. A health sub-district covers a whole county and it is headed by a medical officer. The administrative unit hierarchy from bottom to top is village-parish-sub-county-county/health sub-district and district. Where counties are divided into two or more electoral constituents then each is granted a health sub-district status. Mukono town is not yet a full health sub-district because the town has not yet got a municipality status but it runs as one because it has all the facilities and personnel required for the status. It has a medical officer in charge of the town and runs a health centre with the same ranking as the main health centres of health sub-districts.

The sampling process for villages used a stratified multistage approach. Two health sub-districts in each of Mukono and Kabale districts, one urban and another rural, were selected purposively. In each sub-district a purely simple random sample of half of the sub-counties were selected. Where the total number of sub-counties was odd, one (1) was added to make it even. In a similar way, half of the parishes were selected from each sampled sub-county and then half of villages from the sampled parishes. Within each

selected village, field workers made an effort to randomly select ten households although it was not possible all the time. Eventually, the number of households selected in each village varied from four to fourteen because of inaccessibility due to poor terrain, rainy season and in some villages it was difficult to find unmarried young people.

The random selection of households in the villages used systematic sampling technique. The field workers first located a centre of the village such as a church area or market and shops and then span a pen to get a random direction. In the direction of the pen the research assistants would visit every other household to look for young people aged 15-24. In the situation where two or more eligible respondents were in one household, a random selection was improvised using folded pieces of paper with index numbers for each eligible person. The papers were tossed and one selected. Similar sampling procedure has been used in other studies (Arvanitis and Portier, 1997).

The data collection was carried out in pairs of male and female research assistants per selected village. On contact with the respondent, the first thing was to request consent. If the respondent was under 18 years the parents were asked to consent as well. When it was not granted, the interviewer thanked the respondent and left. When the respondent would be found in company of other people such as parents, permission would be requested to move with the respondent some few metres away so that they could not hear the interview.

In the two districts, 95 villages were selected from 540 villages (47 of 234 in Kabale and 48 out of 306 in Mukono). A total of 20 out of 61 parishes (9 of 27 in Kabale and 11 of 34 in Mukono) were selected. Eight sub-county divisions, three of which were in urban area (Mukono town and Kabale municipality), were selected.

There was some substitution of the households, villages and a parish. Two villages in Rubaya sub-county in Kabale district could not be reached because landslides caused by heavy rains blocked the road. A parish in Kitumba sub-county, Kabale district could not be reached because the road was steep, slippery and not well constructed. Fifty households were substituted as a result of non-availability and ineligibility of the respondents. Unsubstituted non-response was 24 out of 810 households targeted (ten were meant to offset anticipated non-response). The villages and the parish were substituted with ones that have similar characteristics. Substitution may not eliminate bias in selection of respondents but

it does maintain the sample size to control sampling error. When it is used with matching non-response villages it can limit potential bias (Chromy, 2002). For households in the same neighbourhood community, a household was substituted by the nearest household. Where two or more households were close to the one being substituted the distance to the main doors of their main houses was considered.

3.3.4 Sample size determination

The study aimed at comparing abstinence and condom use indices between the two districts and it was therefore necessary to obtain a sufficient number of respondents in each. A sample of 400 respondents from each district was found adequate as it was slightly more than the minimum required in a sample size calculation using Levy and Lemeshow's formula below.

$$n = \frac{N.z^2.pq}{(N-1).d^2 + Z^2.pq} \quad (3.1)$$

$$\approx \frac{z^2.pq}{d^2} \quad (3.2)$$

as $N \Rightarrow \infty$

where :

n = estimated sample size

z = student's t value for an expected confidence level

pq = expected variance where p = expected proportion using condoms or abstaining and q = is $1-p$

N = population size

d = selected accepted error (precision)

(Levy and Lemeshow, 1991).

The total populations of young people (N) in Mukono and Kabale are of 155,170 and 94,136 respectively (UBOS, 2005). When these data together with an estimated variance (pq) of 0.25 (0.5×0.5) and an absolute error (d) of 0.05 are substituted in (3.1) above they

give a sample size of 383. Since the intention was to have comparable indices it was important to have a sufficient number of respondents for each district.

3.3.5 Field work for the survey

The entry point for the field work was a sub-county level. The field team introduced itself to the sub-county officers and requested for guides. The role of the guides was to take the field team to the sampled villages and introduce them to village committee members who would also take the team to the sampled households and introduce them to the respondents.

Throughout the data collection process a policy of substitution of villages and respondents was maintained. A household was substituted with the nearest one if it was inaccessible, respondent did not want/unable to participate or there was no eligible respondent. A village/parish was substituted by simple random sampling if it was inaccessible or it had very few inhabitants.

There were inclusion and exclusion criteria for participants in the study. Young people were interviewed if they were usual residents in the villages in the study areas, were within age group 15-24, were not yet married and consented to the interview. The interviews stopped if the respondent withdrew his/her consent.

3.3.6 Field work for the qualitative data collection

Eight Focus Group Discussions (FGDs) and four Key Informant Interviews (KII) were conducted in each of the two districts. In each district four FGDs were conducted in each of the rural and urban areas. Of the four, two were for those young people in school and the other two for those out of school. One of the two in-school FGDs was for men and the other for women; similarly for the two out-of-school groups. Each focus group comprised six young people within the 15-24 age group and same sex. From each district a District Director of Health Services (DDMS), a programme officer of a Non-Governmental Organization (NGO) working on the reproductive health of young people and a youth leader were interviewed. In addition, an Assistant Commissioner (AC) in-charge of reproductive health and a senior researcher were interviewed. The criteria for selection of key informants were having a job or position that should be useful in understanding the

dynamics of condom use and abstinence among young people or had published work in sexual and reproductive health. The FGD and Key Informant (KI) topic guides had items that included levels and factors associated with delayed first sex, secondary abstinence and consistent condom use (see Appendices 1d and 1e).

Mobilisation of FGD participants was through village Local Council (LC) members, particularly the chairpersons. The investigator had established contacts with chairpersons during the main survey in 2004 and this made it easier to approach them again for mobilization of FGD participants during data collection from Feb 23rd to March 22nd 2005. The criteria for selection was young people aged 15-24 and resident in the area of study.

All discussions and interviews were tape recorded in the local languages, Luganda in Mukono and Rukiga in Kabale. The information was later translated into English to provide a written account of the discussions. Transcriptions were carried out immediately after discussions as recommended in FGD discussion guidelines (Hennink and Diamond, 1999).

3.3.7 Quality control measures in the field

All survey data are subject to error from various sources (Banda, 2003). There are two types of errors; sampling and non-sampling errors. The sampling errors arise solely as a result of drawing a sample rather than conducting a complete enumeration, while non-sampling errors are mainly associated with data collection and processing procedures. In the field, non-sampling errors can be controlled by measures that include training of field workers, use of non-ambiguous questions, use of clear definitions and instructions and adequate scrutiny of data (Banda, 2003).

In addition to rigorous training of field workers, pre-testing the instruments and tight selection criteria for the workers, the following measures were taken to control the quality of the data:

- Filled questionnaires were handed in to the supervisor and investigator every day. They were checked for consistency and transcription errors before being given to the data coders. In case of inconsistency, the field workers responsible were asked

to explain. During coding, the questionnaires were further checked for inconsistencies, missing values and writing errors.

- At the end of each day there was a debriefing for all field workers. Field experiences were shared and discussed with a view to getting a common way to solve problems of inconsistency, non-response and transcription errors. The successes and failures in the day were discussed.
- Direct communication between field workers and supervisor and investigator. Most of the field workers in Mukono district had mobile phones. In Kabale, the supervisor had a mobile phone and could use it in all places except in two parishes where the telephone network could not reach. This helped resolve the issue of substitution of villages and households in the sample.
- There were a number of related questions which helped to check for consistency. For example, information on ever had sex, number of sexual partners and sexual experiences with first, latest and second to latest relationships could check consistency on sexual experience. Filter and reminder notices for the interviewer were also added in the questionnaire to help in checking consistency. After data collection, the correlation coefficient for quantitative variables expected to be related was used to check the quality of data as has been used in other studies (McFarlane and Lawrence, 1999). The higher the correlation between related questions the higher the consistency.

3.3.8 Problems encountered, solutions devised and lessons learnt

Inaccessibility of some sampled areas and non-response were the major problems encountered but substitution helped raise the sample size close to what had been initially planned.

There were cases of inconsistent data. Ten filled questionnaires of one research assistant were rejected due to inconsistent information attributed to poor interviewing. Two research assistants left the data collection exercise for higher paying jobs.

Non-response and the general quality of data would have been worse if the pilot survey had not been carried out. The pilot study, which was carried out in August 2003, helped to adjust the questionnaire to suit young unmarried people's way of communication and

cultural norms. Training exercises were intensive and minimised the non-response rate and invalid data. The training involved role plays and a pre-test. Each question in the questionnaire was reviewed during training. Letters to the local village and parish leaders which were sent before the data collection earned the research team a good reception and reduced bureaucratic delays. The leaders were very willing to help the research team in locating the households and introducing the team to the respondents. The requirements that field workers be of the same age group as the respondents and that each interviews a respondent of the same sex paid off as there were no cases of shyness apart from a few inconsistent records.

3.4 Data management and structure for quantitative data

The data collected were coded and entered in EPI6 and later exported to STATA v.8 and MLWIN v2.01 statistical packages for further management and analysis. EPI6 is an old package that gave birth to EPIINFO 2002. It is still DOS based but it is generally preferred for simple data entry because it is supplied free, occupies relatively less space (20 megabytes of hard disk and 512KB of RAM), can run on any IBM compatible computer (Andrews, 1998), is easy to teach data entry staff and is still easy to run. The EHC data were entered in the computer by event history episodes with start and end dates. The same software computed duration of episodes. Consistency and validity checks in the data entry programmes helped to check the quality of data entered. Twice in the first two days of the data entry process all data were re-entered by different data entrants and compared with the original data using the validation programme of the EPI6 software. The programme listed all inconsistencies and this helped the data entrants to be more accurate. Further cleaning of the data was carried out after data entry.

3.4.1 Reshaping of data, censoring and truncation

In a separate copy of the data file, the data were reshaped from individual to episode-based records and later to person-month format for analysis of secondary abstinence. Here an episode is defined as a continuous period of time spent in the same state until an event occurs (Steele et al., 2004). An example of an episode is a three-month period of abstinence after which someone resumes sexual activity. In the process of reshaping the

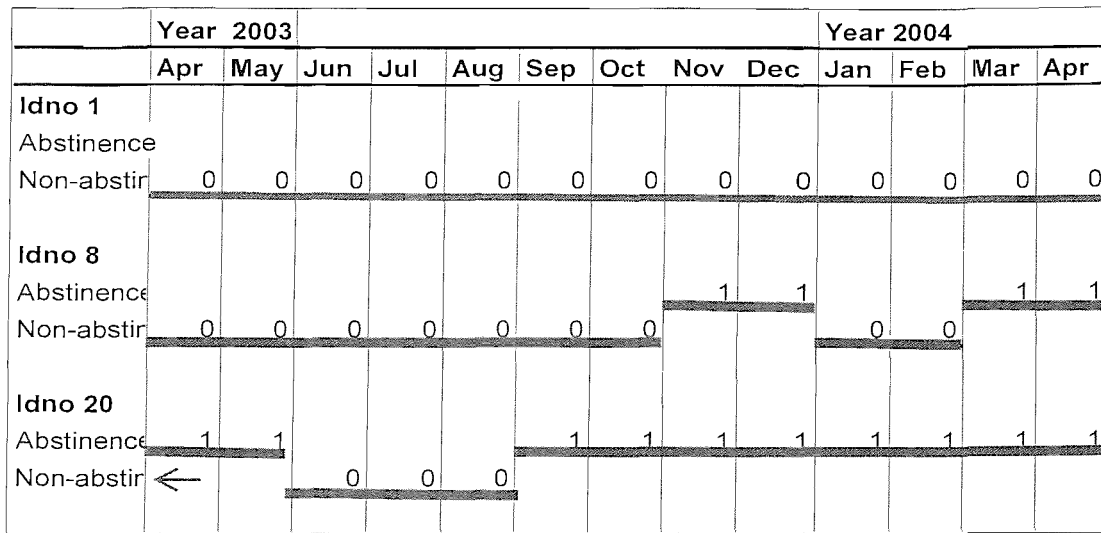
data a new record was created for each episode. In further analysis that investigated monthly events another new record was made for each month.

One of the unique features of time-to-event data is the censoring and truncation. Records are said to be censored if observation time is cut short due to loss to follow-up, drop out or termination of study. Records are said to be truncated if observation is made for only those that meet a condition. Truncation is different from censoring, since for a censored datum, we know the subject exists, but for a truncated datum, we may be completely unaware of the subject (Wikipedia, 2004; Jaeyong, 2004). In the current study, left truncation is applied in analysis of episodes of abstinence by considering only those that started after March 2003 while episodes that had not ended by the time of the study were right-censored.

Figure 3.1 shows the episodes of abstinence and non-abstinence of three respondents as they appeared on a filled EHC while Tables 3.2 and 3.3 show how the data were reshaped into records of abstinence episodes and person month of abstinence respectively. The whole record for respondent number one (1) is left out of the analysis because the person did not abstain for at least a month in the previous 13 months. The first abstinence episode for respondent number 8 is retained because the start date was after March 2003. A record for the first abstinence episode for respondent number 20 is left truncated because the start date was before April 2003. One way to deal with the problem of truncation is to assume a constant hazard rate for all abstinence episodes irrespective of whether they are truncated or not but this is a difficult assumption (Guo, 1993). Truncated observations pose a difficulty in computation and are left out as in Steele et al. (2004). As for censored data, usual survival analysis techniques take censoring into account.

The whole process of data coding, data entry and general data management of life history calendars is complex (Freedman et al., 1988). Each cell in a calendar has to be coded because it is equivalent to a separate question and the way it is filled during fieldwork is different from the way it is entered in the computer. Data entry is tedious since it involves reading from a table with many cells. Thereafter, a lot of computer programming is required to reshape the data, recode some variables and create new ones.

Figure 3. 1 Example of episodes of abstinence



← Started before April 2003

Table 3. 2 Example of restructuring data into person episodes (abstinence)

Idno <i>i</i>	Episode <i>j</i>	Duration in months <i>l_{ij}</i>	Right Censor <i>c_{ij}</i>	Month at start <i>s_{ij}</i>
8	1	2	0	Nov. 2003
8	2	2	1	Mar. 2004
20	1	7	1	Sep. 2003

Table 3. 3 Example of restructuring data into person-months

Idno <i>i</i>	Episode <i>j</i>	Month <i>m</i>	Censor <i>c_{ijm}</i>	Discontinuation <i>y_{ijm}</i>	Month at start <i>s_{ijm}</i>
8	1	1	0	0	Nov. 03
8	1	2	0	1	Dec. 03
8	2	1	0	0	Mar.04
8	2	2	1	1	Apr.04
20	1	1	0	0	Sep.03
20	1	2	0	0	Oct.03
20	1	3	0	0	Nov.03
20	1	4	0	0	Dec.03
20	1	5	0	0	Jan.03
20	1	6	0	0	Feb.03
20	1	7	0	0	Mar.03
20	1	8	1	0	Apr.03

Note that the first abstinence episode of identification number (Idno) 20 has been left out

3.4.2 Data structure

The data have a hierarchical structure. Households visited are clustered within villages which are also clustered within parishes. The parishes are clustered within sub-counties which are then clustered within the health sub-districts (Figure 3.2). The respondents that were randomly selected in each village are likely to have similar behaviour because environmental, institutional and other non-individual level factors might affect those in same locality in a similar way (assuming other factors constant). Similarly, people in the same parish and sub-county may have the same exposure to some factors that affect their sexual behaviour.

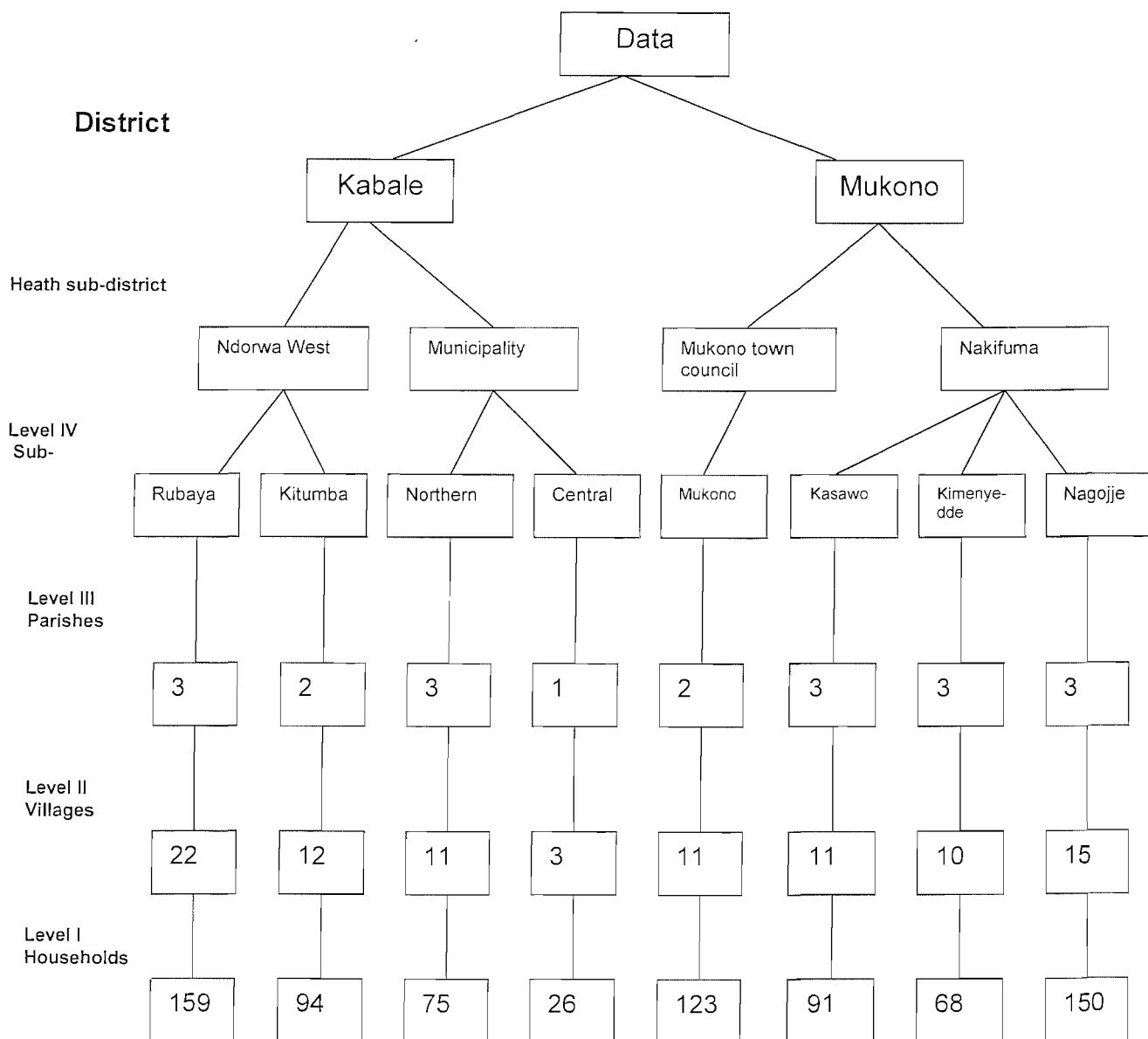
Most work on condom use and sexual abstinence ignores the possibility of clustering effects and yet this may lead to poor conclusions from analysis of the work (Marijtje et al., 1999). Statistical models that ignore potential non-independence of observations provide inefficient parameter estimates and often produce biased test statistics (Carvajal et al., 2001; Aitkin et al., 1981; Bennett, 1976). One cannot assume independence among observations when individuals within the same level, such as community, are assigned the same value. Independence is basic for most classical statistical techniques (Bryk and Raubenbush, 1992). An alternative is to average the data within each cluster but this suffers from loss of information (Marijtje et al., 1999).

Multilevel models are an improvement on the traditional multiple regression models because they calculate the correct standard errors (Kreft, 1996). A study on the effects of ignoring multilevel data structures in non-hierarchical covariance modelling found that, as the level of intraclass correlation increases, the chi-square statistic, the parameters, and their standard errors all exhibit estimation problems (Julian, 2001). One of the approaches to analysis of clustered data is to assume the population values are generated by a linear model that accounts for the correlation structure introduced by the design. Most commonly, a single cluster effect is introduced in the error term but other linear cluster terms can be introduced to reflect complexities of the survey (Eberwein et al., 2003).

Clustered data can also occur in other study designs such as event history. In the case of event history of sexual abstinence, more than one episode of abstinence may occur in the same person's history. Episodes of an individual are analogous to repeated measures

(Goldstein, 1995). The episodes are clustered within an individual. The individuals are also clustered within villages and other higher levels of the hierarchy. In the current study, few respondents had more than one episode and hence the concern of the clustering was on village and parish levels only. Multilevel models are able to separate the variation in the response of interest into variation attributable to individual level factors and that which is

Figure 3. 2 Data structure



attributable to higher contextual factors (Rice and Leyland, 1996). The coefficient of an independent or explanatory variable may be random at any level of the hierarchy. In

addition, at each level, the random coefficients may have any pattern of variance and covariances (Maletela, 1999).

Multilevel modelling has been applied extensively in risky behaviour among young people but little on sexual behaviour research specifically. A multilevel analysis to assess the relationship between structural and health policy variables of the school and individual on the risk and health behaviour of adolescents in Belgium found the school had an impact on the health behaviour of young people (Maes and Lievens, 2003). Similar analysis carried out to investigate the influence of household membership and area of residence on individual drinking behaviour found that household influences on individual behaviour outweighed those of the place of residence (Rice et al., 1998).

3.5 Data analysis

This section describes key outcome and independent variables in the study and the analysis plan. The analysis plan is a summary of statistical techniques used for each specific objective.

3.5.1 Key variables

The outcome variables are ever had sex, age at first sex, length of episode of secondary abstinence (in months), discontinuation of abstinence, consistency of use of condoms and use of condoms at first and most recent sex within first and most recent relationships. Data on condom use within the second to latest relationship were available but only from a few respondents. Consistency of condom use is measured by a variable that combined condom use at first sex and latest sex in individual relationships and then condom use at first sex and most recent sex in overall life sexual experience. The consistency variable was coded as consistent, inconsistent and never used a condom. The length of episode of abstinence was measured in months using an Event History Calendar (EHC).

Independent variables can be categorised as individual, family, interpersonal, community, institutional and environmental. Individual characteristics comprise age, gender, education level, main occupation, change of occupation, access to media, source of funding for school fees or for day-to-day upkeep, alcohol consumption, number of sexual partners, age

at first sex, experience of indecent assault and attitude to sexual abstinence and condom use. Family variables comprise living with parents, and communication with parents about sex related matters. Interpersonal variables comprise type of partner, age difference with partner, education of partner, length of relationship with partner, attendance of parties and clubs and peer pressure. Institutional variables comprise type of school attended, religion and religiosity. Environmental variables comprise length of stay in an area and rural urban residence. The dependent variables; condom use at first sex, age at first sex and length of episode were used as personal level independent variables for some of the other outcome variables. All relevant independent variables were tested for significance in each of the models developed.

Attitudes to abstinence and condom use are measured by scores combining answers to knowledge and attitude questions in section seven of the questionnaire (Appendix 1a). The first six questions ask about abstinence and the other eight questions ask about condom use. An answer to each of the questions that supports abstinence or condom use earns one unit score and none if it does not. The overall score from the sum of scores is categorised into two levels, low/medium and high positive attitude. A third category is created for the scores that had item non-response on some questions that make up the overall score. A score range of 5-6 on the abstinence scale and 6-8 on the condom scale were categorised as high score while lower scores were categorised as low/medium. Both ranges are in the upper third of the scale. The categorisation proved more sensitive than one based on quantiles.

Access to media was measured by questions on reading magazines and listening to the radio. Listening to radio was categorised as not listening and listening everyday while reading newspapers was categorised as not reading and reading weekly. Source of financial support was derived from a response to a question on who caters for tuition or most of the needs of the respondent. The response on financial support was categorised into parents, self and others. A young person was categorised as one who drank alcohol if he/she drank it in previous 30 days. Variables on communication with parents about sex were coded as occasionally/never and often. Type of school attended meant the founding institution of the school and it was categorised as public, religious and private. Religiosity was measured by how often one attended church/mosque services apart from special occasions such as

weddings and funerals. The frequency of attendance was categorised as none/less weekly and at least weekly.

The variable peer pressure is taken to mean the influence of friends or social group on individual's inhibition, decision and practices. For example when a young person's social group has sexual partners, he/she is likely to get partners too. The use of the variable is in conformity with other definitions of peer pressure (Wikipedia, 2004).

3.5.2 Data analysis plan for quantitative data

To achieve the objectives outlined in chapter one, different statistical techniques were utilised. Table 3.4 shows different analytical methods used to achieve each objective. Failure (discontinuation) rates, proportions, medians and cumulative probability were calculated to describe the levels of abstinence and condom use, while logistic regression, multilevel analysis and piecewise constant hazard models have been used to determine factors associated with abstinence and condom use. Changes in condom use and abstinence with time have been investigated by simply comparing proportions of people at different times, using multinomial logistic regression for consistency in condom use and piecewise constant hazards models for change of constants with different time intervals.

Failure rates were computed per 100 person-months for secondary abstinence. Cumulative probability of failure was computed for secondary abstinence. Studies in use of contraceptive methods use the term dynamics to refer to prevalence, discontinuation, failure and switch of the methods (Leite, 1998). In the study of condom use and abstinence in the context of HIV/STIs, prevalence and discontinuation may be the only easily measurable outcomes.

3.5.3 Management of qualitative data

Taped discussions with FGD participants and KIIs were transcribed, written in Microsoft word and then exported to ATLAS TI v.5.0, a qualitative data analysis package (ATLAS.ti Scientific Software Development GmbH, 2005). The work was all coded into themes and sub-themes relating to the study objectives. The themes were identified by looking for word repetition, indigenous terms and comparing and contrasting sentences (Ryan and

Bernard, 2005). Prior to the coding process, transcribed material from two FGDs was read through to identify the frequency of words and terms used to describe certain issues during the discussions. Sentences were compared to find out whether there were differences in content. Themes from the two FGDs formed a basis for coding in all other FGDs. More themes were identified with the same systematic approach. Each FGD had an identification number and description of the participants. A list of all codes and quotations showed the

Table 3. 4 Objective and analysis table

Objective	Analysis technique used
1. Establish the level of abstinence and condom use	<ul style="list-style-type: none"> ○ Incidence rate of discontinuation using discontinuation events per 100 person-months for secondary abstinence and person years for primary abstinence. ○ Cumulative probability of discontinuation ○ Proportions abstaining or using condoms
2. Determine factors associated with abstinence or condom use	<ul style="list-style-type: none"> ○ Logistic regression for probability abstaining or using condoms ○ Multilevel models for cluster or village effects
3. Determine changes with time in condom use and abstinence and associated factors	<ul style="list-style-type: none"> ○ Piecewise constant hazards model for discontinuation along duration of abstinence and age at first sex ○ Compare proportions at different times using graphs ○ Multinomial logistic regression models for consistency and inconsistency of condom use at first and last sex event
4. Identify perceptions about condom use and abstinence	<ul style="list-style-type: none"> ○ Identify typical quotations for themes identified in qualitative data

FGD number, kind of participants, district and residence by code. This made analysis more manageable as it enabled comparison by gender, district and residence.

3.6 Theoretical framework of models fitted

This section provides some theoretical information on the statistical techniques used in this thesis. It describes how discontinuation (failure) rates were computed as well as presenting an outline of logistic regression, Cox’s proportional hazard models, multinomial logistic regression, piecewise constant hazards models and multilevel models.

3.6.1 Rate of discontinuation

In secondary abstinence, a person may have two or more abstinence episodes. The rate of discontinuation of an abstinence episode (failure) is the number of discontinuations (D) for a given number of person-months (M) of abstinence. When the data have been reshaped to show episodes as units of analysis the rate can be expressed as

$$R = \frac{\sum_i D_i}{\sum_i M_i} \tag{3.3}$$

where

R = rate of discontinuation of secondary abstinence episode

D_i = occurrence of discontinuation for episode i

$D_i = 0$ if episode did not end in a discontinuation

$D_i = 1$ if an episode ended in a discontinuation

M_i = length in months of abstinence episode i

The formulae assume constant rate of discontinuation across episodes, persons and duration.

3.6.2 Logistic regression

Logistic regression was used to model binary dependent variables. These include sexual exposure, secondary abstinence, and condom use. The interest lies in a relationship between the probability of the event of interest, π and several explanatory variables (x_1, x_2, \dots, x_p). The logistic regression model expressed as a logit of π is

$$\text{logit}(\pi) = \log\left(\frac{\pi}{1-\pi}\right) = \alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p \tag{3.4}$$

where

$\beta_1, \beta_2, \dots, \beta_p$ = Coefficients of the predictor variables.

α = Constant

The value of the coefficient β_i means that an increase of one unit in variable x_i will increase the logit (log odds) of occurrence of the outcome of interest by β_i .

The logistic regression model can be expressed in an alternative but equivalent form as

$$\pi = \frac{e^{(\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p)}}{1 + e^{(\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p)}} \quad (3.5)$$

3.6.3 Multinomial logistic regression

When the outcome variable has more than two distinct categorical levels it is advisable to use multinomial logistic regression which models the ratio of the probability of each level to the probability of the base level. For the case of consistency of use of condoms there are three levels and the model will have two components

$$\text{Part 1: } \log\left(\frac{p_1}{p_3}\right) = \alpha_1 + \beta_{11}x_1 + \beta_{12}x_2 + \dots + \beta_{1p}x_p \quad (3.6)$$

$$\text{Part 2: } \log\left(\frac{p_2}{p_3}\right) = \alpha_2 + \beta_{21}x_1 + \beta_{22}x_2 + \dots + \beta_{2p}x_p \quad (3.7)$$

where

p_1 = probability of using condom at both first and most recent sex (consistent use)

p_2 = probability of inconsistent use (used condom at last sex but not at first or used a condom at first and not at last event)

p_3 = probability of not using a condom at both first and most recent sex

From (3.6) and (3.7) the probability p_i can be predicted as follows:

$$p_1 = \frac{e^{(\alpha_1 + \beta_{11}x_1 + \beta_{12}x_2 + \dots + \beta_{1p}x_p)}}{\left(1 + e^{(\alpha_1 + \beta_{11}x_1 + \beta_{12}x_2 + \dots + \beta_{1p}x_p)} + e^{(\alpha_2 + \beta_{21}x_1 + \beta_{22}x_2 + \dots + \beta_{2p}x_p)}\right)} \quad (3.8)$$

$$P_2 = \frac{e^{(\alpha_2 + \beta_{21}x_1 + \beta_{22}x_2 + \dots + \beta_{2p}x_p)}}{1 + \left(e^{(\alpha_1 + \beta_{11}x_1 + \beta_{12}x_2 + \dots + \beta_{1p}x_p)} + e^{(\alpha_2 + \beta_{21}x_1 + \beta_{22}x_2 + \dots + \beta_{2p}x_p)} \right)} \quad (3.9)$$

$$P_3 = \frac{1}{1 + \left(e^{(\alpha_1 + \beta_{11}x_1 + \beta_{12}x_2 + \dots + \beta_{1p}x_p)} + e^{(\alpha_2 + \beta_{21}x_1 + \beta_{22}x_2 + \dots + \beta_{2p}x_p)} \right)} \quad (3.10)$$

3.6.4 Cox's proportional hazards model

In survival analysis, the time to occurrence of an event is taken to be a random variable T . To describe the probability of event times the hazard function is used. The hazard is the instantaneous risk of failure at time t , conditional on survival to that time (Fox, 2002). This can be expressed as

$$h(t) = \lim_{\Delta t \rightarrow 0} \frac{\Pr[(t \leq T \leq t + \Delta t) | T \geq t]}{\Delta t} \quad (3.11)$$

The hazard model depends on time and can be written as

$$h_i(t) = h_0(t) \exp(\beta_1 x_{i1} + \beta_2 x_{i2} + \dots + \beta_p x_{ip}) \quad (3.12)$$

where

$h_i(t)$ = hazard at time t for person i

$h_0(t)$ = base hazard

$\beta_1 x_{i1} + \beta_2 x_{i2} + \dots + \beta_p x_{ip}$ = regression function for person i , covariates

x_1, x_2, \dots, x_p and coefficients $\beta_1, \beta_2, \dots, \beta_p$

A survivor function is derived by integrating the hazard function.

$$S_0(t) = \exp\left(-\int_0^t h(t) dt\right) \quad (3.13)$$

Cox (1972) introduced an approach that does not require $h_0(t)$ since it is unknown and is not of primary interest. The estimation of coefficients and inferences are developed by

considering the information supplied at each time an event occurs (Cox, 1972). For two observations i and i' that differ in their x values, with the corresponding linear predictors a ratio of the hazard of failure between them at time t is shown below.

$$\frac{h_i(t)}{h_{i'}(t)} = \frac{h_0(t) \exp(\hat{\beta}_1 x_{i1} + \hat{\beta}_2 x_{i2} + \dots + \hat{\beta}_p x_{ip})}{h_0(t) \exp(\hat{\beta}_1 x_{i'1} + \hat{\beta}_2 x_{i'2} + \dots + \hat{\beta}_p x_{i'p})} = \frac{\exp(\hat{\beta}_1 x_{i1} + \hat{\beta}_2 x_{i2} + \dots + \hat{\beta}_p x_{ip})}{\exp(\hat{\beta}_1 x_{i'1} + \hat{\beta}_2 x_{i'2} + \dots + \hat{\beta}_p x_{i'p})} \quad (3.14)$$

For two subjects with similar characteristics except for $x_{ip} = 1$ and $x_{i'p} = 0$, the

$$\text{hazard ratio } \frac{h_i(t)}{h_{i'}(t)} = \exp(\hat{\beta}_p) \quad (3.15)$$

This shows that the approach is non-parametric with respect to the time but parametric with covariates. The covariates enter the model linearly but not the baseline hazard (Fox, 2002).

Cox's regression analysis is used in the thesis to understand the theory behind the piecewise constant hazards models. The advantages of using Cox's regression analysis over linear regression are that it accounts for right censoring of records of those who have never had sex and the hazard ratios produced in the results are interpretable as relative risks. Hazard analysis allows one to estimate true changes in sexual debut over time (Zaba et al., 2002). The disadvantage with the method is that it assumes that the hazards are proportional which is not always the case (Hosmer and Lemeshow, 1999).

3.6.5 Multilevel modelling

Multi-level modelling is a statistical technique that extends ordinary regression analysis to the situation where the data are hierarchical (Leyland and Groenewegen, 2003). In the current study, households are clustered within villages which are also clustered within parishes. The characteristics of respondents selected using cluster sampling are likely to be different from those chosen at random from the population at large (Centre for Multilevel Modelling, 2004).

Random intercept model

A simple binary model to allow for variation between villages or parishes is the random intercept model

$$\log\left(\frac{\pi_{ij}}{1 - \pi_{ij}}\right) = \beta_0 + \beta_1 x_{1ij} + \beta_2 x_{2ij} + \dots + \beta_p x_{p_{ij}} + u_{0j} + e_{ij} \tag{3.16}$$

where

π_{ij} = probability of occurrence of an event of interest, such as discontinuation of abstinence for respondent i in village j

β_0 = intercept

$\beta_1, \beta_2, \dots, \beta_p$ = coefficients for predictor variables

$x_{1ij}, x_{2ij}, \dots, x_{p_{ij}}$ = predictor variables for respondent i in village j

u_{0j} = random effect accounting for random variation at village j

e_{ij} = random effect accounting for variation for respondent i in village j

The model can be divided into two, the fixed effects part

$\beta_0 + \beta_1 x_{1ij} + \beta_2 x_{2ij} + \dots + \beta_p x_{p_{ij}}$ and the random effects part, $u_{0j} + e_{ij}$. This is in contrast with the ordinary regression methods where there is only one random component.

Similar to e_{ij} , the random parameter u_{0j} is assumed to be normally distributed with mean

zero and variance $\sigma_{u_0}^2$ and independent from e_{ij} . That is,

$$e_{ij} \sim N(0, \sigma_e^2)$$

$$u_{0j} \sim N(0, \sigma_{u_0}^2)$$

$$\text{cov}(e_{ij}, u_{0j}) = 0$$

This model implies that observations in different clusters (villages or parishes) are independent. That is, $\text{cov}(y_{ij}, y_{i'j'}) = 0$ where y_{ij} is the logit of occurrence of event of

interest for an observation i in village j . However, those in the same cluster are correlated since $\text{cov}(y_{ij}, y_{i'j}) = \text{cov}(u_{0j}, u_{0j}) = \sigma_{u0}^2$

The variance of y_{ij}

$$\begin{aligned} \text{var } y_{ij} &= \text{var}(\beta_0 + \beta_1 x_{1y} + \beta_{2y} x_{2y} + \dots + \beta_p x_{py} + u_{0j} + e_{ij}) \\ &= \text{var}(u_{0j} + e_{ij}) \\ &= \text{var } u_{0j} + \text{var } e_{ij} \\ &= \sigma_{u0}^2 + \sigma_e^2 \end{aligned} \quad (3.17)$$

note that $\beta_0 + \beta_1 x_{1y} + \beta_{2y} x_{2y} + \dots + \beta_p x_{py}$ are fixed parameters and their variance is 0.

The intra class correlation can be measured by

$$\rho = \frac{\text{Cov}(y_{ij}, y_{i'j})}{\sqrt{(\text{var } y_{ij})} \sqrt{(\text{var } y_{i'j})}} = \frac{\sigma_{u0}^2}{\sigma_{u0}^2 + \sigma_e^2} \quad (3.18)$$

The ratio of the variance between clusters and within clusters $w = \frac{\sigma_{u0}^2}{\sigma_e^2}$ (Longford, 1993)

is also commonly used. From 3.18, if the intra cluster variance $\sigma_{u0}^2 = 0$ then $\rho = 0$ there is no cluster effect and ordinary regression methods can be used (Leite, 1998).

The same procedure shown above can be applied to explore the random intercept effects on a multinomial model in Equations 3.7 and 3.8. Two terms, random intercept (u_{0j}) and general error (e_{ij}) terms were added to the equations to represent village/parish and individual level random effects respectively. The new models are:

$$\text{Part 1: } \text{Log} \frac{p_{1ij}}{p_{3ij}} = \beta_0 + \beta_{11} x_{1ij} + \beta_{12} x_{2y} + \dots + \beta_{1p} x_{py} + u_{0j} + e_{ij} \quad (3.19)$$

$$\text{Part 2: } \text{Log} \frac{p_{2y}}{p_{3ij}} = \beta_0 + \beta_{21} x_{1ij} + \beta_{22} x_{2y} + \dots + \beta_{2p} x_{py} + u_{0j} + e_{ij} \quad (3.20)$$

Estimation procedures

Multilevel modelling requires specifying an estimation procedure from a range of different choices. In analysis of binomial models Iterative Generalised Least Squares (IGLS) procedure was selected as advised in Goldstein (1986) and in Leite (1998). The procedure is computationally simple and it can be used to run binary models since they are not complex. However, in a multinomial multilevel model, second order Penalised Quasi Likelihood (PQL) estimation is a better option since the alternative (first order Marginal Quasi Likelihood (MQL) methods) produce biased results (Rasbash et al., 2004). Simulation studies also point to PQL 2nd order as the best estimation method for multilevel models (Centre for Health Equity Studies, 2005).

3.6.6 Piecewise constant hazard model

Another view of data on duration of secondary abstinence is of discrete nature that comprises whole months and years respectively. Duration in years or months contain ties especially when it is from recall data. It is difficult to see actual variation if many records tie especially with start and end points of duration of time being analysed. Such data are analysed by creating dummy variables indicating particular time or duration of time being referenced (D) and a logit model fitted as shown below.

$$\log\left(\frac{h_t}{1-h_t}\right) = \sum_{t=1}^T \alpha_t D_t + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p \quad (3.21)$$

where

h_t = temporal risk of discontinuation of secondary abstinence or initiating sex

α_t = the baseline hazard at each discrete time or interval, t .

$\beta_1, \beta_2, \dots, \beta_p$ = coefficients for predictor variables

x_1, x_2, \dots, x_p = predictor variables

D_t = the dummy variable indicating the particular duration of time of secondary abstinence or time to first sex in single years or interval. The dummies represent less than 14 years, 14, 15,, 19 and 20-24 years for primary abstinence and 1-2, 3-4, 5-6, 7-8, 9-10, 11-13 months for secondary abstinence.

The hazard of failure (discontinuation of abstinence) is assumed constant in each time interval, hence constant hazards model. It is like applying Cox's proportional hazard's model to a small time interval. The model allows comparison of the effects of a set of covariates on different intervals of time and this is one of its advantages. In the current study the length of secondary abstinence was grouped into two month intervals while age at first sex was left in its discrete form except for age below 14 years and above 19 years which were grouped due to small number of observations. When the data are viewed in this way (discrete or grouped), Cox-proportional hazards model is not well suited to the analysis of similar data unless modifications are made (Steele et al., 2004; Kalbfleish and Prentice, 1980) like splitting the time interval as shown.

To be able to run the piecewise constant hazards model the records must be formatted by person duration as in example of person-month in Tables 3.2 and 3.3.

To allow for unobserved heterogeneity in the model random terms at village/parish and individual levels were added as shown below

$$\log\left(\frac{h_{ij}}{1-h_{ij}}\right) = \sum_{i=1}^r \alpha_i D_i + \beta_1 x_{1ij} + \beta_2 x_{2ij} + \dots + \beta_p x_{pij} + u_{0j} + e_{ij} \quad (3.22)$$

where

u_{0j} = random effects accounting for variation at village/parish j

e_{ij} = random effects accounting for variation at individual i in village/parish j

General assumptions for fitting the multilevel discrete time models are that non-use or discontinuation of abstinence or condom use is a memorable event and the hazard of discontinuation within a month period is constant.

3.6.7 Model selection

The model selection criteria used were based on work by Hosmer and Lemeshow (1989). In the usual model-building procedures the first step is to carry out a univariate analysis. This helps to get the feel of the data and to select candidate variables for multivariate

analysis. The second step is to select variables for multivariate analysis. All variables with a p -value less than a pre-determined figure are selected along with known important variables. Hosmer and Lemeshow (2000) proposed $p=0.25$, but in the current study p is set at 0.20. If the sample size is adequate relative to the total number of candidate variables then all scientifically relevant variables regardless of the results of univariate analysis are included. Thirdly, all possible models from a set of candidate variables are constructed and their fitness compared. However, in the current study, the criterion for developing more than one model was having very significantly related covariates which are equally important for the study.

Another issue in model selection is the assessment of importance of a set of variables using Wald's and log likelihood ratio tests. Variables are deleted, refitted and verified to produce a stable model. Each variable with the highest p -value on a Wald's test or log ratio test was eliminated using the backward elimination method until only those with p -value less than 0.2 were left. Thereafter, each of the variables initially left out was entered again in the model following the backward stepwise procedure to see whether they become significant when combined with others. The re-entered variables were eliminated again if they were not found significant. Some variables were left in the model due to logical importance (Armitage and Berry, 1994b).

Other things undertaken in model construction are checking assumptions of the techniques used, checking significance of the interactions and model fit assessment. Residual analysis is usually meant to check the assumptions of the model, the fit of the model, identify outliers and compare residuals for different units of analysis (Browne and Rasbash, 2005; Hosmer and Lemeshow, 2000). Ninety five percent confidence intervals of residuals after the fit of a multilevel model are computed differently from other models by using $\pm 1.4\text{CSD}$ (comparative standard deviations) (Snijders, 2004) instead of the usual 1.96SD (standard deviation). The significance of an interaction can be shown graphically as well as the distribution of the residuals.

The last step is to validate the model with another data set or data that have not been used to build the model (Hosmer and Lemeshow, 2000; Wagner, 2003). This is not carried out

in the current study but the results are compared with those that have been recently published in the same field.

One of the desirable qualities of a model is parsimony (Abrams, 1996). This is the compactness of the model. It should have few degrees of freedom but at the same time does not lose accuracy. The argument for model selection is based both on parsimony and on predictive capability. It is a trade off between bias and variance. A model which is too simple will have structural errors with estimates far away from the true values (bias) while complex models will be right on average but with data that are too thinly spread out over many parameters (Bolker, 2005). One of the ways used in the current study to improve parsimony was to combine levels of some of the variables and keep the partitioning of durations to a minimum. Durations such as length of abstinence were partitioned to fit a piecewise constant hazard model.

Before using multilevel modelling separate analyses using traditional regression methods were carried out as advised (Kreft, 1996). One advantage for the action is that the traditional methods have more data management capabilities than multilevel modelling packages like MLWIN. The next step was to fit one covariate and test whether either village level or parish level random effects were significant. The intention was to build a two level random effects model. Thirdly, a basic model adding variables based on initial modelling is developed (Brown, 2002).

Two models, one including alcohol without party attendance and another with party attendance but without alcohol, have been built for most of analysis to emphasise the influence of either of them. The two variables are related ($\chi^2 = 59.5$ $p < 0.001$) and cannot be both in one model yet both are very important. The country is developing a policy on alcohol consumption and there has been an outcry in media about irresponsible party going by young people. Uganda is among the leading countries in per capita alcohol consumption (Mukasa and Odong, 2005).

3.6.8 Tests of goodness of fit and significance of coefficients of the models

The tests of goodness of fit of the models used in the current study are the Wald's test, Hosmer-Lemeshow test, deviance and coefficient of determination.

Wald's test

Wald tests were used to test the statistical significance of each coefficient (β) in the model. A Wald test calculates a Z statistic, which is:

$$z = \frac{\hat{\beta}}{se(\hat{\beta})}$$

The z -value is squared to give a Wald's statistic with a Chi-square distribution. Some researchers have found that the statistic has some problems. For large coefficients, the standard error is inflated and it leads to lower value (chi-square) (Menard, 1995). It is advisable to use log likelihood-ratio test because it is more reliable for small sample sizes than the Wald's test (Agresti, 1996).

Hosmer-Lemeshow Goodness of Fit Test:

The Hosmer-Lemeshow goodness-of-fit statistic is obtained by calculating the Pearson chi-square statistic from the $2 \times g$ table of observed and expected frequencies, where g is the number of groups. The statistic is written

$$\chi^2_{HL} = \sum_{i=1}^g \frac{(O_i - N_i \pi_i)^2}{N_i \pi_i (1 - \pi_i)} \quad (3.23)$$

where

N_i = the total frequency of subjects in group i ,

O_i = the total frequency of event outcomes in group i , and

π_i = the average estimated probability of an event outcome for group i .

The Hosmer-Lemeshow statistic is then compared to a chi-square distribution with $(g - n)$ degrees of freedom. $n = 2$ by default. Large values of χ^2_{HL} (and small p -values)

indicate a lack of fit of the model (Hosmer and Lemeshow, 1989). The statistic is recommended when the number of covariate patterns is nearly equal to the number of observations. Another issue to note is that different statistical packages may give different answers (Brant, 2005).

Deviance and coefficient of determination

Deviance is defined as twice the difference between the log likelihood of a perfectly fitting model and the current model, and has associated degrees of freedom equal to the difference in the number of parameters between the two models (Armitage and Berry, 1994a). The difference in deviance between a restricted model and a general one follows a chi-square distribution with degrees of freedom equal to the difference in number of parameters.

Given a set of parameters θ and an outcome y a likelihood function is a product of probabilities over all groups or individuals $L(\theta)$. That is

$$L(\theta) = p(y : \theta) = p(y_1; \theta)p(y_2; \theta).....p(y_n; \theta) = \prod_{j=1}^N p(y_j : \theta) \tag{3.24}$$

where, each $p(y_i; \theta)$ can be regarded as the likelihood for a single observation. Hence the log-likelihood for all observations is the sum of the log-likelihoods for the individual observations:

$$l(\theta) = \log p(y : \theta) = \log p(y_1; \theta) + \log p(y_2; \theta) + + \log p(y_n; \theta) \tag{3.25}$$

The coefficient of determination for an ordinary linear regression of y on x ,

$$R^2 = \frac{Var(y) - V(e)}{Var(y)} = 1 - \frac{var(e)}{var(y)} = 1 - \frac{SSE}{S_{yy}}, \tag{3.26}$$

where $var(y)$ is the variance in outcome variable and $var(e)$ is the unexplained. SSE is the sum of squares due to errors. S_{yy} = total sum of squares.

In the current study R^2 is computed for link function in logit and proportional hazards models and they are called pseudo R^2 because the linearity is generalised.

3.7 Uniqueness of the data collected

The data collected in the study are unique in content and method of data collection compared to other major studies involving condom use and abstinence in the country. The study is more focused on young unmarried people than any other well-known study in Uganda. Compared to the UDHS 2000/1 questionnaire, there are more data on sexuality and condom use in relationships and attitudes to condom use. The details on abstinence in the EHC are new and cannot be deduced from the calendar in the UDHS 2000/1 questionnaire. All questions were the same for both men and women, unlike in the UDHS 2000/1.

3.8 Validity and reliability of instruments and data

Validity is the extent to which a measurement tool actually measures the construct it is intended to measure (Kidder, 1981) and valid data are a product of valid instruments. In sexual behaviour studies, validity of data is also affected by factors that include reporting errors, social desirability bias, and exaggeration of sexual behaviour (Zaba, 2004). The measures that were taken to improve the validity of data include, carrying out a pilot study, use of questions that have been found valid in other studies, customizing the questions to suit current way of communication among young people and use of an EHC. Use of independent data sources as external reference (Fenton et al., 2001), carrying out key informant interviews and focus group discussion are other ways of checking the validity of survey results (Konings et al., 1995; IDRC, 2004) which were used in the current study.

Reliability is defined as a degree of consistency of a measure. A test or measure that produces consistent results is said to have high reliability (McDowell and Newell, 1996). Two ways of checking the reliability are, carrying out a test-retest of the instruments and examining the correlation among related variables in the instruments (Colosi, 2004). The test-retest involves taking measurements two times and examining the correlation between them while the correlation of the variables can be computed using Cronbach alpha test

(SPSS, 2004). The test-retest method was not carried out but Cronbach's alpha test on key related variables showed a value of over 75 percent, thus indicating high internal consistence.

According to research findings, reliability of data on sexual behaviours varies with a variety of factors including age (McFarlane and Lawrence, 1999; Clark et al., 1997; Capaldi, 1999), number of sexual partners, and time frame for recall (Catania et al., 1990). The reliability of frequency of sexual activity decreases with longer recall period and more frequent behaviours (McFarlane and Lawrence, 1999). Other studies have found that the recall of the number of sexual partners was less variable than sexual acts (Becker and Begum, 1994). Recall periods of twelve months or more may produce less reliable data (Kauth et al., 1991) while recall of six months is very reliable (Saltzman et al., 1987). The study group included a large proportion of young people who had just started sexual activity, so they were not likely to have had many sexual partners and hence there should be fewer recall problems.

CHAPTER FOUR

4. DESCRIPTION OF THE SAMPLE

This chapter describes the background characteristics of the respondents and other general information on the data for the whole study. Descriptive statistics are used to summarise the distribution of key variables.

4.1 Distribution of selected background characteristics by gender and district

The sample comprised 786 respondents with roughly equal numbers of men and women (49 percent men and 51 percent female) [Table 4.1]. Men were generally older than women; as the proportion aged 20 to 24 years was higher among men than women. The modal age intervals were 15-16 and 17-18 for women and men respectively. This is not surprising as fewer women remain unmarried at higher ages. The proportion of women under 19 years was much higher than in the national distribution because the national figures include married women.

Nearly a third of the respondents were urban. A higher proportion from Mukono was urban compared to those from Kabale. The urban proportion was twice as high as the national level due to the sample design. The study was planned to have adequate representation from the urban areas. Men were more likely to be in urban areas than women.

Nearly all respondents (98 percent) had ever attended school and almost two thirds were students at the time of the survey. The proportion of those who were in school was not significantly different by gender and district. Two thirds of the participants had attained secondary education and the proportion was higher in Mukono district than in Kabale. The difference could be due to a higher level of urbanisation in Mukono than in Kabale. Education level did not differ significantly by gender. Education attainment was much higher in the sample than the national level because of selection of the unmarried and inclusion of Mukono, which is relatively more developed than many districts in the country. The wide difference in proportions with no education in the study sample and the

Table 4. 1 Selected characteristics of the respondents

Characteristics	Kabale		Mukono		All	Uganda ¹
	Male n=177 (%)	Female n=177 (%)	Male n=208 (%)	Female n=224 (%)	n=786 (%)	
Age group						
15-16	23.2	36.7	24.1	52.7	34.7	23.7
17-18	26.0	31.1	29.3	27.2	28.2	22.1
19-20	21.5	22.6	21.2	10.3	18.7	21.6
21-22	14.7	4.5	15.9	5.8	10.2	17.2
23-24	14.7	5.1	9.6	4.0	8.0	15.5
Residence						
Urban	28.8	23.2	36.1	29.5	29.6	16.4
Rural	71.2	76.8	63.9	70.5	70.4	83.6
In school						
Never been	1.1	5.1	1.9	0.9	2.2	14.0
No	29.4	32.8	44.7	29.9	34.3	52.7
Yes	69.5	62.2	53.4	69.2	63.5	33.3
Education						
None	1.1	5.1	1.9	0.9	2.2	14.0
Primary	36.7	44.1	29.8	32.1	35.2	59.2
Secondary and higher	62.2	50.9	68.3	67.0	62.6	26.8
Religion						
Catholic	49.7	47.5	38.5	32.6	41.4	41.9
Protestant	49.2	47.5	33.7	36.6	41.1	35.9
Muslim	0.0	2.3	22.1	18.3	11.6	12.1
Pentecostal/Evangelical	1.1	2.8	5.8	12.5	6.0	4.6 ²
Reads newspapers /magazines weekly						
No	80.8	85.9	80.8	80.4	81.8	83.2
Yes	19.2	14.1	19.2	19.6	18.2	16.8 ³
Shares residence						
Both Parents	64.8	59.3	36.1	35.3	47.5	58.3 ³
Mother only	15.9	21.5	16.8	31.3	21.8	17.2
Father only	2.8	2.8	9.1	8.9	6.2	5.6
Relatives and others	16.5	16.4	38.0	24.6	24.5	18.9
Occupation⁴						
Subsistence farming	54.0	72.2	48.4	42.9	54.4	59.0 ⁵
Petty Trade/small business	25.4	2.8	28.0	15.9	18.5	8.6
Other	20.3	25.0	23.7	41.3	27.2	32.4

national sample can be explained by difference in areas sampled. The national indices include areas with some extremely low levels of education, whereas the sample was drawn from districts which do not have the lowest education levels.

¹ Source: 2002 Census Base = all aged 15-24 (except for religion)

² Includes traditional religion and non-believers but they were very few

³ Source: UDHS 2000/1 data in UBOS (2002)

⁴ For only those not currently in school

⁵ Source: UDHS 2000/1 but based on household main source of income

Most participants were Christians (88.4 percent). This reflects the national picture where 87.9 percent are Christian. The Christian proportion was smaller in Mukono where a fifth of the respondents were Muslim.

Access to media as measured by the proportion that read newspapers/magazines at least weekly was slightly higher than the national level possibly because most of the participants were educated. In Kabale, men had more access to newspapers/magazines than women.

Young people in Kabale were more likely to be living with parents than in Mukono. The overall proportion of respondents living with parents was lower than the national average. This could probably be influenced by the development level of the area of residence whereby availability of jobs motivates young people to be independent. The proportion of young people residing with people other than their parents was highest among men in Mukono.

Nearly half of the participants resided with both of their parents. However, those in Kabale were more likely to reside with their parents than those in Mukono. In Kabale, men were more likely to reside with both of their parents than women.

The main occupation was subsistence farming. Women in Kabale were more likely to be involved in subsistence farming than women in Mukono. The explanation for the difference is that Mukono borders the capital city on its west and a second largest city on its east and the residents are more likely to get jobs compared to Kabale. The proportion involved in subsistence farming was nearly the same as the national level.

4.2 Other characteristics of respondents by gender and district

Table 4.2 presents other characteristics of the respondents in the sample. Forty four percent of the respondents attended public (government founded) schools, nearly a quarter attended religious founded schools and a third attended private institutions. Kabale respondents were more likely to have attended public schools than Mukono respondents. Men were more likely than women to have attended religious founded schools in Kabale while the

Table 4. 2 General behaviour and other characteristics of respondents

Characteristics	Kabale		Mukono		All n=786 (%)
	Male n=177 (%)	Female n=177 (%)	Male n=208 (%)	Female n=224 (%)	
School attended⁶					
Public	54.3	73.5	33.0	21.8	43.5
Religious	34.9	13.9	13.8	30.5	23.4
Private	10.9	12.7	53.2	47.7	33.1
Attends religious functions					
None/less than weekly	50.9	41.2	38.0	37.5	41.5
At least weekly	49.2	58.8	62.0	62.5	58.5
Listens to radio					
Not at all/less frequently	15.3	36.7	12.0	26.8	22.5
Yes, everyday	84.8	63.3	87.9	73.2	77.5
Financial support source					
Parents	63.8	61.6	41.4	62.1	56.9
Self	17.0	15.8	37.0	9.8	20.0
Relatives and others	19.2	22.6	21.6	28.1	23.1
Length of stay					
<=5 years	27.1	20.3	51.0	50.0	38.4
>5 years	72.9	79.7	49.0	50.0	61.6
Discusses with parents					
Occasionally/never	88.1	87.0	97.1	90.6	91.0
Often	11.9	13.0	2.9	9.4	9.0
Drinks alcohol					
No	54.2	68.9	86.1	91.1	76.5
Yes	45.8	31.1	13.9	8.9	23.5
Attended party/club last					
No	70.6	66.1	51.4	76.3	66.2
Yes	29.4	33.9	48.6	23.7	33.8
Ever been indecently					
No	54.8	37.9	52.9	38.0	45.7
Yes	45.2	62.2	47.1	62.1	54.3
First sex⁷					
Involved	36.7	40.4	36.2	29.0	35.3
Both willing	63.3	59.6	63.8	71.1	63.6
Number of sexual partners⁷					
None/never had sex	15.6	19.2	15.9	6.9	14.2
One in past 12 months	55.6	67.0	40.7	84.5	60.7
More than one in past	28.9	13.8	43.5	8.6	25.2
Type of first sexual partner⁷					
Steady	68.9	62.4	63.9	86.1	70.4
Casual/one time	31.1	37.6	36.1	13.9	29.6
Time of first sex⁷					
Within previous 1 year	47.2	58.5	24.5	69.8	48.2
Previous 2-5 yrs	31.5	21.3	39.2	25.0	27.2
>5 years before survey	21.4	20.2	36.4	5.2	24.7
Attitude to abstinence					
Low/Medium	29.4	17.0	45.7	33.0	31.9
High	63.3	57.1	48.6	60.3	57.1
Incomplete score ⁸	7.3	26.0	5.8	6.7	10.9
Attitude to condom use					
Low/Medium	32.8	35.6	21.6	33.5	30.7
High	45.8	33.3	63.5	56.7	50.8
Incomplete score ⁸	21.5	31.1	14.9	9.8	18.6
Peer pressure					
No	33.3	35.6	51.0	58.9	44.9
Yes	66.7	64.4	49.0	41.1	55.1

⁶ Only those who attended school

⁷ Only those who have ever had sex

⁸ Did not answer all questions for the abstinence score

reverse is true for Mukono. The higher level of urbanisation in Mukono attracts more private schools than Kabale.

Religiosity of the respondents was measured by reported frequency of attendance of religious activities. Nearly 60 percent of the respondents attended religious services at least weekly. Mukono participants were more likely to attend religious services at least once a week compared to those in Kabale. Men in Kabale were least religious. Women were more religious than men but this was more evident in Kabale than in Mukono.

Poor socio-economic conditions tend to force young people to seek help from people outside their families and this may put them at risk of sexual activity. More than half of the respondents either supported themselves financially or received assistance from people who were not their parents. Women in Mukono were more likely to be helped by other people compared to men in Mukono and all young people in Kabale.

Mobility and migratory tendencies of respondents were measured by length of stay at place of residence. Thirty eight percent had lived at their place of residence for five years or less. The mobility of the respondents was significantly higher in Mukono than in Kabale. Mukono respondents were nearly twice as likely to have moved to their new residence within the previous five years compared to the Kabale respondents. This factor is also partly explained by the higher urbanisation level in Mukono.

Communication with parents was measured by a question on whether young people discussed sex related matters with parents. Overall, only 9 percent of the participants often discussed issues about sex with their parents. Young people in Mukono were less likely to communicate with their parents compared to those in Kabale. Women were more likely to communicate with their parents than the men.

More than a fifth of the participants in this study had drunk alcohol during the previous month and the proportion was higher in Kabale than in Mukono. Men were more likely to drink alcohol than women. High level of alcohol consumption in Kabale district has been established by other researchers and it is reported to be one of the major causes of underdevelopment in the district (Puhalla, 2003) but it may also be a result of underdevelopment.

Attending parties and participating in traditional or modern dances are some of the activities associated with sexual activity (Asimwe et al., 2003). In the current study there was a question on attending parties or a social club during the previous 30 days. A third of the respondents had attended a party or club for dances in the previous month. In Mukono, men were more likely to attend parties than women, while it was the reverse in Kabale.

Coerced sex is another factor responsible for early initiation of sexual activity (Manzini, 2001; Ndyabangi et al., 2003). In the current study, respondents were asked whether anybody touched their private parts or some other part of their bodies without their consent and whether they were forced to have sex. Touching somebody's private parts is tantamount to indecent assault which is a form of sex crime in many jurisdictions (Wikipedia, 2004) and can lead to sexual activity. More than a half of the respondents reported they had ever been indecently assaulted. As expected, this was more common among women than men. A third of the respondents that had ever had sex said that their first sex involved coercion or persuasion. This was less common in Mukono than in Kabale where 40 percent of the women were coerced into first sex.

In the earlier literature review, it was shown that having multiple sexual partners was associated with lower condom use (Hiltabiddle, 1996) and earlier age at first sex (Aral, 2001). In the current study, a quarter of the respondents reported having had more than one sexual partner in previous 12 months. The proportion that had more than one partner was higher in Mukono than in Kabale. As expected, men were more likely to have had more than one sexual partner than women.

Most of the participants (70 percent) that had sexual exposure were in a steady relationship at first sex. This was more evident among women in Mukono. Others had casual or one time relationship. One time relationship referred to those who did not know each other, met once and the relationship ended while casual relationship meant they knew each other but not as boy/girl friend.

Three quarters of the participants had first sex within the previous five years but the proportion was higher among women in Mukono where nearly all of them (95 percent) had their first sex in this period.

More than half of the participants had a high positive attitude to abstinence. The level was higher in Kabale than in Mukono but non-response to the question in Kabale was higher than in Mukono.

A half of the participants had a high positive attitude to condom use. The level was higher in Mukono than Kabale. This is expected since Mukono is more urban. Men were more likely to have a positive attitude to condom use than women.

More than a half (55 percent) of the respondents experienced peer pressure to have sex. This was more common among males than females and more common in Kabale than in Mukono.

Coital frequency in previous 30 days was another measure of sexual activity that was used in the current study (not in Table 4.2). In Kabale district 31.8 percent of men and 68.2 percent of women had sex twice or more times in previous 30 days while the corresponding proportions were 43.9 percent of men and 56.1 percent of women in Mukono district. Therefore, men in Kabale have less number of partners in previous 12 months and less coital frequency in previous 30 days compared to those in Mukono while women in Kabale have more number of partners and more coital frequency than those in Mukono in respective periods.

4.3 Inter-correlation among variables

Correlation between variables determines the kind of combination of variables to put in statistical models so as to avoid multicollinearity which is a high degree of correlation among independent variables (Cohen and Cohen, 1983). Multicollinearity causes high type II errors when it is extremely high (Grewal et al., 2005). The problem comes about as a result of large confidence intervals and small t-statistics (Williams, 2005).

One of the ways to detect multicollinearity among independent variables is to examine the tolerance or Variance Inflation Factor (VIF). Tolerance is defined as $1 - R^2$, where R^2 is the coefficient of determination for the regression of that variable on all remaining independent variables. The VIF, which is $1/\text{Tolerance}$, is always greater or equal to 1 and

is the factor by which the variance of the corresponding parameter estimate is increased due to multicollinearity, as compared to when there is no multicollinearity (SSTARS, 2005). A VIF of 10 or tolerance of 0.1 or less is regarded as indicating high multicollinearity but in weaker models (which is normally the case with logistic regression) values above 2.5 may be of concern (Allison, 1999). Another method used to check multicollinearity is a correlation matrix where a correlation coefficient (r) between two variables of 0.70 or above might suggest significant problems (Von Weiss et al., 2002).

Table 4.3 shows variance inflation factors for key quantitative variables in the study; no variable was found to cause multicollinearity since all the VIFs were less than 2.5.

Table 4. 3 Variance inflation factors for key variables

Variable	VIF
Age	1.61
Age at first sex	1.65
Number of sexual partners in previous 12 months	1.07
Length of stay in months	1.05
Period in months since most recent sex	1.50
Attitude to abstinence score	1.42
Attitude to condom use score	1.04

4.4 Conclusion

The sample was biased towards the lower age group (15-19). This can be explained by having few young people who are unmarried by 19 years of age. The median age at first marriage among young people aged between 15 and 24 years is 18.1 years and 22.8 years for women and men respectively (UBOS and ORC Macro, 2001). Most of the respondents were students, educated, had access to media and were Christians.

The distribution of study participants by some background characteristics was very similar to that in previous studies, thus exhibiting some degree of validity of sampling and the data collection exercise. Differences in distribution of the participants between Kabale and Mukono districts may possibly be due to differences in the level of development. Kabale

participants showed signs of people having a more traditional life style, such as dependence on subsistence farming and living with parents.

CHAPTER FIVE

5. SEXUAL EXPOSURE

This chapter presents an analysis of sexual exposure for young unmarried people aged 15-24. It describes their levels and patterns of sexual exposure by different background characteristics. The exposure is measured by the proportion that has ever had sex, defined as sexual intercourse. In the whole chapter, the unmarried refer to those who have never married.

The proportion that has ever had sex is an indicator of sexual activity among young people. When computed for a specific age group it provides some information on the likelihood of reaching that particular age group before having sex. It is a measure of delayed sex or primary abstinence and it is one of the major HIV/AIDS indicators (Macro International Inc, 2005). While it describes the extent to which abstinence is practiced among unmarried young people over the 15-24 age range, it is affected by increasingly lower proportions of the unmarried at higher ages especially among women. Both condom use and abstinence, which are the main outcome variables in the study, depend on the levels of sexual exposure of the respondents. Determining the level of delayed sex and factors associated with it are some of the objectives of the current study.

Delayed sex, as earlier mentioned, has a wide range of benefits for young people. Delay of sex initiation reduces the risk of unplanned pregnancy, and Sexual Transmitted Infections (STIs) (Kelly and Vencatachellum, 2003; WHO, 2000). In addition, late sexual exposure is associated with higher educational attainment, lower depression and high self esteem (Harvey and Spigner, 1995; Lammers et al., 2000; Lenaz et al., 1991).

A review of the literature showed that the likelihood of sexual exposure is associated with the type of residence (Lammers et al., 2000), schooling status (Lloyd, 2004), alcohol consumption (Murray et al., 1998), communication with parents (Bearman and Brückner, 1999) and attitudes to sex initiation (Stallworth et al., 2004). In this chapter, the extent of influence of these and other factors on sexual exposure are investigated.

The chapter starts with a discussion of the selection effects of the sample and the reasons given by the respondents for having never had sex. This is followed by a discussion of the cumulative proportion of young people in Uganda who have ever married and the age distribution of the respondents in the sample compared with the respondents of the UDHS 2000/1. The UDHS data were weighted by an inbuilt weighting index (UBOS and ORC Macro, 2001). The final part of the chapter discusses the standardized rates of sexual exposure and compares the sexual exposure of the study population with that of the standard population.

5.1 Reasons for delaying sex

Table 5.1 shows the reasons that young people gave for not having had sex at the time of the survey. The respondents who reported having never had sex had been asked a semi-structured question on why they had never had sex. The most commonly reported reasons for the delay were fear of HIV/AIDS (83 percent), fear of pregnancy (63 percent) and not being ready (48 percent). Fewer than half of the respondents mentioned parental control and having no opportunity for sex which can be categorized as involuntary abstinence. As expected, women were more likely to mention fear of pregnancy than men.

Table 5. 1 Reasons for delaying sex among young people aged 15-24 in Kabale and Mukono districts

Reason	Male (% of 150)	Females (% of 191)	All (% of 341)
Fear HIV/AIDS	80.7	85.3	83.3
Fears pregnancy	43.3	78.5	63.1
Not yet ready	48.7	47.6	48.1
Strict parents	38.7	48.2	44.0
Just does not want	46.0	33.0	38.7
Saved/committed to God	29.3	39.3	34.9
No opportunity	29.3	29.3	29.3
Others	18.0	19.9	19.1

NB: Multiple responses possible

5.2 Sample selection effect

It must be emphasised that the selection of unmarried people makes the sample different from the rest of the population in terms of sexual exposure. The selection effect on the current study is stronger when sexual exposure is compared by different age groups because the proportion of those who are married increases with age. The level of sexual exposure of those in the lower age group is likely to be similar to that of the general population since most young people are unmarried at that time. At a later age, the sample may contain people with different characteristics because most young people are already married. Those still unmarried at later ages are more likely to have a lower hazard of initiating sex or are affected differently by factors that lead to sexual exposure as compared to the rest of the population.

Figures 5.1 and 5.2 show the cumulative proportions of those who have ever been married and those who have ever had sex among all young people aged 15-24, and also those who have ever had sex among only unmarried young people. These figures are based on UDHS 2000/1 data. As the proportion married (all of whom have initiated sexual activity) rises with age, the proportion sexually active in the unmarried group falls away from the proportion sexually active in the proportion as a whole. This is more evident among women where the cumulative proportion curve of those who have ever been married rises higher and at a same rate as that of those who have ever had sex. Among men, the cumulative proportion curve of those who have ever had sex among those who have never married is the same as that among the general population until the age of 17 years. After age 17, the proportion of sexual exposure among those who have never married is less than that among the general population. This confirms earlier explanation of the uniqueness of the unmarried young people at higher age groups especially among women in the sample.

The uniqueness of sexual activity of the never married group can also be shown mathematically. Let P_w, P_n, P_m be the proportion sexually active in the whole population, the never married and the married. (Note that $P_m=1$). Let Q_n, Q_w be the proportion of the population never married and married ($Q_n=1-Q_m$) then $P_w=Q_n \times P_n + Q_m \times P_m$, so $P_n = \frac{P_w - Q_m}{1 - Q_m}$. Hence, as the proportion of the never married in the population reduces, the

Figure 5. 1 Cumulative proportion of those that have ever had sex and ever married among young men aged 15-24 in Uganda, UDHS 2000/1

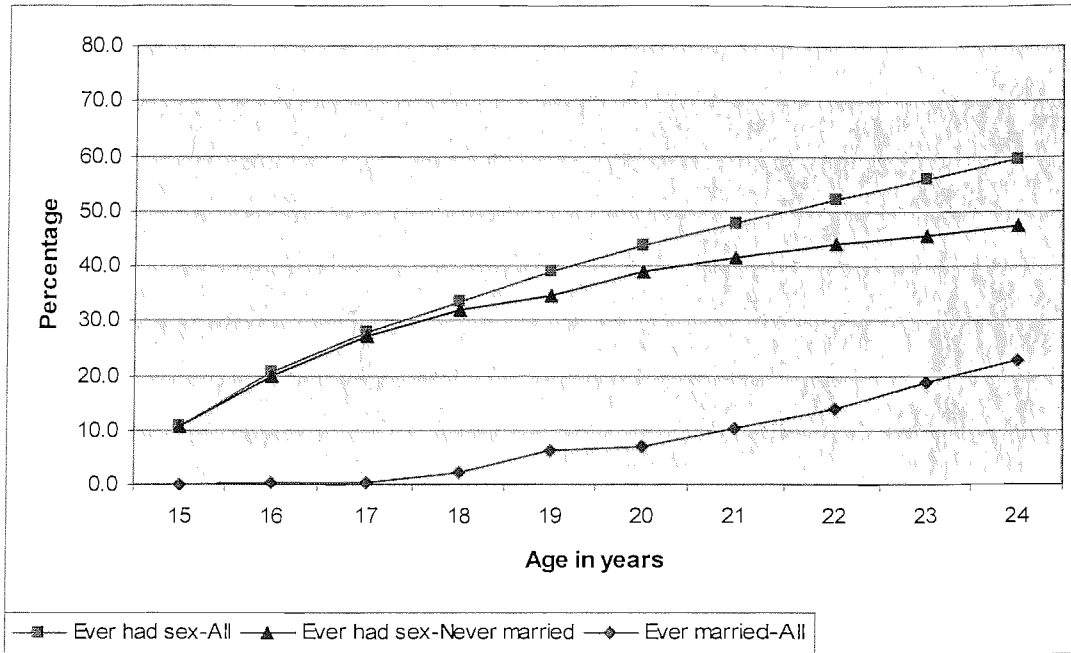
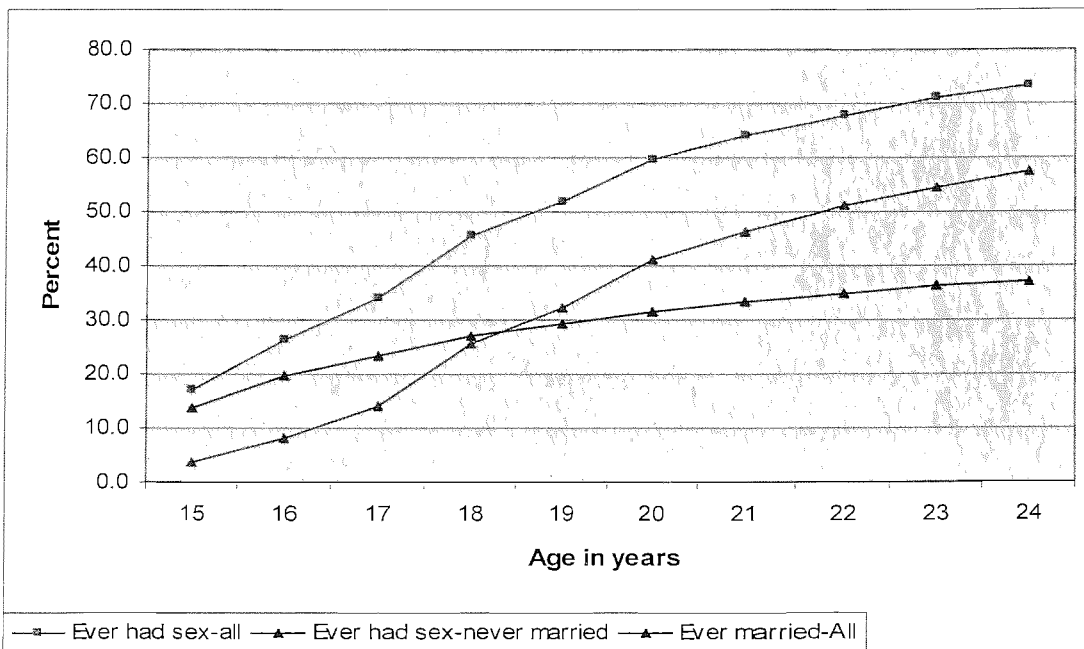


Figure 5. 2 Cumulative proportion of those that have ever had sex and ever married among young women aged 15-24 in Uganda, UDHS 2000/1



proportion of the sexually active among the never married group rises.

One way to deal with the selection effect in the sample for the current study is to adjust the data for differences in age at first marriage in the populations from which the samples were drawn. However, the data on age at first marriage are not available. The nearest estimates of age at first marriage are those obtained from the UDHS 2000/1 for western and central regions of the country where Kabale and Mukono are situated respectively.

5.3 Marriage patterns in western and central regions of Uganda

The level of sexual exposure among unmarried young people is influenced by the increasing proportion of those who are married by age in the general population as shown in the previous sub-section. Figure 5.3 shows the cumulative proportion of those who are married among men aged 15-24 in western and central regions compared with the national level. The regions are selected because Kabale is in the western region while Mukono is in the Central regions. While the cumulative proportion of those who are married in central region is lower than that of the national level for most of the age range, the one for the western region is nearly the same with the national level after 18 years of age. The cumulative proportion curve for the western region is further characterised by a sharp increase in the proportion marrying at age 21. This contrasts with a relatively steady rise in the proportion that was married by age in the central region.

Figure 5. 3 Cumulative proportion of married men in age group 15-24 in central and western regions of Uganda, UDHS 2000/1

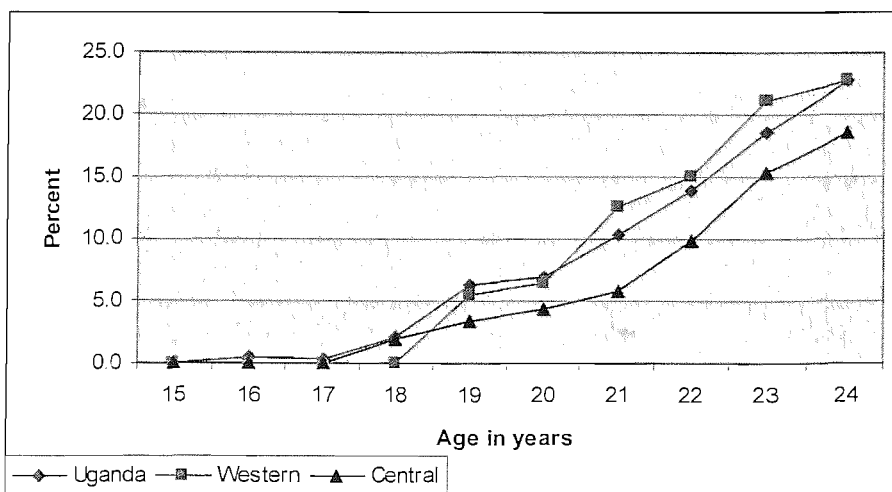
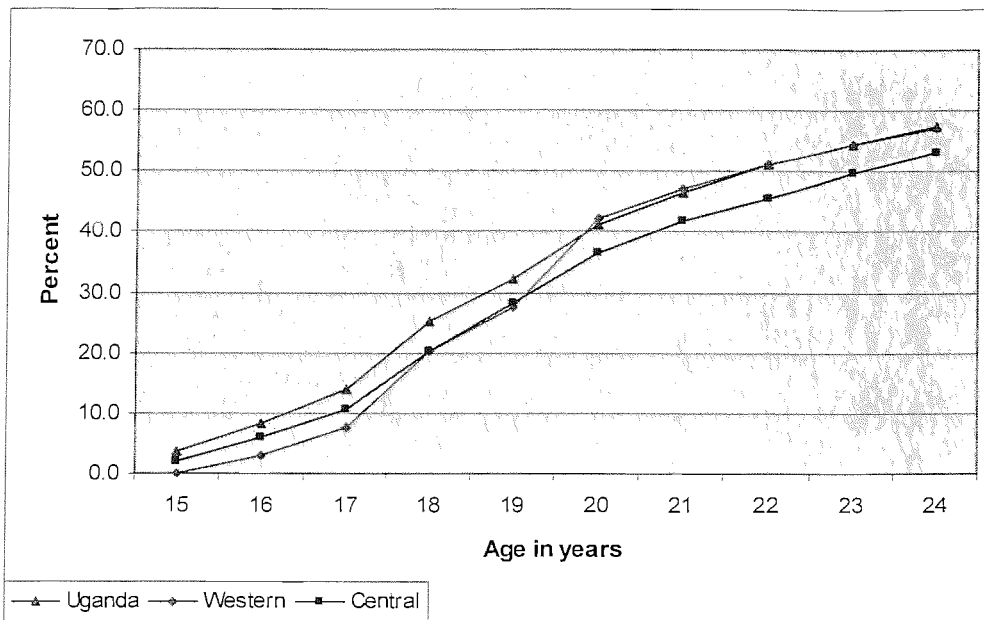


Figure 5.4 shows the cumulative proportion of married women in age group 15-24. Before 20 years of age, the cumulative proportion of married women in western region is lower

Figure 5. 4 Cumulative proportion of those who are married among women aged 15-24 in western and central regions of Uganda, UDHS 2000/1



than that of the central region and the national level. In the same region, there is a sharp rise in the cumulative proportion of married women at 18 years and another sharp rise at 20 years of age. The figure shows that there is a steadier rise in the proportion of married women in the central region by age compared to that for western region. The same pattern was found among men.

The differences in cumulative proportion of those who are married between different regions shown above are a reflection of differences in sexual exposure. The difference in the nature of the cumulative curves for men and women is expected since they have different ages at first marriage. Men marry at older ages compared to the women. An indirect way to adjust for differences in marriage patterns is to standardise the age distribution of the respondents. There is no fully acceptable solution for the selection bias (Rubio et al., 2000) especially when the data have already been collected.

5.4 Standardization

Standardization enables comparison of a summary measure across groups of respondents. When the data are standardized by age the effects of differences in age composition, which

directly affect age at first marriage, are minimised. However, standardization may obscure what is going on in each age group and that is why age specific rates should be compared to see whether the contrasts between study populations vary greatly with age (Berry and Harrison, 2005).

Age standardization can be direct or indirect. In direct standardization, age specific rates of occurrence of an event of interest in the study population are applied on the standard population to compute the overall rate of occurrence; in indirect standardization, age specific rates in the standard population are applied to the study population. Direct standardization is the preferred option; indirect standardization is applied when the age specific rates of occurrence of an event in the study population are not available or the rates are based on small numbers of observations (SHOW, 2002).

The standard population used in the standardization process was the unmarried young people selected from the 2000/1 Uganda Demographic and Health Survey (UDHS). The UDHS data were selected because they were the only accessible and most recent national data. The survey results have a sufficient number of records for the unmarried people aged 15-24 (589 men and 1324 women) and the quality of data was fairly high. The percent of observations missing data on date of birth and age at first union was 0.11 and 0.96 respectively (UBOS and ORC Macro, 2001).

The ratio of the expected to the observed number of young people that were sexually exposed in the standard population was computed using the direct standardization method. The ratio of the expected to the observed is analogous to the Comparative Mortality Ratio (CMR) used in mortality studies (Feinleib and Zarate, 1992) and, for the purpose of this study, it is called Comparative Sexual Exposure Ratio (CSER). CMRs are also known as Comparative Mortality Figures (CMFs) and Standardized Rate Ratios (SRRs). A CMR can be used to compare different areas or levels of characteristics as well as the standard population (Ministry of Health, 2005).

5.5 Age distribution of the study and UDHS 2000/1 respondents

Figures 5.5 and 5.6 show the age distributions of respondents in Mukono and Kabale compared with the respondents in the UDHS 2000/1 samples. The age distribution of men differed by district amongst the under 19s and those over 22 years of age. The major

Figure 5. 5 Age distribution of unmarried men aged 15-24 in the study and standard populations

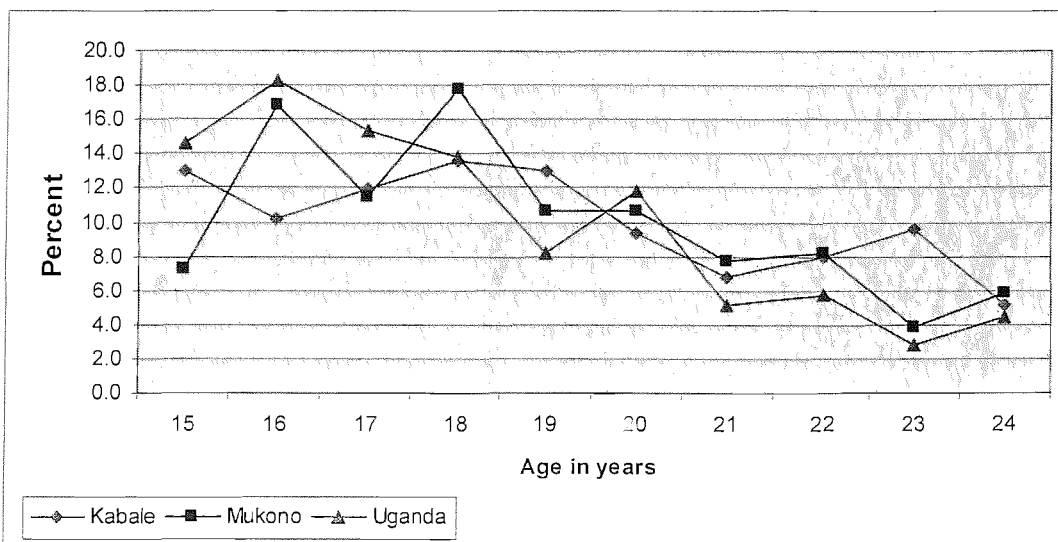
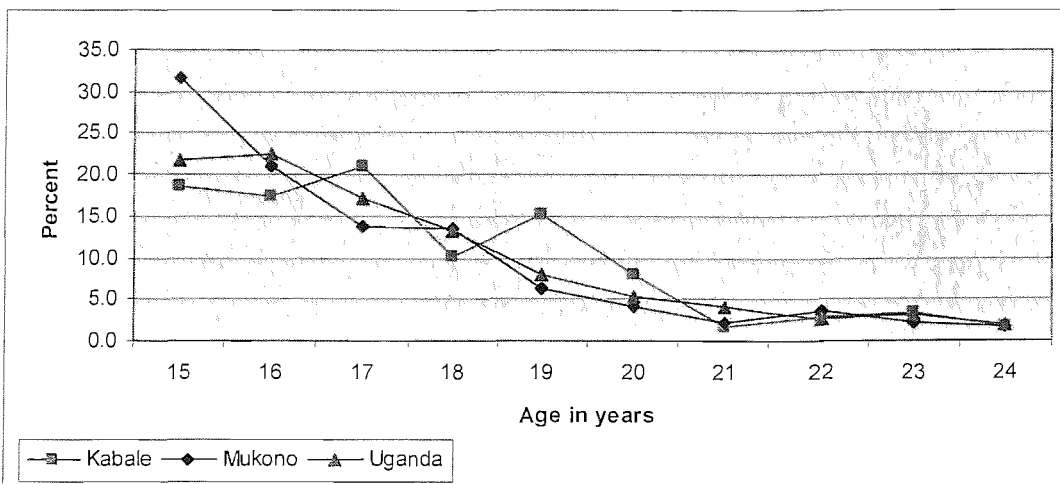


Figure 5. 6 Age distribution of unmarried women aged 15-24 in the study and standard populations



difference in the age distribution of men occurred at 15 and 16 years of age. Female respondents from Mukono had a higher proportion aged 15 and 16 years compared to Kabale and the country level.

While there were differences in age distribution between districts studied and between the districts and the national level, there were no major differences at regional level according to the UDHS data. Figure 5.7 shows that there were some differences at 15 and 20 years of age between western and central regions among men, while Figure 5.8 does not show any outstanding difference in age distribution among women.

Figure 5. 7 Age distribution of unmarried men aged 15-24 in western and central regions of Uganda, UDHS 2000/1

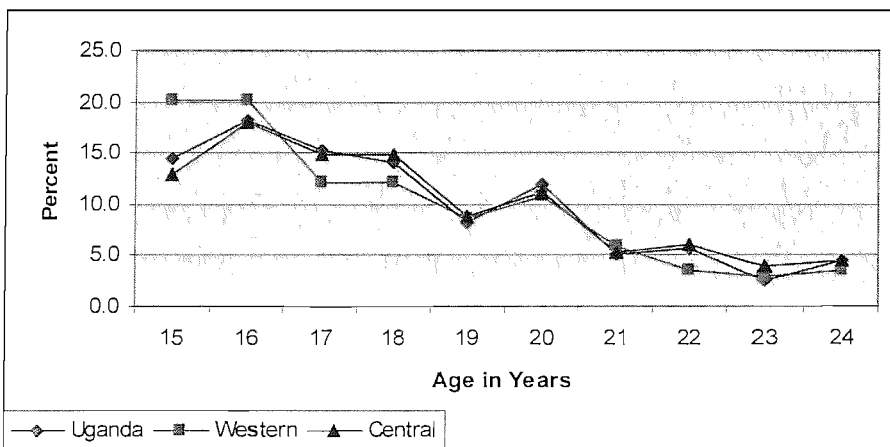
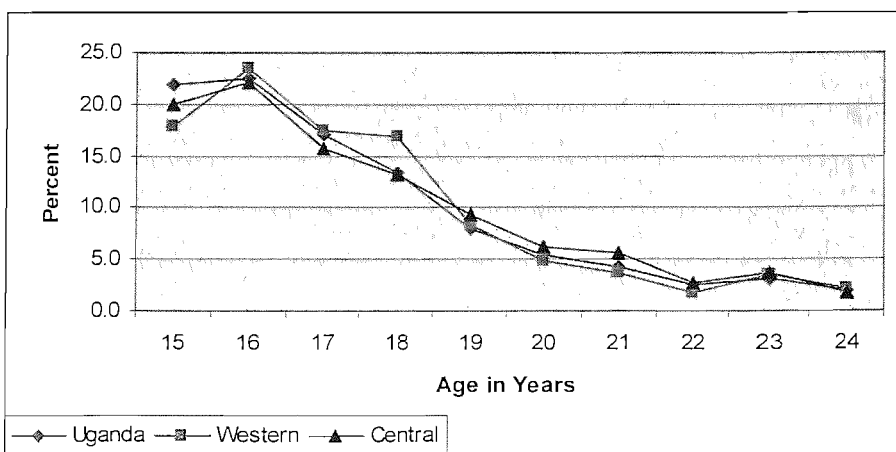


Figure 5. 8 Age distribution of unmarried women aged 15-24 in western and central regions of Uganda, UDHS 2000/1



Another way to compare age distributions is to examine the summary measures. The median is a more appropriate summary measure than the mean because the age distributions are positively skewed. Table 5.2 shows a comparison of the median age by

Table 5. 2 Median age of respondents by gender and background characteristics

Variables	Kabale		Mukono	
	Male	Female	Male	Female
In school				
No	19.0	18.0	18.0	19.0
Yes	18.0	17.0	21.0	16.0
Listens to radio				
No	17.0	17.0	18.0	16.0
Yes	19.0	17.0	18.0	16.0
Religion				
Catholic	19.0	17.0	19.0	16.0
Protestant	18.0	17.0	18.0	17.0
Moslem	--	--	17.5	16.0
Pentecostal/Evangelical	--	--	18.5	17.0
Drinks alcohol				
No	18.0	17.0	18.0	16.0
Yes	19.0	18.0	21.0	16.0
Length of stay				
<=5 years	19.0	17.0	18.5	17.0
>5 years	19.0	17.0	18.0	16.0
Resides with				
Both parents	18.0	17.0	18.0	16.0
Other	19.0	17.0	19.0	17.0
Financial support source				
Parents	18.0	17.0	17.5	16.0
Self	20.0	18.5	20.0	19.5
Others	19.0	18.0	18.0	16.0
Discussion with parents				
Occasionally/not at all	19.0	17.0	18.0	16.0
Often	18.0	17.0	19.0	16.0
Attended party/club last month				
No	18.0	17.0	18.0	16.0
Yes	20.0	17.0	19.0	16.0
Ever been indecently assaulted				
No	18.0	17.0	18.0	16.0
Yes	19.5	17.0	19.0	16.0
Attitude to abstinence				
Low/Medium positive	19.0	18.0	19.0	17.0
High positive	18.0	17.0	18.0	16.0
Incomplete score†	18.0	17.0	19.5	16.0
Peer Pressure				
No	18.0	17.0	19.0	16.0
Yes	19.0	17.0	18.0	16.0
All	19.0	17.0	18.0	16.0

†Did not answer all questions for the abstinence score

different characteristics. The median age is shown to the nearest half a year because the age was reported as whole numbers. The table shows that the male respondents were older

than the women, and those who resided in Kabale were older than those in Mukono. Other categories of respondents that were generally older were those who were not in school, did not reside with parents, drank alcohol and were financially self-reliant. Among men, other categories with higher median age included those who experienced peer pressure to have sex, experienced indecent assault, attended parties and had stayed at their place of residence for a short time (≤ 5 years).

Compared to the national median age at first marriage, most women had reached the time of first marriage (median: 18 years) while most men had not yet reached the time (median: 22 years) (UBOS and ORC Macro, 2001). The differences in age distribution shown above, when not adjusted for, may distort the true pattern of sexual exposure.

5.5 Age standardization

The age standardized proportion of sexual exposure is given as

$$P = \frac{\sum_{j=1}^J e_j}{\sum_{j=1}^J n_j} \quad (5.1)$$

where $e_j = p_j \times n_j$

p_j = proportion who have ever had sex in age group j in the study population

n_j = number of people in the standard population within age group j

A CSER is computed from the expected total number of young people who have ever had sex in the standard population (if the standard population had the same age specific sexual exposure as the study population) and the actual number of young people in the standard population who have ever had sex. That is,

$$CSER = \frac{\sum_{j=1}^J e_j}{\sum_{j=1}^J o_j} \quad (5.2)$$

where

o_j = number of people in the standard population in age group j who have ever had sex

The 95 percent confidence intervals have been computed for the CSERs using the Simple Interactive Statistical Analysis (SISA) package for Standard Mortality Rate (SMR) or CMR analysis (Uitenbroek, 1997).

Table 5.3 shows the standardized proportions of those who have ever had sex. If the national population of young people aged 15-24 had experienced the same age specific sex

Table 5. 3 Direct standardization of the proportion that has ever had sex in the study sample using UDHS 2000/1 as standard population

Age group <i>j</i>	Ever had sex in study popn (%) <i>p_j</i>		UDHS 2000/1 Standard popn <i>n_j</i>		UDHS 2000/1 # ever had sex <i>o_j</i>		Expected number ever had sex in standard population <i>e_j</i>		
	Males	Females	Males	Females	Males	Females	Males	Females	
1	15-16	37.4	36.8	193	586	38	114	72	216
2	17-18	53.8	56.9	172	402	77	154	93	229
3	19-20	69.9	71.9	118	178	72	98	82	128
4	21-22	86.4	76.2	63	90	53	70	54	68
5	23-24	76.1	83.3	43	68	36	56	33	57
All		61.0	52.4	589	1324	276	492	334	698
Standardized proportion								56.8	52.7
CSER								1.21	1.42

exposure as those in Kabale and Mukono districts, 57 percent of men and 53 percent of women would have had sex. The standardized proportion that has ever had sex was lower than the observed proportion among men (from 61 percent) and slightly higher among women.

Table 5.4 shows the age standardized levels of sexual exposure by gender and different background characteristics. The differences between standardized and unstandardized sexual exposure rates are a reflection of differences in the age distributions seen in Figures 5.5 and 5.6. The greater the difference of the study sample age distribution from the UDHS distribution, the greater the difference between standardized and unstandardized sexual exposure rates. This explains the relatively larger differences between standardized and unstandardized sexual exposure rates of men compared to those of women. In particular, the difference between standardized and unstandardized rates of at least four percentage

Table 5. 4 Age standardized and unstandardized proportions of young unmarried men and women that had ever had sex

Variable	Men		Women	
	Standardized	Unstandardized	Standardized	Unstandardized
District				
Kabale	45.2	50.9	51.1	53.1
Mukono	66.5	69.7	55.3	51.8
In school				
No	64.7	74.8	79.2	78.7
Yes	51.5	52.1	43.8	38.9
Listens to radio				
No	48.9	50.0	51.2	48.8
Yes	58.6	62.8	53.4	54.0
Religion				
Catholic	46.2	54.2	50.0	49.0
Protestant	60.0	63.7	54.0	55.4
Moslem	66.8	67.4	--	64.4
Drinks alcohol				
No	52.9	54.2	50.4	49.1
Yes	68.9	78.2	63.7	66.7
Length of stay				
<=5 years	65.4	69.5	57.2	56.1
>5 years	51.2	55.4	50.2	50.2
Resides with				
Both parents	52.3	56.9	49.8	48.9
Other	67.7	71.6	64.8	65.5
Financial support source				
Parents	52.5	53.8	47.8	46.0
Self	70.7	78.5	71.5	76.0
Others	52.1	55.7	55.7	56.3
Discussion with parents				
Occasionally/not at all	58.4	65.6	53.4	53.5
Often	38.8	40.7	47.0	43.2
Attended party/club last month				
No	45.7	47.4	49.4	49.0
Yes	75.8	81.7	60.5	61.1
Ever been indecently assaulted				
No	43.8	44.9	37.1	36.8
Yes	74.8	79.8	61.9	61.9
Attitude to abstinence				
Low/Medium positive	74.3	79.6	69.9	70.2
High positive	44.7	47.4	47.6	46.6
Incomplete score†	--	68.0	43.0	44.3
Peer Pressure				
No	56.9	59.9	48.3	46.3
Yes	58.8	62.3	56.0	57.8
All	56.8	61.0	52.7	52.4

Bold= change of at least 4 percent points as a result of standardization †=Did not answer all questions for the abstinence score

points were observed among men who resided in Kabale, were not in school, listened to radio, were Catholics, drank alcohol, resided with both parents, supported themselves

financially, did not often discuss sexual matters with parents, attended party or club in the previous month and had low attitude towards abstinence. Among women, similar differences were observed among those who resided in Mukono, were in school, supported themselves financially and often discussed sexual matters with their parents. The differences which were at least four percentage points are shown in bold in Table 5.4.

There was a reversal of levels of sexual exposure after standardization for women characterized by district and listening to radio. Before standardization, the level of sexual exposure among Mukono women was lower than that among Kabale women and the level among women who listened to radio was higher than that of those who did not listen to radio. However, after standardization, the level of sexual exposure was higher among Mukono women and among those who listened to the radio.

A comparison of age standardized levels of sexual exposure by different characteristics shows that the level was higher if the respondent resided in Mukono, was not in school, was Protestant/Muslim, took alcohol, had stayed at place of residence for a short while (≤ 5 years), did not share residence with parents, was self reliant financially, did not discuss sexual matters with parents, attended parties or clubs, had been indecently assaulted and had a low attitude to abstinence.

Table 5.5 shows the CSER by gender and background characteristics. The results show that, if unmarried women in the UDHS survey experienced the same age specific sexual exposure as those in the study population, then their overall risk of sexual exposure would be 42 percent higher. Among men, similar exposure would increase the overall risk of having sex by 21 percent but it would not be significant at the 5 percent level. While the CSER was significant for levels of some characteristics among males it was significant for most of the characteristics among females. The CSER was not significant among males if they were in school, did not listen to radio, were Catholic, did not drink alcohol, had a long length of stay (> 5 years) at place of residence, resided with both parents, received support from parents or other people, often discussed sexual matters with the parents, did not attend parties/clubs, were never indecently assaulted, had a high positive attitude to abstinence and did not experience peer pressure to have sex. The level of sexual exposure among women who have never experienced indecent assault was not significantly higher than that of women in UDHS.

Table 5. 5 Comparative Sexual Exposure Ratios (CSER) by levels of background characteristics

Variables	Men		Women	
	CSER	95%CI	CSER	95%CI
District				
Kabale	0.96	0.81-1.14	1.38*	1.22-1.55
Mukono	1.42*	1.22-1.66	1.49*	1.33-1.67
In school				
No	1.38*	1.12-1.62	2.13*	1.92-2.38
Yes	1.10	0.94-1.23	1.18*	1.04-1.33
Listens to radio				
No	1.04	0.88-1.23	1.38*	1.23-1.55
Yes	1.25*	1.07-1.47	1.44*	1.28-1.61
Religion				
Catholic	0.99	0.83-1.17	1.34*	1.20-1.51
Protestant	1.28*	1.10-1.50	1.45*	1.30-1.63
Moslem	1.43*	1.22-1.67	--	--
Drinks alcohol				
No	1.13	0.96-1.33	1.36*	1.21-1.63
Yes	1.47*	1.26-1.72	1.72*	1.54-1.92
Length of stay				
<=5 years	1.40*	1.20-1.63	1.54*	1.37-1.73
>5 years	1.09	0.93-1.29	1.35*	1.20-1.52
Resides with				
Both parents	1.12	0.95-1.31	1.34*	1.19-1.51
Other	1.45*	1.24-1.69	1.74*	1.56-1.92
Financial support source				
Parents	1.12	0.95-1.32	1.29*	1.14-1.45
Self	1.51*	1.30-1.76	1.92*	1.73-2.15
Others	1.11	0.95-1.31	1.50*	1.34-1.68
Discussion with parents				
Occasionally/not at all	1.25*	1.06-1.46	1.44*	1.28-1.61
Often	0.84	0.69-0.98	1.27*	1.12-1.42
Attended party/club last month				
No	0.98	0.82-1.15	1.33*	1.18-1.49
Yes	1.62*	1.39-1.88	1.67*	1.49-1.82
Ever been indecently assaulted				
No	0.94	0.79-1.11	1.00	0.88-1.13
Yes	1.60*	1.37-1.86	1.67*	1.49-1.87
Attitude to abstinence				
Low/Medium positive	1.59*	1.37-1.83	1.88*	1.69-2.10
High positive	0.96	0.81-1.13	1.28*	1.14-1.44
Incomplete score†	--	--	1.16*	1.03-1.31
Peer Pressure				
No	1.21*	1.04-1.43	1.30*	1.16-1.46
Yes	1.25*	1.07-1.47	1.51*	1.35-1.65
All	1.21*	1.03-1.42	1.42*	1.27-1.59

*=Significant at 5 percent level †=Did not answer all questions for the abstinence score --very few observations

Most notable high levels of sexual exposure among women were those who were not in school with CSER of 2.1 (CI: 1.92-2.38), those who were financially self reliant with CSER of 1.9 (CI: 1.73-2.15) and those with low attitude to abstinence with a CSER of 1.9 (CI: 1.69-2.10). This means that if the sample of unmarried women in the UDHS experienced the same age specific sexual exposure as those who were not in school in the study sample, their risk of sexual exposure would double. Similarly, those who were self-reliant financially and those with low attitude to abstinence experience 90 percent higher risk of sexual exposure.

5.6 Discussion

The study has shown the sexual exposure pattern of unmarried young people aged 15-24. It has shown categories of young people in the study population that have high and low levels of sexual exposure relative to the national sample of unmarried people. There was a higher level of sexual exposure among young people who resided in Mukono, were not in school, took alcohol, had stayed at place of residence for a short time (≤ 5 years), did not reside with parents, were financially self reliant, did not discuss sexual matters with parents, attended parties, had ever been indecently assaulted and had a low attitude to abstinence. The standardization procedure slightly raised the level of sexual exposure among women but it reduced it among males. The difference in sexual exposure between men and women reduced. This chapter has also shown that the commonest reason for delaying sexual exposure is fear of HIV/AIDS.

The higher level of sexual exposure in Mukono can possibly be explained by higher urbanisation compared to Kabale. Urban residence has been associated with earlier sex initiation in other studies (Lammers et al., 2000; Shrier and Crosby, 2003; Toroitich-Ruto, 1997).

The difference in sexual exposure by schooling status can possibly be explained by the activities the young people get involved in while at school. There are numerous HIV/STD prevention programmes which are currently being implemented in schools. The programmes have many activities which can occupy young people for most of their free time and this may lead to low sexual activity. Being in school and participation in school clubs has been found to be associated with late sexual exposure (O'Rourke et al., 2004;

Lloyd, 2004). Young people may also choose to stay at school, suggesting that they have more plans for their future and may consequently take fewer risks. Another view can be that they may fear the effects of expulsion from the school management.

The findings on alcohol consumption are in accord with many studies which have found a strong link between alcohol consumption and early sexual exposure (Murray et al., 1998; Graves and Leigh, 1995). Alcohol consumption reduces a person's self control and can also be an indicator of a risky lifestyle in general.

Low sexual exposure among young people who discuss sexual matters with their parents can be explained by emotional support and general advice given by their parents. Similar findings have been reported by other researchers (Twa-Twa, 1997; Lammers et al., 2000; Bearman and Brückner, 1999). The same explanation may apply for low level of sexual exposure among those who reside with their parents.

Higher sexual exposure among those who had stayed for a short length of time at place of residence can be explained by changing living environments and neighbourhood some of which may tempt young people to initiate sex. Several studies have shown higher sexual exposure among mobile people (United Nations, 2005).

The young people who were financially supported by their parents in terms of school fees and day-to-day expenses had a lower level of sexual exposure compared to those who supported themselves. This is probably due to higher level of Socio-Economic Status (SES). Low SES amongst young people tends to make them vulnerable to early sexual exposure (Schvaneveldt et al., 2001; Magnani et al., 1999; Simbayi et al., 2004).

The young people who avoided parties or clubs had a lower level of sexual exposure compared to those who did not avoid them. This was more evident among men than women. This is possibly due to alcohol consumption and the environment in which young people experience at parties. Poorly organised parties may expose young people to risky sexual practices. This lack of organisation is commonly associated with traditional parties which last through the night when there is no suitable accommodation for visitors.

The higher level of sexual exposure among young people who had a poor attitude to abstinence is not surprising. Positive attitudes to initiation of sex have long been associated with early sexual experience (Murray et al., 1998; Stallworth et al., 2004; Carvajal et al., 1999), although since no measure of attitudes towards abstinence was obtained prior to sexual initiation, it is difficult to be sure of causal relationship.

High CSERs show that the level of sexual exposure among respondents was higher than that of the national DHS sample. This may be attributed to the selection of the respondents. They were more urban than the national sample.

It is important to note that fear of HIV/AIDS is the commonest reason for delaying sex. In other communities elsewhere it has been shown that young people fear pregnancy more than HIV/AIDS (Chin and Nakonthum, 2002).

Like other sexual activity indicators, the proportion that has ever had sex is subject to social desirability bias possibly resulting in underestimate or over estimate depending on gender (APHEO, 2004) and other characteristics of the respondents. Therefore, the observed differences in sexual exposure between men and women may be less given that women are less likely to report having ever had sex. It is also probably that women are more sexually exposed than men.

5. 6 Conclusion

The level of sexual exposure in the study sample was significantly higher than that of the national level. The level varied by different background characteristics. Without standardization the levels and differentials of sexual exposure can be overestimated or underestimated.

Programmes and policies geared at delaying sexual activity among young people need to consider the vulnerability of those who are not in school, those who drink alcohol, do not reside with their parents, are self reliant, party goers and those who are indecently assaulted.

CHAPTER SIX

6. SECONDARY ABSTINENCE

This chapter establishes the levels of reported secondary abstinence for a period of twelve, six and three months using the Event History Calendar (EHC) data, compares the levels with those obtained using the main questionnaire data and identifies major factors associated with them. The levels of secondary abstinence were computed from the EHC data using the length of abstinence episodes as explained in the third chapter while from the questionnaire a question on the number of sex partners in twelve, six and three months before the survey date was used to identify those abstaining. Whereas abstinence episodes of the same duration in the EHC could have different start and end dates the periods of abstinence in the questionnaire were measured retrospectively from the survey date.

Three major hypotheses are tested in this chapter. Firstly, socio-demographic and behavioural characteristics of the respondents have an influence on the length and probability of abstaining for a given period. Secondly, socio-demographic and behavioural characteristics of the respondents have a significant influence on the hazard of discontinuation of abstinence. Thirdly, the hazard of discontinuing abstinence is significantly affected by unexplained random village or parish level effects. Any mention of abstinence in this chapter refers to secondary abstinence unless otherwise stated.

The first part of the chapter describes secondary abstinence episodes and determines the level of twelve-month abstinence. The second section presents the levels of twelve month abstinence by different characteristics of the respondents and compares the EHC and the questionnaire based abstinence measures. The third section presents a multivariate analysis of the probability of abstaining, the probability that an episode was six or more months long and the hazard of discontinuation of an abstinence episode. Multivariate logistic regression is used to model the probabilities; while a piecewise constant hazard model is used to model the risk of discontinuing an abstinence episode for only those episodes that started from April 2003. Left truncated episodes are not included in any of the episode analyses.

6.1 Episodes of secondary abstinence

This section describes the episodes by type and length in months, shows the pattern of discontinuation of secondary abstinence episodes in terms of when they occurred and the cumulative probability of discontinuation.

6.1.1 Description of the episodes

Analysis of secondary abstinence relies on episodes of abstinence obtained from an Event History Calendar (EHC). The number of young people that had ever had sexual exposure was 445 (57 percent) out of 786 interviewed. Table 6.1 shows the type of secondary abstinence episodes in the study. In the 13 months prior to the survey date, there were 542 episodes of abstinence by 328 young people (Table 6.1). The rest (117) did not abstain for a period of at least one month. Nineteen of the episodes (3.5 percent) started before April 2003 but with start dates known while 173 (32 percent) of the episodes started before April 2003 with start dates unknown. Both kinds of episodes that started before April 2003 were left truncated, leaving 350 (65 percent) of episodes from 245 young people. A crude comparison probability of discontinuation in 6 and 12 months between truncated and non-truncated episodes showed no significant differences. There were no non-responses for EHC questions.

Table 6. 1 Types of episodes of secondary abstinence

Type	Number	%
Left truncated (start dates unknown)	173	32.0
Start dates known but before April 2003	19	3.5
Uncensored and start date from April 2003	167	30.8
Right-censored episodes with start dates from April 2003	183	33.8
All	542	100.0

Figure 6.1 presents the distribution of the length of the 350 non-truncated abstinence episodes. The distribution was positively skewed with the commonest length being one month and the least common being ten months. Of the 183 episodes which were right-

censored, 29 (16 percent) were 13 months long. This implies 29 young people abstained from April 2003 to April 2004.

Table 6.2 presents the median length of the episodes. Two thirds of the respondents (164) that had non-truncated episodes had one episode while a quarter (63) had two episodes. Few had three or four episodes. One explanation for the distribution is that most participants were young people who had had their first relationship. Latest episodes tended to be shorter than the first ones.

Table 6.3 shows the median length of uncensored episodes only. Nearly 70 percent of the respondents had only one uncensored episode. For those who had two uncensored episodes, the second one was shorter than the first one by one month. Although few respondents had two or more episodes the trend of lengths of their abstinence episodes is not unexpected.

Figure 6. 1 Distribution of the length of abstinence episodes

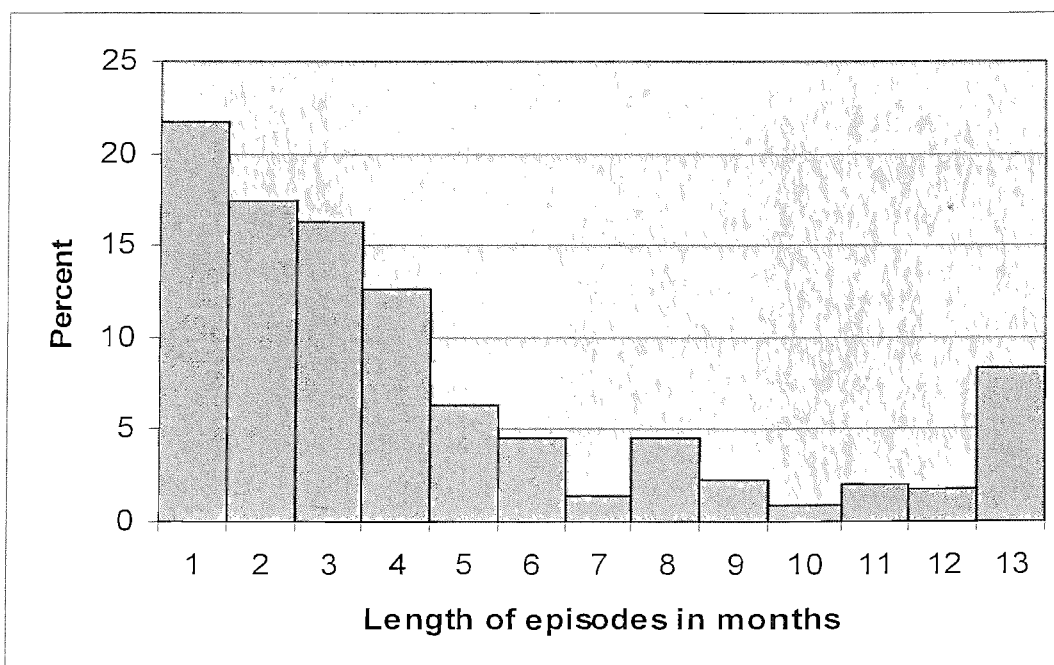


Table 6. 2 Median length of episodes in months by order of occurrence

Number of episodes	Respondents	order of occurrence			
	<i>n</i>	First	Second	Third	Fourth
One	164	4.0			
Two	63	3.0	3.0		
Three	12	2.5	3.0	1.5	
Four	6	1.5	1.5	1.0	1.0
All	245	3.0	2.0	1.0	1.0

Table 6. 3 Number and median length of uncensored episodes in months

Episodes	Number of respondents	Order of occurrence of episodes			
	<i>n</i>	First	Second	Third	Fourth
One	82	3.4			
Two	23	3.0	2.0		
Three	9	1.0	2.0	1.0	
Four	3	2.0	1.0	2.0	1.0
All	117	3.0	2.0	1.0	1.0

Reason for abstaining

Table 6.4 shows reasons for abstaining more than one month in the current relationship. The table is meant to provide some rough idea of why sexually active young people abstain. The details of abstinence between relationships and other times that were not in current relationship could not be obtained due to memory lapse and inconsistencies as found in the pilot study.

The commonest reason for abstaining is absence of partner (48 percent). Only 13 percent intentionally abstained.

Table 6. 4 Major reason for abstaining for more than one month in the current relationship

Reasons	Male (% of 85)	Female (% of 75)	All (% of 160)
Lover was away	47.1	49.3	48.1
Avoided disruption	21.2	29.3	25.0
Abstain/avoid pregnancy	17.7	8.1	13.2
Others	14.1	13.3	13.7
All	100.0	100.0	100.0

6.1.2 Discontinuation of secondary abstinence episodes

This sub-section describes the timing of the discontinuation of the episodes by month of the year and day of the week, and looks at the cumulative probability of discontinuation of the abstinence episode and the rate of discontinuation.

Time of discontinuation of abstinence episode

The earliest month of discontinuation was May 2003 for the episodes that started April 2003 and the latest discontinuation month was April 2004. Figure 6.3 shows that most young people discontinued abstinence episodes in December and April. These are holiday and festive months. In December there is Christmas while in April there is Easter. The months with the lowest sexual activity were from May 2003 to August 2003. October 2003 was also a low-sexual activity month but only in Mukono while November 2003 was a low sexual activity month in Kabale. In Kabale, discontinuation was also relatively high in August, September and October compared to the previous months because of harvest period in the district. The period is characterised by parties and a lot of merry making. It is important to note that low discontinuation rates for the time before November 2003 may be due to left truncation of some episodes.

Figure 6. 2 Months of discontinuation of abstinence episodes excluding censored ones

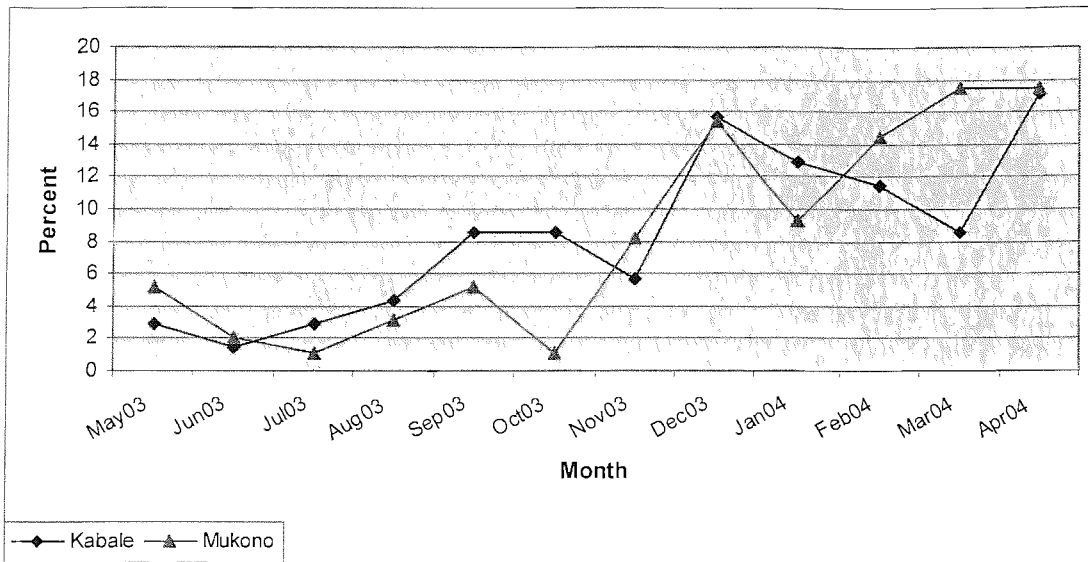
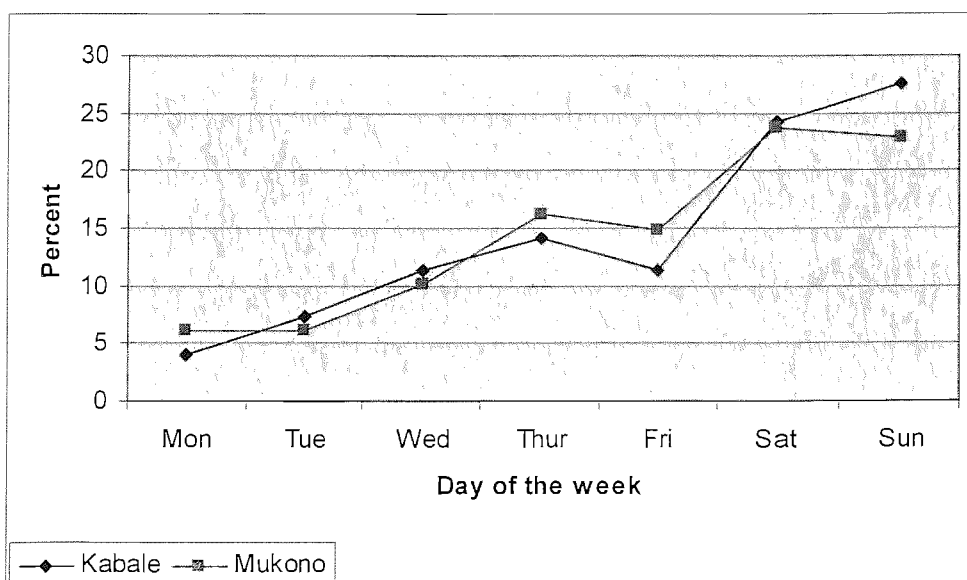


Figure 6.3 shows the days when discontinuation of abstinence occurs. For all young people in the study that had their most recent sex in previous twelve months the days of the week on which discontinuation occurred were Saturday and Sunday. A decline in sexual activity on Friday, though not significant, may be attributed to workload at home in preparation for weekend activities, having been busy for four days. Most students were non-residents and possibly they are busier on Friday than Thursday since they have to prepare for the weekend domestic, economic and leisure activities.

Figure 6. 3 Day of the week on which latest discontinuation occurred



Cumulative probability of discontinuation

Cumulative probabilities of discontinuation within twelve months of episodes of a practice such as family planning have been used by several researchers to make comparisons between different categories of variables. The same measure was used in the analysis of contraceptive use dynamics in Leite (1998) and Ali et al. (2004), and in estimation of contraceptive failure probabilities (Cleland and Ali, 2005). In the current study, cumulative probabilities of discontinuation of abstinence episodes from the Event History Calendar (EHC) have been computed using the single decrement life table technique. The technique has been applied elsewhere to estimate contraceptive failure probability (Cleland and Ali, 2005) but in this case the “failure” is discontinuation of abstinence.

Life tables depict transition from one state to another (Hinde, 1998). In a classical life table, the columns present age related functions pertaining to mortality including the number of cohort members still alive at the start of each age interval, the number of deaths, age specific death rates, the probability of dying and the remaining expectation of life at particular ages (Den Draak, 2003). Cumulative probabilities of surviving up to a certain age or dying before a given age can easily be read from the life tables. Analysis of other forms of transition can use life table techniques. In the current study, the transition is from abstinence to non-abstinence which is referred to as a single decrement as opposed to multiple decrements where various modes of exits occur. An example of multiple decrements is the transition from non-use of contraceptives to use of condoms, use of pills, injections and others.

Use of a life table requires information on date of entry of observation, date of experiencing the event of interest, date of exit from the study and date of stopping data collection (Den Draak, 2003). As explained in third chapter, use of the Event History Calendar (EHC) enabled extraction of retrospective information of month of start and end of abstinence episodes. The survey date is equivalent to date of stopping data collection.

The data on episodes were reshaped to have a record corresponding to each person-month. Therefore the interval duration became one month which is the smallest unit of time in the study. Since the number of events of discontinuation of abstinence (d) in a month (x) and

the number of censored (c) records could easily be established, a normal single decrement life table could be computed. To use the life table, the assumptions were made that:

- Events and censoring occurred uniformly during the fixed time intervals. There are no systematic differences between censored and uncensored durations. Excluding censored observations leads to bias and may drastically reduce sample size (Steele et al., 2005).
- On average a half of the censored records in a month are not exposed to the risk of discontinuation.
- The distribution of censoring times for each comparison group is independent of the survival times.

With the above assumptions the cumulative probability of discontinuation at time t , F_t was estimated by

$$F_t = 1 - l_t$$

$$l_t = \prod_{x=0}^{t-1} p_x$$

$$p_x = 1 - q_x$$

$$q_x = \left(\frac{d_x}{n_x - \frac{1}{2}c_x} \right)$$

x = survival time

q_x = probability of discontinuation during $x - x + 1$ interval

d_x = number of discontinuations during $x - x + 1$ interval

c_x = number of abstinence episodes censored during $x - x + 1$ interval

n_x = number of abstinence episodes at x the start of interval

Table 6.5 shows a life-table constructed based on the formula above. For the first month where the number of discontinuations (d_0) is 47 and the number of episodes (n_0) at start of interval is 350 with 29 right-censored episodes (c_0) the survival probability can be computed by

$$l_1 = 1 - q_0 = 1 - \left(\frac{47}{350 - \frac{1}{2} \times 29} \right) = 1 - 0.14 = 0.86$$

For the second month the cumulative survival probability

$$l_2 = l_1 \times (1 - q_1) = 0.86 \times 1 - \left(\frac{43}{274 - \frac{1}{2} \times 18} \right) = 0.86 \times 0.84 = 0.72$$

Since $F_2 = 1 - l_2$ the cumulative probability of discontinuation

$$F_2 = 1 - 0.72 = 0.28$$

Table 6.5 shows that the overall cumulative probability of discontinuing an abstinence episode using the life table method in a period of 13 months was 0.64 implying the cumulative probability of not discontinuing was 0.36.

Table 6.6 shows the cumulative probability of discontinuation of abstinence for different levels of key variables using the same calculations as in Table 6.5. Only variables with at least a marginal level of significance in relationship with discontinuation of abstinence are shown. The cumulative probability of discontinuation was significantly higher among those who drank alcohol and attended parties than those who did not. Among men, additional factors, higher age at first sex and discussion of sexual matters with parents, contributed significantly to a higher cumulative probability of discontinuation while, among women, being in school was a significant factor. A higher cumulative probability of discontinuation among those who discussed sexual matters with their parents can be explained by the fact that the discussions could have taken place after the young people had got involved in sexual activities. There were no significant differences in the cumulative probability of secondary abstinence by district, age group, rural/urban residence, listening to radio, reading newspapers, type of partner at first sex or being in school for either males or females.

Table 6. 5 Life table for secondary abstinence discontinuation

Survival time	Episodes at start of interval	Discontinuations during the interval	Censored Episodes during interval	Survival at start of interval	Cumulative probability of discontinuation at start of interval
x	n_x	d_x	c_x	l_x	F_x
0	350	47	29	1.00	0.00
1	274	43	18	0.86	0.14
2	213	30	27	0.72	0.28
3	156	15	29	0.61	0.39
4	112	13	9	0.55	0.45
5	90	8	8	0.48	0.52
6	74	3	2	0.44	0.56
7	69	4	12	0.42	0.58
8	53	2	6	0.39	0.61
9	45	0	3	0.38	0.62
10	42	2	5	0.38	0.62
11	35	0	6	0.36	0.64
12	29	0	29	0.36	0.64

A close examination of the discontinuation curves for alcohol consumption and attending parties shows that the risk of discontinuation started reducing after the fifth month of abstinence (Figures 6.5 and 6.6). The graphs confirm earlier results that show those who drink alcohol or attend parties to be at higher risk of discontinuation of abstinence episodes.

Rates of discontinuation

The rate of discontinuation of abstinence was computed as in Equation 3.3 section 3.6.1. The rate was 0.11 with a confidence interval of 0.09 to 0.13. This implies that in every 100 person-months there were 11 discontinuations of abstinence episodes. The corresponding rates with their confidence intervals for males and females were 0.12 (0.09-0.14) and 0.10 (0.08-0.12).

Table 6. 6 Cumulative probability of discontinuation of abstinence within 12 months

Variable	Male		Female		All		n
	Prob	Sig.	Prob	Sig	Prob	Sig	
District							
Kabale	0.67		0.55		0.61		145
Mukono	0.67	>0.2	0.68	0.11	0.67	>0.2	205
Age at first sex in years							
Less than 15 years	0.54		0.58		0.57		115
15 and above	0.72	0.02	0.66	>0.2	0.68	0.07	233
In school							
No	0.74		0.50		0.61		152
Yes	0.62	>0.2	0.74	0.03	0.67	>0.2	192
Drinks alcohol							
No	0.60		0.57		0.58		236
Yes	0.77	0.01	0.77	0.03	0.77	<0.001	114
Discusses with parents							
No	0.66		0.56		0.63		327
Yes	0.80	0.002	0.75	>0.2	0.82	0.01	23
Attended party/club							
No	0.55		0.54		0.54		193
Yes	0.78	<0.001	0.74	0.005	0.76	<0.001	157
Type of partner at 1st sex							
Steady	0.68		0.64		0.66		258
Casual /One time Partner	0.62	0.09	0.57	>0.2	0.60	>0.2	91
All	0.67		0.62		0.64		350

Sig=p-value for log rank test of equality of survivor functions

Figure 6. 4 Cumulative probability curve for discontinuation of abstinence among drinkers and non-drinkers

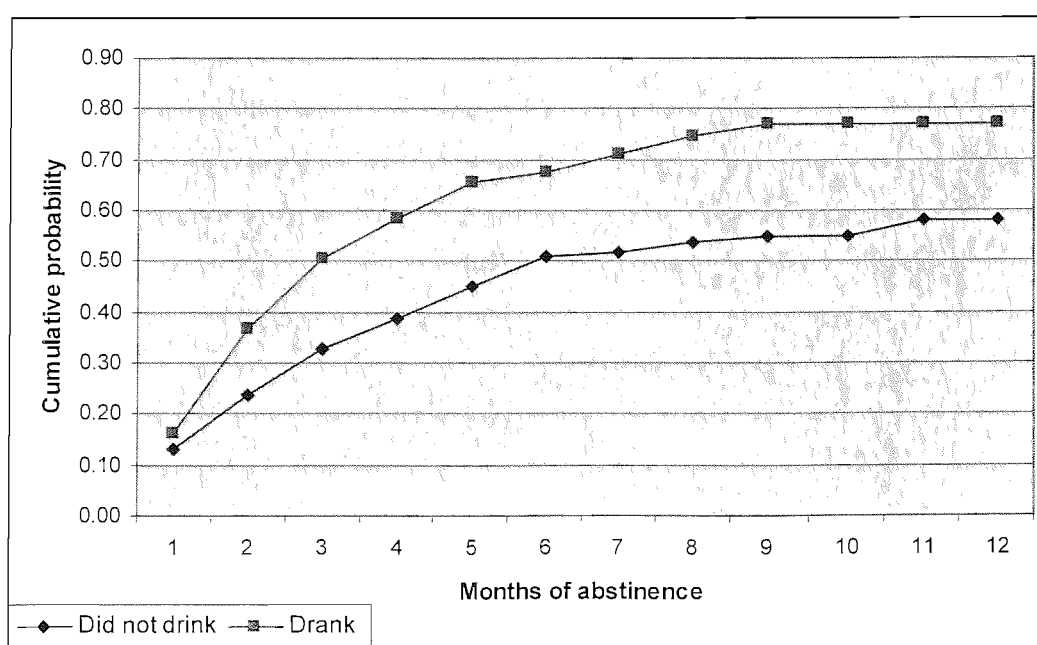
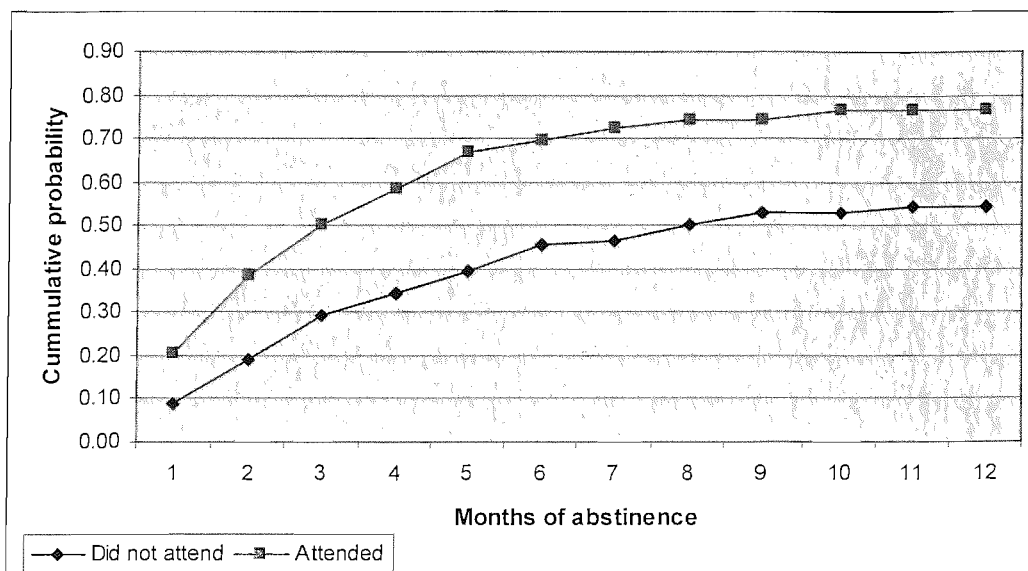


Figure 6. 5 Cumulative probability curve for discontinuation of abstinence among party goers and non-goers



6.2 Secondary abstinence levels and differentials

This section presents the levels of abstinence and their comparison by different levels of independent variables. The abstinence levels are computed from both Event History Calendar (EHC) and the questionnaire data. Abstinence period on the EHC that was earlier than April 2003 is not regarded in the computation. The levels of abstinence in the two sources of data have been compared.

6.2.1 Twelve month secondary abstinence based on EHC

Table 6.7 shows a twelve-month abstinence level by gender using the EHC data. The proportion of young people abstaining from sex for any period of twelve months within the 13 month time was 18 percent. Kabale participants were more likely to abstain than those from Mukono. The difference in abstinence between men and women was more evident in Kabale than in Mukono.

The proportion that abstained reduced with higher age but the change was more pronounced among men than women. The women in the lower age groups were less likely

to abstain compared to the men. The proportion that abstained reduced with higher age at first sex. However, among women the difference was not significant at the 5 percent level.

The level of abstinence among those in urban areas was lower compared to those in rural areas but the overall difference was not significant at 5 percent level. However, the difference was significant among females.

Being in school was protective against sexual activity. The proportion of participants who abstained for twelve months was higher among those who were in school compared to those who were not. However, those who had attained secondary level of education were less likely to abstain for twelve months compared to those who had not, although this was only significant among females.

Abstinence level was lower among those who listened to the radio frequently compared to those who did not but this was only evident among women. Although not significant, it is important to note that, unlike young women, young men who listened to radio frequently were more likely to abstain than those who did not. This possibly depends on the kind of programmes listened to.

Abstinence levels for those who took alcohol were lower than those who did not. The difference was more evident among men than women. However, the association was not significant at the 5 percent level.

Secondary abstinence level was higher among those who resided with their parents compared to those that resided with other people or grand parents. The relationship was not significant at 5 percent level.

Young people who were self-reliant financially were least likely to abstain compared to those who were supported by parents and others. A similar pattern is evident among men and women but only significant among men. Young people looked after by parents or relatives were nearly equally likely to abstain.

Table 6. 7 Twelve month abstinence level by gender using EHC data

Factor	Male	Female	All	n
	%	%	%	
District		**	*	
Kabale	18.9	26.6	22.8	184
Mukono	17.9	11.2	14.9	261
Age group	**		*	
15-16	32.4	22.4	25.7	101
17-18	28.1	13.6	20.3	123
19-20	15.5	19.6	17.3	104
21-22	9.8	25.0	13.4	67
23-24	5.7	6.7	6.0	50
Age at first sex	***		***	
Under 15	33.3	25.4	29.4	124
15 and above	11.9	14.4	13.0	247
Urban/Rural		*		
Rural	18.3	21.5	19.9	316
Urban	18.3	6.4	14.0	129
In school	*	*	*	
No	12.4	23.4	17.7	220
Yes	23.8	12.6	18.7	225
Education level		*		
Primary/None	18.2	25.0	21.9	169
Secondary	18.4	12.7	15.9	276
Listened to radio		**		
No	11.5	31.2	25.3	87
Yes	19.1	12.8	16.5	358
Drinks alcohol				
No	20.8	18.8	19.7	309
Yes	14.0	16.0	14.7	136
Resides with				
Both parents	18.1	24.1	20.7	188
Single parents	19.2	16.7	17.7	124
Grandparents/Other	18.3	10.9	15.0	132
Source of financial support	*			
Parents	24.3	17.5	20.8	221
Self	8.3	23.7	13.1	122
Relatives/Others	22.7	15.5	18.6	101
Attended party/club	**		*	
No	26.4	19.2	22.3	243
Yes	11.2	15.9	12.9	194
Type of partner at 1st sex		***	***	
Steady	14.8	12.0	13.4	311
Casual (known)	23.5	26.9	24.7	77
One time partners	27.6	46.2	36.4	54
Peer Pressure				
No	19.6	14.8	17.3	185
Yes	17.2	20.2	18.8	256
Attitude sexual abstinence	***	*	**	
Low/Medium	10.3	11.0	10.5	190
High	29.7	19.1	24.2	211
Incomplete score†	5.9	33.3	22.7	44
Condom use at first sex		**	*	
No	16.8	11.3	13.8	225
Yes	19.4	27.9	22.7	219
Of all who had ever had sex	18.3	18.1	18.2	445

χ^2 test p-value: * p < 0.05 ** p < 0.01 *** p < 0.001 † = Did not answer all attitude score questions

The proportion abstaining among those who attended parties/clubs was lower than among those who did not. A similar pattern was evident among both men and women but more evident among men.

Amongst those whose first sexual activity occurred within a steady partnership, the proportion abstaining was lower than that of those whose first sex was in a casual or one time relationships. The pattern was similar for men and women but the difference in abstinence levels was greater among women than men.

The level of abstinence varied with attitude to sexual abstinence. It was higher among those who had a higher positive attitude than those with a low/medium positive attitude.

Those who used a condom at first sex were more likely to abstain compared to those who did not. The pattern was similar for both men and women but more evident among women. Possibly, those who used condoms at first sex were careful and were likely to abstain as well.

There was no significant variation in the level of secondary abstinence by experience of peer pressure, religion, education level, type of school attended, access to newspapers, and exposure to indecent assault or discussion with parents about sexual matters.

6.2.2 Abstinence level at three, six and twelve months compared

This sub-section compares abstinence levels of three, six and twelve months to establish the ability to abstain in the respective time intervals. The levels of abstinence are compared by different levels of key variables and the significance of a difference tested.

Using length of episodes in EHC

Abstinence level declined from 65 percent for three months to 18.2 percent for twelve months. Comparison of abstinence level by district shows that there was no significant difference between districts at three, six or twelve month duration.

Figures 6.6 and 6.7 show the difference in abstinence by gender and age groups. The difference in abstinence between men and women was significant for three and six months but reduced at a longer period of twelve months. Across different age groups, the level of abstinence reduced in a similar pattern from three to six month duration but differently from six to twelve months.

Figure 6. 6 Secondary abstinence by duration and gender using EHC data

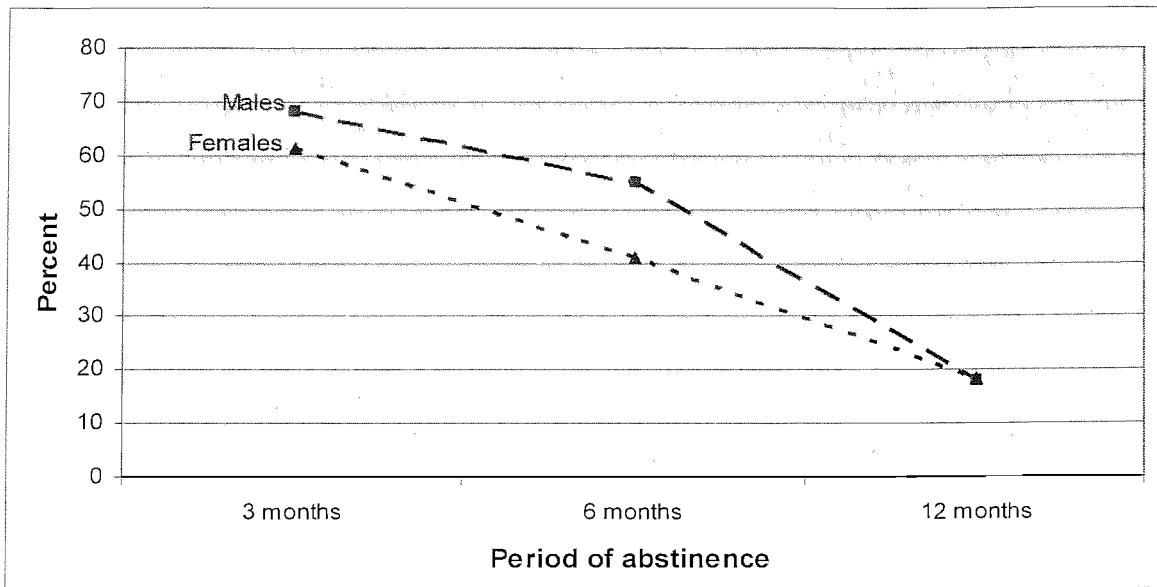
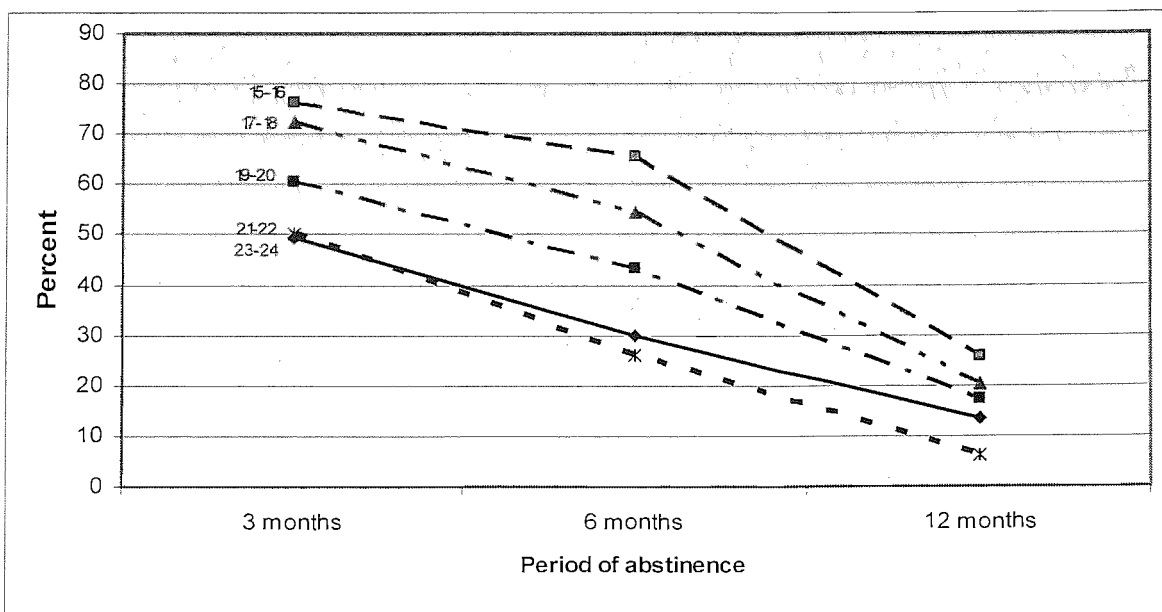


Figure 6. 7 Secondary abstinence by duration and age group



The decline in abstinence during the 6 to 12 month period was less among those aged 21-24 compared to other age groups.

Table 6.8 shows abstinence levels in twelve, six and three months at different levels of other factors in the sample. Comparison of abstinence level by district shows that there is no significant difference when it is measured at three and six months.

Young people who initiated sex at higher ages were less likely to abstain compared to those who started at younger ages. The difference is significant in all levels of abstinence but more evident at twelve-month abstinence.

Being in school was significantly protective against discontinuation of secondary abstinence when measured for three and six month duration. The abstinence level did not change significantly by education level.

Young people who listened to the radio were less likely to abstain than those who did not. The difference was significant for six and three month durations of abstinence.

The likelihood of abstaining was higher among those who did not take alcohol but this was only significant for six month duration of abstinence.

The proportion abstaining was lower among those that did not reside with their parents compared to those that resided with their parents, but the difference was not significant at 5 percent level.

Young people who supported themselves financially were less likely to abstain compared to those that relied on their parents. The pattern was similar at all levels of abstinence but not significant at 5 percent level.

Avoiding parties or clubs was strongly associated with abstinence at all levels. The difference in abstinence between those who attended and those who did not was minimal at three month level.

Table 6. 8 Secondary abstinence level by duration using EHC data

Factor	12 month (n=445)		6 month (n=445)		3 month (n=445)	
	%	OR	%	OR	%	OR
District						
Kabale	22.8	1	48.4	1	67.9	1
Mukono	14.9	0.59*	46.7	0.94	62.1	0.77
Gender						
Women	18.1	1	54.8	1	68.1	1
Men	18.3	1.01	40.9	0.57**	61.3	0.74
Age group						
15-16	25.7	1	65.4	1	76.2	1
17-18	20.3	0.74	54.5	0.63	72.4	0.82
19-20	17.3	0.60	43.3	0.40**	60.6	0.48*
21-22	13.4	0.45	29.9	0.23***	49.3	0.30***
23-24	6.0	0.18**	26.0	0.19***	50.0	0.31**
Age at first sex						
Less than 15 years	29.4	1	59.4	1	75.5	1
15 and above	13.0	0.36***	41.5	0.48***	59.2	0.47**
Residence						
Rural	19.9	1	51.0	1	68.4	1
Urban	14.0	0.65	38.8	0.61*	55.0	0.57**
In school						
No	17.7	1	40.0	1	57.7	1
Yes	18.7	1.07	54.7	1.81**	71.1	1.80**
Education						
Primary	21.9	1	50.3	1	66.3	1
Secondary	15.9	0.68	45.7	0.83	63.4	0.88
Listens to radio						
No	25.3	1	62.1	1	74.7	1
Yes	16.5	0.58	43.9	0.48**	62.0	0.55*
Drinks alcohol						
No	19.7	1	51.1	1	70.0	1
Yes	14.7	0.70	39.0	0.61*	58.8	0.70
Resides with						
Both parents	20.7	1	48.9	1	67.6	1
Single parent	17.7	0.82	50.8	1.08	68.6	1.05
Grandparents/Other	15.0	0.68	42.1	0.76	57.4	0.62*
Financial support source						
Parents	20.8	1	51.6	1	69.7	1
Self	13.1	0.57	36.9	0.55**	54.9	0.53**
Relatives/others	18.6	0.87	51.0	0.98	64.7	0.80
Attended party/club last month						
No	22.3	1	47.6	1	71.7	1
Yes	12.9	0.52*	46.7	0.36***	55.2	0.49***
Type of partner at 1st sex						
Steady	13.4	1	42.2	1	61.3	1
Casual (known)	24.7	2.11*	62.3	2.27**	70.1	1.48
One time partners	36.4	3.69***	56.4	1.77	74.6	1.85
Peer Pressure						
No	17.3	1	49.2	1	66.0	1
Yes	18.8	1.03	46.5	0.90	64.1	0.92
Attitude to abstinence						
Low/Medium positive	10.5	1	40.0	1	57.9	1
High positive	24.2	2.71***	53.1	1.70**	67.3	1.50
Incomplete score†	22.7	2.50*	52.3	1.64	80.6	2.83*
Condom use at first sex						
No	13.8	1	45.3	1	62.2	1
Yes	22.7	1.84*	49.6	1.18	66.8	1.22
All	18.2		47.4		64.5	

* p < 0.05 ** p < 0.01 *** p < 0.001 † Did not answer all attitude score questions

Having a steady relationship at first sex was strongly associated with failure to abstain for three, six and twelve months.

Those who used a condom at first sex were more likely to abstain. The pattern was similar at all the three durations of abstinence but only significant for 12 month duration.

Abstinence levels measured at twelve, six and three months did not significantly vary by exposure to peer pressure and indecent assault, access to newspapers, religious affiliation or discussion with parents about sexual matters.

Comparison of abstinence levels from the EHC and Questionnaire

Table 6.9 shows abstinence levels computed using questionnaire data. They are computed as a proportion of not having sex in a period measured retrospectively from the survey date. For most factors, the pattern of secondary abstinence obtained using the questionnaire data is similar to the one obtained using the EHC but the levels of abstinence are different. That is, like in Table 6.8, Table 6.9 shows that the likelihood for abstaining was higher among those who were resident in Kabale, had lower age group, had lower age at first sex, did not attain secondary level of education, consumed alcohol, attended parties and did not have steady relationships. However, for three variables, gender, peer pressure and being in school the pattern of the relationship with the secondary abstinence was different from that found with EHC based abstinence level. According to the questionnaire based data the likelihood for abstaining appeared higher when one was a male, not in school and exposed to peer pressure which is a different pattern from what was observed in the EHC based data and established research findings.

Expectedly, the level of abstinence was lower when measured retrospectively from the survey date compared to the one based on EHC. This is due to different approaches of measurement explained earlier and is in agreement with other studies (Belli et al., 2001).

Table 6. 9 Secondary abstinence level based on questionnaire data

Variable	12 month (n=445)		6 month (n=445)		3 month (n=445)	
	%	OR	%	OR	%	OR
District						
Kabale	17.4	1	20.1	1	23.9	1
Mukono	11.9	0.64	12.3	0.56*	13.9	0.51*
Gender						
Women	12.4	1	12.4	1	15.2	1
Men	15.7	1.32	18.3	1.58	20.0	1.44
Age group						
15-16	17.8	1	20.8	1	20.8	1
17-18	15.5	0.84	15.5	0.70	18.7	0.88
19-20	13.5	0.72	14.4	0.64	18.3	0.85
21-22	11.9	0.63	14.9	0.67	15.2	0.68
23-24	8.0	0.40	8.0	0.33	14.0	0.62
Age at first sex						
Less than 15 years	23.1	1	25.9	1	30.3	1
15 and above	10.3	0.37***	10.7	0.34***	12.4	0.33***
Residence						
Rural	14.6	1	16.5	1	18.4	1
Urban	13.2	0.89	13.2	0.77	17.2	0.92
In school						
No	15.5	1	16.8	1	18.7	1
Yes	12.9	0.81	14.2	0.82	17.3	0.91
Education						
Primary	18.9	1	21.3	1	21.3	1
Secondary	11.2	0.54*	12.0	0.50**	16.0	0.70**
Listens to radio						
No	18.4	1	24.1	1	24.1	1
Yes	13.1	0.67	13.4	0.49*	16.5	0.49*
Drinks alcohol						
No	16.5	1	19.8	1	19.4	1
Yes	8.8	0.49*	10.3	0.48*	14.8	0.72
Resides with						
Both parents	12.8	1	14.9	1	18.6	1
Single parent	16.1	1.31	18.6	1.30	19.4	1.05
Grandparent/Other	14.4	1.15	13.6	0.90	16.0	0.83
Source of funding						
Parents	14.9	1	17.2	1	21.3	1
Self	11.5	0.74	13.1	0.73	12.4	0.52*
Relatives/others	15.8	1.07	14.9	0.84	17.8	0.80
Attended party/club last month						
No	18.5	1	19.8	1	21.5	1
Yes	9.3	0.45**	10.3	0.47**	13.9	0.59*
Type of partner at 1st sex						
Steady	8.7	1	9.3	1	12.9	1
Casual (known)	26.0	3.70***	28.6	3.89***	25.0	2.25*
One time partners	29.6	4.43***	33.3	4.86***	38.9	4.31***
Peer Pressure						
No	11.9	1	12.4	1	12.5	1
Yes	16.0	1.40	18.0	1.54	22.3	2.01*
Attitude to abstinence						
Low/Medium positive	7.9		9.0		12.7	
High positive	19.4	2.81**	20.4	2.60**	21.3	1.86*
Incomplete score†	15.9	2.21	20.5	2.62*	25.0	2.29*
Condom use at first sex						
No	10.2	1	10.2	1	11.1	1
Yes	18.3	1.96*	21.0	2.33**	25.2	2.70***
All	14.2		15.5		18.0	

* p <0.05 ** p<0.01 *** p<0.001 † Did not answer all attitude score questions

The variables, age group, gender, rural/urban residence, being in school, source of support were significant with six month abstinence in the EHC based approach, but not in the questionnaire based approach while district and education level were significant in the latter but not in the former. Condom use at first sex and type of first relationship were stronger influencing factors in the questionnaire than the EHC data. Overall, the EHC approach is more sensitive to variations in abstinence in different levels of factors than the questionnaire approach.

When three and six months abstinence measures were used, more variables were significantly related with abstinence. This was the same in both EHC and questionnaire approaches.

6.3 Multivariate analysis

Three kinds of multivariate models were constructed to identify factors independently associated with secondary abstinence. In the first kind of model, the dependent variable was the probability that a young person abstained for at least six months and logistic regression was used. In the second kind of model, the dependent variable was the probability that an abstinence episode was at least six months long and logistic regression was also applied but on reshaped data with episodes as observations. In the third kind of model, the outcome was the hazard of discontinuing abstinence and the piecewise constant hazard modelling technique was applied. All further analysis of episodes used EHC data and methods used were as specified in section 3.6.

6.3.1 Individuals abstaining for at least six months

As for models fitted in the fifth chapter, two models, one with alcohol consumption and another with attending parties, were constructed. This is because of the strong relationship between the two variables. The same procedures for model construction as in previous models were followed in fitting the model above. That is, all variables with a p-value of less than 0.2 in preliminary analysis were assembled and run in the initial model and using the stepwise backward elimination method a final parsimonious model was obtained.

Table 6.10 shows the results of the multivariate model. The factors that were very strongly associated with abstinence were lower age group (15-16), avoiding parties or clubs and having a casual or one time relationship.

Table 6. 10 Logistic regression models for abstaining for at least six months

Variable	Model 1	Model 2
	With alcohol consumption	With attending parties
	OR (95% CI)	OR (95% CI)
District (base=Kabale)		
Mukono	0.96 (0.61-1.52)	1.03 (0.67-1.59)
Gender (base=female)		
Male	0.72 (0.47-1.11)	0.85 (0.54-1.33)
Age group (base=15-16)		
17-18	0.77 (0.44-1.37)	0.80 (0.44-1.44)
19-20	0.59 (0.32-1.08)*	0.60 (0.32-1.12)
21-22	0.29 (0.14-0.61)**	0.29 (0.14-0.62)**
23-24	0.27 (0.12-0.61)*	0.24 (0.10-0.55)**
In school (base=no)		
Yes	1.62 (1.07-2.48)*	1.73 (1.12-2.67)*
Type of first sexual partner (base=steady)		
Casual	2.74 (1.55-4.83)***	2.61 (1.46-4.68)**
One time	1.72 (0.91-3.26)	1.97 (1.02-3.82)*
Drinks alcohol(base=no)		
Yes	0.74 (0.46-1.21)	
Listens to radio (base=no)		
Yes	0.56 (0.33-0.95)*	0.53 (0.31-0.92)*
Attended party/club last month (base=no)		
Yes		0.36 (0.23-0.55)***
Goodness of fit		
<i>n</i>	445	445
Number of parameters	11	11
% correctly predicted	66	66
Pearson's goodness of fit test	0.21	0.60

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

Inclusion of coital frequency in the model showed that it was a very highly significant negative determinant of abstinence. However, the significance may be due to type I error since coital frequency tends to perfectly determine failure to abstain and renders other explanatory variables non-significant. For example, the one who abstains for six months is most likely to be the one who did not have sex in previous 30 days.

A re-run of the same model with twelve and three month abstinence as dependent variables showed similar results. All other variables shown earlier did not prove significant in the model. The condom use at first sex was among the variables that were eliminated in the first stage of the model building. This partially disagrees with the hypothesis in the conceptual framework of the study that condom use at first sex has an independent influence on secondary abstinence because it was significant in the preliminary analysis but not in the final multivariate model.

The goodness of fit statistics of the model show that two thirds of the observations can be correctly predicted by the models. A high p-value from Pearson's statistic shows that the model is fairly good. The confidence intervals were fairly narrow for all variables except with type of relationship when they were slightly higher than the rest.

6.3.2 Abstinence episodes that are six or more months long

Multivariate logistic regression was used to model the likelihood of an episode being six or more months long. The model was specified as in Equation 3.4 in sub-section 3.6.2.

The final models in Table 6.11 show that the factors strongly related to abstinence episode length of six or more months were not being in school, having a casual or one time relationship, not talking to parents about sexual matters and avoiding alcohol and parties or dances. The association of not being in school with abstaining is not in agreement with most of the earlier findings in this study. A closer examination of the length of the episodes found that those in school had a longer first episode but shorter subsequent episodes. In earlier sections there was no relationship between talking to parents and abstinence levels. It is possible that young people talk to parents after discontinuation of abstinence episodes. It is also possible that the relationship may be due to a small proportion (9 percent) that discusses sexual issues with their parents. The same analysis was run for twelve month abstinence and similar results were obtained.

Table 6. 11 Modelling episodes: Logistic regression for a length of six or more months

Variable	Model 1	Model 2
	With alcohol consumption	With attending parties
	OR (95% CI)	OR (95% CI)
District (base=Kabale)		
Mukono	0.61 (0.35-1.07)	0.71 (0.42-1.20)
Gender (base=female)		
Male	0.99 (0.57-1.72)	0.99 (0.57-1.73)
In school (base=no)		
Yes	0.51 (0.27-0.95)*	0.52 (0.28-0.97)*
Type of first sexual partner (base=steady)		
Casual	2.36 (1.09-5.10)*	2.09 (0.95-4.61)
One time	1.37 (0.64-2.93)	1.59 (0.72-3.48)
Drinks alcohol (base=no)		
Yes	0.51 (0.27-0.95)*	
Financial support source		
Self	0.44 (0.20-0.98)*	0.48 (0.21-1.07)
Others	1.68 (0.91-3.11)	1.77 (0.95-3.28)
Discusses with parents (base=no)		
Yes	0.25 (0.06-0.94)*	0.23 (0.06-0.88)**
Attended parties/clubs (base=no)		
Yes		0.38 (0.22-0.66)**
Age at first sex (base= <14 years)		
15 and above	0.70 (0.39-1.25)	0.74 (0.40-1.34)
Goodness of fit		
<i>n</i>	347	347
Number of parameters	10	10
Log Likelihood	-184	181
Log Ratio test for the model	<i>p</i> =0.002	<i>p</i> <0.001
% correctly predicted	76	76
Pearson's goodness of fit test	0.12	0.14

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

6.3.3 Discontinuation of secondary abstinence episodes

In an effort to explore more about secondary abstinence a piecewise constant hazard model was constructed as specified in Equations 3.21 and 3.22 in section 3.6.6. The assumption was that the hazard of discontinuing abstinence was constant within intervals of duration of abstinence rather than over the whole length of abstinence episode. The computed duration of abstinence was in discrete numbers which had many ties and this means Cox's proportional hazards model may leave some information unexplored. Events are tied when two or more individuals experience an event at the same time. It is argued that it is more natural to assume a model that reflects discrete time measurement (Yamaguchi, 1991).

Before adjusting for village level effects

Table 6.12 shows the results of the piecewise constant hazard model before adjusting for possible cluster effects. According to the table, the factors associated with discontinuation of secondary abstinence were being in school, being in a steady relationship, taking alcohol, attending parties and talking to parents about sexual matters. Being self reliant was marginally significantly associated with discontinuation. A larger confidence interval for talking to parents is due to a small proportion that had ever talked to parents. Other factors including the order of the episode, type of school, access to media, religion and religiosity, and experience of indecent assault were not significant. The two models show similar pattern although the second one (with attending parties) has a higher predictive value.

Both models show that being in school increases the hazard of discontinuing an abstinence episode by nearly 90 percent. Those who discussed with parents about sexual matters were three times more likely to discontinue abstinence compared to those who did not. Those who attended parties were two times more likely to discontinue abstinence than those who did not attend parties. Abstaining for more than 10 months reduced the hazard of discontinuing to a fifth of the hazard in the first two months.

The goodness of fit statistics show high predictive ability of the models. However, the Pearson's goodness of fit p-value is low in the model with alcohol consumption but high in the model with attending parties. Hence the second model is more robust.

After adjusting for village level effects

Table 6.13 shows results of the piecewise constant hazard model adjusted for village level effects. The variables, being in school, drinking alcohol, discussing with parents and source of financial support had a similar association with the hazard of discontinuing abstinence as in the previous model (before adjusting for random effects). The length of abstinence and type of first sexual partner are no longer strong factors in determining the hazard of discontinuation after controlling for village level random effects. The rural/urban residence, district, education level, religion, alcohol consumption, length of stay at place of

Table 6. 12 Piecewise constant hazard models for discontinuation of abstinence episode unadjusted for village effect

Variable	Model 1	Model 2
	With alcohol consumption	With attending parties
	OR (95% CI)	OR (95% CI)
District (base=Kabale)		
Mukono	1.41 (0.89-2.24)	1.06 (0.69-1.62)
Gender (base=female)		
Male	0.90 (0.61-1.32)	0.87 (0.59-1.29)
In school (base=no)		
Yes	1.90 (1.18-3.06)*	1.78 (1.11-2.85)*
Type of first sexual partner (base=steady)		
Casual	0.44 (0.23-0.85)*	0.50 (0.26-0.98)*
One time	0.91 (0.55-1.49)	0.83 (0.50-1.36)
Drinks alcohol (base=no)		
Yes	2.18 (1.41-3.38)***	
Discusses with parents (base=no)		
Yes	3.23 (1.52-6.89)**	2.97 (1.38-6.40)*
Attended party/club last month (base=no)		
Yes		2.17 (1.47-3.20)***
Resides with (base=both parents)		
Single parents	1.32 (0.79-2.18)	1.33 (0.80-2.21)
Grandparents and others	1.38 (0.79-2.39)	1.66 (0.94-2.94)
Financial support source (base=both parents)		
Self	1.74 (0.98-3.08)	1.49 (0.84-2.64)
Others	0.54 (0.30-0.97)*	0.45 (0.25-0.82)*
Attitude towards abstinence (base=Low/medium)		
High positive	0.69 (0.46-1.04)	0.67 (0.45-1.01)
Incomplete score†	1.22 (0.69-2.15)	1.03 (0.58-1.82)
Length of abstinence in Months (base=1-2)		
3-4	0.85 (0.56-1.29)	0.87 (0.57-1.32)
5-6	0.82 (0.47-1.42)	0.84 (0.48-1.46)
7-8	0.40 (0.17-0.93)*	0.42 (0.18-0.97)*
9-10	0.16 (0.04-0.70)*	0.18 (0.04-0.77)*
11-13	0.21 (0.05-0.91)*	0.23 (0.05-0.98)*
Goodness of fit		
N	842	842
Number of parameters	18	18
Log Likelihood	-379	-377
Log Ratio test for the model	P<0.001	P<0.001
% correctly predicted	81	80
Pearson's goodness of fit test	0.18	0.55

* p <0.05 ** p<0.01 *** p<0.001 † Did not answer all attitude score questions

residence, experience of indecent assault and attitudes to sexual abstinence were not related to the hazard of discontinuing secondary abstinence. The random effects at the

Table 6. 13 Piecewise constant hazard models for discontinuation of abstinence episodes adjusted for village level effects

Variable	Model 1: With alcohol	Model 2: With attending parties
District (base=Kabale)		
Mukono	1.59 (0.98-2.56)	1.21 (0.78-1.87)
Gender (base=female)		
Men	0.82 (0.53-1.26)	0.82 (0.53-1.27)
In school (base=no)		
Yes	1.89 (1.13-3.15)*	1.73 (1.04-2.88)*
Drinks alcohol (base=no)		
Yes	2.43 (1.51-3.91)***	
Financial support source (base=both parents)		
Self	2.06 (1.12-3.80)*	1.84 (1.00-3.38)*
Relatives/Other	0.68 (0.40-1.17)	0.62 (0.36-1.07)
Discusses with parents (base=never/occasionally)		
Often	3.05 (1.35-6.89)**	3.05 (1.33-6.95)**
Attended party/club last month (base=no)		
Yes		2.46 (1.62-3.75)***
Length of abstinence (base=1-2 months)		
3-4	0.96 (0.63-1.47)	1.00 (0.65-1.53)
5-6	0.98 (0.57-1.68)	1.02 (0.59-1.77)
7-8	0.52 (0.24-1.14)	0.56 (0.26-1.23)
9-10	0.22 (0.06-0.79)*	0.24 (0.07-0.88)*
11-12	0.29 (0.08-1.08)	0.31 (0.09-1.16)
Random effects		
$\sigma^2/se(\sigma^2)$ [t statistic for village effect]	0.45/0.20*	0.47/0.20*
Goodness of fit		
Person years	844	844
Number of parameters	12	12
-2LL	655	660

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

village level were significant at 5 percent level. The effects at the parish level were not significant. The variance of the random effects at the village level shown in the second model of Table 6.13 mean that if a village in Kabale has one standard deviation of log hazard of discontinuing an abstinence episode, then a woman in the village who is not in school, does not attend parties, is supported by parents, does not discuss sexual matters with the parents will be having twice as much hazard (exponential of the square root of 0.47) of discontinuing abstinence compared to one in a village with an average risk. Both models in Table 6.13 show a similar pattern and have nearly the same likelihood.

Figure 6.8 The hazard of discontinuing an abstinence episode by duration assuming base value on all covariates

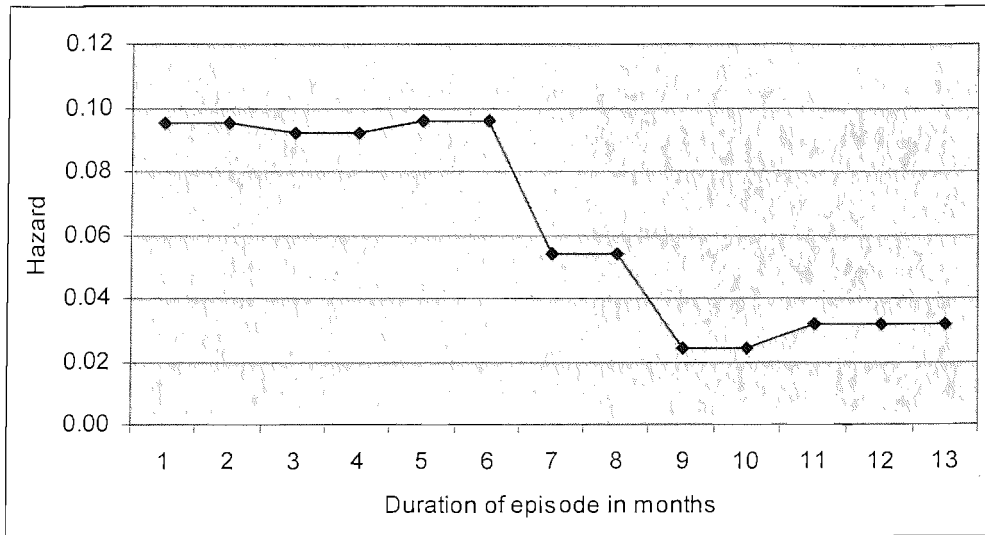


Figure 6.8 shows that the hazard of discontinuing an abstinence episode, after controlling for other factors, started declining greatly after 6 months. The same trend is seen among alcohol drinkers and non-drinkers in Figure 6.9 although the hazard was consistently higher among drinkers than non drinkers.

Figure 6.9 The hazard of discontinuing an abstinence episode among alcohol drinkers and non-drinkers after controlling for other factors

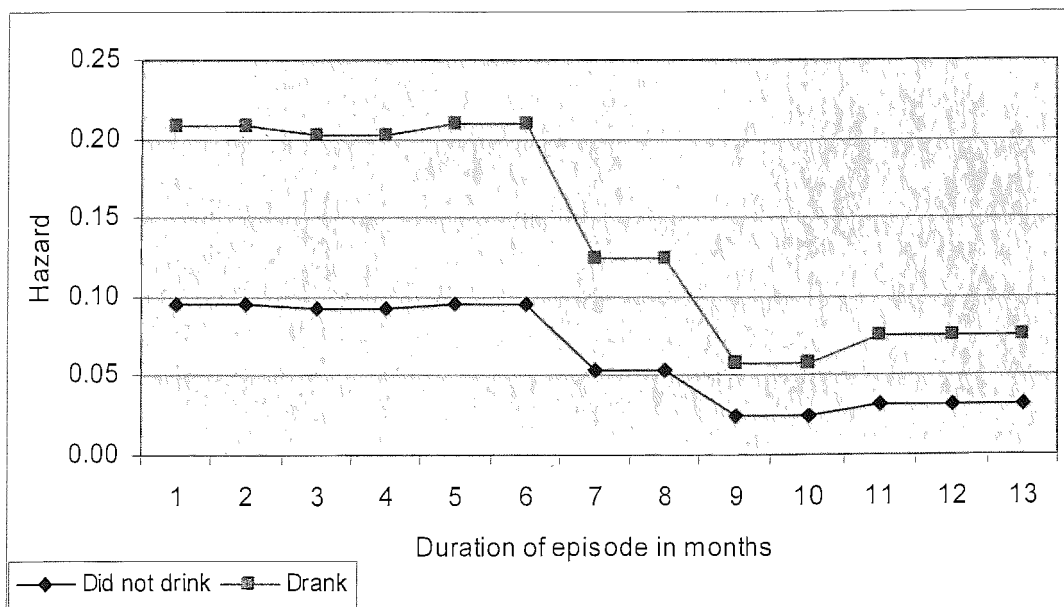
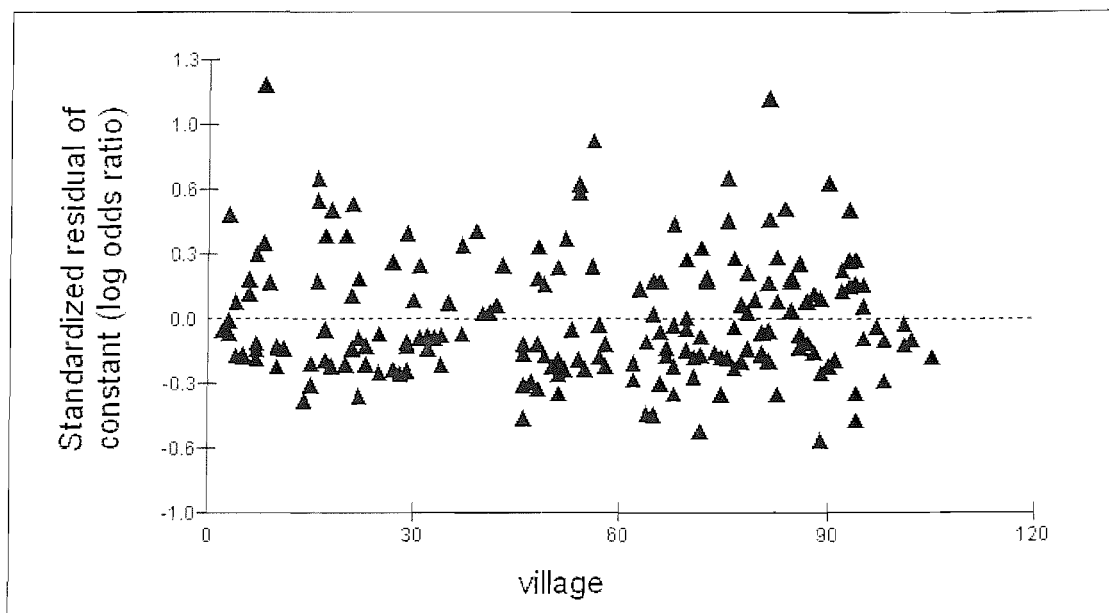


Figure 6.10 presents the variation in hazard of discontinuation by village. The variation in hazard of discontinuation is more among villages that have a higher hazard compared to those that have a lower hazard. Two villages had a log hazard of discontinuation that was more than one standard deviation higher than that of an average village.

Figure 6. 10 Village level random effects on discontinuation of abstinence episodes



6.4 Discussion

The results in this chapter have shown that the second abstinence episodes tended to be shorter than the first ones. There were three peaks in a year for the probability of discontinuation of abstinence episodes and they were September to October, December to January and March to April. Discontinuation of most recent abstinence episodes occurred mostly on weekends. The overall cumulative probability of discontinuation of abstinence episodes was 0.64 and it was significantly higher among those who took alcohol, discussed sexual matters with parents and attended parties. Additional contributing factors to discontinuation were higher age at first sex among men and being in school among women. The twelve month abstinence level using the Event History Calendar (EHC) data was 18.3 percent among men and 18.1 percent among women. The level of secondary abstinence was lower (men, 12 percent; women, 16 percent) when the questionnaire data were used and, for some variables, it followed a pattern different from the one of EHC

based abstinence level. A crude comparison of proportions of those abstaining showed that abstinence level was higher among women, among the lower age group, among those who had first sex at lower age, among those in school, those who did not listen to radio, and those who relied on their parents for their school fees for day to day expenses, those who avoided dancing parties/clubs, those with high positive attitude towards abstinence and those who used a condom at first sex.

The chapter further shows that the level of reported secondary abstinence declined drastically as the observation time was changed from six to twelve months. When measured at six and three months, abstinence level was more sensitive than at twelve months. In a multivariate logistic regression, factors that were associated with abstinence for six or more months were lower age group, avoiding parties or clubs, having had a casual/one-time first relationship, not listening to radio and being in school. When episodes were considered as analysis units, the factors independently associated with episode length of six or more months were not being in school, casual/one time relationship, not taking alcohol, not talking to parents about sexual matters and avoiding parties. In a more analytical approach with a multivariate piecewise logit model, the only factors independently and strongly associated with the hazard of discontinuation of abstinence episode were taking alcohol, attending parties and talking to parents about sexual matters. At the 5 percent level, being in school, having had a steady relationship at first sex and relying on other people other than parents for financial support were also significantly associated with the hazard of discontinuation. The hazard of discontinuation of abstinence significantly reduced with duration and varied by village.

The EHC based twelve month abstinence level is much lower than the national level of 27 percent and 34 percent for unmarried 15 to 24 year old women and men respectively (Uganda HIV_AIDS Partnership et al., 2004). The possible reason is a large proportion of urban respondents and that is why the secondary abstinence level for Kabale (22.8 percent) is nearer to the national average than that of Mukono (14.9 percent) since Kabale is more rural. The EHC based abstinence level is higher than one found in South Africa (Shisana and Simbayi, 2002). More research targeted for young unmarried people in Uganda is needed to get a true picture since DHS abstinence rate was based on only 20 percent and 30 percent of the observations from women and men respectively (UBOS and ORC Macro, 2001).

There was no independent influence of district and gender on any of the measures of secondary abstinence used. This differs from results in Klaus et al. (2004) in the USA and Erulkar et al. (2004) in Kenya, who found significant differences in secondary abstinence by gender. They showed that sexually active women were more likely to abstain than men.

The likelihood of secondary abstinence was significantly higher among those who were young compared to the older respondents. This differs from findings in Pettifor et al. (2004) in South Africa where secondary abstinence level increased with age. However, in a multivariate analysis of episodes including the hazard of discontinuation of an abstinence episode, age was not found to be significant.

Higher age at first sex was associated with higher likelihood of abstinence but only in the bivariate analysis. It was not independently associated with secondary abstinence.

The association of not being in school and lower likelihood of abstaining for at least six months is similar to results in Lloyd (2004) on developing countries and in Gorgen et al. (1998) in Guinea. Higher likelihood of abstaining for at least six months and higher hazard of discontinuing abstinence among those in school compared to those not in school shows that, those in school may abstain for at least six months but easily discontinue there after. This is in agreement with the distribution curve for months of abstinence discontinuation that shows peaks in school holiday times. Truncation of abstinence episodes also had some effect on the length of episodes of those in school since their first episodes were longer than the episodes of those who were not in school. Higher level of education and type of school attended were not significantly associated with secondary abstinence.

Listening to radio was associated with the likelihood of abstaining for at least six months but it did not have an independent association with the hazard of discontinuing an abstinence episode.

Religiosity as measured by the frequency of attending religious services was not significantly associated with secondary abstinence in the current study. This differs from findings in Ku et al. (1998), in a study of sexually active young people in the USA, where the more religious were more likely to abstain.

Consumption of alcohol was not independently associated with a specific duration of abstinence but it contributed significantly to the hazard of discontinuing abstinence episodes. This is in agreement with findings in Strunin and Hingson (1992) and Kaljee et al. (2004).

The significance of reliance on parents for financial support as a protective measure against secondary abstinence may lie in a number of factors. It is a proxy variable for Socio-Economic Status (SES) of the family because it is the well-to-do that can afford to financially support their children until they can be on their own. Hallman (2004) indicated that low SES reduced the likelihood of secondary abstinence in a study in South Africa. Another factor could be that, because the parents support their children financially, they exert some control over them, such as not allowing them to go for dances or to drink alcohol. These two factors are known to be associated with discontinuation of abstinence episodes.

Attending dancing parties/clubs in Uganda was also connected to discontinuation of sexual abstinence in a qualitative study in Asimwe et al. (2004). This variable has also been associated with initiation of sexual intercourse as reported in the previous chapter. This could be associated with alcohol consumption at the parties.

Whereas experience of indecent assault and strong positive attitude towards sexual abstinence were significantly associated with primary abstinence, they were not independently associated with secondary abstinence.

Several publications including Murray et al. (1998) and Stallworth et al. (2004) show a strong association between secondary abstinence and attitude towards abstinence but the association was not independently significant in the current study.

Residing with parents was not associated with secondary abstinence. This differs from the findings in Mensch et al. (1999) which showed that residing with parents was protective against sexual activity among young women in Kenya.

The positive association of communicating with parents and discontinuation of secondary abstinence is unique. In Miller et al. (1999) and other publications, it is shown that communicating with parents reduces the risk of sexual activity. In the current study, however, it is the opposite. As this is not a prospective or quasi-experimental study it is not possible to determine what comes before the other, discussion with parents or discontinuation of abstinence episodes.

Higher hazard of discontinuation in first six months of abstinence episodes may be explained by seasonality of sexual activity. There are months of high and low sexual activity.

Village level random effects on abstinence level may be due to differences in exposure to risky factors. This needs further investigation.

6.5 Conclusion

There are behavioural and socio-economic factors that are associated with the likelihood of abstinence and the hazard of discontinuing abstinence. Some of the factors are influential in both outcomes while others are significant in just one or the other.

Being in school and discussion with parents are associated with higher hazard of discontinuation of abstinence. More research is needed as the findings cannot be fully explained from previous published studies.

There are significant village level effects on young people's abstinence. The effects are strong even after controlling for important background and behavioural characteristics.

The hazard of discontinuation of sexual abstinence reduces with duration of abstinence and the decline is more evident after the six months.

Significant variation of abstinence at village level calls for controlling for cluster structure of the data when analysing data on sexual abstinence or sexual activity in the country. This raises questions about the precision of estimates in previous analyses of data in the country

where data were collected using cluster sampling and no adjustment was made for the clustering effect. An example is Ndyabangi et al. (2003).

Data on sexual behaviour over a period of time can be successfully collected using an EHC. The data are rich and they allow analysis of episodes which would otherwise only be obtained in expensive data collection procedures such as in longitudinal studies with monthly follow-ups.

CHAPTER SEVEN

7. CONDOM USE AT FIRST AND LATEST SEXUAL EVENTS

This chapter investigates the reported levels and factors associated with condom use at first and most recent sexual events as important indicators of dynamics of condom use. It was reported in the literature review (Chapter Two) that Miller et al. (1998) found that there was a very close association of condom use at first sex with lifetime condom use, while Cleland et al. (2004) showed that condom use at last sex was a reasonable proxy for consistent condom use because of a high correlation between recency and frequency. Other issues investigated are the link between age at first sex and condom use, the trend of condom use by age and age difference with partner. Interactions with age, sex and district are also examined.

The chapter has three major sections, condom use at first sex, condom use at latest sexual event and a combination of the two variables. Each section starts with description of condom use at different levels of key variables and a closer examination of the effects of interactions with age, sex and district. A chi-square test is used to test for equality of the proportion of condom use between levels of variables. The final part of each section presents multivariate analyses to explore independent influence of each variable. Binomial and multinomial logistic regression techniques are used to model condom use at the two events and significant factors are compared.

Model selection procedures outlined in the methods section (3.6.7) were followed. All variables with a p -value less than 0.2 in univariate analysis were put in a model and a backward elimination procedure was followed. Variables with the highest p -value from Wald's test were removed one by one until all had a p -value less than 0.2. Next, all variables not initially put in the model and those eliminated were considered one by one for any major influence on log likelihood of the model and the value of the log likelihood ratio test. Another criterion used to add more variables was a score of the Pearson's or Hosmer-Lemeshow's goodness of fit test p -value. If the p -value of the test increased substantially then the variable was included.

7.1 Description of first and latest sexual events

In Table 7.1, the first and latest sexual events are described by age difference with partner, type of partner, when the event occurred, willingness to have sex, reason for use and non-use of condoms and source of condoms. Willingness to have sex was measured by a question on whether both the respondent and partner were willing to have sex before the sexual event (See Appendix 1a).

The types of partner were categorised into steady, casual and one time partners. Steady partners comprised fiancées and girl/boyfriends. The casual partners were known before sex but not to a level of girl/boyfriends. Most relationships occurred with steady partners and women were more likely to be in steady partnerships than men. There was an increased proportion of young people entering more steady relationship by latest sex. The initially observed difference that was in steady relationship between men and women had decreased by the time of latest sex.

The distribution of age difference with partner was nearly the same at first sex and latest sex but there was an increased proportion of men and women having younger partners at latest sex. This can be explained by the rise in steady relationships. The rise in proportion of women that preferred younger partners with time is uncommon since most women tend to prefer older partners (Slaymaker and Zaba, 2003) while men prefer younger ones. However, despite the increase in the proportion, the number of women with the same age or younger partners is small at both events.

A third of the men had first sex within one year prior to the survey while women were twice as likely to have had first sex in same period. The difference is due to different age distribution. Women were twice as likely to be within 15-16 age group compared to the men. Nearly all of the latest sex events occurred within one year before the survey with no difference between men and women.

A third of the men and women were coerced or persuaded to have first sex with their partners. At the most recent event the same proportion of men was coerced or persuaded while there was a slight decrease in the proportion among women. This is surprising since it is women who are generally more likely to experience coercion or persuasion.

Table 7. 1 Description of first and latest sex events by gender

Variable	First sex event		Latest sex event	
	Men %	Women %	Men %	Women %
Type of partner				
Steady	65.8	75.5	82.0	84.2
Casual (known)	21.8	12.5	8.8	8.4
One time partners	12.4	12.0	9.2	7.4
Age difference with partner	n=221	n=181	n=226	N=177
Younger partner	60.6	4.4	78.9	10.2
Same age	16.3	5.0	11.5	7.9
Older (by 1-5 years)	21.3	60.8	8.9	57.1
Older (by 6+ years)	1.8	29.8	0.9	24.9
When event occurred (years before survey)				
Within one year	33.2	64.8	91.7	95.5
Two-five years	43.1	23.3	5.7	4.5
Six+ years	23.7	11.9	2.6	0.0
Willingness				
Persuasion/coercion	35.7	34.0	34.3	27.7
Both willing	64.3	66.0	65.6	72.3
Reason for use of condom (Users only)	n=104	n=122	n=102	N=118
Did not want a child	16.4	45.9	20.0	41.5
Avoid HIV	76.9	48.4	73.3	51.5
Other	6.7	5.7	6.7	6.9
Reason for not using condom (non-users only)	n=135	n=86	n=135	N=130
Trusted partner	32.6	17.4	34.8	22.5
Partner refused	4.4	19.8	8.7	25.4
Other	49.6	39.5	51.1	33.8
Don't know	13.3	23.3	5.4	18.3
Source of condoms (Users only)	n=99	n=109	n=92	N=71
Shop	59.6	37.6	54.2	38.6
Private clinic/Drug shop	21.1	23.9	20.8	25.4
Health centre	2.0	6.4	12.5	7.0
Don't know	3.0	22.9	0.8	21.9
Other	2.0	9.2	11.7	7.0
Total	235	210	228	202

Major reasons for using condoms were avoiding HIV and not wanting to have children. The proportion reporting not wanting children was over twice as high among women as men. Three quarters of men and a half of the women that used condoms at first sex said

they wanted to avoid HIV. The proportion that feared HIV had not changed much by latest sex. The main reasons for not using condoms were trust and refusal by the partner. The proportion that failed to use condoms because they trusted their partners had not changed by most recent sex among men but increased slightly among women. It was observed that there was a substantial proportion of women who said their partners refused to use condoms (20 percent at first sex and 25 percent at latest sex).

The reported sources of condoms were shops, private clinic/drug shops and health centres. Some respondents did not remember where condoms were obtained. The most common source of condoms was shops followed by private clinic/drug shop. Expectedly, more women than men were likely to show lack of knowledge of where to get condoms.

7.2 Condom use at first sex

This section describes the levels of condom use at first sex by gender of respondent for each of the key independent factors. A chi-square test is used to test the significance of a difference between levels.

7.2.1 Levels of condom use at first sex

Table 7.2 shows levels of condom use at first sex by gender. Half of the participants used a condom at first sex, with women reporting a higher reported level of use (59 percent) than men (43 percent). The level of condom use is lower than the level among 14-25 years old in Northern Ireland (64 percent) (Schubotz et al., 2004) and 70 percent among teenagers in the USA (Abma and Sonenstein, 2001) but higher than the 33 percent in Lesotho (FHI et al., 2002) and 18 percent among unmarried young men in Ghana (Karim et al., 2003). In Kenya, condom use at first sex among the unmarried age group 15-24 years is 14.8 percent for men and 20.3 percent for women which is much lower than the level in Uganda (Central Bureau of Statistics (CBS)[Kenya] et al., 2003).

The level of condom use at first sex was higher in Mukono than in Kabale district. It did not significantly change by current age of the young people but it significantly increased with age and age difference with the partner at first sex. Those who had first sex at a higher age were more likely to use condoms than those who had first sex when younger. Condom

Table 7. 2 Levels of Condom use at first sex by gender

Variable	Male %	Female %	All %	Significance Of trend
District	**	***	***	
Kabale	31.1	31.9	31.5	
Mukono	50.3	81.0	64.1	
Age group				
15-16	26.5	62.7	50.5	
17-18	42.1	57.6	50.4	Trend: NS
19-20	50.0	54.4	51.9	
21-22	52.9	75.0	58.2	
23-24	34.3	46.7	38.0	
Age at first sex (years)	***	**	***	
<15	18.1	40.9	29.4	
15-24	54.4	68.4	60.9	
Age difference with partner			*	
Partner younger	44.0	25.0§	43.0	
Same age	41.0	66.7§	46.7	Trend:***
Older(by 1-5 years)	42.9	64.6	57.3	
Older (6-24 years)	25.0§	63.0	60.3	
In school		**	*	
No	39.8	49.5	44.6	
Yes	45.9	68.9	56.4	
Education		**	**	
None/Primary	36.4	45.7	41.4	
Secondary	46.2	69.5	56.2	
School attended				
Public	44.4	50.6	47.4	
Religious	35.3	66.1	51.8	
Private	47.1	68.5	55.3	
Listens to radio		**	*	
No	34.6	44.3	41.4	
Yes	44.0	65.1	52.8	
Religion		**	*	
Catholic	41.8	53.3	47.0	
Protestant	42.0	53.3	47.4	
Moslem	45.2	82.8	63.3	
Pentecostal/Evangelical	53.9§	83.3	68.0	
Drinks alcohol			**	
No	47.7	62.5	55.3	
Yes	34.9	48.0	39.7	
Length of stay			*	
≤5 years	47.7	68.7	56.8	
>5 years	39.5	52.8	45.9	
Resides with				
Both parents	40.0	51.8	45.2	
Single parent	46.2	62.5	55.7	
Grandparents/other	45.5	65.5	53.8	
First sex		***	*	
Involved persuasion/force	44.1	42.3	43.2	
Both willing	42.0	67.4	54.3	
Type of first sexual partner	***	***	***	
Steady	53.9	69.0	61.7	
Casual/One time partner	21.3	28.9	24.2	
When 1st sex took place	***	***	***	
Within 1 year ago	54.6	69.1	64.2	
2-5 years ago	50.0	57.1	52.0	
6+ years ago	14.6	8.0	12.5	
Attitude to condom use		***	*	
Low/medium	40.4	61.1	51.2	
High	46.7	69.2	55.2	
Incomplete score†	37.9	35.1	36.4	
All	43.0	59.1	50.3	
N	235	210	445	

χ² test p-value * p<0.05 ** p<0.01 *** p<0.001 §<15 †=Did not answer all questions for the abstinence score

use at first sex had a relationship with age difference with partner that was marginally significant. There was an increasing trend of condom use with age difference among women. Expectedly, female respondents had older partners while male respondents had younger partners.

Overall, being in school, having attained secondary education and listening to radio significantly increased the likelihood of condom use at first sex but the difference was not significant among men. The type of school attended did not have a significant influence on condom use at first sex but a higher proportion of those who attended public schools used condoms at first sex compared to those in private and religious founded schools.

Religion, alcohol consumption and mobility had a relationship with condom use at first sex. Condom use at first sex was higher among Moslems and Evangelical or Pentecostal religions than Catholics and Protestants. Condom use at first sex was more likely among young people who had not taken alcohol during the previous month. Young people who had been at their place of residence for more than five years were less likely to have used condoms at first sex than those who had lived at their residence for five or less years.

The level of condom use among young people at first sex did not significantly change by source of financial support and the kind of people they shared their residence with. However, those who resided with grand parents and others tended to use condoms at first sex more compared to those residing with both parents and one of the parents but the relationship was not significant. There was no clear pattern on use of condom by different source of financial support.

Events and the nature of first sex had an influence on condom use. As expected, condom use was more likely when both people involved in the sexual event were willing than when they were not. In related findings, condom use at first sex was more likely within a relationship (boy/girl friend) than in casual/one time relationship and when sex took place within the previous five years than six or more years.

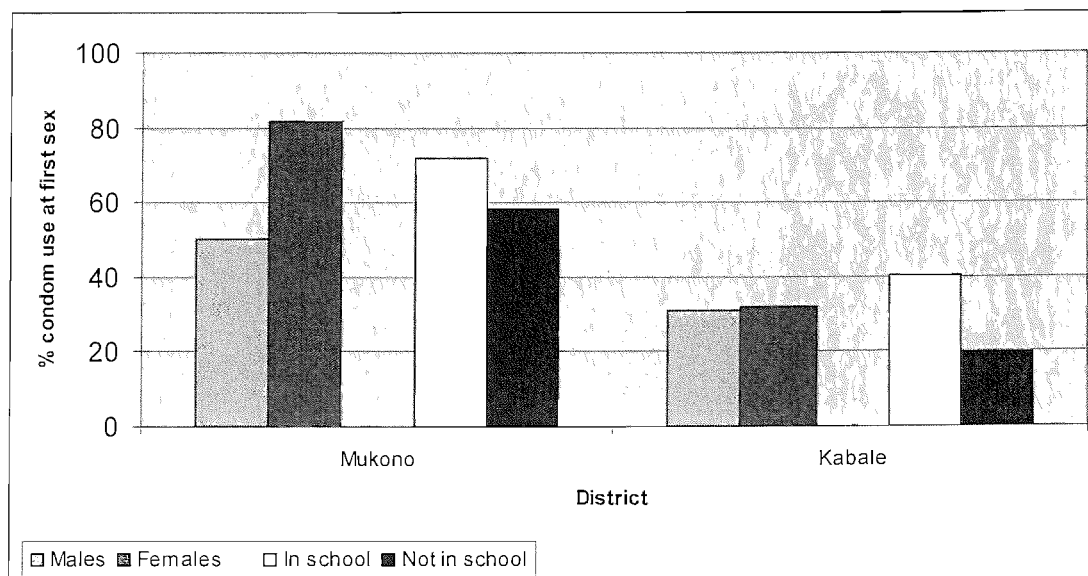
Other factors, including rural/urban residence, coital frequency in previous 30 days, access to newspapers/magazines, and communication with parents about sexual matters, were not significantly associated with condom use at first sex. Type of school attended had a

marginal relationship with condom use at first sex. Those who attended private schools were more likely to use condoms at first sex than those who attended religious and public founded schools. Those in religious and private founded schools were least likely to use condoms. This is expected since they tend to be more conservative than public schools.

7.2.2 Interactions with age, sex and district

The results in the previous section were checked for significance of interaction with age, sex and district. Figure 7.1 shows that the difference in level of condom use between men and women was significantly higher in Mukono than in Kabale. A test of interaction with

Figure 7. 1 Impact of gender and being in school on first sex condom use by district



age group was not significant. Other significant interactions were being in school ($p < 0.001$) and district and willingness to have sex with partner and gender ($p < 0.01$). That is, the relationship between condom use at first sex and being in school significantly changed by district while that of condom use and willingness to have sex varied by gender. Tests of significance of interaction with all other important variables in the previous section did not show any significance at 5 percent level.

Lack of significant differences in condom use at first sex between men and women in Kabale can be explained by minimal difference in the proportions that were in school ($p = 0.05$) and education level attained ($p = 0.06$). There were significant differences in age at

first sex between men and women in Kabale but they were only among those that had first sex before 15 years. However, the level of condom use at first sex among those who had sex before 15 years was low (11 percent) and there was no significant difference between men and women ($p=0.66$).

The difference in condom use at first sex between those in-school and out-of-school was more significant in Kabale than in Mukono. A cross tabulation of education attainment with being in school in Kabale showed that those who were in school were nearly four times more likely to have attained secondary education compared to those who were not in school. Three quarters of those who were not in school in Kabale had attained primary school or no education. In Mukono, those in school were only two times more likely to have attained secondary education than those who were not in school. Therefore, there was a bigger gap in education attainment in Kabale than in Mukono. Secondary education was strongly associated with condom use at first sex.

The difference in condom use at first sex between those who willingly had sex and those who did not was significantly higher among women than men. In cross tabulation of type of relationship and willingness to have sex, women who reported having had sex after mutual agreement were significantly more likely to have been in a relationship compared to those who had not had sex of their own will. The difference in likelihood of being in a relationship was not significant among men. All other factors showed no significant interactions with age, sex and district.

7.2.3 Multivariate analysis

A multivariate logistic regression model for odds of condom use at first sex was constructed to identify independent factors associated with condom use. Table 7.3 shows the results of the final model. Young people were more likely to report having used condoms at first sex if they were from Mukono, had sex after 14 years of age, were in school, had sex in previous five years and were in steady relationships. However, age at first sex was only significant among men while being in school and timing of first sex were only significant among women. Higher confidence intervals for district in the

Table 7. 3 Logistic regression models for using a condom at first sex by gender

Covariates	Men		Women	
	OR	95% CI	OR	95%CI
District (base=Kabale)				
Mukono	4.00***	2.00-8.01	10.48***	4.80-22.89
Age at first sex (Base<=14 years)				
15-24	4.66***	2.05-10.62	1.64	0.68-3.97
In school (base=no)				
Yes	1.67	0.88-3.16	3.96**	1.78-8.85
When event occurred (base= within past 1 years)				
Within previous 2 to 5 years	0.96	0.47-1.96	0.81	0.33-1.97
6 or more years	0.37	0.13-1.08	0.09**	0.02-0.50
Type of partner (base= steady)				
Casual/one time partner	0.34**	0.16-0.70	0.34*	0.13-0.87
Goodness of model fit				
-Log likelihood	125		91	
<i>n</i>	232		207	
%Correctly classified	73		80	
Pearson's χ^2 test (p-value)	0.60		0.99	

women's model were due to a smaller number of respondents and a strong relationship with being in school. According to the models, men who reside in Mukono district were four times more likely to use condoms at first sex than those in Kabale while among women those in Mukono were ten times more likely to use condoms. Men aged 15-24 at first sex were nearly five times more likely to use condoms compared to those younger. Women who were in school were four times more likely to report condom use than those who were not. Those whose first relationship was casual/one-time partnership were three times less likely to use condoms compared to those that had steady relationship.

The models had a fairly high predictive ability with over 70 percent of the observations correctly predicted and a large Pearson's chi-square test p-value, both of which are attributes of a good model.

7.3 Condom use at latest sexual intercourse

Like in the previous section, this section deals with determining the level and factors that independently influence condom use at latest sex. Similar modelling techniques have been applied.

7.3.1 Levels of condom use at latest sexual event

Table 7.4 shows levels of condom use at latest sexual event. The level of condom use at recent sex was 55 percent for women and 57 percent for men. This is lower than the 69 percent for the 9th to 12th grade students in the USA (CDC, 2004) but higher than the 38 percent in Ghana (Karim et al., 2003) and 43 percent in Kenya for unmarried young men aged 15-24 years (Bankole et al., 2004). Condom use at most recent sex among unmarried young people was 41 percent for women and 58 percent for men in Uganda (Uganda HIV_AIDS Partnership et al., 2004).

Condom use at latest sexual event was higher in Mukono than in Kabale and was not significantly different between men and women. In the previous section, it was reported that women were significantly more likely to report condom use at first sex.

The age of young people at the time of the survey was not significantly related to condom use at latest sexual event. There was a tendency to decline by age among women and increase among men but the trend was not significant. This differs from findings by Karim et al. (2003) and Fadiora et al. (2003) that showed condom use at latest sexual encounter to increase with age. The level of current condom use was higher among those who had first sex when they were aged 15-24 than those who were younger at first sex but the difference was not significant.

Like condom use at first sex, the likelihood of current condom use was higher among those who were in school compared to those who were not. However, the difference was not significant among men. The education level attained was related to current condom use as it was with condom use at first sex. Those who attained secondary school education were more likely to use condoms at the most recent sexual event than those who attained primary education or none.

The foundation of the school was an important factor in current condom use with those who attended private schools most likely to use condoms compared to those who attended religious and public founded schools. A similar pattern was found for likelihood of condom use at first sex although it was not significant.

Table 7. 4 Condom use at latest sexual event

Characteristics	Men	Women	All	Sig
	%	%	%	
District	***	**	***	
Kabale	33.7	43.3	38.6	
Mukono	71.9	64.3	68.5	
Residence		*	*	
Rural	54.1	50.3	52.2	
Urban	62.2	70.2	65.1	
Age group				
15-16	53.1	63.5	60.0	Trend: NS
17-18	54.7	55.6	55.2	
19-20	63.8	44.4	55.3	
21-22	64.0	56.3	62.1	
23-24	42.9	46.7	44.0	
Age at first sex				
<15	51.5	48.5	50.0	
15-24	59.9	58.1	59.0	
In school		***	***	
No	54.6	37.5	46.2	
Yes	59.2	73.5	65.6	
Education	**	**	***	
Primary	43.8	35.3	39.2	
Secondary	63.2	69.2	65.8	
School attended	**	*	***	
Public	53.4	44.9	49.4	
Religious	40.8	61.0	51.9	
Private	71.4	69.8	70.8	
Listens to radio		**	**	
No	48.0	37.3	40.5	
Yes	58.1	62.2	59.8	
Religion			*	
Catholic	52.3	51.4	51.9	
Protestant	56.6	52.2	54.5	
Moslem	57.1	69.2	63.0	
Pentecostal/Evangelical	92.3	66.7	80.0	
Drinks alcohol	**			
No	65.5	52.6	58.8	
Yes	43.0	62.0	50.0	
Financial support source		**		
Parents	57.7	65.1	61.5	
Self	56.8	31.6	48.7	
Relatives	60.0	61.9	61.0	
Others	50.0	44.1	46.4	
Attitude to condom		**	***	
Low/Medium	51.6	51.5	51.5	
High	65.4	71.9	67.9	
Incomplete score†	44.8	35.1	39.4	
Type of partner	*	*	**	
Steady	61.0	58.8	59.9	
Casual (known)	30.0	35.3	32.4	
One time partners	47.6	33.3	41.7	
Condom use at first sex	***	***	***	
No	37.2	23.5	31.9	
Yes	82.3	75.6	78.9	
All	57.0	55.0	56.0	
n	228	202	430	

χ^2 test p-value * p<0.05 ** p<0.01 *** p<0.001 NS=Trend Not significant †Did not answer all questions for the abstinence score

The level of condom use at most recent sex was significantly higher among those who listened to radio compared to those who did not, but the difference was not significant among men. A similar pattern was found for condom use at first sex.

Religion had a marginal effect on likelihood of current condom use. Those who were Muslims and Pentecostal/Evangelical faithful were more likely to have used condoms at most recent sexual intercourse compared to Catholics and Protestants.

Consuming alcohol and being self reliant or relying on others such as relatives for financial support reduced the likelihood of current condom use but the relationships were only marginally significant.

The likelihood of current condom use was higher with steady partners than casual and one time partners. This pattern is similar to that found with condom use at first sex.

Discussion with parents about matters concerning sex, kind of people one shares residence with and attitude to condom use were not significantly associated with condom use at recent sex.

7.3.2 Interactions with age, sex and district

A test of interactions of significant factors with age, sex and district was carried out using a bivariate model. The results show that the only factor whose effect on condom use at latest sexual encounter changed significantly by gender was being in school. The effect of being at school on condom use at latest sexual intercourse was greater among women than men (Figure 7.2). Among women, those who were in school were twice as likely to use condoms as those who were not in school while, among men, the difference was minimal. One possible explanation is that women who were in school were nearly three times as likely to have attained secondary education as those who were not in school, while men who were in school were only twice as likely to have attained secondary education as those who were not. Other significant interactions were condom use at first sex with district ($p=0.002$) and condom use at first sex with age group ($p=0.001$).

The effect of condom use at first sex on use at recent sex significantly changed between districts and age groups. The effect was highest among those in age group 15-16 years and those in Kabale (Figure 7.3). An explanation for greater effect of condom use at first sex among those from Kabale is that those who used condoms at first sex were more likely to have attained secondary education than those who did not use condoms at first sex. The same explanation holds with age group. Those in age group 15-17 who used condoms at first sex were more than twice as likely to have attained secondary education as those who did not use condoms. The difference was not significant in other age groups.

Figure 7. 2 Effect of being in school on current condom use by sex

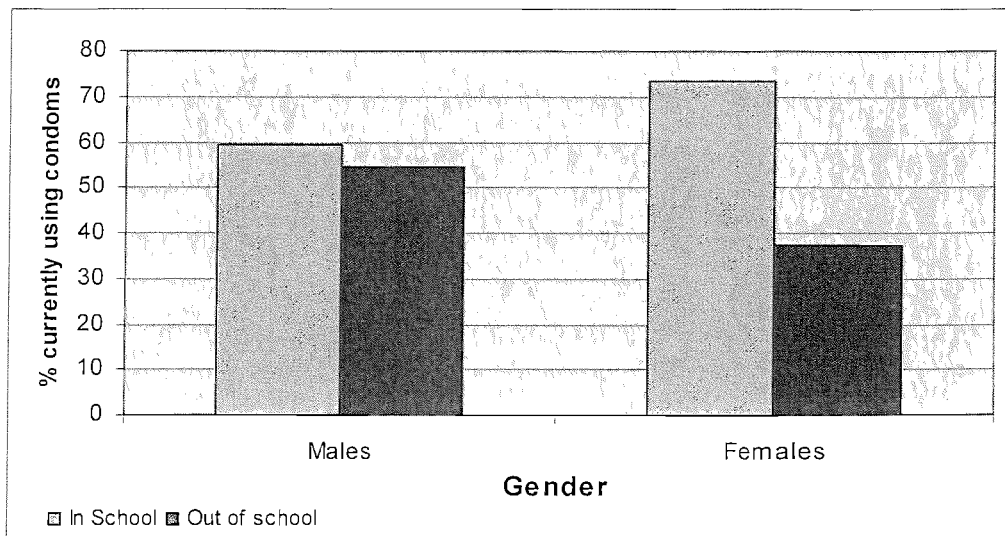
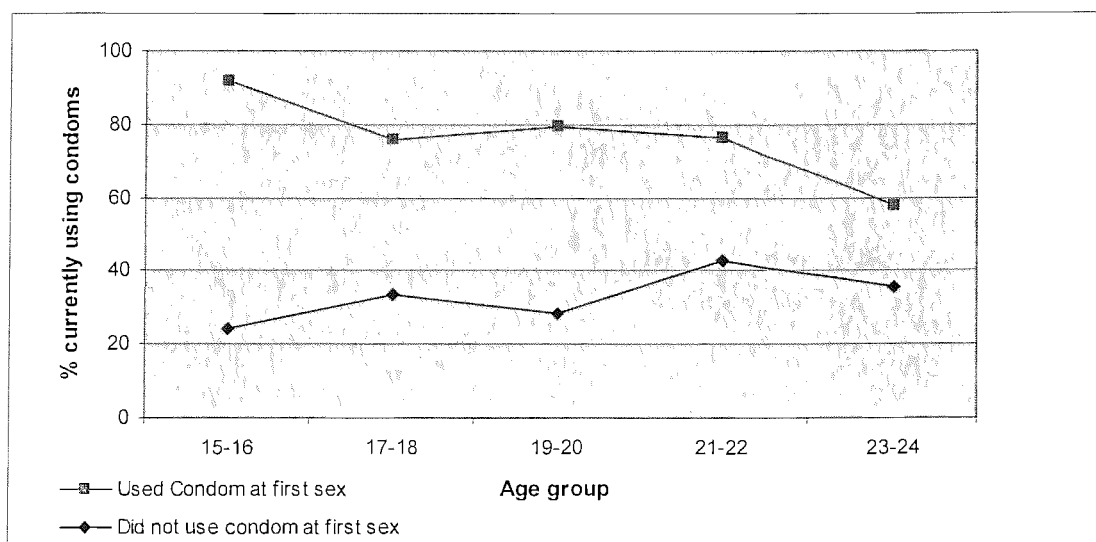


Figure 7. 3 Effect of condom use at first sex on current condom use by age group



7.3.3 Multivariate analysis

Table 7.5 shows independent factors associated with condom use at latest sexual encounter in a multivariate logistic regression model. The factors found to be independently associated with condom use at latest sexual encounter were residence in Mukono district, being in school, listening to radio and using condom at first sex. However, being in Mukono was only significant among men while being in school and listening to radio were only significant among women.

Table 7. 5 Logistic regression model condom use at most recent sexual intercourse

Variable	Men		Women	
	OR	95%CI	OR	95%CI
District (base=Kabale)				
Mukono	5.21***	2.61-10.41	0.97	0.40-2.37
In school (base=no)				
In school	1.17	0.54-2.54	4.02**	1.66-9.76
Education level attained (base=none/primary)				
Secondary	1.97	0.90-4.32	1.67	0.74-3.79
Type of partner (base= Fiancée /Girl/Boyfriend)				
Casual/one time partner	0.50	0.21-1.18	0.47	0.17-1.32
Listens to radio				
Yes			2.34*	1.00-5.46
Resides with				
Single parent			0.82	0.33-2.03
Relative/Other			0.82	0.31-2.16
Condom use at first sex (base=no)				
Yes	7.13***	3.60-14.09	8.96***	3.82-21.04
Model fit				
<i>n</i>	228		200	
-Log likelihood	114		95	
%Correctly classified	77		77	
Pearson's χ^2 test (p-value)	56		74	

7.4 Comparing influences on first sex and most recent sex

Table 7.6 compares influencing factors at first sex and latest sex. The factors that had independent significant influence on both condom use at first and most recent sex were being from Mukono district and being in school. Starting sex late, having a steady partner

and when the sex event occurred were strongly associated with condom use at first sex but not at most recent sex event. Listening to radio had a significant effect on condom use at most recent event at 5 percent level but it was not significant at first sex.

The reason why men were more unlikely to use condoms at first sex could be the kind of partners they have at first sex. They are more likely to have casual and one time partners than women (p=0.03). The pattern was more evident in Mukono district (p<0.001).

Condom use at first sex is a more sensitive indicator with five of the seven variables significant while condom use at last sex is only associated with three of the seven variables that were tested in the model for condom use at first sex.

Table 7. 6 Comparing independent influences of factors on condom use at first and latest sex

Covariates	Condom use at first sex		Condom use at latest sex	
	Men	Women	Men	Women
	OR	OR	OR	OR
District (base=Kabale)				
Mukono	4.00***	10.48***	5.21***	0.97
Age at first sex (Base<=14 years)				
15-24	4.66***	1.64		
In school (base=no)				
In school	1.67	3.96**	1.17	4.02**
Education level				
Secondary			1.97	1.67
When event occurred (base= within past 1 years)				
Within previous 2 to 5 years	0.96	0.81		
6 or more years	0.37	0.09**		
Listens to radio				
Yes				2.34*
Type of partner (base= Steady)				
Casual/one time partner	0.34**	0.34*	0.50	0.47
Condom use at first sex				
Yes			7.13***	8.96***

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

7.5 Pattern of use at both first and most recent sex

Table 7.7 shows condom use at first and most recent events combined to make a three level outcome variable. There are those who used condoms at first and latest sex (40 percent), used condoms at latest sex but did not use at first sex (16 percent), did not use condoms at latest sex but used at first sex (11 percent) and those who did not use at either first or latest sex (33 percent). Those who were consistent users can be placed under no-risk category while those who never used condom at the two events can be placed under the very risky category.

A multinomial logistic regression model was fitted as in Equation 3.6 in subsection 3.6.3 to explain factors that were associated with each risk pattern of condom use. Few people were in either category of inconsistent condom use and were therefore grouped together to ease computation.

Table 7. 7 Pattern of condom use at first and most recent sexual event

Used condom at latest sex	Used condom at first sex	Code /category	Consistency	<i>n</i>	%
Yes	Yes	1	Consistent (No risk)	172	40.2
Yes	No	2	Inconsistent (Risky)	67	15.7
No	Yes	3	Inconsistent (Risky)	46	10.8
No	No	4	Never used (Very risky)	143	33.4
Total				428	100.0

Factors in the final model were district, school status, age at first sex, alcohol consumption and education level. Table 7.8 shows that the factors that had most influence (significant at 5 percent level) were district, age at first sex and alcohol consumption. Among men alcohol consumption was not influential but it was influential among women.

The predicted pattern of condom use from the final model shows that both consistent and inconsistent condom use were higher in Mukono than in Kabale. The likelihood of failing to use at the two events was higher in Kabale than in Mukono.

Those who were in school were more likely to be consistent condom users than those who were not. Those who were not in school were more likely to have never used a condom at

the two events or to be inconsistent users. The difference was higher among women than men.

Those who had attained secondary education were more likely to be consistent or inconsistent condom users compared to those who were not educated. The likelihood of consistent or inconsistent condom use was higher among those who had attained secondary education compared to those who never went to school or attained only primary level. Among women, the uneducated were more likely to be inconsistent condom users than the educated ones. Failure to use condoms at the two events was more common among those who have never been to school or attained only primary level.

Table 7. 8 Predicted probabilities of condom use from a multinomial logit model

Variable	Men			Women		
	Consistent	Inconsistent	Never used	Consistent	Inconsistent	Never used
District						
Kabale	21.4***	22.6**	56.0	29.1***	16.3**	54.6
Mukono	45.0	32.9	22.1	58.1	29.2	12.7
Alcohol						
No	42.4	28.7	28.8	47.4	20.0**	32.5
Yes	24.7	29.4	45.9	38.0	34.0	28.0
In School						
No	32.3	30.1	37.6	27.3**	32.0	40.7
Yes	39.3	27.9	32.8	63.7	14.4	21.9
Education						
None/Primary	27.5	25.7	46.8	28.4	24.9	46.7
Secondary	39.9	30.5	29.6	58.1	22.2	19.6
Age at first sex						
<15	17.8	35.2	46.9	35.6	17.8	46.7
15-24	44.1	26.1	29.7	50.0	26.3	23.7

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

The level of consistent condom use increased with age at first sex among both men and women. The level of inconsistent condom use was lower at higher age group at first sex among men while it increased among women. The likelihood of failure to use a condom at the two events was lower among those who had first sex between 15 and 24 years.

7.6 Discussion

The results in this chapter have shown that condom use at first and most recent sex was lower than that in developed countries but higher than in some other African countries. In a bivariate analysis, factors found to be highly associated with condom use at first sex were residence in Mukono district, being female, higher age at first sex, being in school, having attended public schools, educational attainment and being in a steady relationship. In a similar analysis, factors found to be associated with condom use at latest sex were residence in Mukono district, being male, initiating sex at young age, being in school, listening to radio, having a steady relationship and having used a condom at first sex. The strength of the effect of sex of respondent on condom use at first sex depended on district, schooling status and experience of coercion or persuasion at first sex. The likelihood of condom use at first sex increased with age and age difference with partner. The level of condom use at first sex followed an increasing trend with age difference with partner. The effect of being in school on current condom use was significantly different for men and women while the effect of gender and schooling status on condom use at first sex varied by district.

Condom use at first sex was independently associated with residence in Mukono, being in school, higher age at first sex, having had sex in one year before the survey date and being in a steady relationship while at latest sex it was associated with residing in Mukono, being in school, listening to radio and condom use at first sex. Consistent condom use was strongly associated with residence in Mukono and being in school. However, being in school was not a significant factor among men. Inconsistent condom use was associated with residing in Mukono among both men and women and taking alcohol among women only.

Higher reported levels of condom use at first and latest sex events compared to other countries can be attributed to more awareness and sensitisation campaigns which have contributed to the highest decline of HIV in Africa. The level of condom use is lower than that in developed countries due to lower access to reproductive health services. Other factors may include poor attitude to condom use in developing countries and lack of youth friendly sexual health services. It is not surprising that condom use is much higher in Uganda than in Kenya and Lesotho since anti-HIV campaigns started much earlier.

Higher reported levels of condom use at latest sex by women compared to the national level can be explained by the large proportion of women respondents from Mukono (55 percent) which is among the most urbanised districts in the country and more educated respondents compared to the national level.

Higher reported levels of condom use at first sex by women than men have been reported in other publications, including Levin and Robertson (2004) and FHI et al. (2002). In the current study, the difference was greater in Mukono than in Kabale. One explanation could be the age difference with partner and the kind of partner. Women were more likely to have had first sex with older partners and were also more likely to have sex within a relationship, both of which were associated with condom use. However, more research is required to explain the results further.

From first to latest sex event the relationship between condom use and gender changed direction. While women were more likely to report condom use than men at first sex the reverse was true at latest sex event. An explanation could be that, at latest sexual event, both women and men are more sexually experienced and in usual circumstances men buy the condoms and use them while women expect men to come with them. In such a situation it is men who are more likely to report condom use.

Mukono residents were more likely to use condoms both at first sex and latest sex. This is possibly connected with accessibility. Mukono is more urban and closer to the largest cities in the country where condoms are sold in shops and given free in health centres and by Non-Governmental Organisations (NGO) dealing with the sexual and reproductive health of young people. Another fact is that young people in Mukono are more likely to get some employment where they can get money to buy condoms than in Kabale.

The difference between Mukono and Kabale was stronger at first than latest sex. The difference in likelihood of use reduces at latest sex because possibly sexually active young people are by then knowledgeable of where and how to get condoms. This also depends on the level of overall use of condoms. The difference may be minimal if the overall level increases.

Condom use at both first and latest sex increased with age at first sex and the pattern was similar for both men and women. The pattern is in accord with other studies such as Grunseit (1999), Abma and Sonenstein (2001), Hall et al. (1990) and Fenaughty et al. (1994).

Increase in condom use with higher age difference with partner at first sex among women differs from findings in Narring et al. (2000) and Abma et al. (1998) which showed reduced condom use among those who had first sex with older partners in Switzerland and the USA respectively.

The positive effect of being in school and education level on condom use at first and latest sex may be attributed to sexual and reproductive health education that young people acquire in school. The relationship between education level with condom use at first sex is supported by other research including Abma and Sonenstein (2001), although it was only significant among women. The association between education level attained and condom use agrees with most research findings including Najjumba et al. (2003) in Uganda and Karim et al. (2003) in Ghana. Being in school was only significant among women at both first and latest sex events and education level only significant among women at first sex. The difference in influence of being in school and education needs further investigation.

The reason why young people who listened to radio regularly were more likely to use condoms at first and latest sex compared to those who did not could be that radios in Uganda carry quite a lot of health related messages and adverts on condom use and this might have led to increased use of condoms. An assumption is made here that the frequency of listening to radio at the time of first sex was not different from frequency at the time of the survey.

Higher current condom use among those who studied in private schools can be explained by a more liberal administration as compared to public and religious founded schools. There has been a major rise in the number of private schools in the country.

The difference in level of condom use at first and latest sex between religions was just significant at 5 percent level in bivariate analysis. Mosher and McNally (1991) found a

higher reported level of condom use among Protestants compared to other religions, but in this study it is Moslems and Pentecostal/Evangelicals who were more likely to use condoms. The Catholic Church is particularly known to discourage condom use. One other possible reason for higher reported level of condom use among the Muslim and Pentecostal/Evangelical faithful could be the small number of respondents in the groups.

The association of condom use at first and latest sex events with non-consumption of alcohol was expected as it has long been established in other studies. Cooper (2002), Leigh (2002) and Grunseit (1999) found a strong association between non-condom use and alcohol consumption at first sex while, Orr et al. (1992) and Hiltabiddle (1996) found a similar association at latest sex.

Low condom use at latest sex event among those who were self-reliant can be explained by the relationship between source of financial support and being in school. Those who were self-reliant were over ten times less likely to be in school compared to those that were supported by their parents. Not being in school is highly associated with low condom use especially among women.

Association of mobile or migratory populations with higher condom use at first sex can be explained by the fact that they tend to be more urban than rural. In this study, those from Mukono were nearly twice as likely to have stayed for five or less years at their place of residence as those from Kabale. This may explain the difference in level of condom use at first sex.

Higher likelihood of condom use at first and latest sex among those in steady relationship compared to those in casual/one time relationships both agree and disagree with other studies. Manlove et al. (2001) found that condom use at first sex was strongly associated with steady relationship while Forste and Morgan (1998) found that it was strongly associated with casual relationship at first sex. Lansky et al. (1998) and Hernandez-Giron et al. (1999) showed that young people were more likely to use condoms at latest sex event in casual than in steady partnerships and relationship is known to be strong and consistent (Sheeran and Abraham, 1994; Tanfer et al., 1993), while Adetunji and Meekers (2001) did not find any significant relationship. Use of other methods of contraception when having sex with casual or one time partners may be a factor behind low condom use.

A quarter of respondents did not use condoms at either first or last sex events. Results of association of inconsistency of condom use with alcohol consumption are similar to findings in Ray et al. (1998) and Wee et al. (2004). Loss of self control after alcohol consumption cannot allow young people to consistently use condoms.

The increase in condom use by age, though not significant, could have been due to selection effect. The proportion of those using condoms at an earlier age is more like that in the general population since most young people are unmarried. It includes many who could have had sex with their partners shortly before they married them since age at first marriage is low. People may not use condoms with partners they are about to marry because this would be a sign of mistrust (Pullum et al., 2005). At a higher age group most people are married and those who are not may still want to remain unmarried but sexually active. At such a higher age young people are more likely to use condom (Fadiora et al., 2003; Karim et al., 2003) probably because they are more mature and responsible.

7.7 Conclusion

While results in this study agreed with most previous research findings, there were unique findings that need further investigation. The study has, among other things, highlighted differences in condom use level between districts and the association between condom use at first sex and latest sex. More research is needed to investigate higher condom use at first sex among women compared to men, the pattern of condom use at latest sex event with age at first sex, condom use at first sex with age difference with partner, condom use and being in school among women, condom use at first sex and religion, and condom use at latest sex event with type of relationships.

CHAPTER EIGHT

8. CONDOM USE ACROSS AND WITHIN RELATIONSHIPS

This chapter reports the levels and trends of condom use within and across relationships and identifies factors associated with them. Only three relationships, the first, the second to latest and the latest relationship are considered due to recall problems likely to arise in other relationships. Those who had had only one or two relationships are also included and a variable to identify both the relationships reported and the order of occurrence is created in the data. There was no selection limitation for the timing of the relationships. The data used to investigate condom use are those obtained using the questionnaire. The data from the Event History Calendar were not used for this investigation because of the constraints identified in the pilot study as mentioned in chapter three. There were no data collected on lifetime number of partners, which could have identified those who had had four or more number of partners for more extensive analysis. Any mention of the number of partners refers to the three relationships on which information was sought unless otherwise stated. Those who reported on one relationship had had only one relationship in the entire life. Similarly, those who reported on two relationships had had only two relationships in their entire life. However, some of those who reported on the three relationships had actually had four or more relationships as found in an earlier question on partners in previous 12 months (See Appendix 1a).

A review of the literature showed that condom use within a relationship declines with time and age among men (Ku et al., 1994) and it also declines with increasing number of partners (Richter et al., 1993). Ku et al. (1994) viewed the dynamics of condom use as a saw-tooth pattern whereby, in every relationship, condom use declines with time. In this chapter, these areas are explored to see whether these two findings hold with the data from two districts in Uganda.

Other areas explored are the influences of socio-demographic and behavioural characteristics of the respondents on the trends, patterns and consistency of condom use within and across relationships. The interlink of relationships between primary abstinence, measured by age at first sex, and condom use at first sex and subsequent events as

specified in the conceptual framework, are also explored. The specific characteristics investigated were age, gender, school status, education level, foundation of the school attended, listening to radio, reading newspapers, religion, residence with parents, source of financial support, alcohol consumption, age at first sex and communication with parents, attitude to condom use and number of partners.

The chapter starts with a description of respondents in terms of number and types of the relationships they reported. Then, the patterns of condom use within each relationship and by number of relationships are examined. Within relationships, only two points, first sex and last sex, are studied. Next, condom use at any point and consistency of condom use are modelled. This is followed by a discussion and conclusion.

Levels of condom use within and across relationships are computed using proportions and displayed graphically. Consistent use of condoms at first and last sex in a relationship was modelled using multinomial regression analysis, while condom use as a binary outcome was modelled using logistic regression. The details of each model are shown in the results section.

8.1 Descriptive Analysis

This section describes the order, type and number of relationships the respondents reported and the level of condom use at the start and end of each relationship by key independent variables. It further establishes whether there are changes in relationships that predict condom use.

8.1.1 Order and classification of relationships

In the first part of the chapter, the relationships are ordered into first, second to latest and latest. Events of young people who had only one relationship appear only in the first relationship rather than the latest. For those who had two relationships, the events of their first relationship are counted in first relationship while those for second relationship are counted in the latest relationship. In the later part of the chapter a new variable that combines the number and order of relationships reported is included in the analysis to iron

out misclassification bias. For example, the first relationship is split into the first of one, first of two and first of three relationships reported.

8.1.2 Number and order of relationships

To be able to analyse data on condom use across relationships, questions on the use of condoms at the start and end of first, second to latest and latest relationships were asked. Table 8.1 shows the number of responses for the start and end of relationships. For each relationship, the number of responses at latest sex was lower than at first because some relationships were casual and could last just one day or a very short time. Nearly all answered the question on condom use at first sex and slightly fewer at latest sex with first partner. The one time events were counted in first sex in relationships. Nearly half of the respondents answered the question about condom use at first sex in the most recent relationship. Fewer than one fifth of the participants (86) that had ever had sex provided information on three relationships.

Table 8. 1 Number of responses for questions on condom use at start and end of relationships

Number of relationships	Order of relationship						Involved in each relationships
	First		2 nd Most recent		Most recent		
	First Sex	Last Sex	First Sex	Last Sex	First sex	Last sex	
One	220	205					220
Two	139	131			139	138	139
Three/more	86	76	86	73	86	83	86
Total	445	412	86	73	225	221	445

8.1.3 Number of relationships reported by characteristics of the respondents

The respondents were asked details about their most recent, next to most recent and first relationships. Table 8.2 shows the details by the number of relationships reported. Amongst respondents who reported on three relationships there were significantly higher proportions who were male, had a younger partner in first relationship, studied in private

Table 8. 2 Background characteristics of respondents by number of relationships

Characteristics	Number of relationships reported			All <i>n</i> = 445	Sig
	One (<i>n</i> =220)	Two (<i>n</i> =139)	Three or more (<i>n</i> =86)		
	%	%	%	%	
District					
Kabale	43.6	41.0	36.1	43.4	
Mukono	56.4	59.0	64.0	58.7	
Gender					
Women	63.2	40.3	17.4	47.2	
Men	36.8	59.7	82.6	52.8	***
Age group					
15-16	27.7	18.7	16.3	27.7	
17-18	30.9	26.6	20.9	27.6	
19-20	20.9	25.2	26.7	23.4	
21-22	11.8	17.3	19.8	15.1	
23-24	8.6	12.2	16.3	11.2	
School attended					
Public	42.2	40.9	38.5	41.1	
Religious	29.4	26.3	15.4	25.8	
Private	28.4	32.9	46.2	33.1	*
Age difference with 1st partner					
Partner younger	23.3	43.6	50.0	35.3	
Same	7.4	15.0	13.8	11.2	
Older 1-5 years	48.2	30.8	31.3	39.0	
Older >5	21.2	10.5	5.0	14.4	***
Type of first sexual partner					
Steady	76.3	64.5	64.7	70.4	
Casual	12.3	25.4	17.7	17.4	
One time	11.4	10.1	17.7	12.2	*
Drinks alcohol					
No	74.6	67.6	59.3	69.4	
Yes	25.5	32.4	40.7	30.6	*
Financial support source					
Parents	56.8	48.9	32.9	49.8	
Self	19.1	30.9	43.5	27.5	
Relatives/Others	24.1	20.1	23.5	22.8	***
Attended party/club last month					
No	66.4	49.6	37.4	55.6	
Yes	33.6	50.4	62.7	44.4	***
Length of stay					
<=5 years	38.6	41.7	54.7	42.7	
>5 years	61.4	58.3	45.4	57.3	*
When first sex occurred					
Within 1 year	68.2	36.7	16.3	48.2	
2-5 years ago	23.0	41.7	47.7	33.7	
>5 years ago	8.8	21.6	36.1	18.1	***
All	49.4	31.2	19.3	100.0	

Sig= χ^2 test * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

founded schools, drank alcohol, were self reliant financially, attended parties or discos, had lived at their place of residence for five or less years, liked attending parties and had first sex more than five years before the survey date compared to those who reported one or two relationships. Those who reported two or more relationships were less likely to have had a steady partner at first relationship compared to those that had reported one relationship. The distribution of respondents by age, district, school status, education level, access to media and discussion with parents about sexual matters did not significantly vary by the number of relationships they reported.

8.1.4 Characteristics of the relationships

Condom use patterns between and across relationships can be better understood by first exploring the distribution of key characteristics by relationships. Table 8.3, shows by relationship, the distribution of type of partner, age difference with partner, when the sex event took place, willingness to have sex, reasons for use and non use of condoms, and source of condoms. The table also shows that women are more likely to be in steady relationships than men.

Most of the participants reported having had steady partners in first, second to latest and latest relationships. The proportion in steady partnerships was highest in the latest relationship. This is not surprising because, with time, many people find partners they wish to marry later. The importance of type of relationship in understanding condom use was demonstrated by the strong association with condom use, as outlined in the previous chapter, where the likelihood of condom use was higher in steady relationships than in casual or one time relationships.

Age difference with partner changed with time. The preference for younger partners among men increased steadily across relationships from first to latest one. Bivariate analysis results reported in the previous chapter showed an increase in condom use with age difference.

Nearly two thirds of women participants and a third of men had their first relationship within the previous one year of the survey. The proportion was higher in the second to latest and latest relationships. Nearly all participants had their latest and second latest

Table 8. 3 Characteristics of the first, second to latest and latest relationships

Characteristics	First relationship		Second to last		Latest relationship	
	Men %	Women %	Men %	Women %	Men %	Women %
Type of partner						
Steady	68.1	78.1	61.0	71.4	83.4	88.6
Casual	31.9	21.9	39.0	28.6	16.6	11.4
Age difference with partner						
Younger partner	60.6	4.4	76.0	11.8	78.9	11.4
Same age	16.3	5.0	8.0	0.0	11.6	7.6
Older 1-5	21.3	60.8	16.5	58.8	8.6	56.8
Older 6+	1.8	29.8	0.0	29.4	0.9	24.3
When event occurred						
Within one year	33.1	64.8	98.3	92.9	94.7	95.7
Two-five years ago	43.1	23.3	0.0	7.1	3.3	4.3
Six+ years ago	23.7	11.9	1.7	0.0	2.0	0.0
Length of relationship						
Less than 1 year	21.4	35.2	50.0	49.2	17.1	29.1
One year	28.6	20.8	28.6	30.5	38.6	35.8
2-10 years	35.7	32.9	14.3	13.6	40.0	29.1
Unknown	14.3	11.1	7.1	6.8	4.3	6.0
Willingness						
Persuasion/coercion	33.8	32.3	44.1	28.6	34.4	27.1
Both willing	66.2	67.7	55.9	71.4	65.6	72.9
Reason for use of condom (Users only)	<i>n</i> =96	<i>n</i> =116	<i>n</i> =39	<i>n</i> =6	<i>n</i> =92	<i>n</i> =40
Did not want a child	17.7	44.0	30.8	16.7§	20.7	37.5
Avoid HIV	77.1	50.0	56.4	50.0§	71.7	52.5
Other	5.2	4.3	12.8	33.3§	7.6	5.0
Doesn't know	0.0	1.7	0.0	0.0	0.0	5.0
Reason for not using condom (non users only)	<i>n</i> =120	<i>n</i> =77	<i>n</i> =20	<i>n</i> =8	<i>n</i> =58	<i>n</i> =30
Trusted partner	34.2	19.2	50.0	12.5§	37.9	26.7
Partner insisted	5.0	20.8	20.0	12.5§	10.3	23.3
Other	48.3	39.0	25.0	50.0§	0.0	3.3
Don't know	12.5	22.1	5.0	25.0§	46.6	13.3
Source of condoms (users only)	<i>n</i> =95	<i>n</i> =105	<i>n</i> =42	<i>n</i> =7	<i>n</i> =80	<i>n</i> =38
Shop	57.9	37.1	57.1	28.6§	58.8	44.7
Private clinic/Drug Shop	22.1	24.8	23.8	28.6§	18.8	18.4
Health centre	12.6	6.7	4.8	14.3§	7.5	5.3
Don't know	2.1	22.9	7.1	14.3§	1.3	31.6
Other	5.3	8.6	7.1	14.3§	13.8	0.0
<i>n</i>	216	196	59	14	151	70

§=Small numbers

relationships in the previous one year. Of the 86 who had three or more relationships, 63 started the latest relationship while the second to latest was still on-going (not in table). A

third of the participants had sex after persuasion or coercion and the proportion did not change much across relationships except a rise among men in second last relationship. This could probably be related to the nature of the second to latest relationship, being the shortest and with least number of respondents. More research could help to identify the significance of the apparent rise in involuntary sexual activity among men.

The second to the latest relationship was the shortest; half of the respondents spent less than one year in the relationship followed by the latest relationship. However, the latest relationships were more likely to be on-going. The second to latest could have been shorter due to the fact that closed intervals tend to be shorter than open ended ones.

The major reasons reported for condom use were avoiding HIV and pregnancy. Expectedly, women were more likely to report pregnancy prevention as a major reason for condom use than men. The pattern did not change much between first and last relationship. Other major reasons for not using condoms were trusting partners and refusal by the partner.

Women were more likely to report partner refusal to use condoms than men. The proportion reporting trusting partners was higher in the second and latest relationships compared to the first.

Major sources of condoms were shops and private clinics/drug shops. The proportion of respondents that bought condoms in the shops remained nearly the same across relationships among men, but it increased in latest relationship among women. Probably in the latest relationship young people are older and more confident.

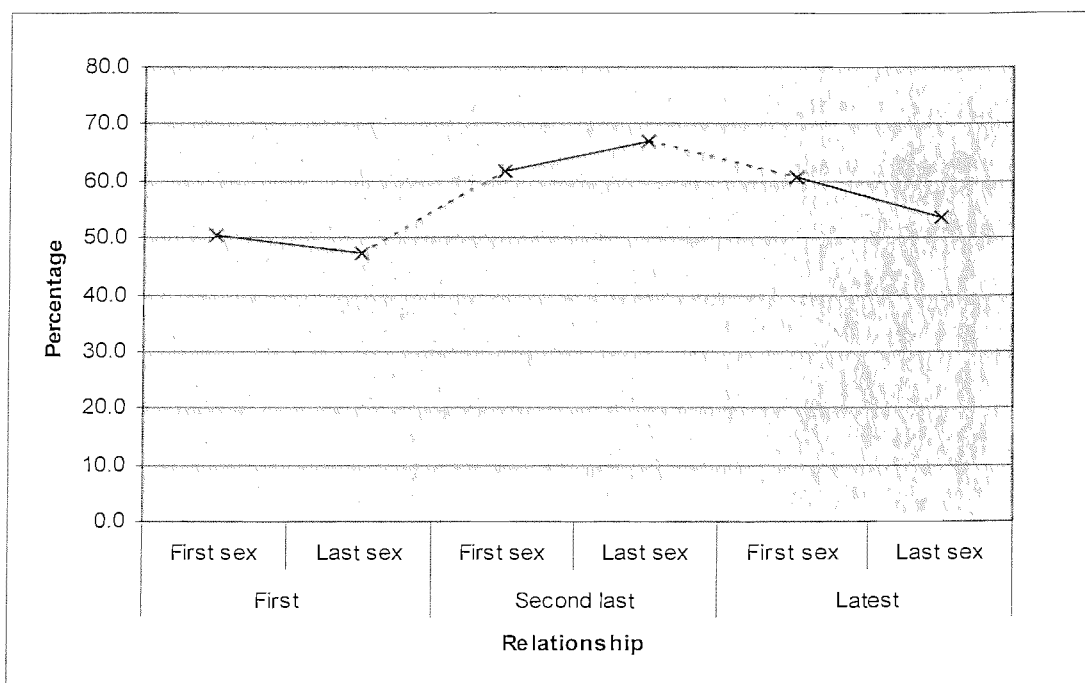
8.1.5 Condom use within and across relationships

This subsection describes the general trend of condom use across relationships and the pattern of use in each relationship. It identifies changes in the pattern of use by relationship. The factors that are associated with condom use and changes in their influence across relationships are identified. Important factors are later used to build a multivariate regression model. Chi-square tests are carried out to compare the levels at each event.

General trend of condom use across relationships

Figure 8.1 shows a crude trend of condom use within and across relationships irrespective of number and length of relationships. The figure assumes the order of relationships is as shown in Table 8.1. The level of condom use was 51 percent at first sex and declined to 47 percent by the end of the first relationship. The level was higher at 62 percent at start of

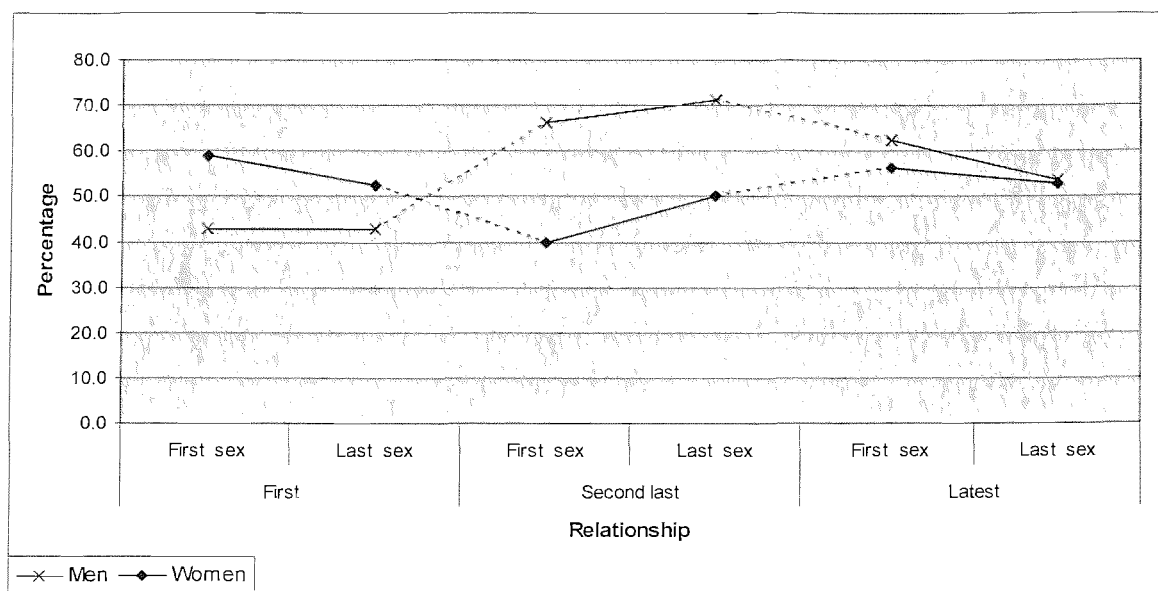
Figure 8. 1 Percentage level of condom use at each event within relationships



second to latest relationship and it rose to 67 percent by the end of the relationship. The level declined to 60 percent at first sex in latest relationship and declined further to 53 percent at most recent sex. The pattern is rather strange in that, in the second relationship, condom use level was higher and it increased during the relationship as compared to the first and latest relationships where it was lower and reduced during the relationship. This differs from the other studies that show reduced condom use in each relationship as a result of trust effect (Ku et al., 1994). As expected, condom use declined in longer relationships between first and latest sex.

Figure 8.2 shows that the trend of condom use among women was different from that of men. Within the first relationship, reported condom use was higher than that of men and there was a decline with time while there was no change among men. In the second to the

Figure 8. 2 Percentage level of condom use at each event by sex



latest relationship, the level of condom use was much lower than that of men but there was a similar increase in use to that amongst men.

Figure 8.3 shows that the level and trend of condom use differed by district. In all relationships, condom use was much lower in Kabale than in Mukono. In the first relationship, the level slightly increased in Kabale while it decreased in Mukono. In the second to latest relationship there was a large increase in condom use in Kabale but a decline in Mukono. In the latest relationship, there was a larger decline in condom use in Mukono than in Kabale. While the condom use pattern for Mukono was similar to the general pattern, the one for Kabale was different. This may probably be due to a smaller number of people that reported the three relationships. Of those who had three or more relationships only 36 percent were from Kabale.

Figure 8.4 shows condom use patterns by the number of relationships. It is clear that condom use level was much higher in recent relationships than in previous ones; this may be due to increased health sensitisation and condom promotion. High condom use in the

Figure 8. 3 Percentage level of condom use at each event by district

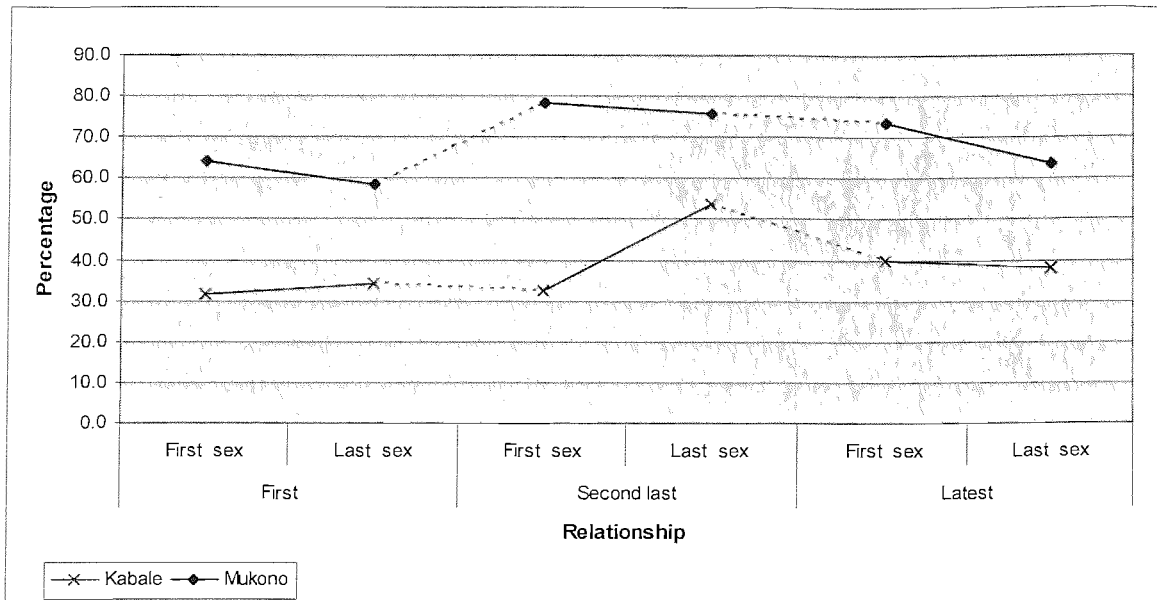
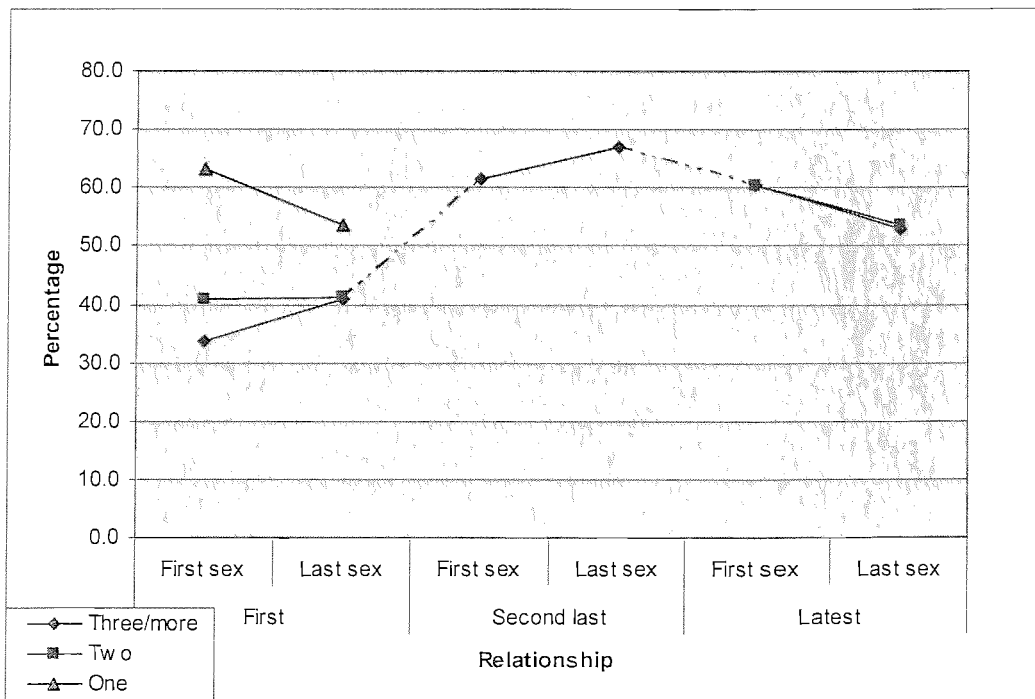


Figure 8. 4 Pattern of condom use by number of relationships

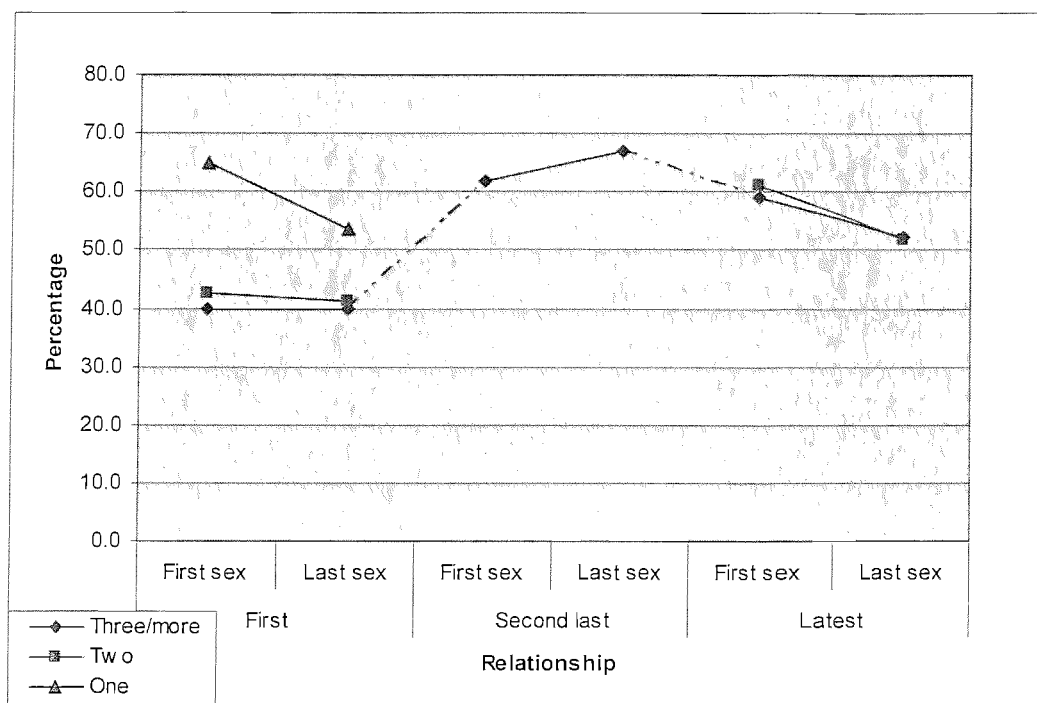


second relationship among those that had three or more relationships may be due to uncertainty of the relationship since the earlier one was more likely to be non-steady as found in Table 8.2 in the previous section. A decline in condom use among those who reported one relationship may possibly be a sign of early “trusting” among those in lower

age group people while older young people have “trusted” their partners after one or more relationships.

Figure 8.5 shows that, when those who had sex on only one of the two events in each relationship are excluded, the graph remains the same as the previous one except that condom use at first sex is the same level as last sex in their first relationship.

Figure 8. 5 Pattern of condom use by number of relationships excluding respondents that reported one time relationship



Pattern of condom use in each relationship

Table 8.4 shows the comparisons of levels of condom use by category of key factors. The level of condom use rose by age group at all events in the three relationships. Across relationships in each age group the level of condom use followed the general trend except in age group 15-16, where there was a slight decline in the second to latest relationship.

Young people who were in school were more likely to be using condoms than those who were out of school. The pattern was significant in first relationship and the latest one but not in the second to latest relationship.

Table 8. 4 Percentage level of condom use by background characteristics at first and last event within relationships

Characteristics	First relationship		2 nd to latest relationship		Latest relationship	
	First n=445	Last n=412	First n=86	Last n=73	First n=225	Last n=221
	%	%	%	%	%	%
District	***	***	***		***	***
Kabale	31.5	32.0	32.3	53.6	39.8	37.9
Mukono	64.0	58.8	78.2	75.6	73.7	63.4
Gender	***					
Women	59.1	52.6	40.0	50.0	56.3	52.9
Men	43.0	43.1	66.2	71.2	62.3	53.6
Age group						
15-16	50.5	56.7	50.0	41.7	42.5	46.0
17-18	50.4	46.0	50.0	64.3	63.6	58.2
19-20	51.9	48.0	73.9	86.4	65.5	56.9
21-22	58.2	53.1	70.6	78.6	73.2	58.5
23-24	38.0	26.5	57.1	45.5	51.6	40.0
In school	*	***				*
No	44.6	37.4	58.0	62.5	56.1	45.1
Yes	56.4	57.8	66.7	72.7	64.8	62.0
Education	**	***	*	*	***	***
None/primary	41.4	32.5	46.9	51.7	39.3	33.7
Secondary	56.2	56.6	70.4	77.3	73.1	65.2
School attended						
Public	47.4	44.0	46.7	72.0	52.3	45.9
Religious	51.8	45.8	66.7	63.6	56.3	53.2
Private	55.3	56.6	77.8	75.9	75.3	65.8
Reads magazines	*	*	*	*	***	*
No	46.7	42.8	48.9	55.0	48.0	47.2
Yes	55.8	54.0	75.6	81.8	76.0	61.2
Listens to radio		**	*		*	*
No	41.4	33.3	42.9	57.1	45.7	40.0
Yes	52.8	51.1	65.3	69.5	64.3	56.8
Drinks alcohol	**	*				
No	55.3	51.6	64.7	65.9	64.8	54.2
Yes	39.7	38.9	57.1	69.0	52.5	51.9
Age at first sex	***	**		*	**	
<15 years	29.4	35.3	50.0	50.0	47.6	45.7
15-24 years	60.9	53.0	68.5	76.6	67.8	57.9
Age difference						
Partner younger	43.0	45.1	70.0	71.4	64.3	59.8
Same	46.7	39.0	63.6	71.4	61.3	43.3
Older 1-5 years	57.3	53.5	64.0	69.6	62.1	54.6
Older >5	60.3	48.2	25.0§	66.7§	61.1	50.0
Length of relationship		***				
<1 year		39.3		58.3		48.2
1 year		50.5		72.7		51.9
2-10 years		60.3		80.0§		58.3
Unknown		23.5		80.0§		58.3§
Number of partners	***					
One	63.2	53.7				
Two	41.0	42.0			60.4	53.6
Three	33.7	40.8	61.6	67.1	60.5	53.0
Used condom at first sex		***	**	**	***	***
No	----	11.6	49.1	54.2	38.1	36.8
Yes	----	80.8	86.2	92.0	96.5	80.0
All						
	50.6	47.3	61.6	67.1	60.4	53.4

* p<0.05 **p<0.01 ***p<0.001 § n<10

In all events and in all relationships those who had attained secondary education were more likely to use condoms than those who had attained primary or had no formal education. Those who had studied in private schools had a higher proportion that used condoms compared to those who attended public or religious founded schools, but this was only significant for the second to latest and latest relationships.

Young people who had access to the media had a higher proportion of reported condom use compared to those that did not have access. This was evident in all events in each of the relationships but more clearly with reading magazines or newspapers than listening to radio. Listening to radio was not a significant factor at first event in the first relationship and last event in the second to latest relationship as reported in the previous chapter. The level of condom use was significantly higher among those who did not take alcohol than those who did, but the pattern was only significant in the first relationship and not in the second latest and latest relationships.

Those who had first sex before 15 years were consistently less likely to use condoms compared to those that had sex later. The pattern was more significant in the first relationship than in second to latest and latest relationships. The significance of the relationship between condom use within any relationship and age at first sex confirms the hypothesis in the conceptual framework that there is an association between primary abstinence and condom use.

Young people who had a relationship lasting two or more years with their partners were more likely to use condoms than those whose relationship lasted for a year or less. However this was not significant in the bivariate analysis. When other forms of contraception are available this direction is not the same as one would find in UK or USA samples. In a longer relationship one is expected to use condoms less due to a growing trust of the partner or use of other methods of contraception (Stone and Ingham, 2002).

The level of condom use in first relationships was lower among those who reported two or more relationships than among those that reported one relationship. The level was higher in latest relationship and second latest.

Subsequent condom use level among those who used condoms at first sex was significantly higher than the level among those that did not use condoms at first sex. This is consistent with earlier findings.

8.2 Multivariate analysis

In this section, multivariate analyses are reported for each of the relationships and events and across all relationships. Logistic regression and multinomial logistic regression are applied as shown in sub-sections 3.6.2 and 3.6.3.

8.2.1 Correlates of condom use at any event within specific relationship

In an effort to understand the factors that independently influence condom use within each relationship the data on first and last events were merged and a multivariate logistic regression model was applied separately for each relationship. Similar procedures of model selection as in section 3.6.7 were followed.

The results in Table 8.5 show that condom use in the first relationship was strongly associated with residence in Mukono, being female, being in school, higher age at first sex, having had first sex less than two years before the survey and being in a steady relationship. In the second to latest relationship, the only factors that were significant were being in Mukono, higher education level attainment, having used condoms at first sex, having had first sex two or more years before the survey. In the latest relationship, the factors that were significantly associated with condom use were residence in Mukono district, being female, attaining secondary education, listening to radio and having used a condom at first sex.

The results show that more factors are influential in first relationship than in later relationships. The factor that was persistently significant at 5 percent levels in all relationships was residence in Mukono district.

Table 8. 5 Multivariate logistic regression models for condom use within relationships

Characteristics	First		2 nd to Latest		Latest	
	Odds	95%CI	OR	95%CI	OR	95%CI
District (base=Kabale)						
Mukono	4.36***	2.95-6.43	4.91**	1.94-12.40	2.42**	1.41-4.15
Gender (base=women)						
Men	0.49***	0.33-0.71	1.49	0.50-4.45	0.64	0.35-1.16
Age group (base=15-16)						
17-18	0.54*	0.31-0.94	3.73	0.89-15.64	2.33*	1.07-5.07
19-20	0.71	0.38-1.35	6.57*	1.62-26.62	2.03	0.95-4.53
21-22	1.89	0.91-3.96	4.47*	1.01-19.76	2.46*	1.03-5.86
23-24	0.55	0.25-1.23	2.61	0.62-11.08	1.47	0.61-3.57
First/Last event (base=first)						
Last event	0.79	0.57-1.10	0.64	0.28-1.44	0.62	0.39-1.01
In school (base=out)						
In of school	2.47***	1.63-3.75				
Education (base=primary/none)						
Secondary	1.37	0.92-2.06	3.33**	1.36-8.16	2.78***	1.67-4.64
Age at first sex (Base<15)						
15-24	2.30**	1.34-3.96				
Listens to radio (base=no)						
Yes	1.42	0.91-2.23			2.09*	1.09-4.01
Drinks alcohol (base=no)						
Yes	0.87	0.59-1.28				
Attitude to condom use						
High	1.55*	1.08-2.23			1.96*	1.14-3.34
Incomplete score †	0.91	0.55-1.52			0.52	0.26-1.05
Condom use at first sex (base=no)						
Yes	-----		5.69*	1.77-18.28	10.08***	5.56-18.26
When first sex occurred (base <2 years ago)						
2-5 years ago	0.94	0.63-1.40	4.46**	1.16-17.12		
>5 years ago	0.21***	0.10-0.43	3.14	0.72-13.73		
Type of partner (base=steady)						
Casual	0.27***	0.16-0.45				
One time	0.21***	0.10-0.43				
Resides with (base=parents)						
Relatives and others					0.65	0.38-1.10
Goodness of fit of the model						
<i>n</i>	851		159		444	
Number of parameters	18		9		13	
LR chi square test	P<0.001		P<0.001		P<0.001	
Observations correctly predicted	75%		75%		78%	
Pearson's goodness of fit test	$p_{HI}=0.90$		$p=0.21$		$p_{HI}=0.13$	

* p<0.05 **p<0.01 ***p<0.001 †=Did not answer all questions for the abstinence score

Large 95 percent confidence intervals in the second to latest relationships can be attributed to factors that include the small number of observations, misclassification bias and

probable differences in the lifetime number of relationships the respondents had had before the survey.

8.2.2 Correlates of condom use at any event

To further understand correlates of condom use at any time, logistic regression of condom use on key independent variables including the new classification variable mentioned earlier (subsection 8.1.1), is applied. The fitted model is shown in Table 8.6. Age at first sex could not be entered in the model with age group because their relationship was strong (χ^2 p-value<0.001).

The results of the final models show that condom use at any event was independently associated with residing in Mukono district, being a woman, being in a higher age group, being in school, attaining a higher education level, listening to radio, having a high attitude towards condom use, being in steady partnership and having had sex in less than two years before the survey. After controlling for other factors, condom use among those who reported on three relationships was significantly higher in second to latest relationship and declined in the latest relationship but was still higher than the first relationship.

In detail, the first model shows that, after controlling for the factors shown, young people who reside in Mukono were nearly five times more likely to report condom use than those in Kabale. Women were nearly two times more likely to report condom use than the men. Compared to those aged 15-16, those aged 19-20 had 79 percent higher likelihood of reporting condom use while those aged 21-22 were three times more likely to report condom use. Those in school had 85 percent higher likelihood of condom use compared to those out of school while those who attained secondary education had 76 percent higher likelihood of reporting condom use than those who never went to school or attained only primary education.

Further, listening to radio was associated with a 39 percent higher likelihood of using a condom at any event compared to those who did not listen to radio. Those who had a higher positive attitude to condom use had 71 percent higher likelihood of using condoms than those with low/medium positive attitude. The likelihood of condom use with a steady partner was nearly twice as high as that with a non-steady partner. Those who had first sex

Table 8. 6 Multivariate logistic regression models for condom use at any time

Characteristics	First model with age group		Second model with age at first sex	
	OR	95%CI	OR	95%CI
District (base=Kabale)				
Mukono	4.76***	3.61-6.29	4.44**	3.39-5.81
Gender (base=women)				
Men	0.57***	0.42-0.76	0.61***	0.46-0.81
Age group (base=15-16)				
17-18	1.19	0.81-1.73		
19-20	1.79**	1.20-2.65		
21-22	3.01***	1.90-4.77		
23-24	1.17	0.72-1.89		
Age at first sex (base <15 years)				
15-24			2.05	1.53-2.76
In school (base=no)				
Yes	1.85***	1.34-2.54	1.72	1.27-2.32
Education (base=primary/none)				
Secondary	1.76***	1.29-2.39	1.78	1.32-2.41
Read magazines (base=no)				
Yes	1.29	0.98-1.69	1.28	0.97-1.68
Listens to radio (base=no)				
Yes	1.39*	1.00-1.93	1.31	0.95-1.82
Attitude to condom use (base=low)				
High	1.71***	1.30-2.24	1.70	1.30-2.22
Incomplete score†	0.89	0.61-1.28	0.83	0.57-1.20
Type of partner (base=steady)				
Casual/one time	0.55***	0.41-0.75	0.56	0.41-0.75
When the first sex occurred (base <2 years ago)				
Previous 2-5 years	0.84	0.62-1.15	1.07	0.78-1.47
More than 5 years ago	0.35***	0.23-0.51	0.59	0.39-0.89
Length of relationship (base =less than one year)				
One year	1.15	0.72-1.85	1.19	0.74-1.90
2-10 years	1.13	0.70-1.81	1.22	0.76-1.95
Unknown	0.90	0.46-1.75	0.91	0.46-1.78
Sexual event occurrence				
Latest event in 1 st of 3 relationships	1.42	0.67-3.02	1.35	0.64-2.86
First event in 2 nd of 3 relationships ¹	4.49***	2.22-9.10	4.37	2.18-8.79
Latest event in 2 nd of 3 relationships ¹	5.77***	2.65-12.57	5.46	2.53-11.80
First event in 3 rd of 3 relationships	3.79***	1.87-7.67	3.71	1.84-7.46
Latest event in 3 rd of 3 relationships	2.42*	1.15-5.08	2.36	1.13-4.92
First event in 1 st of 2 relationships	1.14	0.60-2.17	1.21	0.64-2.29
Latest event in 1 st of 2 relationships	1.09	0.54-2.21	1.11	0.55-2.25
First event in 2 nd of 2 relationships ²	2.83**	1.49-5.39	3.00	1.58-5.69
Latest event in 2 nd of 2 relationships ²	1.75	0.85-3.59	1.78	0.87-3.65
First event in 1 st of 1 relationships	3.06**	1.65-5.70	3.18	1.72-5.90
Latest event in 1 st of 1 relationships	1.58	0.78-3.18	1.56	0.78-3.14
Goodness of fit of the model				
<i>n</i>	1456		1456	
Number of parameters	29		26	
Pearson's goodness of fit test	<i>p</i> =0.69		<i>p</i> =0.72	
% predicted correctly	72		72	
-LL	788		734	
LR chi-square test	<i>p</i> <0.001		<i>p</i> <0.001	

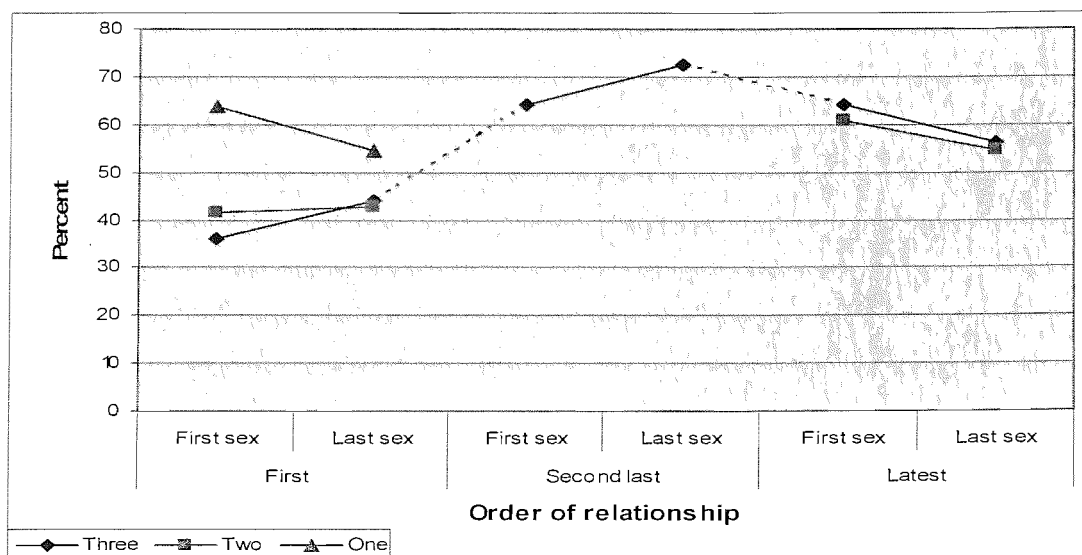
* *p*<0.05 ***p*<0.01 ****p*<0.001 ¹2nd of 3 relationships= Latest to latest relationship, ²2nd of 2 relationships=Latest relationship

†Did not answer all questions for the abstinence score

less than two years before the survey had nearly three times higher likelihood of using a condom than those who had first sex more than five years before the survey. Among those who reported on three relationships, compared to the first event of the first relationships, condom use was 4.5 times higher in first event in second relationship, 5.8 times higher in latest event of second to latest relationship, 3.8 times higher in first event of the latest relationship and 2.4 times higher in latest event of the latest relationship. The length of the relationship was not a significant predictor of condom use. Both models fitted fairly well as they were able to predict over 70 percent of records correctly and the Pearson's goodness of fit test p-value was higher than 0.60.

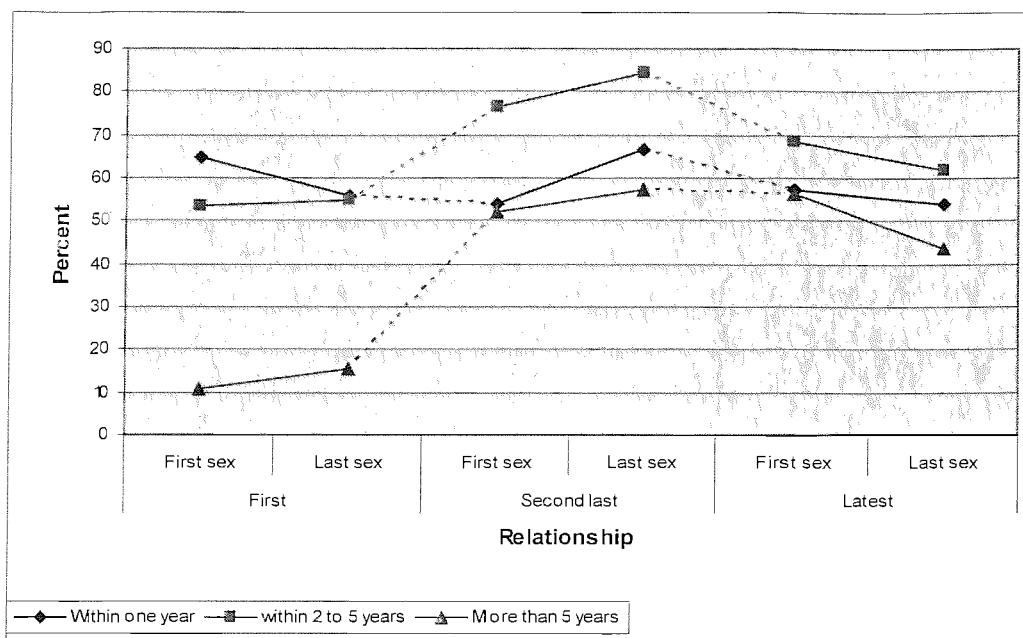
Figure 8.6 shows the predicted levels of condom use at each event for each number of relationships. The graph is similar to that of figure 8.4.

Figure 8. 6 Predicted levels of condom use at each event by number of relationships



A test of interaction of the new variable (sexual event occurrence) with sex, age group, district, school enrolment status and education level in the first model in Table 8.6 did not show sufficient evidence of change of the trend at five percent level of significance. However, the trend changed by the period in which the first sexual event occurred. Figure 8.7 shows that, among those who had sex in the previous one year the trend of condom use across relationships was different from that of those who had sex two or more years before the survey. Unlike others, the trend among those who had sex less than two years before the survey showed a decline in first relationship.

Figure 8. 7 Predicted level of condom use in different relationships by length of time since first sex

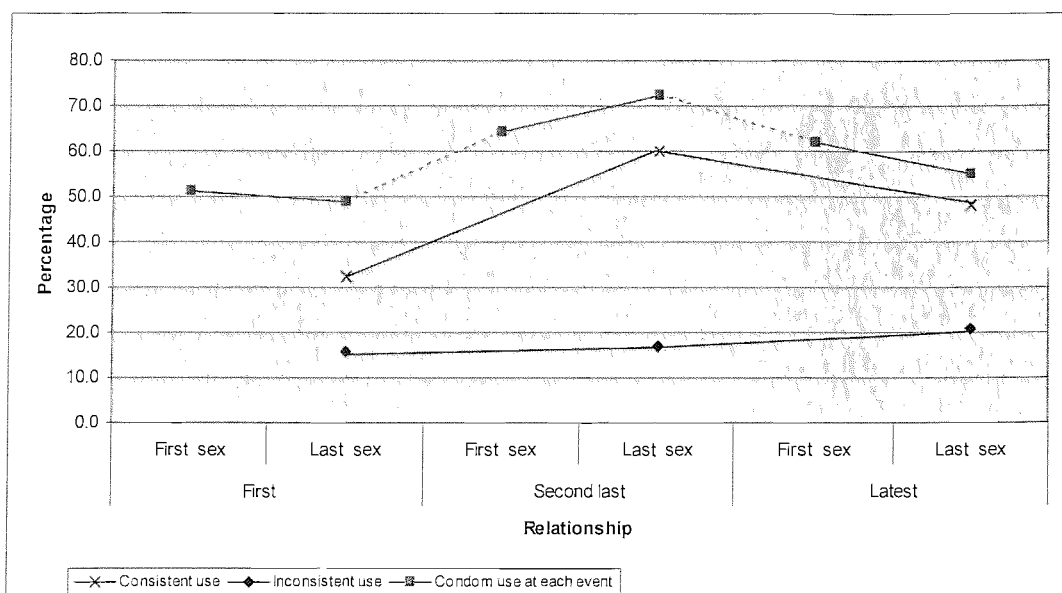


8.2.3 Consistent condom use in specific relationships

Another approach used to study the dynamics of condom use within and between relationships was to analyse consistency of condom use in each relationship. A person was categorised as a consistent condom user in a relationship if he/she used a condom at first and last sex event. Inconsistent users used condoms at either the first or the last occasion of the relationship. Non-users did not use condoms at either event. A multinomial regression of consistent condom use was carried out for each relationship and all relationships combined as outlined in subsection 3.6.3. The estimated probabilities and significant factors were not found to differ by the kind of classification of relationships. Hence the former classification of relationships into first, second to latest and latest is maintained in this section.

Figure 8.8 shows that the trend of consistent condom use was similar to that of general condom use at each event with a rise from 42 percent in first relationship to 56 percent in the second to latest relationship and a fall to 46 percent in the latest relationship. The level of inconsistent use was much lower and slightly increased over time.

Figure 8. 8 Consistency of condom use within a relationship and condom use at each event



NB: The line depicting condom use at each event is from Figure 8.1 and has been superimposed on this graph for comparison

Consistent condom use within the first relationship

Table 8.7 shows the predicted pattern of condom use at both first and most recent events in the first relationship from a multivariate multinomial logistic regression model. The results show that the likelihood of consistent condom use was significantly higher in Mukono, among women, lower age group 15-16, being in school, having had first sex after 14 years and longer relationships. Inconsistent condom use was also higher for Mukono district, higher age at first sex and longer relationships.

Consistent condom use within the second to latest relationship

Table 8.8 shows the predicted probabilities from a final multivariate multinomial model for consistent condom use in second relationship. Factors significantly associated with consistent condom use were being from Mukono district and having attained secondary education. Age group had a marginal effect on consistent condom use. Inconsistent condom use was also associated with educational attainment and marginally with higher age group.

Table 8. 7 Predicted probabilities of consistent, inconsistent and non use of condoms from a multinomial logistic regression model within the first relationship

Characteristics	Condom use		
	Consistent	Inconsistent	Never used
District			
Kabale	26.9	12.3	61.4
Mukono	53.0***	18.2***	28.8
Gender			
Women	47.9**	16.5	35.6
Men	36.6	14.6	48.8
Age group			
15-16	50.0	11.4	38.6
17-18	40.4*	16.5	43.1
19-20	43.9	14.3	41.8
21-22	46.0	19.0	34.9
23-24	22.4**	18.4	59.2
In school			
No	31.9	18.6	49.5
Yes	52.2***	12.3	35.5
Age at first sex in years			
<15	28.9	8.2	62.8
15-24	47.6*	18.5**	33.9
Length of relationship			
< 1 year	37.1	8.6	54.3
One year	43.6	21.8**	34.7
2-10 years	51.8*	20.6**	27.7
Unknown	22.4	4.1	73.5
Goodness of fit of the model			
<i>n</i>	407		
Number of parameters	22		
-LL	332		
LR chi-square test	P<0.001		

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

Consistent condom use within the latest relationship

Table 8.9 shows predicted probabilities from a final multivariate multinomial logistic regression for consistent condom use in latest relationship. The factors significantly associated with consistent condom use were being in Mukono, attainment of secondary education, higher age at first sex and reading newspapers. Inconsistent condom use was associated with residing in Mukono district, attainment of secondary education and having studied in religious founded schools.

8.2.4 Consistent condom use in any relationship

After analysis of consistent condom use in the first, second to latest and latest relationships a model was developed to analyse consistent condom use at any relationship after reshaping the data to have one outcome variable.

Table 8. 8 Predicted probabilities of consistent, inconsistent and non use of condoms from a multinomial logistic regression model within the second to latest relationship

Characteristics	Condom use		
	Consistent	Inconsistent	Never used
District			
Kabale	28.6	28.6	42.9
Mukono	73.3**	8.9	17.8
Gender			
Women	42.9	7.1	50.0
Men	59.3	18.6	22.0
Age group			
15-18§	50.0	3.8	46.1
19-20	72.7*	18.2*	9.1
21-22	57.1	28.6	14.3
23-24	36.4	27.3	36.4
Education			
None/primary	48.3	3.4	48.3
Secondary	61.4*	25.0*	13.6
Goodness of fit of the model			
<i>n</i>	73		
Number of parameters	14		
-LL	50		
LR chi-square test	P<0.001		

§age groups 15-16 and 17-18 were combined due to a small n

The results of the model are shown in Table 8.10. Consistent condom use was strongly associated with residence in Mukono district, being a woman, being in school, attainment of secondary education, studying at private schools, listening to radio and being in latest or second to latest relationship. Inconsistent condom use was associated with residence in Mukono district, higher age at first sex, being in latest and second to latest relationship and longer relationships.

8.3 Random effects model

A multinomial multilevel model was fitted to identify the effects of variation at village level as specified in Equations 3.19 and 3.20 of Section 3.6.5. The results did not differ much from those obtained in previous model (Section 8.2.). Figure 8.9 shows a plot of residuals from the model. There was no evidence of village level effect on consistent condom use. Most of the village level residuals fell in the same range. In part one of the figure, there is a category of villages that had higher residuals than the rest but the

Table 8. 9 Predicted probabilities of consistent, inconsistent and non use of condoms from a multinomial logistic regression model within the latest relationship

Characteristics	Condom use		
	Consistent	Inconsistent	Never used
District			
Kabale	32.5	14.4	53.0
Mukono	57.8***	25.0***	17.2
Gender			
Women	47.0	20.0	33.3
Men	48.3	21.4	30.3
Age group			
15-16	37.1	17.1	45.7
17-18	51.9	23.1	25.0
19-20	50.8	21.1	28.1
21-22	55.3	23.7	21.1
23-24	37.9	17.2	44.8
Education			
None/Primary	29.7	17.6	52.7
Secondary	57.7**	22.6*	19.7
School attended			
Public	37.6	23.5	38.8
Religious	48.9	10.6**	40.4
Private	58.2	24.1	17.7
Age at first sex in years			
<15	37.8	20.3	41.9
15-24	53.3**	21.2	25.5
Reads newspapers			
No	39.5	20.2	40.4
Yes	57.7*	21.6	20.6
Goodness of fit of the model			
<i>n</i>	211		
Number of parameters	22		
-LL	178		
LR chi-square test	P<0.001		

difference appears to be systematic rather than random implying no significant evidence of random variation.

8.4 Discussion

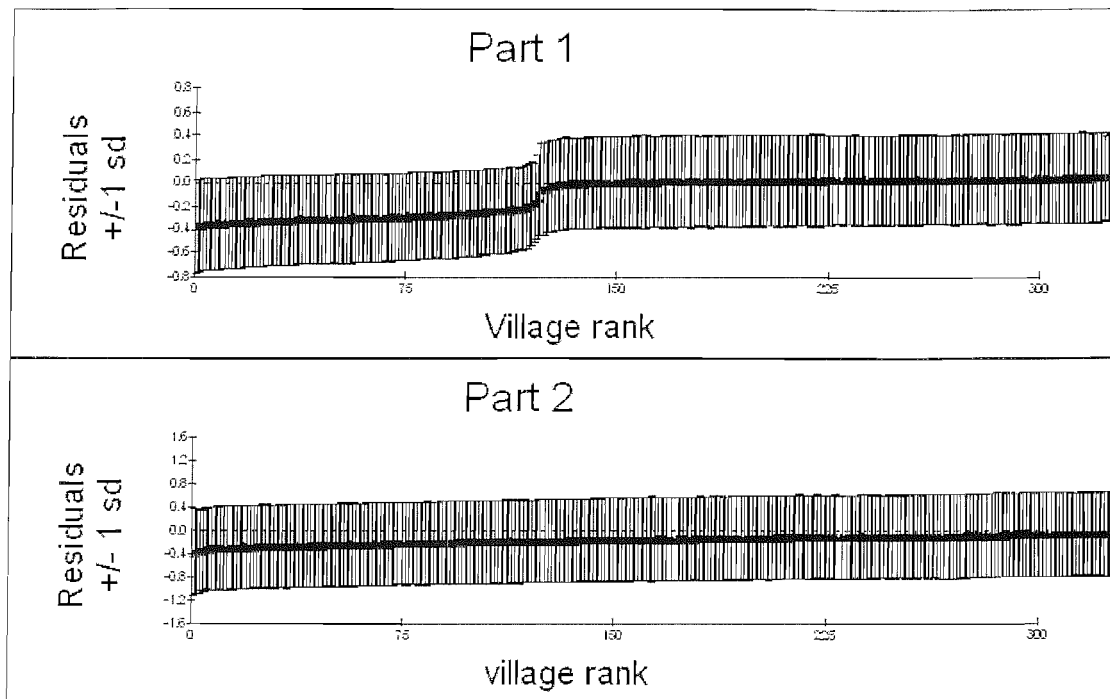
The results in the chapter show that the level of condom use in most recent relationships is higher than in first relationship but declines with time. Condom use in second most recent relationship was higher at most recent event compared to the first event and in other

Table 8. 10 Predicted probabilities of consistent, inconsistent and non use of condoms in any relationship from a multivariate multinomial logistic regression model

Characteristics	Condom use		
	Consistent	Inconsistent	Never used
District			
Kabale	29.0	14.8	56.1
Mukono	57.7***	19.2***	23.0
Gender			
Women	48.8**	16.9	34.2
Men	44.3	17.8	37.8
Age group			
15-16	47.7	12.3	40.0
17-18	46.4	18.5	35.1
19-20	50.0	16.9	33.1
21-22	50.5	21.5	28.0
23-24	30.0**	19.5	50.5
In school			
No	37.8	20.9	41.3
Yes	53.8*	14.2	32.0
Education			
None/Primary	32.0	15.8	52.2
Secondary	53.4**	18.3	28.2
School attended			
Public	39.2	18.9	41.9
Religious	44.4*	14.2	41.4
Private	54.9	18.1	27.0
Age at first sex in years			
<15	35.2	11.8	52.9
15-24	50.9***	20.0***	29.1
Listens to radio			
No	31.7	19.5	48.8
Yes	49.4*	17.0	33.6
Drinks alcohol			
No	50.5	15.6	33.9
Yes	37.4	21.2	41.4
Reads magazines			
No	53.1	18.8	28.1
Yes	40.2	16.3	43.4
Relationship			
First	42.8	15.7	41.5
Second to latest	60.0***	16.9*	23.1
Latest	47.9**	20.9**	31.3
Length of relationship			
<1 year	42.5	9.8	47.7
1 Year	48.4*	22.6***	28.9
2-10 years	51.4*	22.1***	26.6
Unknown	30.5	8.5	61.0
Goodness of fit of the model			
<i>n</i>	664		
Number of parameters	34		
-LL	548		
LR chi-square test	<0.001		

relationships. Condom use in first relationship was lowest. The trend of condom use was observed for most levels of key independent factors. In the multivariate analysis of condom use at any event it was found that it was associated with residence in Mukono, being

Figure 8. 9 A plot of residuals against village ranks after a multinomial model adjusting for village level random effects



female, being in school, lower age, higher educational level, listening to radio, higher age at first sex, having had first sex in previous one year and having had more than two sexual partners. The number of factors that had significant influence on condom use declined at latest relationship and only a few were still significant in the second to last relationship. The trend of condom use across relationships was unaffected by most key independent factors. The trend was significantly different among those who recently had their first sex. Consistent condom use in a relationship followed the same trend and pattern as condom use at each event. While consistent condom use increased in the second to latest relationship and reduced in the latest relationship, inconsistent condom use followed an increasing trend. Consistent condom use was associated with residence in Mukono, women, lower age, being in school, higher education level, studying in private schools, listening to radio, higher age at first sex and longer relationships.

While a decline in condom use in latest relationship is in agreement with findings in Ku et al. (1994), the levels of condom use in the first and second to latest relationships do not show agreement. While an increase in condom use in the second to latest relationship may be due to a smaller number (86) of respondents for the second to latest relationship

compared to other relationships, there is reason to suspect a genuine change in condom use since 86 is large enough for statistical inference. However, other factors such as memory lapse, lifetime number of partners and misclassification bias can contribute the unique pattern of condom use in the second to latest relation. The second to latest relationship can be classified as the latest relationship if the latest relationship had gone on for a short time and was right censored. Of the three relationships, the second to latest is the least memorable. The results may not mean that after the first relationship there will be a rise in condom use. More investigation is needed to ascertain the trend of condom use using a more definite order of occurrence of relationships.

The higher level of condom use in the latest and second to latest relationships may partly due to selection bias. Those who had two or more relationships were more likely to be older than those who had one. As explained in the previous chapter, those who are younger are likely to have similar sexual behaviour as the general population since most young people are unmarried at the time. At a higher age fewer people are still unmarried and may have other factors which influence condom use which are different from those that affect all young people of same age. The selection bias can also arise due to the uniqueness in behaviour of respondents that had three or more relationships. They may behave differently from other unmarried young people.

In the current study, condom use was higher among those who were in a steady relationship than among those who were not. This is different from many other studies which demonstrate higher condom use with casual sexual partners than with steady partners (Agha, 1998). Higher level of condom use in steady relationships may also be attributed to lack of other methods of contraception. Use of other contraceptive methods is associated with low level of condom use (Stone and Ingham, 2002).

Consistent condom use increased with age and age at first sex as reported by other studies (Murphy and Boggess, 1998; Tavares et al., 2002; Catania et al., 1994). At higher age at first sex and higher age at any sexual event one is thought to be more careful and responsible enough to use condoms consistently.

The association of education level and consistent condom use is consistent with earlier work; a similar relationship is reported in Lau et al. (2004) and Buchacz et al. (2001).

The association between school status and foundation of the school with condom use can be explained by access to the sexual health education in school and type of school attended. Those who are not in school miss the sexual health programmes and it is understandable why they are less likely to be consistent users. Another explanation is that some people are just risk takers, or feel socially excluded or see no future prospects, and so miss school as well as having unsafe sex.

Access to mass media, especially radio and magazines, may increase condom use because the media are the major means of communication about prevention of HIV/STI and unplanned pregnancies. The results in the study echo the conclusions in Adetunji and Meekers (2001).

The finding that women were significantly more likely to report consistent condom use differs from several studies including that of Sunmola (2004). However, this was mainly significant in the first relationship. The difference could be due to the fact that while women start relationships with older partners who may be experienced condom users, men tend to start relationships with younger partners who may be equally inexperienced. By the time of the latest relationship, both male and female respondents have already had sexual experience.

The positive association between condom use and consistent use may be explained by availability and affordability differentials. In areas where there is a high level of condom use, condoms may be readily available or affordable and thus facilitate consistent use. Mukono is more urban, has a higher proportion of educated young people and reproductive health services are more accessible.

Although avoiding alcohol consumption, communication with parents, residence with parents, source of financial support and positive attitudes to condom use had a strong relationship with consistent condom use in other studies, they were not independently influential on consistent condom use in this study.

Variation in condom use at village level was not significant partly because the average number of respondents per village (5) was small and varied quite a lot.

8.5 Conclusion

Dynamics of condom use exist within and between relationships. The level, trend and consistency of condom use are influenced by background and behavioural characteristics of young people. The first relationship is very important for initiating condom use since most factors investigated are more influential on level and consistency of condom use within the first relationship but fewer in second to latest and latest relationships. In addition, condom use at first sex is a strong determinant of condom use in latest and second latest relationships.

CHAPTER NINE

9. PERCEPTIONS OF ABSTINENCE AND CONDOM USE

To fully understand the findings from the survey on condom use and abstinence among young people in Uganda a small qualitative study was undertaken. The importance of supplementing survey data with qualitative data in such contexts cannot be overemphasized. A qualitative approach helps explain people's practices, defines reality from their own experiences, perspectives and meaning rather than from the researcher's alone. It helps to explore further issues and can often afford deeper and sharper analysis (Ellis, 1986).

The results of the chapter are arranged in sub-sections of understanding and perceptions of abstinence, factors associated with abstinence, perceptions of condom use and factors associated with consistent use.

9.1 Abstinence

This section presents young people's perceptions of abstinence and factors associated with low level of abstinence.

9.1.1 Perceptions of abstinence

Young people have a range of perceptions and understandings of abstinence. In nearly all FGDs, most participants understood that abstinence meant stopping or delaying sex for those who have never had sexual exposure. However, there was no agreement as to when one should abstain, nor for how long.

"Abstinence is to leave sex until the right time. For example up to eighteen years when one is free..... It is to wait having sex up to the time an HIV test is done." (Girls in school, Mukono Rural)

"It means not to play sex until one is 18 years old and ready for marriage." (Boys in school, Mukono Urban)

"Also if one happens to be in school then one should leave sex up to the time one finishes school." (Girls out of school, Mukono Rural)

Lack of clear definition of abstinence may be a result of unclear messages young people receive. Studies have found that some abstinence messages urge youth to delay having sex until they are older, preferably married (Green, 2003) and others until marriage or in a long term committed relationship (Golden, 2003) or for a given period of time (Pulerwitz et al., 2003). Being older may be interpreted differently. It may mean waiting until one finishes primary or secondary education. The word “abstinence” is frequently used in the documents, National Strategic Framework (NSF), National Programme Priorities (NPP), Programme Policy Guidelines and Tools (PPGT), Mid-Term Review Report (MTRR) and National Programme Reports (NPR) of the National AIDS Documentation Centre at the Uganda AIDS Commission (NADIC, 2005) but it is not clear up to when one can abstain.

When asked how feasible it was to abstain, few people said it was possible. Participants in Kabale were more likely to say it was possible to abstain than those in Mukono.

“There are some who can abstain because of the way they were brought up and others simply abstain ... If you go to clinics like Marie Stopes, AIDS information centre, people are being sensitised and majority have abstained.” (Boys out of school, Kabale Urban)

When asked how many out of ten of their friends in the same age group 15-24 that they thought had ever had sex, the response in all FGDs was fewer than 7 out of 10 in Kabale, while in Mukono district it was 7 and above. FGD participants in rural areas reported a smaller number of friends that they thought had had sex. These estimates were in agreement with the findings from the survey data, where abstinence was higher in Kabale than in Mukono and in rural areas compared to urban areas.

9.1.2 Factors associated with failure to abstain from sex

This sub-section presents the factors reportedly associated with failure to abstain.

Peer pressure

In all FGDs carried out, peer pressure was commonly mentioned in both districts as a contributing factor to disruption of abstinence. Peers were reportedly calling their fellows all sorts of names if they have never had sex. The names include *bewitched, foolish, spoilt, impotent* and *wasted*. There was no noticeable difference in peer pressure between young men and women.

“Doesn't know anything in the world,Spoilt by religion, ... stupid..... wasted material.” (Boys in school, Kabale Urban)

“Dumb and deaf, doesn't function sexually, he is a villager.” (Girls in school, Kabale Urban)

An explanation of the circumstances that lead to sex is presented as follows:

“Sometimes your friends may abuse you and start saying that you are bewitched why don't you “eat” the thing and sometimes you end up doing it.” (Boys out of school, Kabale Rural)

“If you don't play sex by the age of 20 years then one is called Fala (foolish) and the friends tell her she knows nothing about life. Some say one is stupid, one has not tasted life..... one has misfortunes..... you are not normal. ... some say who am I not to do when the rest of my friends are doing it.” (Girls out of school, Mukono Rural)

“Some of your friends may tell you to go and detooth (get money from the man without having sex with him) so and so but at the end he will have sex with you.” (Girls out of school, Mukono Urban)

“Competition has exposed young people to early sex. If one girl has a boyfriend, then all the other girls must get boyfriends. Girls compete for men.” (Girls out of school, Kabale Urban)

“Because of influences I have also joined that group of young boys who have “sugar mummies” the lady convinced me that I will get whatever I want, if we become friends and I accepted so far she has given me ten thousand shillings (£3.50) but we haven't done anything related to sex.” (Boys in school, Kabale Urban)

“In one's free time, friends visit the girl and tell her stories on how to reduce boredom by getting a boy friend who will eventually lead her into sexual activity, I had a friend who took another colleague to a party and when she reached there, she found boys waiting for her to have sex. Such an experience was not good.” (Girls in school, Kabale Rural)

“Some sharp girls are paid to get girls for the men. Such girls trick their friends and finally end up in sexual activity..... Those girls with brothers tend to trick their friends in a way that they will accept to visit them and then the brother takes advantage of the friend.” (Girls out of school, Kabale Rural)

Some issues raised above may also be classified as attitudes of the respondents and their peers towards abstinence because it was difficult for them to raise their own perceptions.

Alcohol

In the quantitative analysis of data on condom use and abstinence, alcohol was consistently associated with failure to delay first sex and to practice secondary abstinence. In all the FGDs in Kabale and Mukono, alcohol was raised as a major cause of failure to abstain from sex. It was clear from FGDs that many young people take alcohol and, in some cases, mix it with drugs. The issue of drugs was raised by key informants as well. They associate alcohol consumption with loss of self control and “proper” reasoning.

“The alcohol is usually bought by men and they will want an exchange in return. It is something for something.” (Girls in school, Mukono Urban)

“Taking booze makes one indulge in early sex. One who is drunk is not always sure of what is going on.” (Girls out of school, Kabale Urban)

“Alcohol is not bad but some people take it with the intention of playing sex. They have a reason as to why they get drunk..... Some boys buy beers for girls to make them drunk so as to engage them in sexual activity there after.” (Boys in school, Mukono Urban)

“Some boys who are mean with their money will put aspirin tablets which make the girls take only one bottle and they are completely drunk.” (Girls in school, Kabale Urban)

One key informant in Mukono identified beer promotions as another cause of loss of self-restraint among young people. When young people drink, their ability to abstain weakens.

Parties

From the survey, it was established that attending parties was a strong determinant of early sex and failure to practice secondary abstinence. Two kinds of parties were singled out as most probable causes of failure to abstain. One is called *niigina* in Mukono district and another is *Ebikuruza* in Kabale district. Most young people that attend these parties tend to be tempted into sexual activity. The connection of the parties with interruption of sexual abstinence can only be understood through the context of how they occur and what happens at the parties.

Niigina comes from a Luganda word *okuniigina* which means walking proudly. Women organise themselves into associations where they each contribute a gift or money to one

member per month or any other agreed interval of time. The gifts are chosen depending on the need of the recipient. The gifts are mostly household items like pans, plates and flasks. They walk proudly in a procession as they go to present their gifts to the recipient. This is followed by lots of eating, drinking and dancing. Each association has its own rules. In one association, a woman whose turn it is to receive the gifts is called *omugole* (bride). She gets gifts worth the money she has contributed towards other members' items. Those set to receive after her offer gifts worth not less than a fixed amount [say, Shs 10,000 (£3.30)] and, when their turn comes, the bride will buy them gifts of equal worth. Thus *niigina* works like a savings scheme (Otal, 2005). The parties attract many young people and some use the chance to stage their own "merry making." They are at the *niigina* parties as observers and not as invited guests but they take part in the dancing which goes on late at night when their parents have long gone.

The effect of *niigina* parties are described in the following quotes:

"Niigina parties are used as a cover up. They first go somewhere and have sex and come to Niigina after the sexual activity such that their parents see them around." (Girls in school, Mukono Urban)

"Friends may tell you that lets go for parties and have life (laughter) what ever happens there at night is terrible." (Girls in school, Mukono Rural)

According to one key informant, *niigina* is not only about parting. Prior to the eating, drinking and dances there is the exchange of gifts or money that economically empowers the women. For example, when a woman wants to buy a sewing machine and she does not have money, fellow women give her a lump sum amount at the end of the month which she uses to buy the machine and she pays back in instalments at end of each month.

Ebikuruza is a Rukiga word in plural form for *ekikuruza*. Its literal translation is "something that is pulling." It is like the way a snail walks as if pulling its body. Now, when a family wants to show love to another it arranges people to carry gifts and as they walk across valleys and mountains they appear like a snail from a distance. The gifts are mostly sorghum in medium sized baskets and they are carried by girls with a few men carrying beer. According to key informants, the most common cause for arranging *ekikuruza* is visiting a newly wed daughter and this kind is a traditional ceremony. It is another way of showing the other family (recipient) that their daughter comes from a loving and powerful family. The recipient family organises a party with a lot of eating,

drinking and dances. Normally, the recipient family does not have enough space and beddings to accommodate the visitors for the night. One common thing to do is to hire a music system or simply conduct traditional dances, which keep the visitors so busy that few want to sleep. Those who may want to sleep may do so in turns. The arrival of young nice looking women excites the young male villagers and they use this chance to make sexual advances towards the girls. The environment is tempting because many young people become drunk and get excited by music when it is at night and in a village where nobody or few people may know them.

What happens at the *ebikuruza* and other parties can be described in the following quotes:

“There is “Ebikuruza” in the area. So when you go to attend and find there some beautiful girls, you can’t leave without satisfying yourself sexually.” (Boys in school, Kabale Urban)

“... you can’t fail to get one. You just put the girl on the wall or sometimes you go to the plantation and within ten minutes you are done.” (Boys in school, Kabale Urban)

“At ‘Ebikuruza’, both the boys and girls share the same carpet at night and end up in sexual activity.” (Girls in school, Kabale Urban)

“Trans-night Disco and Ebikuruza can also influence you.....you end up squeezing her and the result is sex. You can’t even think of using condoms.” (Boys out of school, Kabale Rural)

“Most of the boys walk at night to dance, and smoke Marijuana and sometimes go to Ebikuruza and end up playing sex.” (Boys out of school, Kabale Urban)

In a few FGDs, other ceremonies such as funeral rites and welcoming newly born twins were mentioned as possible sources of temptation to start sexual activity.

“At funeral rites, they build tents and the big people will sleep in one tent and the young ones in another. Some boys and girls end up in sexual activity either during the funeral rites period or sometime afterwards.” (Girls in school, Mukono Urban)

“Some cultural activities like the Baganda’s “dancing the twins” can lead to sexual activity.” (Boys in school, Mukono Rural)

In Buganda culture twins are special. When they are born, a ceremony, *Okwalula abalongo* (birth initiation rites of the twins), is performed. At the ceremony, many obscene words are mentioned and some of the words used may incite young people to start sex. All relatives and in-laws meet and at that function; there is some degree of laxity in traditions because

one is allowed to shake hands with his mother in-law which is normally forbidden.

Environment/Neighbourhood

Poor housing conditions and neighbourhood can have a negative impact on young people's ability to abstain. This issue was raised regarding urban areas in both Kabale and Mukono, but more so in Mukono. The suburbs in towns are characterised by poor housing conditions. The following describe what happens.

“For example if one lives near a bar then one is likely to learn all the bad habits from the drunken people. One will always get money from the drunkards in return for sex if that is what neighbours do.” (Girls out of school, Mukono Rural)

“Poor housing here in town exposes young people to early sex. Parents share the bedroom with the children who hear them when making love. Such children will want to practice sex so as to experience the kind of joy the parents have.” (Girls out of school, Kabale Urban)

“A boy of 5 and a girl of 10 years were found having sex by the parents, and when asked, the boy said it was the girl and the girl claimed she heard her parents at night do it.” (Boys out of school, Mukono Urban)

Key informant interviews concurred with FGDs that the environments in which young people live can affect their ability to abstain. If children grow up in a neighbourhood where defilement is common they may be defiled and once it happens secondary abstinence becomes difficult.

Pressure from society and parents

According to two FGDs, apart from peers, society and parents may influence young persons to have sex in the same way that peers do. This was equally raised in Mukono and Kabale districts.

“That you are sick/have a problem....impotent.... knocked by a sheep...useless in family...don't have man power....can't speak to girls.” (Boys in school, Mukono Rural)

“At times even your parents start abusing you that why don't you bring us an in-law...., then you start a relationship which may begin with sex.” (Boys out of school, Kabale Rural)

According to one key informant, many people believe that when a girl is 16 she should be married off otherwise she will get pregnant and this will mean more expenses. Some parents also believe that their sons should have sex to prove their manhood.

Poverty

Poverty conditions in which young people live can force them to engage in sexual activity because they need to dress, feed and look like others. The problem was more commonly mentioned in Mukono than Kabale.

“Some parents will encourage their daughter to get boyfriends who will help the family providing some commodities such as bread and sugar, School fees problem if a girl gets a man to pay the schools fees, then she will go in for sex so as to get school fees. Most girls in Mukono do it and the parents don't ask because they want them to study.” (Girls in school, Mukono Urban)

“Also most girls are poor and yet they always want to dress well. To get money one has to look for a sugar daddy who provides everything.” (Girls in school, Kabale Urban)

“That is in Kasaria open market girls go to the market without enough money and end up in sexual activity with the men who buy them clothing.” (Girls out of school, Mukono Rural)

A half of the key informants mentioned the same problem of poverty.

Exposure to media

In all FGDs in Kabale and Mukono, newspapers, films, radio and TV programmes were mentioned as possible causes of incitement to start sexual activity. This was a problem of mainly urban areas especially in Mukono.

“Many things today are too open... ..newspapers like Red Pepper, TVs, children designs (skimpy dressing), ... love songs on radios.” (Boys out of school, Mukono Rural)

“Films have exposed young girls into early sex. Mostly ebigusha (blue movies) have no age limit. They are usually put on Sundays at around 10:00pm. So when young girls watch such movies, they will want to practice the different styles watched.” (Girls out of school, Kabale Urban)

“These newspapers show Kimansulo (naked girls) on the front pages which entice the boys and they end up practicing sex.” (Girls out of school, Mukono Rural)

“In the news papers, we are told how to satisfy a woman. That is, Mirror and Bukedde newspapers. After reading such then one is forced to see how well it could work out.” (Boys in school, Mukono Urban)

“Trespass programme on radio west has exposed young people to early sex. Trespass teaches how women should behave for example in bed so as to impress their partners. Such things have impact on the listeners. Such programmes are meant for old people but when the young begin to listen they end up in sexual activity.” (Girls out of school, Kabale Urban)

“Some radios e.g one in Eastern, Nabbasa FM, in late hours talk about sex instead of advising the community, they do the opposite. They have different adverts e.g of Gaetano (a big brother reality TV show star) .” (Boys in school, Mukono Rural)

However, not all media are perceived as bad according to some FGDs.

“But there are some radio programmes like mama FM which educate youths on good morals, around 9pm and another radio. Even CBS broadcasts good things, a Christian University radio is also good, even spirit radio doesn't broadcast obscene material. They have educative programmes that help. But there are others like KFM. Simba broadcast good and bad material.” (Boys out of school, Mukono Urban)

Key informants also echoed the same message above. They also cited newspapers such as Red Pepper as “destroying” young people. One key informant in Mukono mentioned Internet surfing as an emerging problem. Young people spend a lot of their time watching pornography on the internet. Internet was not mentioned as a problem in Kabale, probably because there are few internet cafes.

Undisciplined Religious Leaders

In two FGDs, fake preachers in some religions were mentioned as responsible for inducing young people into sexual activity.

“Some reach an extent of deceiving that they got a vision of sleeping/playing sex with the most beautiful girls.” (Girls in school, Mukono Urban)

“They (girls) will go to the pastor's house to revise a verse (reading) for the next Sunday and in the process, pastors take advantage of them. So there is nothing like being saved from sexual activity.” (Girls out of school, Kabale Urban).

Dressing

In a few FGDs, indecent dressing by girls was reported as another way boys are incited into sexual activity. It was reported that this sometimes sends wrong signals to the boys. They think the girls are intentionally attracting them. This was mainly mentioned in Kabale by boys and girls.

“By putting on mini-skirts they entice the boys to have sex with them.” (Girls in school, Kabale Urban)

“Some times, we move at night and you meet someone who is seductively dressed, you end up playing sex and she can't even make noise.” (Boys out of school, Kabale Urban)

“Short skirts expose young people into early sex. That is mainly in the villages. The boys there are not used to such kind of dressing.” (Girls out of school, Kabale Urban)

“At times a girl may come to visit you and you find her indecently dressed (mini-skirts) and you end up being tempted to engage her in sex.” (Boys in school, Kabale Urban)

Gifts/favours syndrome

In a few FGDs, young people said gifts and favours entice young people, especially girls, into sexual activity. The gifts are normally from sugar daddies or fellow male students.

“In most cases hair salons are usually filled with boys and they are always willing to volunteer and pay for every girl that enters. They always have an intention of having sex with girls who accept the favour.” (Girls out of school, Kabale Rural)

“....exposure to sugar daddies. That is they give lifts, shoes and good food such as chips and chicken in return for sex. Such girls who accept lifts end up in lodges with the sugar daddies.” (Girls in school, Kabale Urban)

“Some boys inflate money meant to be for school trips. The balance is channelled to their girl friends who will reward them with sexual intercourse.” (Girls in school, Mukono Urban)

Games

In a couple of FGDs in Mukono districts, children's games were mentioned as possible cause for starting sexual activity

“At the water spring, there are games like playing ”Jangu onkwenkule /kakebe/tappo” (all laugh) which are associated with sex. It is a hide and seek game where a boy hides with a girl deep in the bush. This also exposes them to early sex and some girls end up getting AIDS.” (Girls out of school, Mukono Rural)

“When young girls and boys are in-hiding, sex is played in the process.” (Girls out of School, Kabale Urban)

Another game is

“..... “Akazaano ka Mama ne Tata” (a game of father and mother) that is to do what your parents do in bed as they make love.” (Boys in school, Mukono Urban)

Defilement and rape

In a few FGDs, rape and defilement were raised as possible causes of early sex. They said this was worsened by corruption and weak law enforcement. According to them, as long as the laws are not strictly followed and corruption still reigns in the law enforcing bodies, then abstinence will still be a problem.

“For example there are laws to follow such as life imprisonment and capital punishment but they are not enforced as they should be. In addition to that, in the court of law there is a lot of corruption. The sugar daddies who defile are bailed out within a short time.” (Girls out of school, Kabale Urban)

Similar views were echoed by key informants. In one FGD in Kabale, fetching water at night was mentioned as a possible danger to young girl’s ability to abstain.

“Fetching water in the night is dangerous. At the water spring, the boys will force you to have sex because the girl will fear to make noise. People will wonder why she goes to fetch water at night.” (Girls out of school, Kabale Rural)

Misconceptions about abstinence

There are beliefs, misconceptions and rumours against abstinence that have led young people to start sex. Some say when you do not have premarital sex you will have problems with sex at marriage.

“One should be experienced so as not to get problems in marriage.... Yes, some girls get such problems and before you have sex with such a girl then you must first squeeze her neck so as to create an opening down. If you do not squeeze her neck then the male organ will fail to enter because the vaginal opening is always closed.” (Girls out of school, Mukono Urban)

Indecent assault

Indecent assault was said to be common in Kabale district. Some young people do start sexual activity after indecent assault.

“Yes, it is common and they touch those they feel free with and those they have associated with for quite a long time.” (Girls in school, Kabale Rural)

“Even in class, a boy touches on the bum of the girl and you see the girl laughing implying that she is happy about it.” (Boys in school, Kabale Rural)

“When some girls are touched, they easily pick interest and may end up in sexual activity.” (Girls in school, Kabale Urban)

“Well, sometimes you may touch on the bum of the girl and if she doesn't react, it means she like you.” (Boys in school, Kabale Urban)

Lack of sufficient reproductive health education

According to key informants, coverage of health education campaigns is still poor. There are not sufficient resources to reach all young people. For example, during school health campaigns just a fraction of the schools are visited. Of the schools visited, the quality of sensitisation work done is still lacking. The extent of the campaign materials like charts and video is not sufficient, and the general preparation is poor due to insufficient funds. During normal sensitisation in villages, few are covered in a year.

Sex education in schools by teachers may not work because it is not part of their training. They may need to be re-trained which is quite expensive. So far, only a few have been trained by non-governmental organisations.

9.2 Secondary abstinence

This section presents young people's perceptions on secondary abstinence. It is shorter than the previous section because they had much less to say about it than primary abstinence. Most of the participants' perceptions of secondary abstinence were similar to those of primary abstinence.

9.2.1 Perceptions of secondary abstinence

According to the key informants, for anybody who has ever had sex and there was no problem, it is very hard to stop. Nearly all factors mentioned as having an influence on the start of sexual activity were also mentioned as responsible for failure of secondary abstinence. These include parties, ceremonies, peer pressure and neighbourhood /environment.

Additional inciting words from peers mention of having got spoilt, a term that refers to those who have ever had sex and are trying to abstain.

“Some girls will say “assuruwadde” (spoilt) because such girls who have lost their virginity can never have it back and then why should they waste time trying to abstain.” (Girls in school, Mukono Urban)

On a question of whether secondary abstinence was possible, most said it was very difficult. When asked how many of their 10 sexually experienced friends have ever managed to stop sexual activity most participants in FGDs mentioned less than six. In one FGD (Girls out of school, Kabale Urban) in Kabale all said nobody can stop and, in another, FGD (Boys in school, Kabale Urban) all said fewer than three could abstain. This reflects a low abstinence level.

On the other hand, a few young people said it was possible to stop sexual activity especially if they had a bad experience

“It is possible to stop sex because when you visit a hospital and see how people are suffering[due to HIV], then you may decide to leave sexual intercourse... .. Experiences of others may teach one a lesson. That is, unwanted pregnancies and their disadvantages may make one vow to stop sex up to the right time.” (Boys in school, Mukono Urban)

“Sometimes you may impregnate some one’s daughter and they imprison you, so later you may never touch a girl.” (Boys in school, Kabale Urban)

9.2.2 Seasonality of non-abstinence

The survey data showed that sexual activity varied by month. The months in which there was most sexual activity were from November to January in Mukono and May to August in Kabale. It was revealed from FGDs that the mentioned months in Kabale are during harvest season while in Mukono the months are festive seasons of Christmas and new

year's day and at the same time holidays for young people. Mukono, being urban, has many exciting programmes ranging from dance/music festivals to theatres during the festive times.

“Also when it is a dry season, then most girls become pregnant. That is around the months of July, August and September. In the dry season, most boys are active. That is, there is less activity because of a lot of sunshine.” (Girls in school, Kabale Urban)

“...November, December and January because of the long holiday for those in school and the Christmas period for those out of school. On big days such as new year's day the girls will make appointments to meet their sugar daddies in Collin Hotel Mukono.” (Girls in school, Mukono Urban)

9.2.3 Parent-child communication and parental care

In most FGDs, it was agreed that parent child communication and general parental care can improve young people's ability to abstain.

“Some parents are careless. They do not take the initiative to talk to their daughters about the problems the girls are likely to encounter as they grow up.” (Girls in school, Kabale Urban)

“I think it's those who talk to their parents that are likely to leave sex completely because parents normally advise them on the dangers of early sex.” (Boys in school, Kabale Rural)

“Some parents do not care about their sons and daughters. This lack of parental care may easily lead them into early sex. That is girls are free to move to anywhere they feel like when parents are not strict then the young boys and girls end up into early sex.” (Girls in school, Mukono Rural)

“Excessive leisure also exposes young people to early sex. That is if one is always free to do what ever she wants, then it is most likely that such a person will end up in sexual activity. But if one has counselling services then one is likely not to do it.” (Girls in school, Kabale Urban)

“Some parents give a lot of freedom to their sons and daughters. Such freedom is misused by indulging in early sex.” (Girls out of school, Kabale Urban)

9.3 Consistency of condom use

Consistent condom use was mentioned as difficult in most FGDs conducted. The major reasons presented were availability, affordability, alcohol and drugs and misconceptions.

In Mukono, one key informant said a recent study had estimated the level of current condom use at 52 percent but consistent use at 14 percent.

Availability

In all FGDs, availability was raised as a major hindrance to consistent condom use. The main reason why it came up so prominently was a government directive to recall in 2004 all *Engabu* brand condoms that were given free in health facilities all over the country because they were found to be of poor quality. They had holes and a bad smell (Wendo and Nakaayi, 2004). Free condoms were no longer in the outlets, although there were plans to restock them with another brand or *Engabu* brand of a higher quality.

“To reduce inconsistent use provide condoms and let people know where they can get such condoms.” (Girls out of school, Kabale Rural)

“At the moment, the condoms are out of stock all over town.” (Boys in school, Kabale Urban)

“They used to supply condoms here. The PEARL project used to provide condoms but it stopped.” (Girls in school, Mukono Rural)

“You know there are young people in this area who have never seen a condom and yet are playing sex.” (Boys out of school, Kabale Rural)

Three key informants complained of inconsistent supply and unavailability of condoms as one of the major problems. One key informant said many people in the villages have not learned anything about condoms.

Affordability

In most FGDs, young people said condoms were expensive in sources other than public or NGO facilities. Young people expect free condoms because they cannot afford to buy them.

“At times these condoms are expensive Shs 500 (16 British pence) per packet so if you do not have that money you may decide to go live.” (Boys in school, Kabale Urban)

“Condoms are Shs 1000 which is quite a lot (33 British pence).” (Boys in school, Mukono Urban)

“We have now a dispensary. They used to tell us these are free government facilities but we pay.” (Boys out of school, Kabale Urban)

“NGOs like PEARL had assisted a lot. They were giving free condoms. One could afford to have over 3 boxes in a house but now if you buy a condom, you forego supper.” (Boys out of school, Mukono Rural)

Alcohol and drugs

The young people expressed lack of inhibition after drinking alcohol. They lose control of their senses.

“When one is drunk, one will lose self-control and the boys are always ready to use such a person for sexual satisfaction..... Also some boys reach an extent of putting chlorophorm in the alcohol given to the girls such that they can fall asleep and then rape them.” (Girls in School, Kabale Urban)

“Maybe alcohol takes away the shyness. You get that feeling of making a move, ” attacking”. And if the girl accepts, a drunkard may even fail to use condoms.” (Boys out of school, Mukono Rural)

“Of course if you drink brains become “charged” and you can’t even think of using condoms.” (Boys out of school, Kabale Rural)

“Most of the boys walk at night to dance, and smoke Marijuana and sometimes go to Ebikuruza and end up playing sex.” (Boys out of school, Kabale Urban)

Some of the key informants revealed that marijuana is grown in several places around the sorghum fields in Kabale district. This was mentioned as a problem in both Mukono and Kabale.

Misconception about condoms

Misconceptions about condoms pose a threat to consistent use. It was noticed that more misconceptions about condom use have arisen as a result of withdrawing *Engabu* condoms (Wendo and Nakaayi, 2004). It was mentioned in almost all FGDs that condoms may be expired even when they are of different brands. Other misconceptions are that a condom affects the uterus, causes cancer and that it can get stuck inside the women.

“Condoms affect the uterus.” (Girls out of school, Kabale Urban)

“Yes, because we were taught how to use it but most people think that a condom can easily break as a person uses it..... Also most people believe that with condom use one can still contract AIDS... Yes, because it may even break in some one and

that is why some people have feared using such condoms.” (Girls out of school, Kabale Rural)

“Some of the girls fear that the condom may stay in their private parts when the boy ejaculates. When such a thing happens men in the entire village and the doctors know that so and so plays sex. To avoid such, most girls do not accept their lovers to use condoms.” (Girls out of school, Mukono Rural)

“A condom can make you suffer from cancer.” (Boys in school, Kabale Rural)

“If not properly inserted, it may slip and disappear inside the woman’s private parts.” (Boys in school, Kabale Urban)

“If it breaks in the girl then it might make her swell (The stomach swells). There is a belief that condoms are too small and therefore too tight and uncomfortable to the users.” (Girls in school, Kabale Urban)

“Another wrong perception is that when one uses a condom in the first round, then the penis may not erect in the second round.” (Girls in school, Kabale Urban)

“At school they taught us that if you have never had sex, do not do it. ...those who encourage condom use simply want us to do/go wrong. ...condoms are not 100% safe. They only prevent pregnancies but not the virus.” (Boys out of school, Mukono Urban)

Still other young people see condoms as an inconvenience to enjoyable sex.

“You cannot taste the sweetness of a sweet that is in a polythene paper.” (Girls out of school, Mukono Rural)

“Some girls are too beautiful that when a boy uses a condom on such girls, he is at a loss.” (Boys out of school, Mukono Rural)

Other factors

Other factors that were said to affect consistent condom use were poor distribution mechanism, the trust effect, random nature in which sexual events occur, poor parental care, effect of advertisements and stigma. On distribution, young people felt that they need to put them in secret places and near users.

“Make condoms availablefree of charge. Even in such places, you put them in strategic places.” (Boys out of school, Mukono Urban)

“In most cases lovers get used to one another. This may make them stop condom use.” (Girls out of school, Mukono Rural)

“A girl may come unexpected. You can't let her go simply because you have no condom.” (Boys out of school, Mukono Rural)

“Those who talk to their parents are likely to use condoms because of the advice they get from parents. For instance my dad leaves the condoms in my room or sometimes gives them to my young sister that she takes Sam's medicine to him, when in actual sense they are condoms.” (Boys in school, Kabale Urban)

According to key informants, despite achievements in condom promotion in the country, some people connect condom use to prostitution, infidelity and promiscuity. Even at the district headquarters, responsible officers find it difficult to come and pick their allocations of condoms for distribution.

Other areas of concern raised by key informants are poor distribution mechanism and advertisements. Operators of shops and agents that sell condoms know most young people and their parents in the village and this prevents them from buying the condoms. Nobody will want to buy a condom from an agent who knows his mother. Advertisements can have a negative impact on condom use. People tend to buy the kind that is advertised. In some cases people do not want the free ones because they may not be as good as "protector", "preventer" and "life guard".

9.4 Mechanisms of keeping abstinent

Means of keeping abstinence were discussed in all FGDs and the most common were romance, masturbation and writing or receiving love letters.

“Use of cold waterSome people use the finger to feel sexually satisfied.” (Girls out of school, Kabale Rural)

“Sometimes we use masturbation where by you just rub your penis with cold water until you release sperms and feel okay... Sometimes you can just squeeze and kiss the girl, until you ejaculate and somehow feel satisfied.” (Boys out of school, Kabale Urban)

“When a girl says she loves you, you feel as if you have done it for example in a love letter with words like, queen of my heart, will love you until lake Victoria dries, ice cream of my tongue, love without money is like tea without sugar.” (Boys in school, Mukono Rural)

“Some girls use eggplants to get sexual satisfaction. In a certain school here in Mukono, eggplants were getting picked from the garden and yet the girls were not cooking them.... Through kisses and pecks, then one gains sexual satisfaction.

Touching the boys in any part of body can bring sexual satisfaction.” (Girls in school, Mukono Rural)

“Some youth masturbate by boiling water and applying it to the private parts so as to release sperms to avoid playing sex with a girl.” (Boys in school, Kabale Rural)

9.5 Comparison of abstinence and condom use by different groups

Abstinence and consistent condom use levels among young people were compared between those in religious and public/private founded schools and between those in-school and out of school during the FGDs.

9.5.1 Abstinence

This sub-section presents FGD participants’ comparison of abstinence levels between those in mission schools and private or public founded schools, and between those enrolled in schools and those not in schools.

Mission versus private/public founded schools

In the survey data it was shown that young people in mission schools were more likely to abstain compared to those in public and private schools. There was disagreement in most FGDs over whether there is a difference in abstinence levels between religious foundation schools and the private or public schools.

“Those who are in church founded schools are very active but they do not do it within the school but are sharp like during holidays.” (Boys in school, Kabale Urban)

“Those in religious founded schools do it most because they are always in gates and when they get out, they will satisfy their sexual urge.” (Girls in school, Kabale Urban)

“Students in religious founded schools and single schools are like a bull, which is enclosed in a fence and the day it breaks the fence it becomes wild so the same applies to such students.” (Boys in school, Kabale Rural)

In school and out of school

Data from the survey showed that young people in school were more likely to abstain compared to those not in school. The explanation obtained from FGDs was that those in school were always too busy and have counselling services.

“I think it’s those in school because they are often advised and sometimes supply them free of charge.” (Boys out of school, Kabale Rural)

“Those in school are always busy and do not think much about early sex as those out of school who are always idle.” (Girls out of school, Kabale Urban)

“Those in school can abstain because they have counselling services at school compared to those out of school.” (Girls in school, Kabale Rural)

Few of the key informants agreed that it is mainly those out of school who have time to attend parties, drink alcohol and end up in sexual activity. However, not all agreed that those in school abstain more. It was said that parties and admiring other students tempt them to have sex.

“Also girls in school begin sex earlier as compared to those out of school. This is a result of material desires. Girls in school admire what their fellow girls have and in the end they get men who will provide everything in return for sex.” (Girls in school, Mukono Rural)

“Those in school begin early sex because they get boyfriends at school who later indulge in early sex. Those in villages are always tilling the bushes.” (Girls out of school, Kabale Rural)

“There are always parties at school. That is welcoming senior ones. Such dances are associated with squeeze which heats up both the girl and boy for sex.” (Girls in school, Mukono Urban)

9.5.2 Consistent condom use

This sub-section compares the levels of consistent condom use by school enrolment status and between those who drink alcohol and those who do not. The participants did not find any difference between other groups of people.

Condom use in school versus out of school

In nearly all the FGDs participants agreed that those in school were more likely to use condoms consistently because they are taught about them and they had a lot to lose if they did not, compared to those who were not in school.

“Those in school are more likely to use condoms consistently because of the fear that their parents should not waste school fees on them and become pregnant in the end.” (Girls out of school, Kabale Rural)

“I think it is those who are in school that are likely to use condoms consistently because if you are still getting school fees from parents, you may not want to risk impregnating someone’s daughter.” (Boys out of school, Kabale Urban)

“It’s those in school that are likely to use condoms consistently because they even teach them at school, how to use it.” (Boys in school, Kabale Rural)

Drinkers and non drinkers of alcohol

Most participants thought that those who drink alcohol cannot be consistent users of condoms.

Those who take booze are not consistent in condom use. They have sex out of the blue and are not always ready with condoms. (Girls out of school, Mukono Urban)

9.6 Recommendations for abstinence and consistent condom use

This section presents the recommendations of the young people for increased abstinence and condom use.

9.6.1 Abstinence

There were divergent views over ways to promote abstinence among young people. They included imprisonment, avoiding women altogether, Voluntary Counselling and Testing (VCT) and setting up Income Generating Activities (IGA).

“Boys who are imprisoned for pregnancy cases may easily stop sexual activity... These at school use condoms because they are cheaper than being imprisoned.” (Girls in school, Mukono Rural)

“Ensure that you imprison whoever does it (has sex before marriage) for like ten years so that the rest can fear.” (Boys out of school, Kabale Rural)

“Sensitive/educate people especially the youth. Some do not know how to use condoms.” (Boys out of school, Mukono Rural)

“The government should put free education where by children will be busy in school other than being idle to indulge in sexual activity... Tailoring, catering and secretarial services can make one get a job fast and hence keep one very busy.” (Girls out of school, Kabale Urban)

“Voluntary Counselling and Testing services (VCT) should be given freely.” (Girls out of school, Kabale Rural)

“Those employed will always have time to only think about their business as compared to those who are still dependants.” (Girls out of school, Mukono Urban)

“Young boys engaging themselves in Income Generating Activities (IGAs) may make them forget all about sex. For example, jobs like making concrete, one will leave work when tired and may therefore not indulge in sex.” (Boys in school, Mukono Urban)

Key informants made the following suggestions that they hoped would increase abstinence among young people.

- There should be restrictions on the media against publishing or broadcasting material that can tempt young people into sexual activities.
- There should be a restriction on consumption and sale of alcohol to the young people. This can be done by enacting a law that forbids sale of alcohol to young people below a certain age like 18 years.
- Laws against drug abuse should be strictly enforced. Whoever is found with gardens of marijuana should be arrested.
- Laws on defilement are clear and should be enforced.
- More youth friendly services should be set up. They should be able to offer a whole range of sexual and reproductive health services including voluntary counselling and testing for STIs/HIV. There are few such services in the country.
- More sensitization is required as in some remote areas such as in Buvuma Islands on Lake Victoria have not been reached by sensitisation campaigns in the recent past.
- The role of religiosity should be given its due recognition in the fight against HIV/STIs. For example, when people get saved they are more likely to abstain.
- Government should continue to support drama groups. They have done great job in sensitisation and if there is more support they can reach more areas of the country.
- Parents of young people have a role to play in shaping their character. Sensitisation campaigns should target them as well.
- Involvement of young people in programmes meant to help them is crucial. Many times adults design programmes which do not clearly address the problems of young people.

9.6.2 Consistent condom use

The recommendations put forward to improve consistency of condom use include carrying condoms, providing them free of charge and making them available all the time.

“Condom carrying is not common in Kabale but it would be good for a girl to have her own condom in case the boy doesn’t have.” (Girls out of school, Kabale Rural)

Most of the recommendations made by key informants on abstinence above were also made for consistent condom use. Additional recommendations are listed below.

- More health education on consistent condom use is required.
- Discussion on use of religions to sensitise people about condom use should be initiated by government. This is difficult given that some religious leaders are opposed to use of condoms but the few that can accept them can save the lives of their followers.
- Condoms should be available and should be of good quality and not expired, the government should avail and sensitize the youth on how to use and keep the condoms.
- Government should be clear on condoms. It is discouraging to hear government officials saying condoms are for prostitutes.
- Setting up income generating activities is vital if young people are to reduce sexual activity and manage to buy condoms.

9.7 Discussion

The results above have covered briefly some of the perceptions and understandings of abstinence, the level of abstinence, factors associated with abstinence and consistent condom use of young people. It is clear from the results that there is confusion among young people over what abstinence means. Young people in Kabale district are more likely to delay sex initiation compared to those in Mukono. Young people are thought to be failing to delay first sex because of peer pressure, exposure to alcohol and drugs, excitement at parties, poor environment/neighborhood in which they live, exposure to media and poverty. Other less frequently mentioned causes of failure to abstain are pressure from parents and society, defilement and rape, indecent dressing, indiscipline at some religious activities, internet, a culture to accept gifts and favours, games, indecent

assault and misconceptions about abstinence. On inconsistent condom use, important associated factors were unavailability and un-affordability of condoms, consumption of alcohol and drugs and misconceptions about condoms. Other less frequently mentioned factors were poor distribution of the condoms, trust among partners with time and the unpredictability of sexual events.

Poor understanding of abstinence could be due to low coverage of sensitisation programmes and lack of clarity in the messages delivered. It is difficult from this study to fully determine why nearly all participants could not say up to when one could abstain, but a review of documents shows that it is not explicitly written in major documents on HIV/STI prevention in the country. This confuses health educators and people they are trying to educate. Other studies have found a similar lack of clarity on the definition of abstinence. This confusion should be cleared by all stakeholders.

Explanations given by FGDs and key informants on the effect of parties provide examples of specific events that tend to tempt young people which were not covered in earlier studies. Implementers of reproductive health programmes may want to raise awareness of dangers that arise from poorly organised *ebikuruza* and *niigina* parties. Through the media, seminars and religious institutions young people and the would-be hosts of the parties can be sensitised on how to avoid tempting situations.

All FGDs and key informants pointed out peer pressure as an influencing factor on first sex. Many studies, including Asimwe et al. (2003), have expressed the force of peer pressure in early sex in Uganda, but not as strongly as in this study. Numerous phrases used by peers to tempt their fellows into sex have been identified in the study. A young person will commonly do anything to avoid being called *foolish*, *impotent*, *spoilt*, and/or *wasted*. This information can be used by reproductive health programme implementers during sensitisation activities. Stopping peers from abusing each other over non-exposure to sex may increase abstinence as it may empower young people to resist the pressure. It is interesting to note that girls trick their fellows into sex with their brothers or other boys. This calls for caution over a common practice of visiting one another among young people.

The media have a strong influence on young people's ability to abstain. Newspapers, mostly *Red Pepper*, and some radio programmes (such as *Trespass* on Radio West) are

providing information that is thought to incite young people to engage in sexual activities. Pornography films in some unlicensed film halls are another source of inappropriate information. There is a media council to regulate the media and a possibility would be to impose more restrictions on inappropriate writing or broadcasting.

Poverty has long been known to be associated with early age at first sex (Leventhal and Brooks-Gunn, 2000). Most girls want education, want to dress and feed well. When they are born in poor families they may be forced to engage in sexual activity with rich men as a survival mechanism. This was more commonly mentioned in Mukono than in Kabale. Setting up income generating activities could be a way to fight poverty.

Seasonality of abstinence is important in the timing of sensitisation campaigns. In Kabale, these could take place before May since the harvest period runs from May to August, while in Mukono they could take place before November.

Misconceptions about condoms show the need for sensitisation. There are still young people that have not got the right message about condom use.

The distribution system of condoms needs to be revised. Shopkeepers may not be the best distributors since most of them are adults and parents, and may not maintain confidentiality. Probably using young people who would be more approachable could be a better option. They could be trained on distribution, disposal and briefing others on how to use the condoms. Each village could have one or two distributors.

The fact that condom use is more consistent among in-school young people provides more evidence for promotion of Universal Primary Education (UPE). Children have been dropping out of school and this evidence should be used to convince the parents that when their children are at school they are more likely to protect themselves.

The major recommendations from key informants and FGDs for abstinence and consistent condom use may be summarised as increase in reproductive health education, availability of condoms, provision of more youth friendly service centers, provision of income generating projects, limiting consumption of alcohol by the youth and enforcing existing laws on rape and defilement.

Relative high cost, unavailability and erratic supply of condoms in health facilities and shops that were mentioned in the FGDs and key informant interviews seem to be in agreement with the views of one of the main anti-HIV/AIDS campaigners; the President of the country. He said "In countries like ours where a mother has often to walk 20 miles to get an aspirin or five miles to get water, the practical question of getting a constant supply of condoms or using them properly may never be resolved" (Museveni, 2000). Despite much investment in condom procurement and distribution the above mentioned problems persist. In 2003, Uganda imported 80 million condoms (Xinhua News Agency, 2003) but by 2004 many facilities had run out of them. The number of condoms ordered for 2005 was 120 million (Nyanzi, 2005) but this may still not be enough.

The results above are from what participants in FGDs and KIIs in Kabale and Mukono have said. Their views may not be representative of all young people in both districts, and the number of FGDs and KIIs was not large enough. However, they provide some views from some typical young people. Some of the ideas are expressed to support and expand the survey data.

9.8 Conclusion

The levels of abstinence and condom use are influenced by many factors some of which could not be identified or explained in the survey. The factors mentioned in this chapter can be classified into personal, interpersonal, institutional and environmental /neighbourhood categories.

CHAPTER TEN

10. SUMMARY AND CONCLUSIONS

This chapter summarises all the key findings of the study, draws conclusions, raises some policy implications, identifies some limitations of the study, and offers some recommendations for future work on the subject of the study.

The objectives of the study were, firstly to identify levels of abstinence and condom use; secondly, identify correlates of the levels of abstinence and condom use and, thirdly to identify the changes of the levels and associated factors. The study further established the significance of cluster effects on the condom use and abstinence. The abstinence refers to both primary and secondary abstinence. Information on condom use was only available for first and last event in the first, second to latest and latest relationships.

10.1 Key findings

The summary provides just only the key findings directly connected with the objectives of the study. They are arranged by themes of the study.

10.1.1 Delayed sex

The age standardized sexual exposure rates were lower among those who resided in Kabale district, were aged 15-16, were in school, relied on their parents for financial support, avoided consumption of alcohol, avoided indecent assault, did not attend parties or dances, had a high positive attitude to abstinence and were Catholics. The most commonly reported reasons for having never had sex were fear of HIV/AIDS, fear of pregnancy and not being ready.

10.1.2 Secondary abstinence

The length of secondary abstinence episodes changed with time and socio-demographic and behavioural characteristics. Three quarters of young people with sexual experience

went through episodes of sexual abstinence. Latest episodes were shorter than the previous ones. The episodes discontinued in the month intervals from September to October, December to January and March to April which coincided with students holiday time. Comparison of cumulative discontinuation probabilities of the episodes by levels of behavioural and socio-demographic characteristics showed that the episodes of those who took alcohol or attended parties had a higher likelihood of discontinuation. Episodes of young men who discussed sexual matters with their parents or had first sex at the age of 15 or more years also had a higher discontinuation rate. The same applied to episodes of young women who were in school.

Eighteen percent of young men and women abstained for 12 months in previous 13 months. This is much lower than the national level of 34 percent among men and 27 percent among women as found in the Demographic and Health Survey of 2000/1. The level is higher than that found in a study in South Africa (Simbayi et al., 2004). The abstinence level increased with shorter periods of recall. In a bivariate analysis, abstinence level was significantly higher among those who were aged 15-16 years, had first sex at 15 or higher age, were in school, did not listen to radio, depended on parents for financial support, avoided parties and had a high positive attitude to abstinence. The level of abstinence was not affected by gender and district.

Age, type of relationship at first sex, listening to radio and attending parties or dances had an influence on secondary abstinence. The likelihood of abstaining for six or more months was independently associated with higher age group, not listening to radio and avoiding parties or dances and a marginal effect of having had casual/one time partner at first sex.

The risk of discontinuation of secondary abstinence episodes was significantly higher among those who took alcohol, attended parties and discussed sexual issues with their parents. There were unexplained random effects at village that influenced the discontinuation of episodes.

An EHC can be used to collect reliable data on sexual practices. The patterns and differentials of abstinence obtained using EHC data are nearly similar to those in questionnaire data with few exceptions that can be attributed to higher quality rather than low quality. The abstinence level computed from the questionnaire data was found to be

higher among men, those not in school and those that had been exposed to peer pressure but this was not consistent with other findings. The EHC checks consistency in the main questionnaire and produces richer data that enables analysis of episodes which questionnaire data cannot. The EHC data were more sensitive to variations on abstinence in certain variables than the questionnaire based data

10.1.3 Condom use at first and latest events

There was a relatively high level of condom use among young people and it increased with time. Overall, half of the participants used condoms at first sex (Men: 43 percent, Women: 59 percent). The level of condom use at latest sex was higher (Men: 57 percent, Women: 55 percent). The level of condom use at both first and latest sex was higher than one found in Kenya (Bankole et al., 2004) and Ghana (Karim et al., 2003). However, given the high levels of HIV and high unplanned pregnancies, two decades of mobilisation campaigns should have raised condom use to a higher level.

Those who reported condom use at first sex were over seven times more likely to report condom use at latest sex. Women who were in school were four times more likely to report condom use at either first sex or latest sex than those who were not while those who listened to the radio were over two times more likely to report condom use at latest sex than those who did not. Women in Mukono were over ten times more likely to report condom use at first sex than those in Kabale while men in Mukono were four times more likely to report condom use than those in Kabale. At latest sex the difference in condom use among women between both districts reduced significantly. Those in casual/one-time relationship at first sex were three times less likely to report condom use at first sex than those in steady relationship.

The influence of independent factors changed with the sex event. At first sex, factors independently associated with condom use were being female, resident in Mukono, higher age at first sex, being in school, having had first sex in previous one year and having a steady relationship. At latest sex, only residence in Mukono, being in school, listening to radio regularly and having used condoms at first sex were significant. Age at first sex, the timing of sex and type of partner were significant at first sex and not at latest sex, while listening to radio was significant at latest event but not at first event.

A quarter of respondents did not use a condom at either first sex or latest sex, while a third did not use condoms at all. Inconsistency of condom use at the two events was closely associated with residing in Mukono for both men and women, and consumption of alcohol for females only. Consistent condom use was associated with being in school among women.

10.1.4 Condom use within and across relationships

A comparison of condom use at first, second to latest and latest relationship showed that condom use was at its highest level during the second to latest relationship and declined in most recent relationship but to a level still higher than the first relationship. There was a general increase with time in condom use within the second to latest relationship and a decline within the latest relationship. While a reduction in condom use level in relationships is similar to what other researchers have found, an increase in condom use in the second to latest relationship is unique. Compared to the first relationship, young people were on average over three times more likely to use condoms at any event in second relationship and more than two times in latest relationship. After controlling for other factors, those in Mukono were over five times more likely to use condoms compared to those in Kabale and women were twice as likely to use condoms as men. The smaller number of respondents who reported on three relationships requested and the differences in lifetime partners may contribute to the unusual condom use pattern in the second to latest relationship.

Condom use in first relationship was influenced by more factors than that in later relationships. Condom use in first relationship was independently influenced by residence in Mukono, being a woman, being young (15-16 years), being in school, attainment of secondary education, higher age at first sex and listening to radio. In latest relationship, only being in Mukono, being female, attainment of higher education, reading newspapers and listening to radio were significant. In the second to latest relationship, only being resident in Mukono and reading newspapers were significant.

The district, education level attained, age at first sex and reading newspapers had an influence on consistent condom use in any relationship. Residence in Mukono, attaining

secondary education, higher age at first sex and reading newspapers were strongly associated with consistent condom use. Inconsistent condom use was associated with the same factors associated with higher levels of condom use; there were residence in Mukono, attainment of secondary education and having studied in public or private founded schools.

10.1.5 Perceptions of abstinence and condom use

From the qualitative data collected, it was found that young people have different understandings of abstinence. This might have arisen from the way they are taught.

In addition to factors identified in the survey, there are many other factors that influence abstinence and condom use that were identified in the qualitative data. They include peer and society pressure, the media, lack of basic necessities, alcohol consumption and, accessibility and poor distribution of condoms.

The media has a big role to play if condom use and sexual abstinence are to be promoted. Some print and electronic media were consistently mentioned as promoting permissive behaviour while others were mentioned as sources of preventive messages against risky behaviour.

Lack of basic necessities drives young girls into premarital sex in exchange for gifts of the required necessities. This is mainly due to poor socio-economic status of the children.

Unavailability, relatively high cost and poor distribution of condoms were reported to be among the major constraints of condom use among young people. Consumption of alcohol and drugs were also reported as hindrances to condom use.

10.2 Conclusions

Among young unmarried people aged 15-24, the level of delayed first sex and condom use levels are relatively high but secondary abstinence levels are low. High primary abstinence and condom use levels are possibly high due to high level of sensitisation as in most parts of the country. Low levels of secondary abstinence are possibly due to alcohol consumption and attendance of cultural festivities and parties. Another factor for high

condom use is the selection of participants who were more urban (Mukono district is semi-urban) and more exposed to tempting media.

There are factors that are independently associated with primary abstinence which can be categorised into personal, interpersonal, institutional and environmental factors. This is in agreement with a theory by McLeroy et al. (1998). The personal factors are lower age group, avoiding alcohol consumption, positive attitude to abstinence and avoiding parties. The interpersonal factors that are influential on primary abstinence are peer pressure, communication with parents, source of financial support and exposure to indecent assault. Peer pressure, communication with parents and source of financial support were not significant in the quantitative study but were raised in the qualitative study.

There is evidence of dynamics of secondary abstinence in form of episodes that change with time, different characteristics and behaviour. Personal factors, alcohol consumption and attendance of parties, are significantly associated with both secondary abstinence (for a given period) and the hazard of discontinuing the secondary abstinence episodes. Other factors associated with instantaneous risk of discontinuing abstinence episodes were not being in school (institutional) and not discussing with parents about sexual matters (interpersonal).

An EHC is a very useful tool in a study of sexual practices. When it is piloted and adjusted to particular area of study it can improve the quality of the data and produce episodes for further analysis. It provides an opportunity for a different way of measuring secondary abstinence that caters for seasonality. Seasonality and duration of abstinence or sexual activity are very important in understanding variations in values of population based indicators of sexual and reproductive health as most of them are based on cross-sectional studies.

There is evidence of dynamics of condom use in the form of change in use within and across relationships. The dynamics are influenced by the factors, district, gender, age, schooling status, education level, access to media, duration of time since first sex, attitude to condom use and the number of sexual partners. This shows that personal, interpersonal, institutional and environmental factors contribute to the dynamics of condom use.

There are more factors associated with condom use at first sex than at latest sex, hence more opportunities for intervention before first sex. In addition, condom use at first event greatly influences condom use at latest sex. The level of condom use at latest and next to latest relationships is higher than at first which is not common with other findings, such as in Ku et al. (1994).

Strong relationships between condom use at first sex and condom use at latter events and between primary abstinence measured by age at first sex and condom use at first sex agree with the hypotheses in the conceptual framework. However, age at first sex was not associated with condom use in other relationships.

Consistent condom use rises with higher levels of condom use. Some people opposed to condom promotion argue that inconsistency may be high but this is possibly due to low condom use.

There are behavioural and socio-demographic factors which are significantly related to abstinence and condom use in reputable studies elsewhere but are not significant in this study. This is further support for the need for more in-country studies. The strength of influence of the factors changes with time.

Across relationships, condom use increases and later decreases. Within each relationship, condom use tends to decrease with time but this is different in second to latest relationship.

The media are influential on young people's sexual abstinence and condom use. Some newspapers and radios seem to encourage prevention while others encourage permissiveness.

10.3 Limitations and omissions

Despite having provided some very useful information and robust results in several models that are ready for use for policy and programme officials, there were some limitations related to the design, content, sample size and assumptions.

Design

This study was cross-sectional with a retrospective component using an event history calendar. One of the major disadvantages of the design is that it is difficult to claim causality since both the outcome and exposure occurs at the same time. An assumption has to be made that the current values of some exposure variables are unalterable over time to be able to use the data in analytical way (Hennekens and Buring, 2005). The assumption may not always hold in reality. An example of the weakness of the study is a positive relationship between communication with parents and discontinuation of secondary abstinence by young people. It may be that parents often talked to their children after knowing that they were engaged in sexual activities. In a few cases, it may be the reverse because it was found in the qualitative results that some parents seemed to condone initiation of sexual activity by their sons.

In any study that requires recall of events there is always a problem of memory lapse. In this study the problem was minimised by use of an Event History Calendar (EHC) and choice of memorable events from a pilot study but, because it was a cross-sectional design, the memory lapse is expected to be higher than in other designs using a longitudinal approach.

Sample size

While the sample size was adequate for analysis of primary abstinence it was not ideal for secondary abstinence and condom use since they were applicable for a proportion of the total sample size. In analysis of secondary abstinence there were 350 non-truncated episodes from only 245 (55 percent) out of the 445 that had ever had sex, which is a common characteristic of event history data. Analysis of condom use at last sex in the second most recent relationship involved only 73 (16 percent). A larger sample requires more money and time, neither of which was available.

Omissions in data collection

In many investigations a question on age is followed by another on date of birth. This is mainly to check the validity of the age. A question on year of first sex could have verified

the age at first sex in this investigation. It may be a strain on the respondents but any estimate would be helpful. Age at first sex is one of the key outcome variables.

Biological markers such as having ever had a sexually transmitted disease and having ever been pregnant or made somebody pregnant were left out but could be important in verifying consistency in reported condom use or abstinence.

On access to media, additional questions should have been included to identify specific radio station, radio programme and newspaper /magazine. In the qualitative data the details were obtained but it would have been better to have it in the quantitative data as well since it was more representative. Access to media was a significant determinant of condom use and abstinence in the bivariate analyses.

How long a person had been drinking or when he/she started should have been included in the study. It provides an idea of behaviour over time and reduces dependence on assumptions. Alcohol consumption featured prominently as a negative correlate of primary and secondary abstinence in both bivariate and multivariate analysis.

There should have been a measure of socio-economic status of the family of the respondent in addition to the question on occupation of the respondent. Inclusion of questions on main source of income for the family and occupation of the head of the household where the respondent resides could have improved the measure of socio-economic status.

Type of school attended was a significant factor on condom use at first sex and if the name of the school had been included in the questionnaire it would have helped get accurate information on the foundation of the school. Some respondents were unsure of the foundation of the school.

There was no question on involvement in sports or other extra curricular activities. This is another area that could have been explored. Participation in sports has been found to have an effect on sexual activity. Active adolescents who participate in team sports are less likely to engage in risky behaviours (Pames, 2003).

Information on source of condom for each event would have enriched the data as it would identify changes in source of condom at first and latest sex events.

An estimate of life time partners is an indicator of sexual activity and has a very close relationship with condom use at first sex. Inclusion of the variable could have added extra information.

Use of other methods of contraception is a well documented influencing factor for condom use. Inclusion of a question on knowledge and use of any other method of contraception could have enriched the data.

Experiences after first sex such as, abortions or unintended pregnancies, fears of STIs/HIV and partner's view/comfort might have had an effect on secondary abstinence and condom use. This is not supported by the data collected but can be explored in future research.

Data quality and Bias

Despite stringent measures to improve quality, it is likely that there remains some social desirability bias in the direction of over-reporting by men and/or underreporting by women (Fenton et al., 2001). Examples of data that are likely to have been under-reported are age and the number of sexual partners. Under reporting of age is common among women. Over reporting is likely to have occurred on response to questions on duration of time since last sex and condom use. Another source of bias is digit preference. Many people prefer to report certain figures and this results in heaping on figures that end with even numbers especially zero.

Selection of young unmarried people in age group 15-24 causes a selection bias. The younger (aged 15-17) especially women are more likely to behave like the rest of the population since few are married by 17 years (median age at first marriage: 18 for women and 22 for men) while the older ones are more of a selected group who may behave in a unique way.

Comparisons of abstinence and condom use indices with other indices from studies carried out among the general population of young people aged 15-24 have been made due to lack

of data for the unmarried group. The two groups may be affected differently by exposing factors to abstinence and condom use. For example those who are already married are likely to have started sexual activity earlier than those unmarried

10.4 Recommendations

The recommendations below are divided into two sections, policy and programme in one section and future research in another.

10.4.1 Programme and Policy

The results in the current study have some programme and policy implications. In particular, they point to review or re-focus attention on sexual health education, income generating activities, vocational training, and regulation of alcohol consumption, education, availability of condoms and youth friendly services.

Sexual health education

Evidence of associations between specific factors and sexual abstinence can potentially be used to bring change in the state of reproductive health. The evidence can be incorporated into sexual and reproductive health education package. The timing and content of the education materials should be right so as to help young people manage the risky periods in safer ways.

The media should be fully utilised to convey health messages as results show that most young people listened to radio and those who did were more likely to use condoms, although they were less likely to abstain. Reading newspapers was associated to condom use in first relationship. The designer of the messages should also take into account that, when a message is not correct, it may instead lead young people into early sex or discontinuing secondary abstinence.

There should be a change of attitude towards sexual relationships between girls and boys through health education. In this study, those who were in a relationship were more likely to use condoms than those who were not. Many traditional cultures in Africa, especially in Uganda, classified being in sexual relationship as one of worst forms of indiscipline in olden times and an out-of-wedlock pregnancy was punishable by death (New Vision Reporter, 2005). Some parents still have the same attitude to premarital sexual relationships although not to the extent of having their children killed. This encourages secret (Romberg, 2003) and casual patternships that result in pregnancy and sexually transmitted infections. A more open approach to sexual issues within home, school, church and at health facilities through teaching responsibility and good personal relationship may be better (Stammers and Ingham, 2000).

HIV/STIs and unplanned pregnancy prevention programmes should continue to target young people especially those 18 years old or younger. It is the time before young people start sex and there are more opportunities to influence their life time condom use than waiting until they are sexually experienced. Condom use at first sex was strongly associated with condom use at latest sex.

Life skills based health education can be an effective tool against permissiveness. There are life skills programmes that have been designed to reinforce adolescents' personal risk perception, self esteem, and self efficacy (Tiendrebeogo et al., 2003). The programs provide skills in assertiveness, communication and decision making, as well as coping with peer pressure and emotions. Training young people in such skills, especially those who are looked after by people who are not parents or relatives, may go a long way in protecting them against early sex or unprotected sex.

Since a more positive attitude towards abstinence is closely related to delayed first sex, it is possible to delay sex through sexual health education if it improves the attitudes.

Currently, there are organisations such as Presidential Initiative on AIDS Strategy for Communication to the Youth (PIASCY), Uganda Youth Forum (UYF) and Faith Based Organisations (FBO) which are promoting abstinence. They have the resources and political support from within the country and even the United States Government and Churches (HRW, 2005). UYF goes on further to promote marriage commitment cards (HRW, 2005) while a private source promises reward for virginity (BBC, 2005). The

organisations should be careful with using abstinence-only approaches since they have not been effective in the United States (Bearman and Brückner, 2004; PSI, 2005) and they should not denigrate condom use as part of their campaigns (HRW, 2005). Another issue is that most of the abstinence programmes use Christian religious values to promote abstinence but religion and religiosity were not independent influencing factors on abstinence in the current study. Encouraging abstinence but at the same time highlighting the importance of using a condom is a better approach. Lack of association between attitudes towards abstinence and secondary abstinence may also be an indicator of weaknesses of existing sexual health education messages. Abstinence education is essential but not enough (Stammers, 2005).

There is evidence to show that encouraging discussion with parents about sexual matters, residing with both parents and relying on parents rather than other people for financial support, can delay first sex among unmarried young people. These should be encouraged during sexual health education campaigns although they may not apply in situations where young people do not have parents or are too poor.

There is a need for organisations and other stakeholders in HIV prevention to set up a working definition for abstinence. It is evident from the focus group discussions that young people understand it differently. This causes confusion which may be related to premarital sex and/or unsafe sex.

Income generating activities

Source of financial support had an influence on abstinence level in bivariate analysis. Incorporating income-generating activities in existing programmes could alleviate some of the problems faced by young people who are self-reliant. Some double faceted programmes on HIV and poverty eradication have been sustained in the country with encouraging results (United Nations, 2004).

There is a need for continued and sustainable empowerment of parents with income generating activities so that they can care for children until they can be on their own. This may have a positive effect on abstinence level.

Vocational training

Vocational training for young people is one way through which they can reduce dependence on other people. With the skills acquired they can look for jobs or employ themselves and this will increase their self assertiveness needed to resist temptations to indulge in sex. This applies especially for young people from poor backgrounds.

Regulation and policies

The results in the current study support the government's current effort to develop a policy of regulating the alcohol drinking hours. This comes in the wake of a WHO report showing Uganda as having the highest alcohol per capita consumption (Mukasa and Odong, 2005). Such a policy should include safeguards for young people against irresponsible alcohol consumption. For example free alcohol promotions, concerts and parties and beach bashes can be limited to those who are 18 years and above. Laws limiting consumption of alcohol during working time, selling alcohol to young people aged less than 18 years and drunkenness should be instituted.

Discipline in schools and homes could be strengthened to reduce incidences where young people attend illegal and unauthorised parties, dances and night clubs since there is a high likelihood for discontinuation of secondary abstinence.

Discipline in dancing parties, halls and discotheques should be improved. The association of attending parties and initiation of sexual activity could be a result of irresponsible alcohol consumption and nature of the dances and general discipline. Parents need to be more careful in letting their children go to parties.

There have been cases where women complain that men touch their breasts in taxis and buses without their consent. This culture should stop because of the strong association with sexual activity. Indecent assault is punishable in the country but rarely is the law invoked to punish culprits. Another problem may be that the people do not report indecent assault cases out of ignorance of the law.

There are laws meant to safeguard the public against pornographic material in print and electronic media which are not always enforced. In the preliminary analysis and the qualitative results, the media was found to be negatively influencing young people's ability to abstain.

Education

The government should continue to fully support the Universal Primary Education (UPE) and implement the planned Universal Secondary Education (USE). Being in school was significantly associated with delayed first sex, secondary abstinence and condom use and consistency in condom use.

Availability of condoms

Condoms should be available to all that need them. Unavailability was one of the reasons for non-use of condoms that was raised by young people in the qualitative data. All health facilities should have condoms and staff who have been trained to respect confidentiality.

Youth friendly services

Youth friendly services should be available to all young people. One possible reason why condom use in Mukono was high is that it is well served by several facilities and organisations that deal with young people. In addition, several youth reported utilisation of Nagulu teenage centre, famous for its youth friendly services in Kampala, the capital city.

10.4.2 Future research

To advance knowledge on the dynamics of condom use and sexual abstinence based on the results of this study a number of recommendations for future research have been made. They include improvement in design, sample size and data collection procedures.

Design

To improve on the quality of data, to allow robust analytical methods and to improve the validity of results, prospective studies such as a longitudinal design with three panel surveys are recommended. Panel studies consist of a series of interviews or observations of the same respondents or outlets over an extended period of time. For example, individuals could be asked to record events when they had sex, condom use and predisposing events. The major characteristics of this design are that the participants are the same and the surveys are carried out at regular intervals. Such surveys are able to determine causality (Smith and Stover, 2005). However, such surveys are expensive and a cheaper option is multiple cross-sectional surveys which are able to give trends in behaviour at aggregate level but not at individual level. The problems with the panel surveys are the high attrition and the risk of conditioning participants through repeated contacts.

A baseline survey of at least 1,300 young people can be sufficient. A tenth of the young people in current study had three or more relationships. Using the same proportion, at least 130, which is a statistically reasonable number of participants, will be expected to have three or more relationships. With such a larger number of respondents there will be more abstinence episodes to analyse. The first follow-up panel can take place after six months and the next after twelve months. The interval of six months is chosen because, according to the results of the current study, certain exposing events like parties and holidays experience occur within six month periods. The criterion of deciding on the interval has been used in other studies (Smith and Stover, 2005). The same respondents in the same villages should be interviewed in the panel visits or follow-up cross-sectional survey if funds cannot allow panel surveys.

The proposed design of panel or cross-sectional surveys will measure changes in key independent variables and reduce dependence on invariability assumption mentioned above. Memory lapse problems will be greatly reduced since the time of recall would be a maximum of six months. Inclusion of time varying factors will greatly enhance the robustness of the models developed from the data obtained. Another essential factor, length of relationship, can more easily be obtained using the proposed design.

A pilot study is essential before a large sexual health study and especially when it involves an EHC. The structure and content of the tools may change as a result of the pilot study.

Content

Researchers have identified many other factors that predispose young people to early onset of sexual intercourse, discontinuation of abstinence and inconsistent condom use in several countries. Future research in Uganda can investigate whether the same findings would be found in the country. For early sex, the factors include biological factors such as pubertal timing and testosterone levels (Tucker et al., 1994), social factors (for example poverty, violence, family marital disruption, lack of family connectedness, parents' lack of education, lack of parental supervision, substance use, sexual abuse, poor academic performance, low educational expectations), and factors associated with attitudes and beliefs, including personal values and perceived norms and intentions. Additional factors that have been identified include low self-esteem and self-efficacy, hopelessness, mother's early sexual intercourse, teens' perceptions of parents' rules and attitudes, and single mother-headed households (Lammers et al., 2000). Other factors associated with early sexual exposure that are not covered in the current study are the value of independence, tolerance for deviance and lower value placed on academic achievement (Jessor et al., 1983). Identification of factors that significantly influence the dynamics of condom use and abstinence helps to prioritize areas of intervention.

Another area of future research is the factors responsible for significant random variation in abstinence and condom use at the village level. There is a need to investigate whether exposure to factors associated with abstinence or condom use vary by village.

Some findings in the study were unique and further research should be carried out to explore more about them. These include increase in condom use during the second latest relationship, high association between discussion with parents and hazard of discontinuing secondary abstinence.

There are abstinence programmes running in the country and it is necessary to know their effectiveness. Comparing the proportions of those who have sex before a committed

relationship and marriage between participants in the programmes and non-participants would be of great value.

Other issues for future research include reasons why several factors tend to have an influence on condom use at first sex but not at latest sex. This may require a mix of qualitative and quantitative methods.

A panel study described above can be used to collect data on condom use which can compare sensitivity for consistency of condom use among three measures, condom use at first sex, condom use at latest sex and condom use at both first and latest sex.

10.5 Uniqueness of the study

Based on the literature review carried out, some characteristics of the current study and results are unique.

Firstly, use of Event History Calendar (EHC) to recall sexual events is not common in the literature. What is very common is use of the EHC in family planning studies to recall methods used. In the few studies that do appear in the literature, the focus and procedures are different. For example, a study in the USA used self administered EHCs to get detailed 5-9 year health risk that included drug abuse and sexual activity (Martyn and Belli, 2005). In Uganda, there is no study in the literature that has been found to have used the EHC for sexual events.

Some results in the current study are different from those in other larger and well known studies, while others are new or updated. Higher level of condom use and increase within second to last relationship differs from the results reported in Ku et al. (1994). Results on higher condom use among steady partners compared to casual partners are different from many established studies because a steady partner is expected to be more trusted. The level and factors associated with condom use at first sex in Uganda have not been reported in the literature.

The study is more focused than many studies that have reported on condom use and sexual abstinence in Uganda. The only recent report that covered condom use and abstinence

among unmarried people used data from the Demographic and Health Survey (DHS) of 2000/1 which are collected for a wide range of issues from a wide age group of people.

The study is more population based (although geographically limited) than other studies which have been carried out among selected populations such as prostitutes, family planning clients and school children. This is in line with the proposed new direction for programmes to reach the general population rather than high risk groups only (Center for Health and Gender Equity, 2004; The Cochrane Collaborative Review Group on HIV Infection and AIDS, 2004). Since the study is population based and scientific methods of data collection have been applied, the results from the study can readily be used for the whole district of Mukono and Kabale and not just the sampled areas only.

Secondary abstinence in the context of HIV/AIDS is a relatively new topic although abstinence in the context of family planning has been researched for quite a long time. With the advent of HIV/AIDS, there is a renewed effort to promote secondary abstinence and some achievements have been registered. However, little research has been carried out in the area, especially in developing countries which are most affected by the HIV epidemic.

APPENDIX 1: TOOLS

APPENDIX 1A: QUESTIONNAIRE AND EVENT HISTORY CALENDAR

FOR A STUDY ON DYNAMICS OF CONDOM USE AND ABSTINENCE AMONG UNMARRIED YOUTH AGE 15-24 IN UGANDA

VERSION FOR MALE RESPONDENTS

IDENTIFICATION

District Name _____	
County _____	
Sub-county _____	
Parish (LC2) _____	
Village (LC1) _____	
Urban/Rural (Urban=1, Rural=2) _____	
Household number _____	

INTERVIEWER VISITS

	Visits		Final visit
	1	2	
Date			
Interviewer's Name			
Result			
Next visit (time, date)			
Result codes			
1	Completed		
2	Partially completed		
3	No household member at home or no competent respondent at home of visit		
4	Refused		
5	Other specify _____		
Comments by Interviewer			
.....			
.....			

INFORMED CONSENT

Good Morning/Afternoon

My name is _____ I am working on a project trying to study sexual behaviours of the unmarried youth age 15-24. It is based at the Institute of Public Health, Makerere University. The main intention of the study is to find out factors that are associated with discontinuation of abstinence or condom use in the fight against HIV/AIDS and STIs. The results of this study will guide implementers such as the ministry of health and NGOs on ways of improving the consistency or continuation of use of condoms or abstinence. Ethical Approval to conduct this research was obtained from National Council of Science and Technology.

In this study a respondent like you sits down with an interviewer for about 45 minutes to discuss issues relating to his sexual behaviour in the previous one year. You are free to stop participation any time if you feel you cannot continue. It is a frank discussion which requires truth and honesty about one's life.

All the information that you give will be strictly confidential. We do not write your names on the questionnaire.

May I please go ahead with the interview?

Accepted _____ Yes/No

Time : _____

SECTION 1: RESPONDENT'S BACKGROUND

101	How old were you at last birth day	
102	In which year and month were you born [CROSS-CHECK WITH 101]	MONTH _____ YEAR _____	
103	Have you ever attended school	YES 1 NO 2	106
104	Are you currently in school?	YES..... 1 NO 2 IN LONG VACATION AFTER S6..... 3	*05
104b	When did you leave school?	YEAR <input type="text"/>	
105	What is the highest level of education you have attended?	PRIMARY 1 SECONDARY 2 POST SECONDARY..... 3	
105b	What is the highest class/year you attended?	CLASS/YEAR <input type="text"/>	
105c	Did you ever receive any vocational training?	NONE..... 1 TECHNICAL 2 COMMERCIAL..... 3 OTHER (Specify)..... 4	
105d	Is the school/institution you attend/ last attended private, church, Muslim or government founded?	GOVERNMENT 1 CATHOLIC CHURCH..... 2 PROTESTANT CHURCH..... 3 MUSLIM COUNCIL..... 4 INDIVIDUAL (S)..... 5 OTHER (SPECIFY)..... 6	

105e	Is the school/institution you attend /last attended mixed or not?	MIXED 1 BOYS ONLY 2	
106	Can you read and understand a letter or newspaper?	EASILY 1 WITH DIFFICULTY 2 NOT AT ALL 3	→ 109
107	During the last 4 weeks did you read a newspaper or magazine?	YES 1 NO 2	→ 109
108	How often did you read a newspaper or magazine?	ALMOST EVERYDAY 1 AT LEAST ONCE A WEEK 2 LESS THAN ONCE A WEEK 3	
109	During the last 4 weeks, did you listen to the radio?	YES 1 NO 2	→ 111
110	How often did you listen to the radio?	ALMOST EVERYDAY 1 AT LEAST ONCE A WEEK 2 LESS THAN ONCE A WEEK 3	
111	What is your religion	CATHOLIC 1 PROTESTANT 2 MUSLIM 3 OTHER (Specify) 4	
112	Apart from special occasions such as weddings and funerals, how often do you attend services or meetings connected with your religion?	MORE THAN ONCE A WEEK 0 ONCE A WEEK OR MORE 1 AT LEAST ONCE IN TWO WEEKS 2 AT LEAST ONCE A MONTH 3 AT LEAST TWICE A YEAR 4 AT LEAST ONCE A YEAR 5 NEVER 6 VARIES 7	
113	Have you ever drunk an alcohol-containing beverage?	YES 1 NO 2	→ 117
114	In the last 30 days, on how many days did you drink an alcohol containing beverage?	NUMBER OF DAYS.....	
115	Have you ever gotten intoxicated from drinking alcohol-containing beverage?	YES 1 NO 2	→ 117
116	In last 30 days have you gotten drunk?	YES 1 NO 2	
117	For how long have you lived in this village continuously	MONTHS <input type="text"/> YEARS <input type="text"/>	
118	Are there certain periods when you have had to reside in another location in past 12 months	YES 1 NO 2	
INTERVIEWER: DETERMINE THE MONTHS THE PERSON HAS BEEN RESIDING IN THE VILLAGE IN THE PREVIOUS ONE YEAR AND FILL IN ROW 3 APPROPRIATELY [AN EXAMPLE IS SCHOOL TIME]			
119A	Are your parents alive?	YES 1 ONLY FATHER 2 ONLY MOTHER 3 NONE IS ALIVE 4	
119B	With whom do you live?	BOTH PARENTS 1 MOTHER 2 FATHER 3 GRANDPARENTS 4 OTHER(Specify) 5	
120	What is your main occupation?	I AM A STUDENT 1 PEASANT FARMING 2 PETTY TRADE 3 OTHER (Specify) 4	

120b	[SUDENTS] Who caters for your tuition/school fees? [NON STUDENTS] who caters for most of your needs?	PARENTS 1 SELF 2 RELATIVES 3 OTHERS (Specify)..... 4	
121	Has your occupation changed in the previous 12 months	YES..... 1 NO 2	
122	Have you ever discussed sex related matters with your parent(s)? If yes how often?	OFTEN 1 OCCASIONALLY..... 2 NEVER 3 NOT APPLLICABLE 8	
122b	Have you ever discussed sex related matters with your uncles/aunts? If yes how often?	OFTEN 1 OCCASIONARY..... 2 NEVER 3 NOT APPLLICABLE 8	
123	Do you ever go to clubs or parties where young people dance? If yes how many times last month?	NUMBER OF TIMES NEVER 88	<input type="text"/>
124	Do you smoke cigarettes? If yes, how many in last 7 days?	NUMBER OF CIGARETTES NEVER 88	<input type="text"/>
125	Do you smoke marijuana? If yes how many times in last 7 days? [USE LOCAL TERM]	NUMBER OF TIMES NEVER 88	<input type="text"/>

SECTION II RECENT (PAST 12 MONTHS)

In this section, I want you to try to recall your sexual life for the previous year. Try to remember as much as you can. You recall that I said this information will be used to set up or enhance programmes for young people like you.

[RECORD TIMING OF ALL MAJOR EVENTS IN PAST 13 MONTHS IN ROW 2 OF THE CALENDAR AND USE LOCAL TERMINOLOGY/ SLANG AS IN TRAINING. E.g *Edemu and Okupanga*]

READ TO RESPONDENT: I am about to ask you of your sexual partners starting with the most recent one

201	Have you ever felt loving a girl? I mean someone to whom you were sexually or emotionally attracted and whom you 'dated'	YES..... 1 NO..... 2	
202	Have you ever had physical contact with a girl such as holding hands, hugging or kissing on your own will?	YES..... 1 NO..... 2	
203	Would you say this happened often, sometimes or rarely?	OFTEN..... 1 SOMETIMES 2 RARELY 3	
204	Has anybody ever touched your private parts or some other part of the body when you do not want?	YES..... 1 NO..... 2	
205	Have you ever had any sexual intercourse with a woman?	YES 1 NO 2	→ 600
206	Have you ever used a condom?	YES..... 1 NO..... 2	

207	How many sexual partners have you had since April 2003 (IN PREVIOUS 12 MONTHS, 6 MONTHS, 3 MONTHS AND 1 MONTH)?	NUMBER OF PARTNERS Since May 2003 (in last 12 months) <input type="text"/> Since October 2003 (in last 6 months) <input type="text"/> Since January 2004 (in last 3 months) <input type="text"/> Since March 2004 (in last 1 month) <input type="text"/>
208	How many times did you have sex in last 7 days and one month	TIMES IN LAST SEVEN DAYS _____ TIMES IN LAST ONE MONTH _____

300 SECTION III: LATEST SEXUAL EXPERIENCE

301	When was the last time you had sexual intercourse? RECORD 'YEARS AGO' ONLY IF LAST INTERCOURSE WAS ONE OR MORE YEARS AGO	DAYS AGO _____ WEEKS AGO _____ MONTHS AGO _____ YEARS AGO _____ DON'T REMEMBER 66
302	Which month and year? [DOUBLE CHECK 301]	MONTH _____ YEAR _____
INTERVIEWER: MARK THE MONTH AND YEAR ON THE CALENDAR ON PAGE 16		
303	Which day of the week was it?	MONDAY..... 1 TUESDAY..... 2 WEDNESDAY 3 THURSDAY 4 FRIDAY 5 SATURDAY 6 SUNDAY 7
304	Around what time of the day was it ?	_____ AM _____ PM
305	What main event preceded the sexual activity? [CIRCLE ONLY ONE]	DRINKING ALCOHOL..... 1 WATCHING VIDEO..... 2 DANCING..... 3 ATTENDED A PARTY..... 4 SHE VISITED ME/I VISITED HER..... 5 OTHER SPECIFY 6
INTERVIEWER: PROBE FOR MONTHS IN WHICH SHE ATTENDED PARTIES OR DRUNK ALCOHOL FILL IN ROW 4 APPROPRIATELY		
306	What is your relationship to the woman with whom you last had sex?	FIANCEE 1 GIRL FRIEND 2 CASUAL friend (<i>Friendly bonk</i>) 3 One time (<i>hunk/dude/take away/numberless</i>)... 4 OTHER (Specify) 6
307	What was her age by then	YEARS _____
308	What was her education level	NONE..... 0 PRIMARY 1 SECONDARY 2 POST SECONDARY 3
309	What was her occupation	STUDENT 1 PEASANT FARMER 2 PETTY TRADE 3 OTHERS SPECIFY 4

310	What was her marital status	SINGLE..... 1 MARRIED 2 OTHER (Specify)	
311	For how long were you in sexual relationship with this <i>woman</i> ?	DAYS _____ WEEKS _____ MONTHS _____ YEARS _____ DON'T REMEMBER 66	
312	How often did you have sex while in relationship with this woman	DAILY 1 WEEKLY 2 MONTHLY..... 3 ONCE A YEAR..... 4 DON'T REMEMBER 6 NOT APPLICABLE [HAPPENED ONCE]..... 8	314
313	What is the duration of time between last sexual intercourse and the previous one [BOTH WITH HER].	DAYS MONTHS YEARS	
314	What is the main reason for taking so much time before another sexual intercourse (IF >1MONTH)	GIRL FRIEND WAS AWAY 1 AVOIDED DISRUPTION IN STUDIES.. 2 OTHERS (Specify)	
315	In which month and year did you have the last but one sexual intercourse with her	MONTH YEAR	
316	Period of this relationship	FROM: MONTH/YEAR ____/____ TO: MONTH/YEAR ____/____	
INTERVIEWER: PROBE FOR MONTHS IN THE RELATIONSHIP. TICK IN ROW 5 APPROPRIATELY			
317	The first time you had sex with this woman, would you say [READ] a) I forced her b) I persuaded her c) She forced me d) She persuaded me e) We were both willing	I FORCED 1 I PERSUADED 2 SHE FORCED... 3 SHE PERSUADED 4 BOTH WILLING 5	
318	The first time you had sex with her, was a condom used?	YES 1 NO 2	330
319	What was the main reason for using a condom?	DID NOT WANT A CHILD..... 1 WANTED PROTECTION AGAINST STD/HIV 2 PARTNER INSISTED 3 OTHER 6 DON'T KNOW 8	
320	What was the main reason for not using a condom?	RESPONDENT WANTED A CHILD..... 1 TRUSTED PARTNER 2 PARTNER INSISTED 3 OTHER 6 DON'T KNOW 8	
321	The last time you had sexual intercourse, was a condom used?	YES 1 NO 2	334
322	What was the main reason for using a condom?	DID NOT WANT A CHILD..... 1 WANTED PROTECTION AGAINST STI/HIV. 2 PARTNER INSISTED 3 OTHER 6 DON'T KNOW 8	

323	Where was the condom obtained?	SHOP 1 PRIVATE CLINIC/DRUG SHOP 2 GOV'T HEALTH CENTRE 3 I DON'T KNOW WHERE HE GOT IT 4 OTHER SPECIFY..... 5	
324	What was the main reason for not using a condom?	RESPONDENT WANTED A CHILD..... 1 TRUSTED PARTNER 2 PARTNER INSISTED 3 OTHER 6 DON'T KNOW 8	
325	How do you describe the level of condom use with this woman during the period of the relationship?	CONSISTENT 1 INCONSISTENT 2 NEVER USED 3 CAN'T RECALL 4	
INTERVIEWER: FOR MONTHS OF CONDOM USE TICK IN ROW 6 APPROPRIATELY			
326	How long was it between first meeting that person and first having sex with her	DAYS MONTHS YEAR	
327	How did you meet your latest partner?	CHURCH 1 THROUGH FRIENDS/RELATIVES 2 AT SCHOOL 3 WORK 4 SOCIAL EVENT ORGANIZED BY A FRIEND. SOCIETY, CLUB OR INTEREST GROUP... 5 NEIGHBOUR/FAMILY FRIENDS..... 7 OTHER 8	
FILTER: HAD ONE SEXUAL PARTNER IN PREVIOUS 12 MONTHS		YES 1 NO 2	→ 501
328	At the start of relationship with her did you have a relationship with another woman?	YES..... 1 NO..... 2	→ 401
329	How long did you stay out of the relationship before you got the latest partner	DAYS _____ WEEKS _____ MONTHS _____ YEARS _____ DON'T REMEMBER 66	
330	How long did you stay without sex before you first had sex with your latest partner	DAYS _____ WEEKS _____ MONTHS _____ YEARS _____ DON'T REMEMBER 66	

CHECK 208. HAD MORE THAN 1 PARTNER IN LAST 12 MONTHS 1=YES
2=NO--go to 501

400 SECTION IV: SECOND LAST RELATIONSHIP

401	When was the last time you had sex with the second last partner? RECORD 'YEARS ' ONLY IF LAST INTERCOURSE WAS ONE OR MORE YEARS AGO	DAYS AGO _____ WEEKS AGO _____ MONTHS AGO _____ YEARS AGO _____ DON'T REMEMBER 66	
402	Which month and year? [DOUBLE CHECK 401]	MONTH YEAR	

403	Which day of the week was it?	MONDAY..... 1 TUESDAY..... 2 WEDNESDAY 3 THURSDAY 4 FRIDAY 5 SATURDAY 6 SUNDAY 7
404	Around what time of the day was it ?	_____ AM _____ PM
405	What main event preceded the sexual activity? [CIRCLE ONLY ONE]	DRINKING ALCOHOL..... 1 WATCHING VIDEO..... 2 DANCING..... 3 ATTENDED A PARTY..... 4 SHE VISITED ME/I VISITED HER..... 5 OTHER SPECIFY 6
INTERVIEWER: PROBE FOR MONTHS IN WHICH SHE ATTENDED PARTIES OR DRUNK ALCOHOL FILL IN ROW 4 APPROPRIATELY		
406	What is your relationship to this woman?	FIANCEE 1 GIRL FRIEND 2 CASUAL friend (<i>Friendly bonk</i>) 3 One time (<i>hunk/dude/take away/numberless</i>)..... 4 OTHER (Specify) 6
407	What was her age by then	YEARS _____
408	What was her education level	NONE..... 0 PRIMARY 1 SECONDARY 2 POST SECONDARY 3
409	What was her occupation	STUDENT 1 PEASANT FARMER 2 PETTY TRADE 3 OTHER SPECIFY 4
410	What was her marital status	SINGLE..... 1 MARRIED 2 OTHER (Specify)
411	For how long were you in sexual relationship with this woman?	DAYS _____ WEEKS _____ MONTHS _____ YEARS _____ DON'T REMEMBER 66
412	How often did you have sex while in relationship with this woman	DAILY 1 WEEKLY 2 MONTHLY..... 3 ONCE A YEAR..... 4 DON'T REMEMBER 5 NOT APPLICABLE [HAPPENED ONCE]..... 6
413	What is the duration of time between last sexual intercourse and the previous one [BOTH WITH HER].	DAYS _____ MONTHS _____ YEARS _____
414	What is the main reason for taking so much time before another sexual intercourse (IF >1 MONTH)?	GIRL FRIEND WAS AWAY 1 AVOIDED DISRUPTION IN STUDIES 2 OTHERS specify _____
415	In which month and year did you have the last but one sexual intercourse with her	MONTH _____ YEAR

416	Period of this relationship	FROM: MONTH/YEAR ___/___ TO: MONTH/YEAR ___/___	
INTERVIEWER: FOR MONTHS IN RELATIONSHIP TICK IN ROW 5 APPROPRIATELY			
417	The first time you had sex with this woman, would you say [READ OUT] a) I forced her b) I persuaded her c) She forced me d) She persuaded me e) We were both willing	I FORCED 1 I PERSUADED 2 SHE FORCED..... 3 SHE PERSUADED 4 BOTH WILLING 5	
418	The first time you had sexual intercourse with her, was a condom used?	YES 1 NO 2	→420
419	What was the main reason for using a condom?	DID NOT WANT A CHILD..... 1 WANTED PROTECTION AGAINST STI/HIV... 2 PARTNER INSISTED 3 OTHER 6 DON'T KNOW 8	
420	What was the main reason for not using a condom?	RESPONDENT WANTED A CHILD..... 1 TRUSTED PARTNER 2 PARTNER INSISTED 3 OTHER 6 DON'T KNOW 8	
421	The last time you had sexual intercourse with her, was a condom used?	YES 1 NO 2	→24
422	What was the main reason for using a condom?	DID NOT WANT A CHILD..... 1 WANTED PROTECTION AGAINST STI/HIV... 2 PARTNER INSISTED 3 OTHER 6 DON'T KNOW 8	
423	Where was the condom obtained?	SHOP 1 PRIVATE CLINIC/DRUG SHOP 2 GOV'T HEALTH CENTRE 3 I DON'T KNOW WHERE HE GOT IT 4 OTHER SPECIFY..... 5	
424	What was the main reason for not using a condom?	RESPONDENT WANTED A CHILD..... 1 TRUSTED PARTNER 2 PARTNER INSISTED 3 OTHER 6 DON'T KNOW 8	
425	How do you describe the level of condom use with this woman during the period of the relationship?	CONSISTENT 1 INCONSISTENT 2 NEVER USED 3 CAN'T RECALL 4	
INTERVIEWER: FOR MONTHS OF USE OF CONDOM TICK IN ROW 6 IN THE EHC APPROPRIATELY			
426	How long was it between first meeting that person and first having sex with her	DAYS MONTHS YEAR	

427	How did you meet her?	CHURCH 1 THROUGH FRIENDS/RELATIVES 2 AT SCHOOL 3 WORK 4 SOCIAL EVENT ORGANIZED BY A FRIEND... 5 SOCIETY, CLUB OR INTEREST GROUP..... 6 NEIGHBOUR/FAMILY FRIENDS..... 7 OTHER 8	
428	During the time of the relationship with her did you have a relationship with another woman?	YES..... 1 NO..... 2	
429	How long did you stay out of the relationship before you got this partner?	DAYS _____ WEEKS _____ MONTHS _____ YEARS _____ DON'T REMEMBER 66	
430	How long did you stay without sex before you first had sex with this partner	DAYS _____ WEEKS _____ MONTHS _____ YEARS _____ DON'T REMEMBER 66	

500 SECTION V: FIRST SEXUAL EXPERIENCE

501	How old were you at first sexual intercourse	AGE _____	
502	How would you describe your relationship with your first partner?	FIANCEE..... 1 GIRLFRIEND..... 2 CASUAL (hunk/dude/take away/numberless) 3 OTHER SPECIFY 6	
505	What main event preceded the sexual activity? [CIRCLE ONLY ONE]	DRINKING ALCOHOL..... 1 WATCHING VIDEO..... 2 DANCING..... 3 ATTENDED A PARTY..... 4 SHE VISITED ME/I VISITED HER..... 5 OTHER SPECIFY 6	
506	What is your relationship to this woman?	FIANCEE 1 GIRL FRIEND 2 CASUAL friend (<i>Friendly bonk</i>) 3 One time (<i>hunk/dude/take away/numberless</i>)..... 4 OTHER (Specify) 6	
507	What was her age by then	YEARS _____	
508	What was her education level	NONE..... 0 PRIMARY 1 SECONDARY 2 POST SECONDARY 3	
509	What was her occupation	STUDENT 1 PEASANT FARMER 2 PETTY TRADE 3 OTHER SPECIFY 6	
510	What was her marital status	SINGLE..... 1 MARRIED 2 OTHER (Specify) 6	
511	For how long were you in sexual relationship with this <i>woman</i> ?	DAYS _____ WEEKS _____ MONTHS _____ YEARS _____ DON'T REMEMBER 66	

512	How often did you have sex while in relationship with this woman	DAILY 1 WEEKLY 2 MONTHLY 3 ONCE A YEAR 4 DON'T REMEMBER 6 NOT APPLICABLE [HAPPENED ONCE] 8	
513	What is the length of time between the last two occasions you had sex with her.	DAYS _____ MONTHS _____ YEARS _____	
514	What is the main reason for taking so much time before another sexual intercourse (IF >1 MONTH)?	GIRL FRIEND WAS AWAY 1 AVOIDED DISRUPTION IN STUDIES 2 OTHERS (Specify) _____ 6	

515	In which month and year did you have the last but one sexual intercourse with her	MONTH YEAR	
516	Period of this relationship	FROM: MONTH/YEAR ____/____ TO: MONTH/YEAR ____/____	
517	The first time you had sex with this woman, would you say [READ OUT] a) I forced her b) I persuaded her c) He forced me d) He persuaded me e) We were both willing	I FORCED 1 I PERSUADED 2 HE FORCED 3 HE PERSUADED 4 BOTH WILLING 5	
518	The first time you had sexual intercourse with her, was a condom used?	YES 1 NO 2	→520
519	What was the main reason for using a condom?	DID NOT WANT A CHILD 1 WANTED PROTECTION AGAINST STI/HIV 2 PARTNER INSISTED 3 OTHER 6 DON'T KNOW 8	
520	What was the main reason for not using a condom?	RESPONDENT WANTED A CHILD 1 TRUSTED PARTNER 2 PARTNER INSISTED 3 OTHER 6 DON'T KNOW 8	
521	The last time you had sexual intercourse with her, was a condom used?	YES 1 NO 2	→524
522	What was the main reason for using a condom?	DID NOT WANT A CHILD 1 WANTED PROTECTION AGAINST STI/HIV 2 PARTNER INSISTED 3 OTHER 6 DON'T KNOW 8	
523	Where was the condom obtained?	SHOP 1 PRIVATE CLINIC/DRUG SHOP 2 GOV'T HEALTH CENTRE 3 I DON'T KNOW WHERE HE GOT IT 4 OTHER SPECIFY 6	

524	What was the main reason for not using a condom?	RESPONDENT WANTED A CHILD.....	1
		TRUSTED PARTNER	2
		PARTNER INSISTED	3
		OTHER	6
		DON'T KNOW	8
525	How do you describe the level of condom use with this woman during the period of the relationship?	CONSISTENT	1
		INCONSISTENT	2
		NEVER USED	3
		CAN'T RECALL	4

526	How long was it between first meeting that person and first having sex with her	DAYS	<input type="text"/>
		MONTHS	<input type="text"/>
		YEAR	<input type="text"/>
527	How did you meet her?	CHURCH	1
		THROUGH FRIENDS/RELATIVES	2
		AT SCHOOL	3
		WORK	4
		SOCIAL EVENT ORGANIZED BY A FRIEND,	5
		SOCIETY, CLUB OR INTEREST GROUP	6
		NEIGHBOUR/FAMILY FRIENDS.....	7
		OTHER	8
528	During the time of the relationship with her did you have a relationship with another woman?	YES.....	1
		NO.....	2

600 SECTION VI: REASONS FOR NOT HAVING SEXUAL INTERCOURSE AND SOURCE OF PRESSURE TO ENGAGE IN SEXUAL ACTIVITY

CHECK Q205. EVER HAD SEX		YES	1	602
		NO	2	
600	People may have mixed reasons for not having sexual intercourse. what are the reasons for not having ever had sex (CIRCLE THE RIGHT ANSWER)?			
	Reasons	Mentioned	Not mentioned	
601a	Has not been tempted /Not had the opportunity /No girlfriend	1	2	
601b	Saved/committed to God	1	2	
601c	Lives with strict parents /guardians	1	2	
601d	Fears HIV/AIDS	1	2	
601e	Fears pregnancy	1	2	
601f	Not yet ready	1	2	
601g	Just doesn't want	1	2	
601h	Others (Specify)			
ALL RESPONDENTS				
602	Do you feel any pressure from others to have sexual intercourse?	A great deal	1	
		A little	2	
		None	3	

602a	Do you feel any pressure from Friends?	Applies	1	
		Does not apply	2	
602b	Do you feel any pressure from Relatives?	Applies	1	
		Does not apply	2	
602c	Do you feel any pressure from Girls?	Applies	1	
		Does not apply	2	
602d	Do you feel any pressure from Others (Specify)	Applies	1	
		Does not apply	2	

700 SECTION VII: KNOWLEDGE AND ATTITUDES TOWARDS ABSTINENCE AND CONDOM USE

READ TO THE RESPONDENT: Please tell me whether you agree or disagree with the following

701	I believe Boys should remain virgins until they marry	AGREE	1	
		DISAGREE.....	2	
702	I believe girls should remain virgins until they marry	AGREE	1	
		DISAGREE.....	2	
703	I believe that both girls and boys should remain virgins until they marry	AGREE	1	
		DISAGREE.....	2	
704	Sexual intercourse is alright if a boy and a girl love each other	AGREE	1	
		DISAGREE.....	2	
705	One can easily fall sick if he/she stays without sex for a long time.	AGREE	1	
		DISAGREE.....	2	
706	A girl and a boy should have sex before they are engaged to see if they suited to each other	AGREE	1	
		DISAGREE.....	2	
707	Condoms effectively protect against HIV	AGREE	1	
		DISAGREE.....	2	
708	Condoms effectively protect against STIs	AGREE	1	
		DISAGREE.....	2	
709	Condoms can disappear in woman's body	AGREE	1	
		DISAGREE.....	2	
710	Condoms can be used more than once	AGREE	1	
		DISAGREE.....	2	
711	A girl can initiate use of a condom	AGREE	1	
		DISAGREE.....	2	
712	Condoms are suitable with casual partners not with girlfriend	AGREE	1	
		DISAGREE.....	2	
713	It is too embarrassing to buy condoms	AGREE	1	
		DISAGREE.....	2	
714	Girl's suggestion to use implies distrust	AGREE	1	
		DISAGREE.....	2	
CHECK Q206 EVER USED A CONDOM		YES	1	802 →
		NO	2	

800 SECTION VIII: PREVENTING PREGNANCY

801	Have you ever used any method to prevent pregnancy?	YES	1	
		NO	2	
802	Did you use any method to prevent pregnancy during last sexual intercourse?[CHECK CONSISTENCY WITH Q321]	DIDN'T USE.....	1	
		CONDOM	2	
		PILL	3	
		OTHER specify		
803	How would you describe your use of the methods that prevent pregnancy in last 12 months?	CONSISTENT	1	
		INCONSISTENT	2	
		NEVER USED	3	
		CAN'T RECALL	4	

APPENDIX 1B: EVENT HISTORY CALENDAR

Thank you so much for your time and patience. The last and short part is to summarize and accurately record periods of abstinence and condom use. To be accurate we need to recall all events in the village or your personal life such as births, rains, parties, holidays and visits of relatives which in turn help us to recall exactly when discontinuation of abstinence and condom use occurred. I am sorry to repeat some questions.

AFTER RECORDING ALL EVENTS OF INTEREST, ASK: Now that you recall these events can you kindly again tell me which months you abstained? IF SHE GETS STUCK ASK. Was it between [EVENT] and [EVENT]? OR after/before [EVENT]?

REPEAT FOR CONDOM USE

INSTRUCTIONS:

1. YOU CAN USE OTHER CODES
BUT DEFINE THEM
2. DON'T LEAVE ANY COLUMN UNFILLED
3. PUT A STAR * ON ANY INFORMATION YOU GET AFTER PROBING
4. DON'T ASK BEYOND 12 MONTHS

EVENTS	2003										2004			
	Apr	May	Jun	Jui	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	
	1	2	3	4	5	6	7	8	9	10	11	12	13	
1. SEASONS e.g V=VANILLA HARVEST S=SORGHUM HARVEST R - RAINY SEASON D - DRY SEASON C - COFFEE HARVEST														
2. VILLAGE EVENTS e.g D-DEATHS B-BIRTH														
3. RESIDENCE e.g S=Same residence U=went to town V=Went to village SC=Went to school														
4. PERSONAL e.g A=Attended party D=Drunk alcohol														
5. IN RELATIONSHIP Tick appropriately	Yes													
	No													
6. USED CONDOM Tick appropriately	1.Consistent													
	2.Inconsistent													
	3.Never used													
	4.Can't recall													
7. ABSTAINED Tick appropriately	1.Consistent													
	2.Inconsistent													
	3.Never used													
	4.Can't recall													

END TIME: _____ am/pm. THANK YOU SO MUCH

APPENDIX 1C: EVENT HISTORY CALENDAR FROM 1998 KENYA DHS

INSTRUCTIONS:
 ONLY ONE CODE SHOULD APPEAR IN ANY BOX.
 FOR COLUMNS 1, 3, AND 4, ALL MONTHS
 SHOULD BE FILLED IN.

INFORMATION TO BE CODED FOR EACH COLUMN

COL.1: Births, Pregnancies, Contraceptive Use

B BIRTHS
 P PREGNANCIES
 T TERMINATIONS

0 NO METHOD
 1 PILL
 2 IUD
 3 INJECTIONS
 4 IMPLANTS
 5 DIAPHRAGM/FOAM/JELLY
 6 CONDOM
 7 FEMALE STERILISATION
 8 MALE STERILISATION
 9 NATURAL METHODS
 A WITHDRAWAL
 X OTHER _____
 (SPECIFY)

COL.2: Discontinuation of Contraceptive Use

0 INFREQUENT SEX/HUSBAND AWAY
 1 BECAME PREGNANT WHILE USING
 2 WANTED TO BECOME PREGNANT
 3 HUSBAND DISAPPROVED
 4 WANTED MORE EFFECTIVE METHOD
 5 HEALTH CONCERNS
 6 SIDE EFFECTS
 7 LACK OF ACCESS/TOD FAR
 8 COST TOO MUCH
 9 INCONVENIENT TO USE
 F FATALISTIC
 A DIFFICULT TO GET PREGNANT/MENOPAUSE
 D MARITAL DISSOLUTION/SEPARATION
 X OTHER _____
 (SPECIFY)

COL.3: Marriage/Union

X IN UNION (MARRIED OR LIVING TOGETHER)
 0 NOT IN UNION

COL.4: Moves and Types of Communities

X CHANGE OF COMMUNITY
 1 CITY
 2 TOWN
 3 COUNTRYSIDE

		1	2	3	4		
	12 DEC	01				01	DEC
	11 NOV	02				02	NOV
	10 OCT	03				03	OCT
	09 SEP	04				04	SEP
1	08 AUG	05				05	AUG 1
9	07 JUL	06				06	JUL 9
9	06 JUN	07				07	JUN 9
8	05 MAY	08				08	MAY 8
	04 APR	09				09	APR
	03 MAR	10				10	MAR
	02 FEB	11				11	FEB
	01 JAN	12				12	JAN
	12 DEC	13				13	DEC
	11 NOV	14				14	NOV
	10 OCT	15				15	OCT
	09 SEP	16				16	SEP
1	08 AUG	05				05	AUG 1
9	07 JUL	06				06	JUL 9
9	06 JUN	07				07	JUN 9
7	05 MAY	08				08	MAY 7
	04 APR	21				21	APR
	03 MAR	22				22	MAR
	02 FEB	23				23	FEB
	01 JAN	24				24	JAN
	12 DEC	25				25	DEC
	11 NOV	26				26	NOV
	10 OCT	27				27	OCT
	09 SEP	28				28	SEP
1	08 AUG	29				29	AUG 1
9	07 JUL	30				30	JUL 9
9	06 JUN	31				31	JUN 9
6	05 MAY	32				32	MAY 6
	04 APR	33				33	APR
	03 MAR	34				34	MAR
	02 FEB	35				35	FEB
	01 JAN	36				36	JAN
	12 DEC	37				37	DEC
	11 NOV	38				38	NOV
	10 OCT	39				39	OCT
	09 SEP	40				40	SEP
1	08 AUG	41				41	AUG 1
9	07 JUL	42				42	JUL 9
9	06 JUN	43				43	JUN 9
5	05 MAY	44				44	MAY 5
	04 APR	45				45	APR
	03 MAR	46				46	MAR
	02 FEB	47				47	FEB
	01 JAN	48				48	JAN
	12 DEC	49				49	DEC
	11 NOV	50				50	NOV
	10 OCT	51				51	OCT
	09 SEP	52				52	SEP
1	08 AUG	53				53	AUG 1
9	07 JUL	54				54	JUL 9
9	06 JUN	55				55	JUN 9
4	05 MAY	56				56	MAY 4
	04 APR	57				57	APR
	03 MAR	58				58	MAR
	02 FEB	59				59	FEB
	01 JAN	60				60	JAN
	12 DEC	61				61	DEC
	11 NOV	62				62	NOV
	10 OCT	63				63	OCT
	09 SEP	64				64	SEP
1	08 AUG	65				65	AUG 1
9	07 JUL	66				66	JUL 9
9	06 JUN	67				67	JUN 9
3	05 MAY	68				68	MAY 3
	04 APR	69				69	APR
	03 MAR	70				70	MAR
	02 FEB	71				71	FEB
	01 JAN	72				72	JAN

APPENDIX 1D: FOCUS GROUP DISCUSSION GUIDE

Core questions	Issues to probe
1.0 Delayed sex	
1.1 What do young people like you understand as abstinence 1.2 Which practices expose young people to early sex 1.3 Why do young men/women like you have sex before marriage 1.4 What are ways through which one can avoid initiation of sex. 1.5 What is the level of sexual coercion/indecent assault? <i>1.5.1 How is it connected to early sex?</i> Differences between men and women 1.6 What do you think are differences between men and women in terms of delaying sex and constraints? <i>1.6.1 Who starts earlier, boys or girls? Why?</i>	Interpretation of delayed sex Constraints to delayed sex Who manages to delay sex and why In/out of school High/low education Type of school Drinkers/non-drinkers Party goers/non goers Coercion/indecent Assault Vs none Talking to parents Self/parent financial Support Listening to radio Residence with parents How do they manage? Under which circumstances do people initiate sex Differences between men and women Ability to abstain with time Is primary abstinence possible?
Dating 1.7 How do young people select their partners? 1.8 What are the reactions when young people try to have sexual relations when they are not married?	Reaction by parents, relatives, friends to women and men who start relationships before marriage
Pressure to have sex 1.9. To what extent are you pressured to start sex? 1.10. Who pressures you? How is it different for men and women? 1.11 Out of 10 of your friends, how many have never had sex? 1.12 Out of 10 of your friends how many would stay virgins even when they have money, handsome and girls like them?	Source of pressure Media influence Financial pressure Nature of consent
2.0 Secondary abstinence	
2.1. In your own view how possible is it to stop sexual activity? <i>2.1.1 Out of 10 of your friends, how many would abstain from engaging in sexual activity with a beautiful /handsome friend.</i> 2.2. What is understood as secondary abstinence (Would a person having a one-night stand in a year be regarded as abstaining for a year?) 2.3. Is abstinence actively promoted? 2.4. Do you feel abstinence programmes will succeed?	Limits for abstinence Reasons for the abstinence Young people's views about the messages Gender differences Constraints and interruptions in abstinence Periods of abstinence Who abstains Why one abstains Probe for abstinence levels in different groups mentioned above

<p>2.5. Do young people of your age actively abstain from having sex?</p> <p>2.6. Do young people have techniques / ways of obtaining sexual satisfaction whilst maintaining abstinence?</p> <p>2.7. For how long can people abstain?</p> <p>2.8. What are the beliefs about abstinence? In some cultures people believe one can fall sick if he abstains for long time.</p>	
<p>Recommendation</p> <p>2.9 What should be done to increase secondary abstinence?</p>	
<p>3.0 Condom use</p> <p>3.1 What does safe sex mean to young people?</p> <p>3.2 When your friend says he/she uses condoms all the time what do you understand?</p> <p>3.3 How about early/late removal.</p> <p>3.4 Is consistent condom use possible? Why do you think it is possible or not possible?</p> <p>3.5 What are barriers to consistent condom use?</p> <p>3.6 What makes it possible to consistently use condoms</p> <p>3.7 Under which circumstances will condoms be used or not used?</p> <p>3.8 What determines changes in condom use over time? Does the change occur to many young people or few?</p> <p>3.9 Who are likely to be consistent and inconsistent condom users?</p> <p>3.10 Where do young men and women generally obtain their condoms from? Does the supply change over time?</p> <p>3.10.1 How about services such counselling, treatment for STIs, VCT</p> <p>3.10.2 How do young men / women usually find out about these services?</p> <p>3.11 Some people say that they would rather not have sex than use a condom... What do you think women/men of your age think about that?</p> <p>3.12 What do you think would make people use condoms consistently? Recommendations?</p>	<p>Understanding of consistent use Sources of condoms Barriers to condom use Changes in condom use over time between and within relationships Differences between men and women Source of reproductive health services</p>

APPENDIX 1E: KEY INFORMANT INTERVIEW GUIDE

Dear Dr/Sir/Madam/Professor

Thank you so much for your time. I wish to ask you some few questions concerning some issues central to my research.

Questions	Issues to probe
Delayed sex	<ul style="list-style-type: none"> • Schooling as protection against early sex and risky sex • Foundation of school: Private and religious founded schools more likely to abstain (secondary) but less likely to use condom use • Listening to radio- less likely to abstain but more likely to use condoms • Type of partner and condom use: Condom use more likely with more steady relationships unlike other studies • Indecent assault: Levels quite high and correlated with early sex • Partying and disco going: relation with discontinuation of abstinence • Alcohol consumption: Strongly correlated with abstinence discontinuation and low condom use. • The likelihood of condom use increases with age in most studies reviewed but in the current study it rises and falls • Any comment on Kabale Mukono differences in abstinence and condom use? Indecent assault, less condom, more abstinence, more alcohol, more out of school
From your work and observations, what are the factors associated with early sex	
What should be done and what is being done to increase age at first sex	
What is the trend of age at first sex	
Secondary abstinence	
What are the factors associated with secondary abstinence	
How do these factors differ from those of delayed sex	
How does secondary abstinence change over time, age	
Condom use	
Which factors are associated with condom use	
Which factors are associated with consistent condom use	
How do the factors change over time	
How does condom use change over time	

APPENDIX 2: APPROVAL OF RESEARCH



Uganda National Council For Science and Technology
(Established by Act of Parliament of the Republic of Uganda)

Your Ref.

Our Ref: **MV 780**

01-Aug-03

Mr. Nazarius Mbona Tumwesigye
C/o Institute of Public Health
Makerere University
KAMPALA

Dear Mr. Tumwesigye,

RE: RESEARCH PROJECT, "DYNAMICS OF ABSTINENCE AND CONDOM USE AMONG UNMARRIED YOUTH AGE 15-24 IN UGANDA: A CASE OF MUKONO AND KABALE DISTRICTS"

This is to inform you that the Uganda National Council for Science and Technology (UNCST) approved the above research proposal on **July 2, 2003**. The approval will expire on **July 2, 2004**. If it is necessary to continue with the research beyond the expiry date, a request for continuation should be made in writing to the Executive Secretary, UNCST.

Any problems of a serious nature related to the execution of your research project should be brought to the attention of the UNCST, and any changes to the research protocol should not be implemented without UNCST's approval except when necessary to eliminate apparent immediate hazards to the research participants(s).

This letter also serves as proof of UNCST approval and as a reminder for you to submit to UNCST timely progress reports and a final report on completion of the research project.

Yours sincerely,

Julius Ecuru

for: Executive Secretary

UGANDA NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

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WEBSITE: <http://www.uncst.go.ug>

**Opportunities and Choices Programme
Department of Social Statistics**

This outline form should be submitted to the Programme Secretary (Rosemary Lawrence) together with your research proposal. Research students must discuss this form with their supervisor before submitting this form and should note any guidelines and regulations as set out by the Department and Faculty.

1. Researchers

Name of Principal Researchers:
TUMWESIGYE MBONA NAZARIUS

How may you be contacted?
ADDRESS: RM DISE MONTEFIORE HOUSE, WESSEX LANE
SWAYTHLING, SOUTHAMPTON SO18 2NU
TEL: OFF: 02380594069 RESIDENCE: 0870-3573492
MOBILE: 07931-691-676

Names of other researchers:

(i) _____

(ii) _____

(iii) _____

Name of Supervisor (if applicable):
DR. NYOVANI MADISE

2. Research Project

a) Title of Project:
DYNAMICS OF ABSTINENCE AND CONDOM USE AMONG UNMARRIED YOUTH
AGE 15-24 IN UGANDA: A CASE OF MUKONO AND KABALE DISTRICTS

The Section below applies to research students' projects ONLY

To be completed by the Supervisor

a) Do you foresee any ethical problems with this research? YES/NO

If YES, please detail.

Signature of Supervisor

Date

15-04-04

APPENDIX 3: CORRELATION MATRIX

Question	Q101	Q307	Q407	Q507	Q207a	Q326	Q426	Q526	Q301	Q401
q101	1.0000									
q307	0.2289	1.0000								
q407	0.2887	0.7900	1.0000							
q507	0.2019	0.5410	0.5831	1.0000						
q207a	0.1823	-0.0628	-0.0480	-0.1006	1.0000					
q326	0.0895	0.1063	0.0228	0.1507	-0.0308	1.0000				
q426	0.0602	0.0624	0.1270	0.2885	-0.0334	0.0224	1.0000			
q526	0.0922	0.0879	0.1334	0.2879	-0.0306	0.0780	0.9823	1.0000		
q301	0.0554	0.0780	0.0835	0.2017	-0.0778	-0.0197	0.0708	0.0666		
q401	-0.1185	-0.1021	-0.1482	-0.1064	-0.0397	-0.0329	-0.0104	-0.0097	-0.0156	1.000

Variable name	Meaning
Q101	Age
Q307	Age of latest partner
Q407	Age of second to latest partner
Q507	Age of first partner
Q207a	Number of partners in previous 12 months
Q326	Length of time between first meeting the latest partner and first having sex with her/him
Q426	Length of time between first meeting the second to latest partner and first having sex with her/him
Q526	Length of time between first meeting the first partner and first having sex with her/him
Q301	Length of time since you had sex with the latest partner
Q401	Length of time since you had sex with the second to latest partner
Q501	Length of time since you had sex with the first partner

APPENDIX 3: RESULTS SUMMARY SHEET

A: Values of key indicators in the survey

Indicator	Values		All
	Men	women	
Primary abstinence			
Never had sex (%) [un-standardized]	39	48	43
Ever had sex (standardized)	57	53	--
Secondary abstinence			
Cumulative probability of discontinuing an abstinence episode (%)	67	62	64
Rate of discontinuation of abstinence (/100 person-months)	12	10	11
Abstinence for 13 months using EHC (%)	18	18	18
Abstinence for 12 months using Questionnaire (%)	12	16	14
Abstinence for 6 months using EHC (%)	63	50	56
Abstinence for 3 months using EHC (%)	71	62	67
Condom use			
Condom use at first sex (%)	43	59	50
Condom use at latest sex (%)	57	55	56
Consistency of use at first and latest event (%)	36	45	40
Inconsistency use (non use at either first or latest sex events) (%)	35	31	33

B: Factors independently related to condom use and abstinence

Factor	Strength of association	
	Secondary abstinence (abstain \geq 6 months)	Condom use at any event /relationship
District		***
Sex		***
Age group	**	**
In school		**
Education level		***
Type of school attended		**
Reading newspapers		**
Listening to radio	*	**
Religion		
Religiosity		
Alcohol consumption		
Length of stay at place of residence		
Residence with parents		
Source of financial support		
Attendance of parties/dances	***	
Experience of indecent assault		
Age at first sex		
Type of partner at first sex		
Duration since first sex		***
Willingness to have first sex		

Attitude to abstinence	
Attitude to condom use	***
Number of sexual partners	***
Random effects at village level	
Condom use at first sex	***
-- Not applicable	

C: Factors independently associated with changes in abstinence and condom use

Factor	Strength of association	
	Hazard of discontinuation of abstinence	Trend of condom use across relationships
District		
Sex		
Age group (cohort)		
In school	* ⁹	
Education level		
Type of school attended		
Reading newspapers		
Listening to radio		
Religion		
Religiosity		
Alcohol consumption	***	
Length of stay at place of residence	*	
Residence with parents		
Discussion with parents	** ⁹	
Source of financial support	*	
Attendance of parties/dances	***	
Experience of indecent assault		
Length of secondary abstinence		
Age (Time to first sex)		
Type of partner at first sex	*	
Duration since first sex		***
Willingness to have first sex		
Attitude to abstinence		
Attitude to condom use		
Number of sexual partners		
Random effects at village level	*	

D: Other key findings

EHC is a useful tool in recall of sexual events

⁹ Negative association: Discussion and being in-school associated with hazard of discontinuation

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