

CONDOM USE AMONG KENYAN HIGH SCHOOL STUDENTS

by

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(Under the Direction of Pamela Orpinas)

ABSTRACT

The high level of HIV infection in Kenya and most of Sub-Saharan Africa has led to an increased interest in understanding the determinants of sexual behavior among young people who form a group at high risk of infection due to their sexual behavior. In the absence of curative treatments for HIV, prevention remains the most practical weapon against the AIDS epidemic. To design effective prevention interventions, it is important to understand the dynamics and determinants of people's sexual behavior within the cultural and social contexts where sexual encounters occur.

The current study had two primary aims. First, the cross-sectional study utilized a socio-ecological conceptual framework to examine sociodemographic characteristics, behavioral factors, and other variables that are associated with condom use for HIV-prevention among a sample of 3612 high school students in Nairobi, Kenya. Multilevel multiple logistic regression was used to investigate the relative importance of various classes of variables in predicting actual condom use and intentions to use condoms. Overall, attitudinal factors emerged as the primary predictors of intentions to use condoms among young people with no previous sexual contacts while contextual and behavioral variables, such as engaging in risk behavior and the type of sexual partner, were the chief predictors of condom use at last intercourse for sexually experienced youth

Second, the study examined factors that distinguished among different types of condom users i.e. consistent, sporadic, and nonusers because this information may aid in the development of more precisely targeted interventions. Multinomial logistic regression was used to examine what variables distinguish

different groups of users. Results indicated that males who reported consistent condom use tended to have initiated sexual intercourse at an older age than sporadic condom users. Compared to nonusers, consistent users were more likely to have initiated sexual intercourse at an older age, to have greater perceptions of peer acceptance of safer sex, and to engage in risky behavior more frequently. Study findings support the need for comprehensive reproductive health programs that address the multiple factors influencing young people's sexual behavior.

INDEX WORDS: HIV, AIDS, Adolescents, Youth, Kenya, Condom Use, Sexual Behavior

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DEDICATION

This work is dedicated to my parents, Duncan and Margaret Kabiru, to my siblings, Mumbi Kabiru-Brown, Huria Kabiru and Robert Brown Jr., and to my friends. Thank you for believing in me and for your love, support, and continued encouragement.

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CHAPTER 1

INTRODUCTION

By the end of the year 2003, approximately 1.1 million adults (15-49 years) were living with HIV/AIDS in Kenya. Based on population estimates at the time, this translates to an adult prevalence rate of 6.7% (UNAIDS/WHO, 2004). Taking into account the relatively long latency period from infection to AIDS diagnosis (3-10 years), the peak ages for people living with AIDS in Kenya (females: 25-29 years and males: 30-34 years) suggest that for many, infection occurs during youth (15 –24 years) (National AIDS and STDs Control Program [NASCO], 1999). As in other parts of sub-Saharan Africa (UNAIDS, 2005), females between 15 and 24 years are more likely to be living with HIV/AIDS than males in the same age group (Central Bureau of Statistics (CBS) [Kenya], Ministry of Health (MOH) [Kenya], & ORC Marco, 2004; NASCO, 1999).

In the absence of curative treatments for HIV, prevention remains the most effective weapon against the AIDS epidemic. Some actions recommended for the prevention of HIV infection include abstinence, long-term monogamy with a sero-negative partner, reduction in the number of lifetime sexual partners, and correct and consistent condom use (Davis & Weller, 1999). To design effective prevention interventions, it is important to understand the dynamics and determinants of people's sexual behavior within the cultural and social contexts where these sexual encounters occur. Attention to cultural and social contexts is particularly important in societies where factors beyond an individual, such as social norms regarding sexuality, play an important role in controlling and influencing human behavior (Airhihenbuwa, 1995; Eaton, Flisher, & Aaro, 2003). For example, the patriarchal nature of many traditional African cultures has implications for women's ability to negotiate safer sex (Eaton et al., 2003). In addition, several studies indicate that masculinity in some African societies is associated with unprotected intercourse with multiple partners (Eaton et al., 2003).

The purpose of the present study is to examine the correlates of condom use for HIV-prevention among secondary school students in Nairobi, the capital city of Kenya and surrounding peri-urban areas. Peri-urban areas in this study refer to those locations that are outside the technical boundaries of Nairobi, but that are considered part of the Nairobi metropolitan area. The long-term goal of the study is to contribute to the body of knowledge that informs the development of effective HIV prevention interventions. The study targeted secondary school (grades 9-12) students because they represent an accessible sample of young people who are at high risk of HIV infection as a result of their sexual behavior. For example, several studies conducted among Kenyan youth indicate that over 50% of sexually active young people, both school going and out-of-school youth, do not use condoms (Hawken et al., 2002; Pattullo et al., 1994).

Background Information on Kenya

Kenya lies on the Eastern coast of Africa and is bordered by Sudan and Ethiopia to the north, Somalia to the east, Uganda to the west, Tanzania to the south, and the Indian Ocean to the southeast. The country covers a land area of 582,650 square kilometers (approximately 224,960 square miles), an area roughly twice the size of Nevada and has a population of approximately 33.8 million (July, 2005 est.) (U.S. Central Intelligence Agency [CIA], 2005). The northern and eastern parts of the country are mostly arid or semi-arid resulting in a concentration of the population in the more arable southern and western regions of the country. Administratively, the country is divided into eight divisions called provinces, which are subdivided into districts except for Nairobi, which in addition to being a province is also the capital city.

Nairobi, has a population of about 2.1 million people, 1999 est. (World Health Organization, 2000). It is Kenya's principal commercial center and is the largest city in East Africa. Nairobi's primary industries are food and beverage processing, cigarette manufacturing, furniture production, and tourism (Encyclopædia Britannica Inc., 2002). Nairobi is also home to two United Nations agencies: the United Nations Environmental Programme (UNEP) and the United Nations Human Settlements Programme

(UN-HABITAT) (Government of Kenya, 2004). The other major cities and towns include Mombasa, Kisumu, Nakuru, and Eldoret. A map of Kenya showing the location of Nairobi and the other major cities and towns is provided in Figure 1.

Kenya gained her independence from Britain in 1963 following the Mau Mau rebellion, a Kikuyu-led resistance movement against colonial rule. Following her independence, Kenya has experienced relative political stability despite turbulent economic conditions particularly during the past decade as the country adjusted to political pluralism and a shift towards an open, market-based economy (The Institute of Economic Affairs, 2002). The gross domestic product (GDP) per capita as of 2004 was approximately \$ 1,100, and close to 50% of the population was estimated to be living under poverty in 2000 (CIA, 2005). However, there are wide regional disparities with regard to income, health, education and other human development indicators. For example, Nairobi, Central, and the Rift Valley provinces have human development levels that are similar to middle human development countries like Mexico, while others like the North Eastern province are similar to the low human development countries such as Togo. The significant regional disparity in human development indicators has been cited as one of the reasons for social crises like increased crime and insecurity (The Institute of Economic Affairs, 2002).

Kenya is culturally diverse and is home to over 40 ethnic groups in addition to a significant population of people of Indian and European descent. The largest ethnic groups are the Kikuyu 22%, Luhya 14%, Luo 13%, Kalenjin 12%, Kamba 11%, Kisii 6%, and Meru 6% (Central Intelligence Agency [CIA], 2005). The ethnic groups are classified into three major groups based on similarities in historical origins and linguistic backgrounds: Cushites (e.g., the Somali, Oroma), Bantus (e.g., Kikuyu, Kamba), and Nilotes (e.g., Luo, Kalenjin). The national language is Swahili, while the official language is English. Majority of Kenyans are Christians with Protestants comprising 45% of the population, Roman Catholic 33%, indigenous beliefs 10%, Muslim 10%, and other religions 2% (CIA, 2005).

increasingly becoming less significant due to improvements in blood screening. Perinatal transmission probably accounts for most of the 220,000 children (0-15 years) living with HIV/AIDS in Kenya (NASCOP, 1999; UNAIDS/WHO, 2004).

According to the 2003 Kenya Demographic and Health Survey (KDHS), young females between the ages of 15 - 24 years are over four times more likely to be living with HIV/AIDS than males in the same age group, with an estimated HIV/AIDS prevalence rate of 5.9% for females compared to 1.3 % for males (CBS, MOH, & ORC Marco, 2004). According to Schoepf (1995), understanding gender relations, women's status, and women's knowledge levels is imperative in analyzing the gender disparity in the HIV/AIDS epidemic in Africa. Asojo and Asojo (2000) state that women in pre-colonial Africa played active roles in the political, economic, and religious systems. For example, women made significant contributions to the commercial and agricultural sectors, were political leaders, were sometimes involved in military action, and were actively involved in religious ceremonies. However, during the colonial era, the colonial governments sought to conquer and civilize African people, whose cultural practices they viewed as barbaric and primitive (Njambi, 2004). The religious and economic motivations for colonization lead to social processes that imparted Judeo-Christian-Western and Arab-Islamic cultural ideologies that emphasized women's role as homemakers and that curtailed the relative powers held by African women, reduced their access to education, and relegated them to an inferior status compared to their male counterparts (Asojo & Asojo, 2000), a phenomenon that appears to have persisted in the post-colonial period. For example, in much of Africa, men are socialized to have control over sexuality and reproduction (Kaaya et al., 2002). In addition, women are highly dependent on males for social, economic, and emotional support (Baylies, 2000). Also evident from some studies is the acceptance, by both genders, that men have a higher biological need for sexual intimacy and can therefore have multiple partners (Gilbert & Walker, 2002; Meyer-Weitz, Reddy, Weijts, van den Borne, & Kok, 1998). These factors coupled with women's greater biological susceptibility to infection result in an elevated risk of HIV among women (Airhihenbuwa, Makinwa, & Obregon, 2000; Baylies, 2000; Schoepf, 1995). Table 1

summarizes of some of the factors that contribute to women’s increased vulnerability to HIV (Baylies, 2000; Ulin, 1992).

Table 1. Factors Contributing to Women’s Increased Vulnerability to HIV

Physiological Factors	<ul style="list-style-type: none"> • Higher concentration of HIV in semen than in vaginal fluid • A larger exposed surface area in the female genitals • Great permeability of mucous membranes in the female genitals • Longer exposure to semen within the vaginal tract • STDs, which increase the probability of infection, are often asymptomatic in females resulting in lower likelihood of treatment
Social Factors at the Public Sphere	<ul style="list-style-type: none"> • Less access to education and lower levels of literacy, which results in limited access to information about STDs and HIV • Poorer access to health care due to distance, lack of transportation, household responsibilities etc. • Dependency on males due to legal provisions that limit women’s access to economic resources • Cultural and religious ideologies that prevent women from asserting themselves and that instead teach subordination
Social Factors at the Dyadic Level	<ul style="list-style-type: none"> • Expectation of sexual passivity for women and acceptability of men’s sexual mobility prior to and after marriage • Nature of the relationship (i.e., whether it is hedonistic, romantic, matrimonial, or prostitutive) because it influences women’s ability to negotiate the terms of sexual relations

Youth Sexual Risk Behaviors in Kenya

Several studies have examined the prevalence of risky sexual behavior among the youth in Kenya (Hawken et al., 2002; Kiragu & Zabin, 1993; Lema, 1990; Pattullo et al., 1994). The findings from these studies are summarized in Appendix B. The results from these studies suggest that the mean age at sexual debut (first sexual intercourse) is about 13 years for males and about 16 years for females. Further, the findings indicate that close to 70% of male and 25% of female secondary school students have engaged in sexual intercourse. More importantly, the studies reveal that condom use among those who are sexually active is relatively low (less than 50%) and that a substantial proportion has had more than one lifetime sexual partner. The 2003 KDHS data support these study findings and reveal that between 60 – 70% of young people aged 15-24 years have had sexual intercourse (CBS et al., 2004). Taken together, the

available data indicate that significant proportions of adolescents are putting themselves at risk of HIV infection through unprotected intercourse.

Studies repeatedly show that the proportion of females who report that they are sexually experienced is lower than the proportion of males who do so. However, the HIV/AIDS statistics reveal that females are almost three times more likely to be living with HIV/AIDS. The lower proportion of sexually active females may be indicative of the possibility that females are more likely to underreport their sexual contacts (Akwara, Madise, & Hinde, 2003) due to societal expectations of female virginity until marriage. However, the apparent discrepancy between sexual behavior and HIV prevalence among females also reflects the possibility that women have a higher vulnerability to HIV for reasons that have been described previously.

Significance of the Study

Information of the psychosocial determinants of sexual behavior in Africa and other parts of the developing world is limited and has tended to focus more on individual level determinants than on the more distal cultural, normative, and societal norms that could potentially have a large impact on young people's sexual behaviors including condom use (Eaton et al., 2003; MacPhail & Campbell, 2001; Vos, 1994). In addition, those studies that have examined these distal factors have tended to be qualitative studies that are limited in their generalizability. Further, there have been no studies to my knowledge that have examined variables that distinguish between different types of condom users among African populations. Therefore by investigating both individual and distal factors influencing condom use among young people using quantitative methodologies, and by exploring factors that distinguish between different types of condom users, this study fills a gap in our understanding of adolescent sexual behavior. The present study highlights some of the issues that need to be tackled in HIV prevention programs at the individual, school, and community level. It also identifies areas that should be addressed in health and educational policies.

Purpose and Research Questions

The purpose of this study is to investigate the correlates of condom use among secondary school students in Nairobi. Specifically, the study examines sociodemographic characteristics, behavioral factors, and other variables that are associated with actual or intended condom use for HIV prevention. In addition, the study examines factors that distinguish between different types of condom users i.e. consistent, sporadic, and non- condom users. Secondary school students were selected for this study because they represent an accessible sample of young people who are at high risk of HIV infection as a result of their sexual behavior.

The overall research questions driving the conceptualization of this study are:

1. What are the individual, social, and environmental factors that are associated with actual or intended condom use for HIV prevention among secondary school students in Nairobi, Kenya and surrounding areas?
2. What factors distinguish consistent, sporadic, and non- condom users?

Some sub-questions include: What is the relationship between

- perceived peer support and adolescent condom use?
- perceived parental attitudes and adolescent condom use?
- gender role attitudes and condom use?
- attitudes towards condom use and condom use?
- risk behaviors such as substance use and abuse, and condom use?
- socio-economic status and condom use?

Definition of Key Terms

1. Sexual intercourse: Penile-vaginal sexual act with penetration.
2. Sexually experienced: A label used to identify a person who has engaged in sexual intercourse. This label was selected over “sexually active” because the latter is often used to describe those who are presently involved in sexual partnerships.

3. Individual gender role attitudes: An individual's belief about the roles of males and females in society.
4. Adult gender role attitudes: Individuals' perceptions of the beliefs held by adults in their community regarding the roles of males and females.
5. Condom use self-efficacy: Belief in one's ability to use condoms or request a partner to use condoms under various situations.
6. Condom use attitudes: Self-evaluation of one's attitudes towards condoms.
7. Youth: People between the ages of 15 and 24 years; used interchangeably with the term "adolescents"

Assumptions

The following were some of the basic assumptions that guided the conceptualization of the study:

1. Secondary school students are a heterogeneous group resulting in sufficient variance for analytical procedures.
2. Instruments used for data collection are appropriate for use with this population.
3. Assumptions of logistic regression analyses as described by Wright (1995) are met. These are: (a) the dependent variable is a dichotomous variable; (b) a single case is represented in the data only once (independence); (c) the defined model includes only relevant predictors; (d) groups being compared are "mutually exclusive" and "collectively exhaustive", meaning for example that a person can either have used or not used condoms but not both and everyone included in the analysis has either used or not used condoms; and (e) large samples are available.
4. Assumptions of multinomial logistic analyses as described by Schwab (2004b) are met. These are: (a) the dependent variable is non-metric, and (b) independent variables are metric or dichotomous.

Delimitations

This study is delimited to:

1. Adolescents attending secondary school in Nairobi and surrounding peri-urban areas.
2. Factors that are correlated with use of the male condom.

3. Heterosexual sexual contacts
4. Students attending public and private secondary schools and excludes international schools that cater primarily to foreign citizens and Kenyan elite because students attending the latter may not be a representative sample and often follow a different educational system.

Limitations

The following are some limitations of the study:

1. The study used a cross-sectional design; therefore, causal inferences cannot be made.
2. Participants were selected using convenience sampling (classrooms) rather than random sampling, which presents uncertainty about the representativeness of the student population.
3. The findings from this study cannot be generalized to out-of-school adolescents, who may engage in higher rates of sexual activity (Karim, Magnani, Morgan, & Bond, 2003).
4. As a result of the sensitivity of the information sought from participants, self-report bias must be considered.
5. Data collection was restricted to those students who were present at the time of survey administration and students were not under any obligation to respond to all questions, which potentially introduces self-selection bias.
6. The findings from the study may not be generalizable to students attending schools in other parts of Kenya, particularly the rural areas.

Chapter Summary

The youth in Kenya are a group at an elevated risk of HIV infection as a result of their sexual behavior. An examination of the dynamics and determinants of young people's sexual behavior is an important step in designing intervention programs to help young people make sound decisions regarding their sexual health. The present study examines (a) sociodemographic, psychosocial, behavioral, and contextual factors associated with actual and intended condom use, and (b) factors that distinguish between different types of condom users using data from a sample of secondary school students in Kenya.

CHAPTER 2

REVIEW OF THE LITERATURE

This chapter reviews the literature pertaining to behavioral, psychosocial, sociodemographic, and environmental factors associated with male condom use among the youth in Africa. The chapter comprises four sections. The first section discusses the literature findings on individual-level, proximal context, and distal context factors associated with condom use in Africa. The second section discusses the literature on differences among condom user groups. The third section summarizes the methodological limitations of the studies included in the literature review. Last, the final section provides an overview of the framework that guided the conceptualization of this study.

Individual Level Factors Associated with Condom Use

Much of the quantitative research examining the sexual behavior of African youth has focused on individual-level determinants or correlates of condom use during sexual activity. These include demographic attributes such as age and gender, behavioral characteristics such as engaging in risk taking behavior, and psychosocial factors such as condom use self-efficacy. In this section, I present the existing literature findings on these individual-level factors beginning with the demographic correlates followed by the behavioral and psychosocial factors that have been found to be associated with condom use and sexual activity.

The current literature indicates that males report higher condom use than females both in terms of consistent condom use and ever having used condoms (Bertrand, Makani, Djunghu, & Niwembo, 1991; Volk & Koopman, 2001; Wilson, Manual, & Lavelle, 1991). Meekers and Klein (2002) also found gender differences in reported condom use self-efficacy, with significantly higher proportions of males being confident in their ability to negotiate condom use, to use condoms correctly, and to purchase or obtain condoms. These findings are not surprising since the condoms in question are male-controlled

contraceptives and prophylactic devices. However, they may also reflect the fact that males have been socialized to exercise authority in sexual decision-making, whereas there are societal expectations of female passivity during sexual encounters (Bauni & Jarabi, 2000; Wilson et al., 1991). MacPhail and Campbell (2001) also found that compared to young females, males tend to externalize the threat of HIV rather than acknowledging personal vulnerability, which may increase the chances that males will fail to engage in safer sex. This, in turn, may mean an increase in female vulnerability to HIV infection in situations characterized by female disempowerment in sexual decision-making.

Findings on the association of age with condom use are mixed. Several studies have found greater odds of condom use with increasing age (Adih & Alexander, 1999; Karim et al., 2003), while others have found the opposite relationship with older individuals being less likely to use condoms (Camlin & Chimbwete, 2003). Two conceivable methodological issues may explain these conflicting findings. First, in the Adih and Alexander (1999) study, the outcome variable was whether a person had ever used condoms, while condom use at last intercourse was the outcome variable in the Camlin and Chibwete study. In the former study, one might expect that older people would have a longer sexual history and, therefore, a higher likelihood of having ever used condoms. On the other hand, when condoms at last intercourse is the outcome variable, younger people may be expected to have a greater likelihood of condom use as they are more likely to be single, a factor found to be associated with greater odds of condom use (Zellner, 2003). In addition, these disparities may reflect differences in the study population such that studies including a wider age group (15 – 49 years), such as the Camlin and Chibwete study, would find that younger people would have higher rates of condom use largely due to their single status (Zellner, 2003). On the other hand, those focusing on the youth (15 – 24 years) would find a positive association between condom use and age (Adih & Alexander, 1999; Karim et al., 2003; Zellner, 2003), as older youth may be less apprehensive about obtaining and using condoms.

Religiosity has also been found to be associated with condom use. For example, some young people believe that their religious group prohibits condom use (Abdool Karim, Abdool Karim, Preston-Whyte, & Sankar, 1992). Findings from quantitative studies assessing the association between religious

background and condom use have been equivocal. Kinsman, Nakiyingi, Kamali, and Whitworth (2001) found that Catholic males were significantly less likely than non-Catholic males to report that they intended to use condoms. In addition, Catholic males and females knew less about condoms than their non-Catholic counterparts. On the other hand, Kiragu and Zabin (1995) found that contraceptive use, including condom use, was not significantly associated with religiosity among a sample of Kenyan secondary school students. Religious background is an important consideration given that close to a third of the population in Kenya is Catholic, a group that has been very vocal in its stance against contraceptives, including condoms. Further, religious education is one of the subjects through which HIV/AIDS education is integrated into the Kenyan school curriculum with religious education serving as a platform for discouraging sexual activity among young people by taking a moralistic stance (Wambugu & Stephen, 2005).

Several studies in Africa and other parts of the world have found a co-occurrence of risk behavior among adolescents such that those who engage in risky sexual behavior also tend to engage in other risk behavior such as substance use (Adih & Alexander, 1999; Kiragu & Zabin, 1993; Robinson, Telljohann, & Price, 1999; Rossi, 1997b; Stevens-Simon & McAnarney, 1996; Taylor, Dlamini, Kagoro, Jinabhai, & de Vries, 2003; Taylor-Seehafer & Rew, 2000). In general, young people who engage in risk behavior such as smoking and drinking alcohol are more likely to have sexual intercourse. However, the relationship between condom use and risk taking behavior is less clear. For example, Adih and Alexander (1999) found that young Ghanaian males who drunk beer often or sometimes were more likely to have ever used condoms than those who never or rarely drunk beer. There was no difference across the groups with regard to condom use at last intercourse. On the other hand, frequent consumers of gin were less likely to report condom use at last intercourse than those who never drunk gin or only did so infrequently. Kiragu (1991) also reported mixed findings on the association between contraceptive behavior and risk taking behavior. Specifically, she found that males and females who engaged in substance use were more likely to have ever used contraceptives. However, she found no association between risk taking behavior and contraceptive use at last intercourse. One might expect that substance use impairs judgment regarding

the need for taking precautions to avoid the negative consequences of unprotected sexual intercourse. Thus, regular consumers of alcohol and other mind-altering substances would report a lower frequency of condom use. However, the available research does not appear to support the hypothesis that substance use is associated with a lower likelihood of condom use. In some respect, young people who engage in risk-taking behavior, may possess qualities that allow them to be less embarrassed about acquiring and using condoms and other contraceptives than peers who abstain from these behavior.

There have been some literature documenting that knowledge about HIV and its transmission may be associated with condom use. Higher odds of condom use have been found among those who are knowledgeable about the prophylactic properties of condoms (Camlin & Chimbwete, 2003) and among those with accurate AIDS-related information, as indicated by the source of AIDS education (Messersmith, Kane, Odebiyi, & Adewuyi, 2000; Zellner, 2003). This association has held when controlling for education levels and sociodemographic factors (Zellner, 2003).

Several researchers have investigated the relationship between people's perceptions of the pros and cons of using condoms, and their reported use of condoms. Two studies that examined the association between perceived benefits of condoms and actual condom use found that perceived benefits were not significant predictors of ever having used condoms (Adih & Alexander, 1999) and condom use at last intercourse (Adih & Alexander, 1999; Volk & Koopman, 2001). This is contrary to what would be expected based on the health belief model, which posits that the likelihood of engaging in a health behavior such as condom use is higher if a person perceives high benefits of engaging in the behavior (Janz, Champion, & Strecher, 2002). It is plausible that the reason none of the aforementioned studies found an association was due to the measures used to assess perceived benefits. For both studies, perceived benefits measures were limited to the benefits of using condoms for disease prevention or as a contraceptive rather using more global benefits such as condoms being available without a prescription. However, it may also be true that perceived benefits is an inadequate predictor of condom use unless considered in conjunction with other variables (Mahoney, Thombs, & Ford, 1995). For example, a person may be aware of the benefits of condoms and would prefer to use them, but may lack access to them.

In a review of the literature to examine the factors that promote unsafe sexual behavior among South African youth, Eaton et al. (2003) found that perceived barriers to condoms included perceived “wastage of sperm,” low reliability of condoms as a contraceptive, loss of pleasure, the fact that too many condoms are needed, fear of slippage or breakage, and awkwardness in purchasing condoms. Other barriers include the high cost and limited availability of condoms (Abdool Karim et al., 1992), the belief that condoms are unsafe (Barker & Rich, 1992; Lule & Gruer, 1991; Tillotson & Maharaj, 2001), the belief that they encourage promiscuity (Lule & Gruer, 1991), and problems with disposal (Bauni & Jarabi, 2003). Consistent with expectations based on the health belief model, several studies have found that those who perceive high barriers to condoms are less likely to use condoms (Adih & Alexander, 1999; Mnyika, Kvale, & Klepp, 1995; Volk & Koopman, 2001; Wilson et al., 1991).

Perception of susceptibility to a health threat has been found to be associated with health behavior (Janz et al., 2002). Najjumba, Ntozi, Ahimbisibwe, Odwee, and Ayiga (2003) investigated some reasons why people may perceive themselves to be at risk of HIV infection and found that people considered themselves to be at risk of infection because of mistrust of partner, past history, having multiple partners, and having a blood transfusion. The association between perceived vulnerability to HIV and condom use has been investigated in several studies (Adih & Alexander, 1999; MacPhail & Campbell, 2001; Volk & Koopman, 2001; Wilson et al., 1991). The findings indicate a higher likelihood of condom use among those who perceive that they are susceptible to HIV (Adih & Alexander, 1999). However, perceived susceptibility to HIV does not always mean that people will increase condom use. For example, several studies have found that people are more likely to abstain, engage in monogamous relationships, or reduce the number of sexual partners, than they are to increase or start using condoms in response to increased perceived susceptibility (Bertrand et al., 1991; Kapiga & Lugalla, 2002). It is also conceivable that high perceived risk of HIV infection may result in a fatalistic attitude, whereby one views any effort at HIV prevention as being futile (Tillotson & Maharaj, 2001).

Self-efficacy refers to a person’s confidence in his or her skills and ability to engage in a particular behavior or to the perceived belief that one can control motivation, thought processes, emotions

and behavior (Bandura, 1994). The literature investigating the role of self-efficacy in influencing condom use behavior indicates that young people who are confident in their ability to obtain and use condoms are more likely to use condoms consistently than those who are less confident in their abilities (Adih & Alexander, 1999; Karim et al., 2003).

Proximal Context Factors Associated with Condom Use

Studies investigating correlates of condom use in Africa have tended to focus on individual-level factors such as those presented above. However, some authors (Airhihenbuwa, 1995; Eaton et al., 2003) stress that factors beyond the individual play an important role in influencing sexual behavior. In this section, I present findings on proximal context factors associated with condom use. The proximal context, as used in this paper, refers to interpersonal factors and attributes of a person's immediate environment that may influence sexual behavior.

The type of sexual partner has been found to be associated with condom use (Bertrand et al., 1991; Camlin & Chimbwete, 2003; Greig & Koopman, 2003; Meekers, 2003; Myer, Mathews, & Little, 2002). Study findings indicate that condom use is highest with casual partners and with commercial sex workers (CSWs) (Camlin & Chimbwete, 2003; Meekers, 2003). Bertrand et al. (1991), who conducted a cross-sectional study on condom use in several urban and rural areas of the Democratic Republic of the Congo, found that condoms were considered most acceptable in sexual relationships with CSWs, for contraception among adolescents, and in extra-marital sexual relations.

Young people tend to internalize their peers' negative attitudes about condoms (MacPhail & Campbell, 2001). Thus, it is important to consider perceived peer influence when examining condom use among this population. For example, MacPhail and Campbell (2001) found that taunting by peers resulted in the decision not to use condoms among a group of young men. Eaton et al. (2003) also noted that for males, peer pressure may include the need to prove manliness and to have multiple sexual partners. They also point out that young males may be more influenced by their peers than their female counterparts.

In much of Africa, men are socialized to have control over sexuality and reproduction (Kaaya et al., 2002). The gender imbalance in many relationships may therefore limit the ability of women to negotiate condom use in relationships (Eaton et al., 2003). As such, gender role perceptions may be associated with condom use. Karim et al. (2003) assessed the association between scores on a gender role index and condom use. The results of their study indicated that more egalitarian gender role perceptions were associated with higher odds of consistently using condoms, and for males, more egalitarian scores were also associated with a greater likelihood of condom use during first and last sexual intercourse. Meyer-Weitz, Reddy, Weijts, Van Der Borne, and Kok (1998) conducted face-to-face interviews with a sample of STD patients in Cape Town, South Africa. The results of their study indicated that women's inferior position in relationships and the belief that they should not discuss sexual matters seemed to reduce their ability to negotiate condom use. Greig and Koopman (2003) conducted a preliminary study to explore factors associated with condom use in a sample of 71 women living in Gaborone, Botswana. They found that women's negotiating power, defined as the degree to which a woman felt that she could discuss sexual history and safe sex with partners, and persuade their sexual partners to use condoms; and economic independence, defined as the extent to which women rely on their partner for economic support, accounted for 49% of the variance in condom use when controlling for HIV knowledge, HIV serostatus awareness, cultural norms, alcohol consumption, abuse, and barriers to condom use.

There is some indication that perceptions of parental disapproval of sex and condoms may deter young people from using condoms (Eaton et al., 2003; MacPhail & Campbell, 2001). One reason why perceived or actual parental disapproval might reduce condom use is because the opportunity to have sex often arises when parents or other adults are away from home and during this time using condoms is viewed as "wasting" time (MacPhail & Campbell, 2001). A second reason may be that young people are afraid of being caught in possession of condoms (Eaton et al., 2003).

Distal Context Factors Associated with Condom Use

Eaton et al. (2003) describe distal context factors as cultural and structural factors, such as poverty, that could potentially affect sexual behavior. As with the proximal context factors described above, distal context factors have tended to be neglected in quantitative research on condom use in Africa.

Culture is one distal context factor that could affect condom use. Eaton et al. (2003) refer to culture as a multifaceted entity that includes amongst other things: traditions, societal norms, social discourse, and shared beliefs and practices. As Bruhin (2003) points out, “sexual activity takes place within relationships, social contexts, and cultures” (p. 390); yet, as stated previously, much of the focus in the study of correlates of sexual behavior in the African context has been on individual-level determinants of sexual behavior. As alluded to earlier, many traditional African cultures are patriarchal and women are often socialized to be subservient to men, which could have implications on their ability to negotiate safer sex (Baylies, 2000; Kaaya et al., 2002). Eaton et al. (2003) also indicate that masculinity in some African societies is associated with unprotected intercourse with multiple partners. Additionally, social norms often discourage young women from carrying condoms because this behavior is misconstrued as an indication of promiscuity (MacPhail & Campbell, 2001). To further complicate the picture, many African populations are facing a changing socio-cultural context that often results in adolescents dealing with contradictory values and fewer guidelines regarding sexuality than in the past because of a shift from the traditional extended family and greater exposure to mass media that often depicts and to some extent “glorifies” casual sexual relationships, often with multiple partners.

Urban or rural residence is another distal context factor that could affect condom use rates. Eaton et al. (2003), for instance, suggest that urban youth might be better informed about HIV/AIDS than their rural peers as a result of higher access to mass media among the latter group. Kiragu and Zabin (1993) also found significant differences in sexual behavior between urban and rural secondary school students in Kenya, with the latter being more likely to be sexually experienced. In general, however, relatively few studies have examined the relationship between condom use and area of residence.

A third structural factor that may have implications for condom use is poverty. Eaton et al. (2003) found that low socioeconomic status was often associated with a greater likelihood of adolescent sexuality and assert that poverty is a major reason for the commercialization of sex, whereby young women engage in sexual intercourse with the aim of receiving monetary or material remuneration. Typically, such sexual relationships occur between young females and older males; thus, there is high potential of a power imbalance that limits the females' ability to negotiate safer sex. Economically disadvantaged young males and females may also be unable to purchase condoms (MacPhail & Campbell, 2001). In general, however, there is a dearth of information on the economic context in which sexual activity among the youth occurs.

Literature on Factors Distinguishing Condom User Groups

No studies, to my knowledge, have investigated the use of psychosocial, behavioral, and contextual factors in distinguishing among consistent, sporadic and non-condom users among Sub-Saharan African populations. Mahoney et al. (1995) studied the utility of the health belief model, and several behavioral and demographic variables in distinguishing among young American college students who used condoms consistently, occasionally, or never. The results of their study indicated that occasional users were best distinguished from consistent users and nonusers by the number of sexual partners, perceived susceptibility to HIV and STDs, frequency of intoxication during intercourse, perceived susceptibility of one's partner to HIV and STDs, and condom use self-efficacy. Specifically, they found that sporadic condom users were more likely to perceive that they were susceptible to HIV infection or acquiring STDs, reported a greater frequency of intoxication during coitus, and had a greater number of sexual partners than consistent users or nonusers.

The authors suggest that a social environment characterized by heavy alcohol use and high turnover of sexual partners may inhibit condom use because the positive outcomes anticipated from being intoxicated and having multiple partners outweigh the benefits of safe sex. Similar results were found in a study by Tawk, Simpson, and Mindel (2004) who investigated the demographic, sexual and social risk

factors associated with condom use among a large sample of men in Sydney, Australia. The latter group of researchers found that consistent users had a lower likelihood of heavy alcohol consumption and injecting drug use than those who used condoms sporadically.

The measures used by Mahoney et al., such as perceived susceptibility to HIV and STDs, age, religiosity, and others, were not able to distinguish between nonusers and consistent users. It may be the case that nonusers have taken other measures besides condom use to protect themselves from HIV and STDs (Mahoney et al., 1995). For example, nonusers may reduce the number of sexual partners or maintain monogamous relationships. The adoption of alternative risk reduction behavior by nonusers is supported to some extent by findings by Tawk, et al. (2004), who found that consistent condom users had greater odds of reporting multiple sexual partners and engaging in injecting drug use than nonusers.

Methodological Limitations of Previous Studies

The available research indicates that condom use among young people and other sub populations is influenced by demographic, psychosocial, behavioral, and contextual factors. However, little is known about the interaction between individual-level variables and factors outside a person in relation to condom use. In addition, there is a lack of information on variables that distinguish between different types of condom users (i.e. consistent, sporadic, and non-users). The latter information would be useful when designing HIV-prevention interventions best suited to different subgroups. Several methodological issues may have contributed to this gap in our knowledge of the correlates of condom use.

First, existing studies rely heavily on bivariate statistical analyses or single-level regression analyses, which do not allow for an assessment of the interactions between independent variables in addition to their relationship to the outcome variable (Norman, 2003). Part of the reason for the lack of use of multilevel regression may have been due to the fact that many of the studies tend to be of a more exploratory nature rather than being hypothesis-driven.

Second, studies adopt different measures of condom use. For example, Adih and Alexander (1999) assessed determinants of lifetime condom use and condom use at last intercourse, while Karim et

al. (2003) evaluated the determinants of consistent condom use. The adoption of different measures of condom use makes it difficult to synthesize findings across studies. When measuring condom use, it is also important to consider the possibility of recall bias. For example in the Volk and Koopman (2001) study, participants were asked to report the lifetime number of partners with whom they had unprotected intercourse. It is probable that some respondents will not remember all instances in which condoms were used during sexual intercourse. In the present study, condom use at last intercourse was selected as the outcome variable when analyzing data from sexually experienced youth in order to reduce the likelihood of recall bias.

Inconsistency in the operationalization of other key variables also limits the synthesis and comparison of findings across studies. For example, the association between condom use and religion is unclear because of the different methods used to measure the latter. For example, Kinsman et al. (2001) simply examined differences across young people who belong to different religious denominations, while Kiragu and Zabin (1995) considered the combined effect of the importance of religion to oneself, belonging to a religious denomination, and the frequency with which one attends religious services. In the present study, I adopted the approach taken by Kiragu and Zabin (1995) because the importance of religion to a person provides some indication of the likelihood that a person will adhere to the beliefs and teaching of the religious group. However, I did not consider religious denomination because of the awareness that some people may not consider themselves as belonging to one particular sect, but may have a very strong sense of spirituality.

Inconsistency in variable operationalization also applies to studies that assessed the association between sexual behavior and other risk behavior (e.g., substance use). In general, it is unclear whether a composite index of risk behavior is a more appropriate predictor of risky sexual behavior than considering each risk behavior as an independent predictor as was done by Adih and Alexander (1999). In the present study, a composite index was used in order to ease the interpretation of findings.

Finally, data collection strategies may influence responses. In some instances, such as in the study by Volk and Koopman (2001), data were collected via interviews; therefore, it is important to consider the

possibility of bias arising from the fact that the interviewers may be of one gender, while majority of the interviewees are of the opposite gender as was the case in their study. The need to consider the genders of the interviewee and interviewer is an important consideration because in some cultures it might be taboo for women to be interviewed by male strangers (Crosby & Grodin, 2002). The present study was based on a paper and pencil survey; thereby, eliminating this bias.

Conceptual Framework

The conceptual framework guiding this study was adapted from a socio-ecological framework developed by Akwara, Madise, and Hinde (2003). The model developed by the aforementioned authors is illustrated in Figure 2, while the modified model used in this study is presented in Chapter 3. As previously stated, this model was selected because it is more explicit in its inclusion of culture, social norms, and other distal determinants of sexual behavior than the more commonly used theories employed to explain sexual behavior, such as the health belief model; the theories of reasoned action and planned behavior; the social cognitive or learning theory; the behavioral-ecological model; the information, motivation, and behavior skills model; the protective model of resiliency; the biopsychosocial model; and the transtheoretical model (Basen-Engquist & Parcel, 1992; Becker & Barth, 2000; Benoit, 1997; Blinn-Pike, 1999; Eisen, Zellman, & McAlister, 1990; Hovell et al., 1994; Jemmott, Jemmott, & Fong, 1998; McKay, 2000; Robinson et al., 1999; Rossi, 1997a; Taylor-Seehafer & Rew, 2000). According to the theories of reasoned action and planned behavior, external variables, such as demographic variables and personality traits, only influence behavior indirectly by influencing normative and attitudinal factors (Fishbein, 1980). Similarly, in the health belief model, demographic factors and other factors related to the individual are not a major part of the theory and are assumed to influence the major theoretical variables (Poss, 2001). However, the effects of external variables are not always mediated by theoretical constructs and could influence behavior directly (Sheeran, Conner, & Norman, 2001).

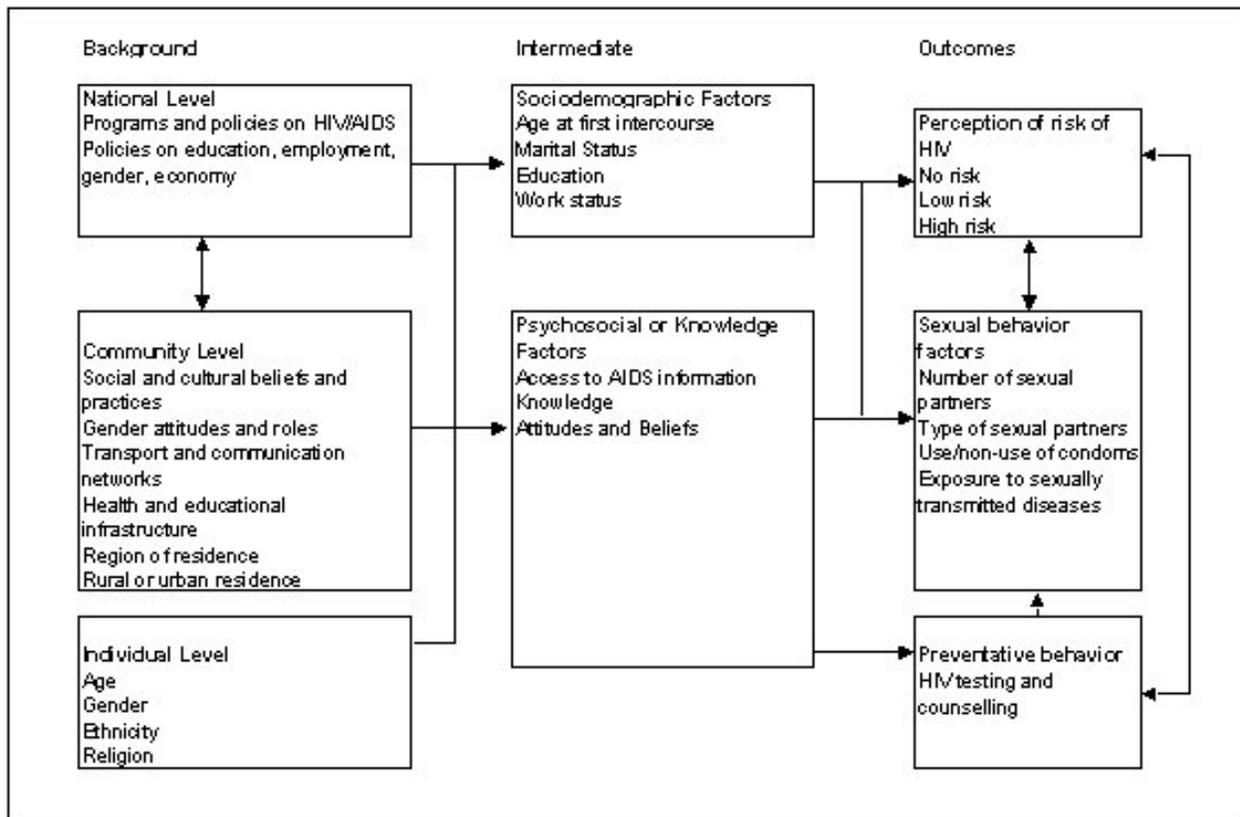


Figure 2. Conceptual model developed by Akwara, Madise, and Hinde, 2003

The conceptual model defined by Akwara et al., (2003) recognizes two outcome variables: perceived risk to HIV infection and sexual behavior. These outcome variables are conceptualized as being influenced by background national-, community- and individual-level factors, and intermediate sociodemographic and psychosocial factors, as illustrated in Figure 2. Following is a brief discussion of the conceptual framework as described by the authors.

At the national level, governmental policies and programs on HIV/AIDS prevention and reproductive health, in general, are believed to influence people's access to information and the availability and accessibility of treatment for STDs and voluntary testing services. Policies and programs on education, the economy, gender issues etc. may also influence people's sexual behavior by shaping the social construction of gender roles, empowerment of women, availability of health services, and the distribution of economic resources and public infrastructure.

At the community level, gender role ideologies have an impact on a person's definition of his or her role in sexual decision-making and sexual relationships. For example, young women may be socialized to be sexually passive. On the other hand, region of residence and rural or urban residence may influence access to health services.

The conceptual framework also includes individual background factors such as gender, age, ethnicity and religion. Gender is considered because evidence indicates several gender differences; such as, females tend to have fewer sexual partners, have less control over their male partners' sexual behavior, and are more likely to be infected with STDs. The age of a person influences sexual behavior and risk perception in that young people tend to be at increased risk of HIV infection because they engage in unprotected sexual intercourse due to their low perceptions of vulnerability (Cleland, 1995). Young people also face pressure from their peers to engage in unprotected intercourse or to have sex with multiple partners.

Ethnicity potentially influences sexual behavior through cultural beliefs and practices. The authors provide several examples of how ethnicity might influence sexual behavior. First, levirate marriages, where a widow is expected to marry her husband's brother, are still practiced in parts of sub-Saharan Africa. Second, some ethnic groups require widows to have sexual intercourse with a male in-law for ritual cleansing. For some, pressure to conform to these cultural practices may take precedence over concern about sexual health.

Religion, on the other hand, may influence sexual behavior and risk perception through intermediate factors by influencing the age at first intercourse, marital status, and access to information. Religion may also influence attitudes towards HIV and perception of risk. For example, religious people may consider AIDS as a disease afflicting "sinners" and therefore perceive their own risk of infection as being low (Nzioka, 1996).

The factors described above influence risk perception and sexual behavior through several intermediate factors categorized as either sociodemographic or psychosocial variables. Intermediate sociodemographic variables include age at first intercourse, marital status, level of education, and work

status. On the other hand, psychosocial variables include access to HIV/AIDS information, knowledge, attitudes, and beliefs. Following is a brief description of intermediate level variables and how they influence sexual behavior.

Early initiation of sexual activity is associated with a longer history of sexual activity with multiple partners and, therefore, greater likelihood of acquiring STDs. Marital status influences sexual behavior and the perceived risk of infection. For example, married women may be less likely to negotiate safer sex due to fears of being labeled as promiscuous, even when they suspect or are aware of their spouses' extramarital relationships. Although socio-economic status was not included as a variable in the illustrated conceptual model, the authors tested it as an intermediate sociodemographic variable and found statistically significant lower odds of reported risky sexual behavior with increasing reported household wealth.

Education level may also affect risk perception and sexual behavior, though the findings are equivocal. For example, Carael's (1995) study (As cited in Akwara et al., 2003) found higher rates of casual intercourse among more highly educated individuals, while Meekers (1994), found that education level had no significant effect on the likelihood that an unmarried person was sexually experienced after controlling for age, place of residence, and religion. The literature on the association between HIV knowledge and risk perception and between HIV knowledge and sexual behavior is also unclear. Fatalistic attitudes, such as "we are all going to die [from AIDS]", may explain the weak association between HIV/AIDS awareness and the adoption of safe sex behavior (Obbo, 1993). Lastly, people's beliefs and attitudes about the cause of HIV and their attitudes toward safer sex also influence risk perception and sexual behavior (Obbo, 1993).

As stated earlier, the model conceptualized by Akwara et al. (2003) highlights contextual and demographic variables that are often downplayed in more commonly used theories used to explain human behavior in public health. However, the model required some modification to make it suitable for the present study. The modified model is described in Chapter 3.

Chapter Summary

The existing literature on adolescent sexual behavior in Africa demonstrates that a large number of behavioral, psychosocial, and contextual variables may influence the use of condoms. However, there is a dearth of information on the ways in which these factors interact to influence sexual behavior and in particular condom use. Further, no literature, to my knowledge, examines the utility of these classes of variables in differentiating between groups based on the consistency of condom use. An investigation of these variables using a socio-ecological model may, therefore, provide a more precise way of predicting adolescent sexual behavior and, hence, aid in the development of effective interventions to reduce the risk of HIV infection and other negative consequences of sexual activity among young people.

CHAPTER 3

METHODS

This chapter provides information on the procedures used to conduct this study, which investigated correlates of condom use among secondary school students in Nairobi to answer the following research questions:

1. What are the individual, social, and environmental factors that are associated with actual and intended condom use for HIV prevention among secondary school students in Nairobi, Kenya and surrounding areas?
2. What factors distinguish consistent, sporadic, and non-condom users within the same population?

This chapter comprises eight sections. The first section describes the conceptual model adapted for this study. The hypotheses tested are presented in the second section. The third section describes the study design. The fourth section describes the sample; specifically, the section describes the sampling frame, the sampling method, and the characteristics of the respondents. The fifth section highlights the data collection procedure, data editing process, and quality control measures. The sixth section describes the steps taken to ensure the reliability and validity of test scores obtained from the instrument, and the items and scales included in the measurement scales. The seventh section highlights the analyses conducted. Lastly, the eighth section summarizes the methods chapter.

Conceptual Framework

To answer the abovementioned research questions, a conceptual model adapted from the framework developed by Akwara, Madise, and Hinde (2003) was used. Figure 3 illustrates the adapted conceptual model. In the model, condom use at last intercourse, and intended condom use are treated as outcome variables when analyzing data from sexually experienced and inexperienced youth, respectively. In the original model presented by Akwara et al. (2003), risk perception is treated as an outcome variable.

In the present study, however, risk perception is treated as an explanatory variable that is directly associated with the outcome variable. The adapted model predicts that background factors (individual- and community-level) impact risk perception and the outcome variable through a range of intermediate psychosocial and behavioral factors.

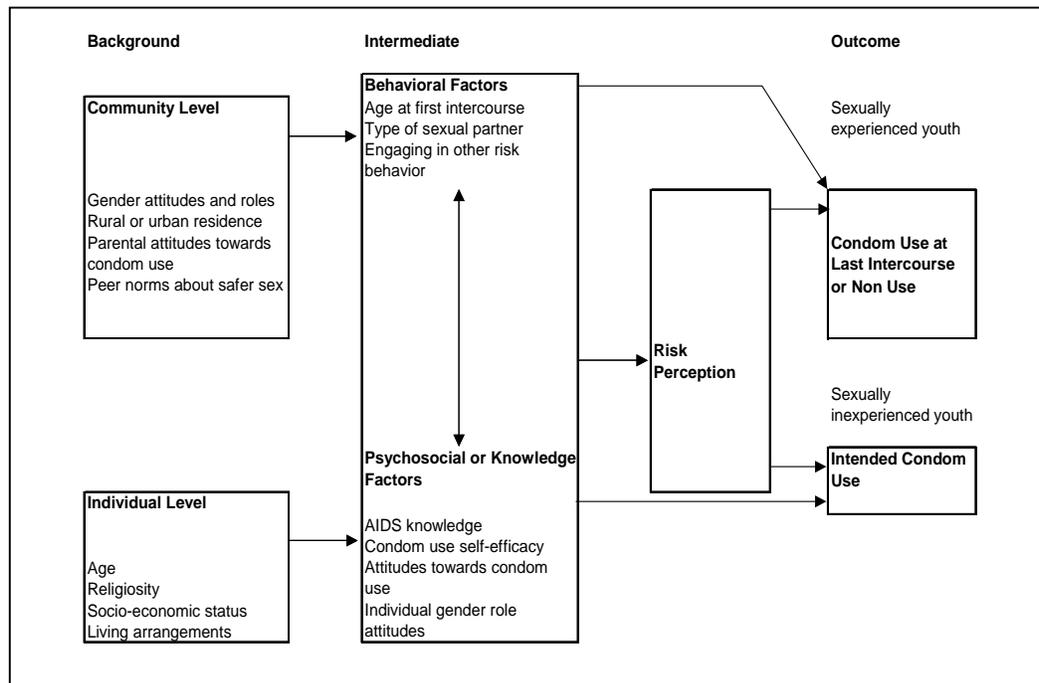


Figure 3. Conceptual model for the study of actual and intended condom use among Kenyan youth

National- and community-level background factors in the original model, other than gender role attitudes, and rural or urban residence, were not assessed in the present study because these would necessitate cross-area or cross-country comparisons to assess their effect on condom use. However, several studies have examined the relations between some of these factors and condom use. Greig and Koopman (2003) explored the association between women empowerment indicators and the use of condoms using national-level data from sub-Saharan African countries. They found that condom use at last sexual encounter was positively correlated with female enrollment in secondary education and the secondary school net enrollment ratio of females to males. The correlation between condom use at last sexual encounter and female share of paid employment in industry and service was not statistically

significant; however, it was in the positive direction and was based on a small sample of only six cases. With regard to the influence of accessible health care and other infrastructure, Ukwuani, Tsui, and Suchindran (2003) found that condom use to prevent HIV infection in Uganda and Tanzania was more prevalent in areas close to health care services and in areas that had higher indicators of development such as proximity to urban centers.

The adapted model also includes perceived parental attitudes towards condoms and peer norms about safer sex as community level variables that affect individual behavior. In the present conceptual framework, socio-economic status was considered as a background individual level variable because it cannot be presumed to be changeable given the young age of the study population. Also included as a background individual level variable is living arrangements in order to assess whether young people who live with either one or both of their parents report different levels of actual or intended condom use than those living with other adults or friends. Together, community and individual level background variables indirectly influence risk perception and actual or intended condom use through behavioral and psychosocial variables, which are described briefly below.

At the intermediate level, marital status, education and work status are dropped as intermediate sociodemographic variables and replaced with type of sexual partner (friend or other person) and engaging in other risk behavior. This group of variables together with age at first sexual intercourse is collectively termed as behavioral factors. Psychosocial variables at the intermediate level include HIV/AIDS knowledge (transmission and testing), condom use self-efficacy (mechanics of use, dealing with partner disapproval, assertiveness, use under influence of intoxicants), attitudes towards condom use, and individual gender role attitudes. The present framework predicts that these variables influence actual or intended condom use either directly or indirectly by altering risk perception.

Hypotheses

Numerous hypotheses can be tested from the conceptual model presented above. While acknowledging the pathways through which variables at different levels influence actual or intended condom use, I state the hypothesized relationships between individual predictor variables and the outcome variable.

Community level variables: Young people are more likely to report condom use or intentions to use condoms if they

1. Perceive that adults in their community hold egalitarian gender attitudes as compared to discriminative gender attitudes
2. Live in urban areas compared to rural areas
3. Perceive more permissive parental attitudes towards sex and condom use
4. Perceive that their peers favor safer sex

Individual level background sociodemographic variables: Young people are more likely to report condom use or intentions to use condoms if they

5. Are older
6. Are male
7. Profess low religiosity
8. Are from high socioeconomic status
9. Do not live with both or one of their parents

Behavioral variables: Young people are more likely to report condom use or intentions to use condoms if they

10. First engaged in sexual intercourse at an older age than at a younger age
11. Have sexual partners who are not their boyfriends/girlfriends
12. Do not engage in risk behaviors such as alcohol and drug use

Psychosocial variables: The likelihood of reporting condom use or intentions to use condoms increases with

13. Increasing HIV/AIDS knowledge
14. Increasing condom use self efficacy
15. Increasingly positive attitudes towards condoms
16. Increasingly egalitarian gender role attitudes

Risk Perceptions: The likelihood of reporting condom use or intentions to use condoms increases with

17. An increase in perceived risk to HIV and other STIs

Study Design

The main objectives of this study are to investigate the socio-demographic, behavioral, and psychosocial correlates of condom use among secondary school students in Nairobi, and to examine what factors distinguish between different types of condom users within the same population. A cross-sectional design was employed for the study and, for this reason, I cannot make causal inferences, rather, I seek to understand adolescent condom use behavior at the existing time. Data were collected using a self-administered questionnaire constructed based on the conceptual framework. The 155-item questionnaire consisted largely of measurement scales adapted from existing instruments used in Africa and the United States. A more detailed description of the items is provided later in this chapter. The questionnaire was administered in English, which is the official language of instruction in educational institutions in Kenya.

Sample

Sampling Frame

A brief description of the educational system in Kenya is provided to enhance the reader's understanding of the sampling methods. Under the current educational system in Kenya, which is sometimes referred to as the 8-4-4 system, students attend 8 years of primary school, 4 years of secondary school (also referred to as high school herein), and 4 years of college. Students attend governmental schools or public schools, which are maintained by the local government, or privately owned secondary

schools. These schools are usually exclusively boarding or day schools; though, a few schools have both day scholars and boarders. In addition, schools are either single gender or co-educational. The age range of high school students is typically between 13 – 19 years. However, it is not uncommon to have high school students older than 19 years of age in schools, such as national schools that draw large numbers of students from rural areas. In rural areas young children may enroll in school later than their urban peers because rural areas are highly dependent on agriculture, which is a labor-intensive industry. National schools also recruit top-scoring students from every province and, therefore, tend to have a more diverse student population than other schools.

The sample for this study was drawn from schools located in Nairobi and surrounding areas. There are approximately 120 private and public secondary schools in this area, excluding international schools that cater primarily to foreign citizens and Kenyan elite. The latter schools were excluded because students attending these schools may not be representative of the typical secondary school student in Nairobi and, in addition, often follow a different educational system. Schools were also excluded from the sample frame if no telephone or address information could be obtained from a directory issued by the Kenyan government or if efforts to contact the schools were unsuccessful. All, but one, national schools in Nairobi and nearby areas were included in the sample.

The Sampling Method

The determination of the minimum sample size required for this study was computed by closely following procedures used by Kiragu (1991) to calculate the minimum sample size to detect differences between sexually active and inactive youth. The following formula obtained from Kahn (1983) was used.

$$N = [(Z_{\alpha/2} + Z_{\beta})^2 2PQ] / d^2$$

Where:

$Z_{\alpha/2}$	= 1.96, for a 2-sided alpha = 0.05
Z_{β}	= 0.84, for a power of .80
P	= $Q = 0.5$ to maximize variance
d	= 20%, which is the minimum difference to detect between groups that differ on the dependent variable (condom use at last intercourse/ intent to use condoms)

Based on the formula above, a sample size of 98 per group that differ on the outcome variable was needed. I conservatively estimated that 25% of females and about 50% of males in high school are sexually experienced based on studies that have assessed adolescent sexual behavior (Hawken et al., 2002; Kiragu & Zabin, 1993; Lema, 1990; Pattullo et al., 1994). In addition, according to UNAIDS/WHO (2002), about 16% of females and 42% of males report having used condoms with their most recent non-regular partners. For this reason, a sample size of at least 2,450 females [$98 \div (.25 \times .16)$] and 467 males [$98 \div (.50 \times .42)$] was thought to provide sufficient numbers of males and females who have used condoms. Only 1,674 females participated in the study and efforts to recruit more females were hampered by time constraints and reluctance by school administrators to allow students to participate since the study was conducted during the shortest and busiest school term.

Table 2 shows how the sampling frame was stratified. The reason for this stratification is that there is research indicating that the type of school, that is boarding or day school or whether the school is single gender or coeducational, is associated with reported levels of sexual activity particularly for males (Kiragu & Zabin, 1993). Schools within each cell were randomly selected using a random table. In addition to 25 provincial schools, the sample included 5 boys-only (1 day and boarding; 4 boarding) and 2 girls-only (all boarding) national schools.

Table 2. Number of Schools in Sample, by Kind of School

	Males Only	Females Only	Co-educational	Total
Day School	1	5	2	8
Boarding School	8	7	--	15
Day and Boarding	4	1	2	7
Mixed Day and Single Gender Boarding*	--	--	2	2
Total	13	13	6	32

*Mixed day and single gender boarding schools are schools that are coeducational, but whose boarding facilities are open to only one gender

Characteristics of respondents

Data were collected from 3,777 respondents in the 32 schools within the study area. In 21 schools, students from Form 1 – Form 4 (grades 9-12) participated in the study. In most of the remaining schools, students in Form 4 (grade 12) were either studying for or sitting for the national school leaving examination (Kenya Certificate of Secondary Education) and, therefore, could not participate in the study. One hundred sixty-five questionnaires were excluded from the analyses (details provided in Appendix C) leaving a total sample size of 3,612 respondents. Of the respondents, 46% were female. Over 60% of the students were boarders at school. Participants ranged in age from 12 to 25 years with the mean age being 16.6 years (standard deviation [SD] = 1.52). Majority of the respondents were of Bantu origin. Over 80% of the respondents stated that they were Christians, with about 30% stating that they were Catholics. Nineteen percent of the respondents stated that they had lived in a rural area for the past five years. Just over 60% of the respondents reported living with both their parents during school vacations. Table 3 provides the demographic characteristics of the participants by gender and in total.

Table 3: Demographic Characteristics of the Respondents

Variable	Female N = 1,674	Male N = 1,938	Total N = 3,612
Class Level			
Form 1 (9 th grade)	27%	27%	27%
Form 2 (10 th grade)	28%	28%	28%
Form 3 (11 th grade)	27%	24%	26%
Form 4 (12 th grade)	18%	21%	19%
National or Provincial School			
National	17%	29%	23%
Provincial	83%	71%	77%
Type of school			
Single Gender - day school	29%	5%	16%
Single Gender - boarding school	50%	52%	51%
Single Gender - day and boarding	4%	15%	10%
Mixed - day school	7%	8%	8%
Mixed - day and boarding school	6%	9%	8%
Mixed day and single gender boarding	4%	10%	7%
Day/Boarders			
Day Scholars	43%	29%	35%
Boarders	57%	71%	65%

Variable	Female N =1,674	Male N = 1,938	Total N = 3,612
Ethnolinguistic Classification			
Bantu	71%	79%	75%
Nilote	21%	16%	18%
Cushite	2%	3%	3%
Other (e.g. Asian, European, mixed)	6%	2%	4%
Religion			
Catholic	31%	33%	32%
Moslem	4%	7%	6%
Protestant	56%	53%	54%
No religion	1%	2%	2%
Other	8%	5%	6%
Socioeconomic status (number of household assets reported)			
0-2	13%	22%	18%
3-4	10%	14%	12%
5-6	18%	19%	19%
7-8	59%	45%	51%
Location of residence for past 5 years			
Rural	13%	25%	19%
Urban	87%	75%	81%
Living arrangements during school term			
Both parents	24%	13%	18%
Single parent	10%	8%	9%
Boarder	57%	72%	65%
Relatives	9%	7%	8%
Living arrangements during school vacation			
Both parents	65%	63%	64%
Single parent	20%	19%	20%
Relatives or siblings	11%	12%	11%
Other	4%	6%	5%
Age: Mean (SD) [range]	16.3 (1.40) [12 – 25] years	16.8 (1.57) [12 – 24] years	16.6 (1.52) [12-25] years

Data Collection, Editing and Quality Control

The Institutional Review Board of the University of Georgia granted approval to conduct the study. Data were collected during the third term of the Kenyan school calendar between September and October 2004. Two research assistants, both university graduates, assisted with data collection. They underwent a 1-hour training on survey administration and procedures. They also reviewed the questionnaire together with the principal investigator to ensure uniformity in responses to routine questions from study participants.

Schools selected were contacted and invited to participate in the study. An attempt was made to visit each school to schedule data collection and to verify the number of questionnaires required. Prior to

the administration of the questionnaire, students were verbally briefed on their rights as participants in the study. Students did not provide signed consent as a guarantee of anonymity. Only those students present at the time of data collection were included in the study. While it is recognized that limiting the study to students who were present may introduce selection bias, seeking those students who are absent may breach confidentiality and may introduce bias due to communication with first round respondents (Kiragu, 1991).

At the end of each data collection session, questionnaires were handed in by the students to the principal investigator or research assistants and placed in an envelope. All envelopes were transferred to the principal investigator for safekeeping. After all surveys had been collected, they were manually checked for errors, coded and entered by the principal investigator and research assistants into a Microsoft® Excel dataset, which was exported to a *Statistical Software for the Social Sciences* (SPSS) (SPSS Inc., 1999) version 10.0 dataset.

To check for data entry errors, information from 300 questionnaires was double entered and one-way ANOVA tables computed for all numerical values to check for differences between original and reentered data. Original and reentered data were manually compared for any test with less than a 1.0 level of significance and changes made to the original dataset after referring to the questionnaires. Approximately 0.5% of the entries were found to have errors.

In addition to the double entry process, frequency reports of all numerical variables were generated to check for data entry errors. The reports were reviewed to identify cases with responses outside the allowable range or with system-missing values. These errors were corrected by reentering data from the original questionnaires. It was assumed that processing errors resulting from the data entry procedure would result in random error, which would affect the reliability of measurement, thus reliability estimates were obtained for all the scales.

Measures

As stated earlier, the final instrument (Appendix E) had 155 items. This section begins with a discussion of the steps taken to ensure the reliability and validity of test scores obtained from the instrument. I then describe the items and scales included in the measurement scales, organized by outcomes, community level factors, individual level background sociodemographic measures, psychosocial variables, and perceived risk.

Reliability and Validity

The validity of test scores refers to the extent to which correct inferences can be drawn from test scores (Crocker & Algina, 1986). Several measures were taken to ensure the validity of the test scores obtained from the instrument. First, researchers who have worked with adolescent populations in Kenya reviewed the questionnaire to assess face and content validity and necessary modifications made based on their feedback. Second, prior to actual data collection, the questionnaire was administered to a small convenience sample of six volunteer high school students (five males and one female) in Machakos District to ensure that respondents would understand the questions. Third, to increase the likelihood that respondents were providing honest answers, the questionnaire was self-administered, anonymous, voluntary, and was not administered by teachers, except in a few situations where teachers helped out due to time limitations. Last, confirmatory factor analyses yielded similar factor structures as those found by the original scale authors. Factor analyses were only computed for the condom attitude and condom self-efficacy scales because the factor analyses results for the original scales were available. Appendix D provides the details of the factor analyses.

Reliability of test scores refers to the consistency of test scores if the same individuals were tested again under the same circumstances (Crocker & Algina, 1986). Internal consistency measured by Cronbach's alpha of the subscales' scores was used to assess the reliability. Where the scores of a scale had a low value of Cronbach's alpha, item analyses were also performed and a decision made to retain or remove problematic items based on the values of the item-total correlations and the value of Cronbach's alpha if the item(s) was deleted. Consequently, one item was deleted from the peer attitudes scale because

of its effect on attenuating the alpha value. Tables 4-6 show the psychometric properties of the measurement scales used in the study.

Outcomes

The outcomes for the bivariate analyses and multilevel logistic regression analyses were condom use at last intercourse (for data from participants who had engaged in sexual intercourse) and intended condom use (for data from participants with no prior sexual contacts). Respondents answered one question for each outcome. The responses were scored as 1 if the participant used condoms or intended to use condoms or 0 if the participant did not use or did not remember using condoms (did not intend to use condoms or was not sure).

The outcome for the multinomial logistic regression analyses was condom user group. Definitions of the three classes of condom users are similar to those used by Mahoney, Thombs, and Ford (1995). Participants reported the number of different partners with whom they had sexual intercourse on a 6-point scale ranging from *none* to *five or more*. Participants also reported whether they have used a condom and, if so, in a separate question asked how many partners did they *always* use a condom with. In addition, participants reported how often they use condoms on five-point scale (*always, most of the time, some of the time, not very often, almost never/never*). Students were classified into condom user groups as follows:

1. *Consistent Users* 1) had one or more lifetime sex partners, 2) reported using a condom at last intercourse, 3) reported having the same number of lifetime sex partners as partners with whom they always used a condom, and 4) reported that they use condoms *always* or *most of the time*
2. *Sporadic Users* 1) had one or more lifetime sex partners, 2) reported that they did not use condom at last intercourse, 3) reported more total sex partners than partners with whom they always used condoms, and 4) reported that they used condoms *always* to *not very often*.
3. *Nonusers* 1) reported having one or more lifetime sex partners, and 2) that they have never used a condom, 3) reported that there is no partner with whom condoms were always used, and 4) stated that they *never/almost never* use condoms.

Background Level Factors

1. Community Level Variables:
 - a. Perceived adult gender role attitudes: Assessed using a 15-item gender role attitudes scale adapted from Karim et al. (2003). (Sample items – Adults in my community believe that males and females should have equal rights; Adults in my community believe that it is okay for a boy to do household chores; Adults in my community believe that in a relationship a boyfriend and girlfriend should have equal say in important decisions) (Table 4).
 - b. Rural or urban residence: Assessed using one item with two response categories - whether the respondent had lived mostly in an urban or rural area in the 5 years prior to the study when not in school.
 - c. Parental/Caregiver attitudes towards sex and condom use: Assessed using a 2-item scale adapted from Kiragu (1991) (Table 4).
 - d. Peer attitudes: Assessed using a 6-item scale adapted from Dehart and Birkimer (1997) (Table 4).
2. Individual Level Background Sociodemographic Variables: Assessed using items adapted from Kiragu (1991) and Karim Magnani, Morgan and Bonds (2003). The factors included are
 - a. Age: Assessed using one item.
 - b. Gender: Assessed using one item.
 - c. Religiosity: Assessed using a 2-item scale adapted from Kiragu (1991) (Table 5).
 - d. Socio-economic status: Assessing the socioeconomic status (SES) of respondents' families by asking them about their parents' or guardians' income would likely have yielded inaccurate estimates. SES was therefore assessed using an additive index based on possession of eight household assets. Specifically, students reported whether they come from a home with electricity, running water, flushing toilet, functioning radio, refrigerator, television set, video cassette deck, and a car (Table 5).

- e. Living arrangements (who the respondent lives with during school vacations and school term): Assessed using two items with nine possible responses per item: *both mother and father, father but not mother, mother but not father, relatives, my parents' friends, my friends, my brother/sister, I am a boarder at school (I remain at school- school vacations), other.*

Intermediate Level Factors

1. Behavioral Variables:

- a. Age at first sexual intercourse: Assessed using one item.
- b. Type of sexual partner at last intercourse: Assessed using one item asking whether the respondent last had intercourse with a *boyfriend/girlfriend, friend, or other* person.
- c. Engaging in other risk behavior: Assessed using an 7-item additive index adapted from Kiragu (1991) asking the frequency with which the respondent engaged in each of seven behavior (going to a disco club, attending parties for youth, smoking cigarettes, drinking beer, drinking illicit brews, smoking marijuana, using other drugs). Possible responses were *never, rarely, sometimes, and often.*

2. Psychosocial Variables

- a. HIV/AIDS knowledge: Assessed using a 15-item scale adapted from Hou (2004). (Sample items - Secondary school students and college students are at high risk of being infected with HIV; HIV/AIDS can be transmitted through mosquito bites; HIV can be transmitted to me if I donate my blood) (Table 6).
- b. Condom use self-efficacy: Assessed using a 19-item scale adapted from the Condom Use Self Efficacy Scale (CUSES) (Mahoney et al., 1995). (Sample items - I feel confident in my ability to put a condom on myself or my partner; I would feel embarrassed to put a condom on myself or my partner; I feel confident in my ability to use a condom correctly) (Table 6).

- c. Condom use attitudes: Assessed using a 26-item scale adapted from Madu and Peltzer (2003). (Sample items - The use of condoms makes the partner suspect that I am not faithful (that I sleep around); The use of condoms is a sign of mistrust for the partner; Condoms don't allow me to reach orgasm or derive maximum pleasure from sex) (Table 6).
- d. Gender role attitudes: Assessed using a 15-item gender role attitudes scale adapted from Karim et al. (2003). (Sample items – Males and females should have equal rights; It is okay for a boy to do household chores; In a relationship a boyfriend and girlfriend should have equal say in important decisions) (Table 6).

Perceived Risk

Perceived risk was assessed using a 4-item scale obtained from Mahoney et al. (1995) (Sample items - It is possible that I am infected with HIV/AIDS even though I have not been tested, It is likely that I will acquire HIV/AIDS within the next five years) (Table 6).

Table 4. Psychometric Properties of Scales Measuring Community Level Variables and Scoring Procedures

Construct/ Variable	Instrument	Psychometric Properties of original scale	Psychometric Properties of Modified Scale	Scoring in current study
Adult Gender Role Attitudes	Gender role index (Karim et al., 2003)	9 items Cronbach's alpha = 0.60	15 items, Cronbach's alpha = 0.78 (2970 respondents)	1-5 strongly agree-strongly disagree Likert scale with scores ranging from 15 - 75. Higher scores indicating more gender-discriminating attitudes
Perceived parental attitudes towards sex and condom use	Parental attitude scale (Kiragu, 1991)	N/A	2 items, Cronbach's alpha = 0.63 (2893 respondents)	1-3 Very angry, somewhat angry, probably not mind Likert scale with scores ranging from 2- 6. Higher scores indicating permissive attitudes towards sex and condom use
Peer attitudes towards safer sex	Peer norm subscale of the Sexual Risk Scale (DeHart & Birkimer, 1997)	7 items Cronbach's alpha = 0.83 (Part of a 38 item Sexual Risk Scale, alpha = 0.86)	6 items Cronbach's alpha = 0.81 (2174 respondents)	1-3 Almost always, sometimes, almost never Likert scale with scores ranging from 6 - 18. Higher scores indicating greater norms towards to safer sex

Table 5. Psychometric Properties of Scales Measuring Individual Level Sociodemographic Variables and Scoring Procedures

Construct/ Variable	Instrument	Psychometric Properties of original scale	Psychometric Properties of Modified Scale	Scoring in current study
Religiosity	Two questions: attendance of religious services in past month, and importance of religion to self (Kiragu, 1991)	None	2 items	High religiosity (4): Attendance of services 4 or more times in past month, high importance placed on religiosity Medium-high religiosity (3): Attendance of services 2-4 or times in past month, some importance placed on religiosity OR high importance placed on religiosity but low attendance Medium-low religiosity (2): Attendance 0-2 times, some important placed on religiosity Low religiosity (1): No attendance and low importance placed on religiosity
Socio-economic status	Additive index based on possession of 8 household assets	N/A	8 Items	Score of 0-8 with higher scores indicating greater economic status

Table 6. Psychometric Properties of Scales Measuring Psychosocial Variables and Perceived Risk, and Scoring Procedures

Construct/ Variable	Instrument	Psychometric Properties of original scale	Psychometric Properties of Modified Scale	Scoring in current study
HIV/AIDS knowledge	HIV/AIDS knowledge Scale (Hou, 2004)	15 items (10 general questions related to HIV/AIDS and 5 items related to HIV testing) Alpha = 0.71	15 items Cronbach's alpha = 0.50 (2,682 respondents)	True/False scale. Total scores ranging from 0-15. Higher scores indicating higher knowledge
Condom use self-efficacy	Condom use self efficacy scale (Mahoney et al., 1995)	18 items, 4 dimensions Mechanics (6 items) Alpha = 0.83 Partner's disapproval (5 items) Alpha = 0.83 Assertive (4 items) Alpha = 0.81 Intoxicants (3 items) Alpha = 0.74	19 items Cronbach's alpha = 0.89 (1,647 respondents)	1-5 strongly agree-strongly disagree Likert scale with scores ranging from 19 - 95. Higher scores indicating greater self efficacy
Condom Use Attitudes	Condom Attitude Scale (Madu & Peltzer, 2003)	25 items, 5 factors Poor relationship (5 items) Alpha = 0.88 Personal false or misleading beliefs (5 items) Alpha = 0.78 Inconvenience of condom use (5 items) Alpha = 0.80 Socially negative attitudes (5 items) Alpha = 0.77 Non-availability of condoms (5 items) Alpha = 0.79	26 items Cronbach's alpha = 0.87 (2,125 respondents)	1-5 strongly agree-strongly disagree Likert scale with scores ranging from 26 - 130. Higher scores indicating more positive attitudes towards condom use
Gender Role Attitudes	Gender role index (Karim et al., 2003)	9 items Cronbach's alpha = 0.60	15 items Cronbach's alpha = 0.76 (2,788 respondents)	1-5 strongly agree-strongly disagree Likert scale with scores ranging from 15 - 75. Higher scores indicating more gender-discriminating attitudes
Perceived Risk	Perceived susceptibility to HIV/AIDS and other STDs instrument (Mahoney et al., 1995)	4 items Cronbach's alpha = 0.77	4 items Cronbach's alpha = 0.80 (3,247 respondents)	1-5 strongly agree-strongly disagree Likert scale with scores ranging from 4 - 20. Higher scores indicating greater perceived risk of infection

Analyses

Risk and personal factors may differ by gender. In addition, previous research indicates that males may overreport their sexual behavior while women may underreport their sexual behavior (Akwara et al., 2003). Therefore, to account for potential gender differences, separate analyses were conducted for males and females. All analyses were conducted using SPSS software, version 10.0 (SPSS Inc., 1999). The analyses comprised four levels: univariate, bivariate, multilevel multiple logistic regression, and multinomial logistic regression.

Univariate Analyses

Basic univariate statistics (means, standard deviations, and frequency counts) were computed to describe the demographic characteristics and sexual behavior of sexually experienced respondents and to describe the risk behaviors of the entire sample.

Bivariate Analyses

The first aim of this study was to examine individual and contextual factors that are associated with condom use at last intercourse and intended condom use. The outcome variable was constructed as a binary outcome (condom use at last intercourse versus non use at last intercourse - for those who are sexually experienced, and intentions to use condoms versus no intentions to use condoms - for those who are not sexually experienced). Bivariate analyses (chi-squares and odds ratios- for associations between categorical variables and the outcome variables; and one-way ANOVA - for associations between continuous variables and the outcome variables) were performed to test the hypothesized associations between individual predictor variables and the outcome variables.

Although not part of the original model, bivariate analyses were also performed to examine differences in the outcome variables between students attending national schools and provincial schools, among students from different types of schools, and between day scholars and boarders. Wherever significant differences across school-related variables were found, they were considered covariates in the next level of analyses described below. Specifically, they were entered as covariates in the final

regression model (model 5) because it was assumed that these factors would best be classified as background level factors.

Multilevel Multiple Logistic Regression

To further refine the response to the first research question, multilevel multiple logistic regression was used to examine the combined effects of the independent variables in predicting condom use at last intercourse or intentions to use condoms. Spearman rank correlations were computed to examine the correlation between continuous variables as a preliminary check for multicollinearity problems in the regression analyses. A sequential approach was then used to assess the association between the independent and dependent variables, beginning with three separate models including perceived risk, behavioral factors, and psychosocial factors as independent variables and then adding independent variables in blocks as shown in Table 7. The order of variables included was based on the conceptual framework illustrated in Figure 3. For example, the model predicts that perceived risk, behavioral, and psychosocial variables are directly associated with condom use or non-use. Therefore, these variables were included as single independent variables in the first three models. In addition, behavioral and psychosocial variables may be indirectly associated with the outcome variable by influencing perceived risk. Therefore, these latter variables are treated as independent variables together with perceived risk in model 3. The background level variables were then added as independent variables in models 4 and 5. A stepwise logistic regression model was run for the highest order model that converged to examine which variables were the most important in predicting the outcome variable.

During each step, studentized residuals were obtained and checked to detect for the presence of outliers (studentized residuals greater than 2.0) (Schwab, 2004a) and the analysis rerun without the outliers. If the logistic regression model omitting outliers had a classification accuracy rate (comparison of predicted and actual group membership) that was at least 2% points higher than the model with all cases, then the former was interpreted. Standard error values for the beta (*b*) coefficient were also checked to ensure that none of the values were greater than 2.0, which would indicate numerical problems such as multicollinearity or the presence of independent variables in which all cases have the same value

(Schwab, 2004a). One of the steps taken when a nominal independent variable had a standard error value greater than 2 was to collapse the categories into fewer levels and rerun the analysis to examine whether this categorization reduced the standard error.

Table 7. Multilevel Logistic Regression Models

Models	Variables
Model 1a	Perceived Risk
Model 1b	Behavioral Variables (age at first intercourse, type of sexual partner, other risk behavior)
Model 1c	Psychosocial Variables (HIV/AIDS knowledge, condom use self-efficacy, condom use attitudes, individual gender role attitudes)
Model 2a	Perceived Risk + Behavioral Variables
Model 2b	Perceived Risk + Psychosocial Variables
Model 3	Perceived Risk + Behavioral Variables + Psychosocial Variables
Model 4	Perceived Risk + Behavioral Variables + Psychosocial Variables + Background Sociodemographic Variables (Age, religiosity, socioeconomic status, living arrangements)
Model 5	Perceived Risk + Behavioral Variables + Psychosocial Variables + Background Sociodemographic Variables + Community level Variables (adult gender role attitudes, rural or urban residence, parental attitudes, peer norms on safer sex) + School related variables (if found to be significant in bivariate analysis)

Multinomial Logistic Regression Analyses to Distinguish Condom User Groups

Multinomial logistic regression analysis was used to answer the second research question: What factors distinguish consistent condom users from sporadic condom users and nonusers? Multinomial logistic regression was used instead of discriminant analysis because not all variables satisfied the assumptions of normality, linearity, and homogeneity of variance, which are required for discriminant analysis (Silva & Stam, 1995). Due to the small number of female respondents who answered all the questions necessary to conduct this analysis, the multinomial analysis was restricted to sexually

experienced male respondents (respondents who had engaged in sexual intercourse at least once in their lifetime).

In this analysis, the grouping variable was the type of condom user. First, bivariate analyses were conducted to identify variables that were significantly associated with condom user group. All variables showing a significant association were used as the predictor variables in the subsequent analyses. Second, three binary logistic regression models (built to compare two condom user groups at a time) were run to identify outliers (cases with studentized residuals greater than 2.0) (Schwab, 2004a). Third, multinomial regression models were run with and without the outliers identified in the previous step and the models' classification accuracy rates compared. If the multinomial regression model omitting outliers had a classification accuracy rate that was at least 2% points greater than the model with all the cases, then the former was interpreted. The benchmark used to assess the utility of the multinomial regression model was a 25% improvement over the rate of accuracy achievable by chance alone (Schwab, 2004b).

Chapter Summary

This chapter described the methods used to conduct the study. A self-administered, 155-item questionnaire was designed based on a socio-ecological conceptual framework adapted from Akwara et al. (2003). The questionnaire was administered to a sample of 3,777 students attending 32 high schools in and around Nairobi, Kenya. One hundred and sixty five questionnaires were excluded from the analyses resulting in a total sample size of 3,612 students. Bivariate analyses (chi-squares and odds ratios- for associations between categorical variables; and one-way ANOVA - for associations between continuous and categorical variables) were performed to provide a preliminary indication of the relations among variables studied. Multilevel multiple logistic regression models were used to assess the association between the independent variables and condom use or intended condom use while taking adjusting for the effects of various classes of confounders. Lastly, multinomial logistic regression was used to assess the utility of model variables in differentiating between consistent condom users, sporadic condom users, and nonusers.

CHAPTER 4

RESULTS

The results are organized in four sections. The first section summarizes the demographic characteristics of sexually experienced respondents, highlights the sexual behavior of sexually experienced respondents, and describes the risk behavior of all study participants. The second section highlights the results of the bivariate analyses. The third section summarizes the results of the multilevel multiple logistic regression analyses. Finally, the fourth section presents the results of the multinomial logistic regression analysis to investigate variables that distinguish among condom user groups.

Sexual and Risk Behavior

Demographic Characteristics of Sexually Experienced Respondents

Approximately 50% of the males and 11% of females reported that they were sexually experienced that is, reported having had sexual intercourse at least once in their lifetime. Table 8 illustrates the proportion of sexually experienced respondents by demographic factors. As shown in the table, for both males and females, the proportion of sexually experienced respondents increased with increasing grade level. A higher percentage of students in provincial schools than in national schools reported that they were sexually experienced. With regards to school type, the highest proportion of sexual experienced female respondents was among those attending mixed day and single gender boarding schools, while among males it was among those attending mixed day and boarding schools. The proportion of sexual experienced respondents, both male and female, decreased with increasing socio-economic status. Among males, over 90% of those who stated that they did not belong to any religious organization were sexually experienced.

Table 8. Proportion of Sexually Experienced Respondents by Demographics

Variable	Proportion of sexually experienced respondents			
	Female		Male	
	n	%	n	%
Class Level				
Form 1 (9 th grade)	446	6.5%	509	40.1%
Form 2 (10 th grade)	461	11.3%	544	47.8%
Form 3 (11 th grade)	458	13.3%	448	50.9%
Form 4 (12 th grade)	292	16.4%	398	63.8%
National or Province School				
National	282	5.7%	544	33.6%
Provincial	1,375	12.7%	1,355	56.3%
Type of school				
Single Gender - day school	476	11.8%	97	60.8%
Single Gender - boarding school	823	8.5%	995	43.9%
Single Gender - day and boarding	66	4.5%	281	38.8%
Mixed - day school	121	10.7%	156	62.8%
Mixed - day and boarding school	100	26.0%	174	67.2%
Mixed day and single gender boarding	71	31.0%	196	64.3%
Day/Boarders				
Day Scholars	714	15.0%	542	58.9%
Boarders	943	8.8%	1,357	46.2%
Ethnolinguistic Classification				
Bantu	1121	11.5%	1407	49.5%
Nilote	335	13.7%	278	50.7%
Cushite	26	11.5%	63	42.9%
Other	96	6.3%	36	50.0%
Location of residence for past 5 years				
Rural	215	17.2%	460	53.7%
Urban	1,428	10.5%	1,403	48.4%
Religion				
Catholic	503	14.3%	619	55.1%
Moslem	66	6.1%	127	46.5%
Protestant	924	9.5%	986	43.2%
No religion	18	5.6%	35	91.4%
Other	124	16.1%	103	68.9%
Socioeconomic status (number of household assets reported)				
0-2 (lowest SES)	213	18.8%	401	54.1%
3-4	166	15.1%	247	53.4%
5-6	294	11.2%	356	47.8%
7-8 (highest SES)	944	8.9%	828	47.6%
Living arrangements during school term				
Both parents	405	14.6%	243	55.1%
Single parent	161	13.7%	147	70.7%
Boarder at school	944	8.8%	1,358	46.2%
Relatives or other	144	18.1%	131	54.2%
Living arrangements during school vacation				
Both parents	1,048	10.1%	1,154	46.1%
Single parent	326	11.0%	347	52.7%
Relatives or siblings	181	17.1%	208	55.8%
Other	70	21.4%	114	61.4%

Note. Row percentages. For example, 6.5% of female students in Form 1 (n = 446) had engaged in sexual intercourse.

Sexual Behavior

Table 9 summarizes the sexual behavior of those who were sexually experienced. As shown in the table, similar proportions of males and females reported condom use at last intercourse. The main difference between male and female respondents was the number of sexual partners reported. Approximately 60% of sexually experienced females reported that they had one sexual partner compared to 35% of males, while 8% of sexually experienced females and 26% of males stated that they have had five or more sexual partners over their lifetime. Another important difference between males and females was the age of first sexual partners. The average age of the first sexual partner among female respondents was 17.7 years compared to 13.4 years among male respondents.

Table 9: Sexual Behavior of Sexually Experienced Respondents

Variable	Females N=190 %	Males N=946 %
Lifetime number of sexual partners (n=175 females; 894 males)		
One	60.6%	34.5%
Two	15.4%	18.5%
Three	9.7%	12.2%
Four	5.1%	8.5%
Five or more	9.1%	26.4%
Ever used condoms (n = 188 females; 941 males)	54.8%	53.8%
Respondents who reported condom use at last intercourse (n = 177 females; 891 males)	40.7%	40.4%
Self reported frequency of condom use (n = 156 females; 836 males)		
Always	28.8%	27.2%
Most of the time	12.8%	13.6%
Some of the time	13.5%	10.0%
Not very often	11.5%	11.2%
Never	33.3%	37.9%
Age at sexual debut: Mean (SD) [range]	13.7 (3.64) [3-19] years	12.5 (3.60) [4-21] years
Age of sexual partner during first intercourse: Mean (SD) [range]	17.7 (4.73) [5-30] years	13.4 (4.37) [3-50] years

Risk Behavior

Due to the co-occurrence of risk-behavior, respondents reported the frequency with which they engaged in seven activities considered to be an indication of risk taking behavior. Table 10 illustrates the number of respondents reported to engage in each activity *often*, *sometimes*, *rarely*, or *never*. Attending parties targeted exclusively for the youth and going to discos (nightclubs) were included as risk-taking behavior because these activities allow young people to interact without adult supervision and are often sources of alcohol, cigarettes and other drugs (Kiragu, 1991).

Table 10. Frequency of Engaging in Risk-Taking Behavior

Risk Behavior		Females (%)	Males (%)
Going to a disco club (n = 1591 females; 1798 males)	<i>Often</i>	7%	15%
	<i>Sometimes</i>	12%	20%
	<i>Rarely</i>	16%	18%
	<i>Never</i>	65%	47%
Attending parties for youth (n = 1588 females; 1785 males)	<i>Often</i>	13%	24%
	<i>Sometimes</i>	31%	30%
	<i>Rarely</i>	28%	24%
	<i>Never</i>	28%	22%
Smoking cigarettes (n = 1572 females; 1787 males)	<i>Often</i>	2%	4%
	<i>Sometimes</i>	3%	6%
	<i>Rarely</i>	5%	8%
	<i>Never</i>	90%	82%
Drinking beer (n = 1572 females; 1778 males)	<i>Often</i>	4%	12%
	<i>Sometimes</i>	9%	16%
	<i>Rarely</i>	10%	16%
	<i>Never</i>	77%	56%
Drinking illicit brews (n = 1565 females; 1762 males)	<i>Often</i>	1%	3%
	<i>Sometimes</i>	1%	3%
	<i>Rarely</i>	2%	6%
	<i>Never</i>	96%	88%
Smoking marijuana (n = 1569 females; 1766 males)	<i>Often</i>	1%	3%
	<i>Sometimes</i>	1%	3%
	<i>Rarely</i>	2%	5%
	<i>Never</i>	96%	89%
Using other drugs (n = 1521 females; 1695 males)	<i>Often</i>	1%	4%
	<i>Sometimes</i>	1%	3%
	<i>Rarely</i>	1%	3%
	<i>Never</i>	97%	90%

Students were asked to write-in the names of other drugs used. Some of the drugs reported by students included cocaine, heroine, mandrax, khat, and kuber. Khat (*Catha edulis*), widely known in Kenya as *miraa*, is a stimulant that grows naturally in the Eastern Province of Kenya. Miraa consumption can produce hallucinations and lead to manic behavior, hyperactivity, and suicidal depression (U. S. Drug Enforcement Agency, 2005). Kuber is a powdery substance imported from India that is usually dissolved in hot water and drunk or chewed to produce a “high” (Onyango, 2002).

Twenty three percent of females and 13% of males stated that they had *never* engaged in any of the activities while one female and six males stated that they engaged in all seven activities *often*. Table 11 shows the total number of activities and the proportion of respondents who reported engaging in them *sometimes* or *often*. The results indicate that close to 50% of females and 60% of males engage in at least one of the behavior sometimes or often.

Table 11. Total Number of Risk Behavior that Respondents Engaged in *Sometimes* or *Often*

Number of behavior that respondents engage in <i>sometimes</i> or <i>often</i>	Females n = 1470	Males n = 1599
None	52.3%	36.1%
1	29.0%	25.5%
2	11.0%	17.8%
3	4.4%	10.9%
4	2.2%	5.8%
5	0.5%	2.1%
6	0.3%	0.8%
All	0.3%	0.9%

Factors Associated with Condom Use at Last Intercourse and Intended Condom Use:

Bivariate Analyses

This section summarizes the results of the bivariate analyses to test the hypotheses on the factors associated with condom use at last intercourse (non-virgin youth), and intended condom use (virgin youth). Overall, 40% and 41% of sexually experienced males and females, respectively reported condom use at last intercourse. Among sexually experienced males, 73% of those belonging to the Cushitic ethnolinguistic group reported condom use at last intercourse compared to 39% among Bantus, 43%

among Nilotes, and 47% among those classified as “other” (e.g. mixed ethnicities, Asians, and Europeans). Among respondents with no prior sexual contacts, 45% of females and 51% of males reported that they intended to use condoms in the future. Results are organized based on the adapted conceptual model illustrated in Chapter 3. Table 12 shows the means and standard deviations for continuous variables.

Table 12. Means and Standard Deviations for Continuous Variables

Variables	Females				Males			
	Condoms used at last intercourse/intentions to use condoms		Condoms used at last intercourse/intentions to use condoms		Condoms used at last intercourse/intentions to use condoms		Condoms used at last intercourse/intentions to use condoms	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
<u>Sexually experienced youth</u>								
Gender role attitudes (adult)	89	34.6 (8.86)	57	33.8 (8.74)	418	37.4 (8.90)	293	36.3 (7.83)
Parental attitudes	93	2.7 (1.03)	61	3.0 (1.16)	432	3.3 (1.26)	304	3.5 (1.27)*
Peer attitudes	80	12.1 (3.68)	51	14.1 (3.29)**	380	11.8 (3.35)	268	13.6 (3.05)***
Age	104	16.8 (1.46)	71	17.1 (1.29)	525	17.0 (1.55)	355	17.5 (1.52)***
Socioeconomic status	101	5.0 (2.68)	67	5.9 (2.47)*	517	4.8 (2.79)	344	5.8 (2.52)***
Age at first intercourse	99	12.8 (4.08)	68	15.0 (2.46)***	483	11.8 (3.63)	333	13.4 (3.31)***
Risk behavior	81	10.2 (3.59)	56	12.3 (4.69)**	435	12.0 (4.54)	298	13.6 (4.00)***
HIV/AIDS knowledge	78	10.2 (2.34)	46	10.4 (1.81)	372	10.2 (2.09)	278	10.2 (2.04)
Condom use self-efficacy	52	64.2 (14.22)	38	74.8 (11.83)***	272	63.6 (14.73)	209	73.0 (12.28)***
Condom use attitudes	78	84.8 (15.56)	48	97.6 (15.89)***	370	86.0 (18.08)	256	95.9 (13.66)***
Gender role attitudes (self)	89	25.2 (7.27)	55	24.7 (6.02)	393	32.3 (8.48)	270	31.9 (6.70)
Perceived risk	98	7.8 (3.78)	68	7.6 (3.36)	496	6.7 (3.31)	332	6.6 (3.11)
<u>Sexually inexperienced youth</u>								
Gender role attitudes (adult)	575	32.8 (9.63)	493	31.8 (9.30)	336	35.9 (8.35)	369	35.2 (8.89)
Parental attitudes	566	2.5 (0.84)	482	2.6 (0.88)***	322	2.7 (0.99)	357	3.1 (1.11)***
Peer attitudes	382	10.4 (3.84)	361	13.1 (3.49)***	234	10.7 (3.58)	281	12.6 (3.52)***
Age	682	16.3 (1.40)	564	16.1 (1.32)	384	16.5 (1.44)	411	16.4 (1.47)
Socioeconomic status	677	5.9 (2.43)	559	6.3 (2.35)**	385	5.0 (2.72)	409	5.9 (2.46)***
Risk behavior	626	9.0 (2.45)	514	9.8 (2.69)***	354	9.5 (2.81)	368	10.4 (2.96)***
HIV/AIDS knowledge	524	10.2 (2.28)	437	10.5 (2.17)*	297	10.0 (1.95)	328	10.4 (1.98)*

Variables	Females				Males			
	Condoms used at last intercourse/intentions to use condoms				Condoms used at last intercourse/intentions to use condoms			
	No		Yes		No		Yes	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Condom use self-efficacy	298	59.9 (12.95)	274	69.0 (12.88)***	189	59.6 (14.13)	214	69.6 (11.93)***
Condom use attitudes	385	83.7 (15.23)	349	94.2 (14.93)***	220	82.3 (16.57)	272	95.7 (13.58)***
Gender role attitudes (self)	543	23.7 (6.39)	453	23.0 (6.04)	315	30.5 (7.47)	331	29.2 (6.79)*
Perceived risk	641	6.8 (3.31)	530	6.8 (3.38)	375	6.4 (3.16)	401	6.5 (3.22)

Note: Differences in means significant at * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Background Level Factors

Logistic regression was used to examine the extent to which males and females differed in their use of condoms at last intercourse or intentions to use condoms. Among survey respondents who reported no previous sexual contacts, females had a lower likelihood of reporting intentions to use condoms than males (odds ratio (OR) = 0.80; 95% confidence interval (CI), 0.68 – 0.95; $p = .011$). However, sexually experienced females were no less likely to report condom use at last intercourse than their male peers. Since, differences between genders were found for most of the other variables and because previous research indicates that males may over report their sexual encounters while females tend to under report them (Akwara et al., 2003), separate analyses were conducted for males and females.

There were no significant differences in perceptions of *adult gender role attitudes* between young people who used condoms at last intercourse and those who had not, or between respondents who reported that they intended to use condoms and those who did not.

Among sexually experienced males, living in an urban area compared to a rural area was associated with a greater likelihood of reporting condom use at last intercourse (OR = 1.51; 95% CI, 1.11 – 2.07; $p = .009$). However, rural or urban residence was not associated with condom use at last intercourse for females. Among respondents who reported that they had never had sex, living in an urban area increased the odds of intending to use condoms in the future compared to living in a rural area

(females: OR = 1.43; 95% CI, 1.02 – 2.00; $p = .038$; males OR = 1.63; 95% CI, 1.17 – 2.26; $p = .004$)

(Table 13).

Table 13. Percent Distribution of Respondents Living in Rural or Urban Areas by Sexual Behavior

Outcome variable	Residence	Proportion of respondents who used condoms or intend to use condoms			
		Female		Male	
		n	%	N	%
Condom Use at Last Intercourse ^a	Rural	32	28.1%	238	33.2%
	Urban	141	43.3%	634	42.9%
Intended Condom Use ^b	Rural	165	37.6%	189	41.8%
	Urban	1090	46.2%	616	53.9%

^a $\chi^2(1, N = 173) = 2.48, p = .115$ – Females; $\chi^2(1, N = 872) = 6.78, p = .009$ – Males

^b $\chi^2(1, N = 1255) = 4.34, p = .037$ – Females; $\chi^2(1, N = 805) = 8.47, p = .004$ – Males

Among non-virgin respondents, those who reported that they used condoms at last intercourse had greater perceptions of *permissive parental attitudes towards sex and condom use* than those who did not use condoms at last coitus. The latter results, however, were only significant for males ($F [1, 734] = 4.79, p = .029$) and marginally significant for females ($F [1, 152] = 3.38, p = .068$). Among respondents reporting no prior sexual contacts, both males and females who intended to use condoms had stronger perception of permissive parental attitudes towards sex and condoms than those who did not intend to use condoms (females - $F [1, 1,046] = 13.60, p < .0001$; males ($F [1, 677] = 21.85, p < .0001$).

Students who used condoms at last intercourse reported significantly higher perceptions of positive *peer attitudes towards safer sex* than those who did not use condoms (females - $F [1, 129] = 10.29, p = .002$; males ($F [1, 646] = 54.15, p < .0001$). Among young people who had never had sexual intercourse, students who stated intentions to use condoms in the future reported significantly higher perceptions of positive peer attitudes towards safer sex than those who did not plan to use condoms (females - $F [1, 741] = 98.36, p < .0001$; males ($F [1, 513] = 36.90, p < .0001$).

One of the hypotheses was that respondents who had used condoms at last intercourse or who reported an intent to use condoms would be older than those who did not use condoms or who did not

intend to use condoms. ANOVA results indicated that the mean *age* of those who had used condoms at last intercourse was higher than those who had not used condoms at last intercourse for both males and females. However, the difference was only statistically significant for males ($F [1, 878] = 15.78, p < .0001$). Among those who had never had intercourse, the mean age of those who intended to use condoms was lower than that of those who did not intend to use condom in the future. The difference, however, was not significant for either gender.

Religiosity was measured as a composite of attendance of religious services in the last month and the importance of religion to self. Approximately 60% of respondents were classified as having high religiosity. As a result of the low frequency of responses, the low and medium low levels of religiosity were collapsed into a single level. Cross tabulation data of religiosity by sexual behavior (Table 14) indicate that religiosity was associated with condom use at last intercourse for males; though, the association was only marginally significant. Male respondents professing high religiosity were at higher risk of not using condoms at last intercourse compared to those professing low or medium low religiosity (OR = 0.70; 95% CI, 0.51 – 0.97; $p = .034$).

Table 14. Cross Tabulation of Religiosity by Condom Use or Intended Condom Use

Outcome variable	Religiosity	Proportion of respondents who used condoms or intend to use condoms			
		Female		Male	
		n	%	N	%
Condom use at last intercourse ^a	Low or medium low (ref)	35	51.4%	238	47.1%
	Medium high	24	33.3%	80	35.0%
	High	83	38.6%	395	38.5%
Intended condom use ^b	Low or medium low (ref)	250	47.2%	141	56.7%
	Medium high	156	42.9%	80	55.0%
	High	645	42.6%	423	48.0%

^a $\chi^2 (2, N = 142) = 2.36, p = .307$ – females; $\chi^2 (2, N = 713) = 5.84, p = .054$ –males

^b $\chi^2 (2, N = 1051) = 1.58, p = .455$ – females; $\chi^2 (2, N = 644) = 3.89, p = .143$ –males

Results supported the hypothesis that young people from high *socioeconomic status* would be more likely to report actual or intended condom use than those from low socio-economic status. Students

who used condoms at last intercourse were significantly more likely to be from high socioeconomic status (females - $F [1, 166] = 4.84, p = .029$; males ($F [1, 859] = 27.46, p < .0001$). Among respondents with no prior sexual contacts, those who intended to use condoms were significantly more likely to be from higher socioeconomic status (females - $F [1, 1,234] = 6.91, p = .009$; males ($F [1, 792] = 23.67, p < .0001$).

To assess whether *living arrangements* affect condom use among young people, students were asked to report on their family structure. Specifically, they reported with whom they usually lived during the school term and school vacations. This is because previous research findings suggests that young people living with one or both parents are less likely to engage in sexual intercourse (Kiragu, 1991). However, little is known about the effects of living arrangements on condom use. Yet, it may be expected that those who live with their parents may be less likely to use condoms because they fear being found in possession of condoms particularly when young people perceive parental disapproval of sexual activity. Due to low frequencies in some categories, living arrangements during the school term was collapsed into four levels: both parents, single parent, boarder, and relatives or others, while living arrangements during school vacations was collapsed into the following levels: both parents, single parent, relatives or siblings, and other. Living arrangements during the school term was not found be associated with condom use at last intercourse for either males or females. Males in boarding schools had significantly greater odds of reporting intentions to use condoms (OR = 1.61; 95% CI, 1.04 – 2.49; $p = .034$) than those living with both their parents. Living arrangements were not associated with intentions to use condoms for females.

Intermediate Level Factors

Early initiation of sexual activity might be an indication of risk-taking tendency in adolescents. Thus, the association between the use of condom at last intercourse and age at first intercourse was examined. It was hypothesized that the likelihood of reporting condom use at last intercourse would be greater with increasing age at first intercourse. ANOVA results supported this hypothesis and indicated that males and females who did not use condoms at last intercourse initiated sexual activity at a significantly younger age than those who used condoms at last intercourse (females - $F [1, 165] = 15.24, p < .0001$; males ($F [1, 814] = 40.69, p < .0001$).

The nature of the relationship between sexual partners may have some influence on the decision to use condoms. My hypothesis was that young people having sexual partners who are not their boyfriends/girlfriends would be more likely to report actual condom use because research findings indicate that condom use tends to be more acceptable with casual partners (Bertrand et al., 1991), perhaps because stability in a relationship decreases concern about the need to protect oneself against sexually transmitted diseases (Gebhardt, Kuyper, & Greunsven, 2003). However, cross tabulation data of type of partner by condom use at last intercourse (Table 15) indicated that a greater proportion of males and females who used condoms at last intercourse had sex with their girlfriend or boyfriend. Further, logistic regression analysis indicated that compared to those who had sex with a girlfriend or boyfriends, having sexual intercourse with a friend increased the odds of not using condoms by a factor of 2.56 for females (95% CI, 1.06 – 6.17; $p = .036$) and by a factor of 1.75 for males (95% CI, 1.29 – 2.37; $p < .0001$). For females, having sex with a person classified as *other* (e.g. relative, neighbor) also increased the odds of *not* using condoms by a factor of 5.78 (95% CI, 1.25 – 26.72; $p = .025$) when compared to having sex with a boyfriend.

Table 15. Cross Tabulation of Type of Partner by Condom Use at Last Intercourse

Type of partner	Proportion who reported condom use at last intercourse			
	Female		Male	
	n	%	n	%
Boyfriend/ Girlfriend (ref)	121	47.1%	530	44.9%
Friend	31	25.8%	283	31.8%
Other	15	13.3%	52	38.5%

$\chi^2 (2, N = 167) = 9.58, p = .008$ – Females; $\chi^2 (2, N = 865) = 13.25, p = .001$ – Males

To examine whether *engaging in other risk behavior* is associated with condom use or intentions to use condoms, students completed an additive index indicating the frequency with which they engaged in certain risk behavior. Study participants who reported condom use at last intercourse were more likely to frequently engage in risky behavior than those who did not report condom use at last intercourse (females - $F [1, 135] = 9.01, p = .003$; males ($F [1, 731] = 24.10, p < .0001$). Among young people with

no prior sexual contacts, those who intended to use condoms were also more likely to frequently engage in risky behavior than those who did not intend to use condoms (females - $F [1, 1,138] = 22.05, p < .0001$; males ($F [1, 720] = 21.39, p < .0001$).

The mean *HIV/AIDS knowledge* scores were 10.3 (SD = 2.21) for females and 10.2 (SD = 2.03) for males, out of a possible range of 0 –15 indicating moderately high HIV/AIDS awareness. However, results indicated that a substantial proportion of respondents were not aware of the latency period between infection and appearance of symptoms, and issues pertaining to HIV testing, such as anonymity during testing and the appropriate window period between possible infection and HIV testing. HIV/AIDS knowledge was not associated with condom use at last intercourse. However, among virgin youth, those who reported an intent to use condoms had higher HIV/AIDS knowledge than those who did not intend to use condoms (females - $F [1, 959] = 6.01, p = .014$; males ($F [1, 623] = 5.21, p = .023$).

Previous research shows that *condom use self-efficacy* or the belief that one can successfully engage in the use of condoms is associated with condom use among young people (Adih & Alexander, 1999; Karim et al., 2003). Among non-virgin youth, those who reported the use of condoms at last intercourse had greater condom use self-efficacy than those who did not report the use of condoms (females - $F [1, 88] = 14.03, p < .0001$; males ($F [1, 479] = 55.33, p < .0001$). Among those who had never had sex, condom use self-efficacy was greater among those who intended to use condoms in the future than among those who did not intend to use condoms (females - $F [1, 570] = 70.12, p < .0001$; males ($F [1, 401] = 59.84, p < .0001$).

Respondents' *attitudes towards condom use* were assessed by having students complete a condom attitude scale measuring attitudes about the usefulness of condoms, acceptability of condom use by parents and sexual partners, safety of condoms, and availability and accessibility of condoms. One-way ANOVA results indicated that those who reported condom use at last intercourse had more positive attitudes towards condoms (females - $F [1, 124] = 19.90, p < .0001$; males ($F [1, 624] = 53.97, p < .0001$). In addition, among respondents who had never had sexual intercourse, those who intended to use

condoms in the future reported more positive attitudes towards condoms (females - $F [1, 732] = 88.44, p < .0001$; males ($F [1, 490] = 95.93, p < .0001$).

Respondents were asked to complete a scale measuring *individual gender role attitudes*. Virgin males and females who intended to use condoms in the future held more egalitarian gender role attitudes than those who did not intend to use condoms though the difference was significant only for males and marginally so for females (females - $F [1, 994] = 2.78, p = .096$; males ($F [1, 644] = 6.12, p = .014$).

Gender role attitudes were not significantly associated with condom use at last intercourse.

Respondents completed a scale measuring the level of *perceived risk of HIV infection or other STIs*. Perceived risk was not significantly associated with condom use at last intercourse or intentions to use condoms for both males and females.

Bivariate analyses were also conducted to determine whether several school-related variables were associated with sexual behavior. Attendance at a *national* or *provincial school* was not associated with condom use or intentions to use condoms for females, or with condom use for males. However, for males, attending a national school was associated with significantly greater odds of intending to use condoms (OR = 1.56; 95% CI, 1.17 – 2.07; $p = .002$). Whether a student was a *day scholar* or *boarder* did not predict condom use or intentions to use condoms for females. For males, being a day scholar was associated with lower odds of condom use at last intercourse (OR = 0.71; 95% CI, 0.53 – 0.95; $p = .022$), and intentions to use condoms (OR = 0.68; 95% CI, 0.49 – 0.94; $p = .019$) than being a boarder. The *type of school* was not significantly associated with condom use at last intercourse or intended condom use for females. Among males, those attending mixed day or mixed day and single gender boarding schools had significantly lower odds of condom use at last intercourse compared to males from boys-only day or day and boarding schools (OR = 0.64, 95% CI, 0.42 – 0.98, $p = .040$). On the other hand, males attending boys-only boarding schools had significantly greater odds of reporting intentions to use condoms than their peers in boys-only day or day and boarding schools (OR = 1.54, 95% CI, 1.09 – 2.17; $p = .014$).

Summary of bivariate analyses results

The bivariate analyses indicated that a wide range of factors influence adolescent sexual behavior. Table 16 summarizes the findings as they relate to the hypotheses outlined in the Methods chapter. Contrary to my hypotheses, young people who last had sexual intercourse with a steady partner (boyfriend/girlfriend) were more likely to have used condoms at last intercourse than their peers who last had sexual intercourse with a *friend* or *other* partner. Also unexpected, was the finding that males and females who frequently engaged in risky behavior like alcohol use were more likely to report condom use at last intercourse or to report intentions to use condoms.

Table 16. Summary of Preliminary Hypothesis Tests

Hypotheses		Condom use at last intercourse		Intentions to use condoms	
		Males	Females	Males	Females
<u>Community Level Variables</u>					
Young people are more likely to report condom use or intentions to use condoms if they:					
1	Perceive that adults in their community hold egalitarian gender role attitudes than if they perceive more gender discriminating attitudes	Not supported	Not supported	Not supported	Not supported
2	Live in urban centers than rural areas	Supported	Not supported	Supported	Supported
3	Perceive more permissive parental attitudes towards sex and condom use	Supported	Not supported	Supported	Supported
4	Perceive that their peers favor safer sex	Supported	Supported	Supported	Supported
<u>Individual Level Background Variables</u>					
Young people are more likely to report condom use or intentions to use condoms if they:					
5	Are older	Supported	Not supported	Not supported	Not supported
6	Are males	Not supported		Supported	
7	Profess low religiosity	Supported	Not supported	Not supported	Not supported
8	Are from high socioeconomic status	Supported	Supported	Supported	Supported
9	Do not live with one or both of their parents	Not supported	Not supported	Males in boarding school more likely to report condom use than those living with both parents	Not supported

Hypotheses		Condom use at last intercourse		Intentions to use condoms	
		Males	Females	Males	Females
<u>Behavioral Variables</u>					
Young people are more likely to report condom use or intentions to use condoms if they:					
10	First engaged in intercourse at a older age than at a younger age	Supported	Supported	--	--
11	Have sexual partners who are not their boyfriends/girlfriends	Not supported (opposite relationship observed)	Not supported (opposite relationship observed)	--	--
12	Do not engage in risk behaviors such as alcohol and drug use	Not supported (opposite relationship observed)			
<u>Psychosocial Variables</u>					
The likelihood of reporting condom use or intentions to use condoms increases with:					
13	Increasing HIV/AIDS knowledge	Not supported	Not supported	Supported	Supported
14	Increasing condom use self efficacy	Supported	Supported	Supported	Supported
15	Increasingly positive attitudes towards condoms	Supported	Supported	Supported	Supported
16	Increasingly egalitarian gender role attitudes	Not supported	Not supported	Supported	Not supported
<u>Risk Perceptions</u>					
17	The likelihood of using condoms or intending to use condoms increases with an increase in perceived vulnerability to HIV or other STIs	Not supported	Not supported	Not supported	Not supported

Factors Associated with Condom Use at Last Intercourse and Intended Condom Use:

Multilevel Logistic Regression Analyses

In the preceding section, I presented the results of the bivariate analyses to highlight the factors that are associated with condom use at last intercourse (non-virgin youth) and intended condom use (virgin youth). From the results, it is evident that condom use and intentions to use condoms are influenced by a host of factors. Thus, multilevel logistic regression analyses were used to examine the combined effects of five levels of factors on condom use and intentions to use condoms. In addition, a stepwise logistic regression model was run using the variables in the highest order model that converged in order to determine which variables were most important in predicting the outcome variable.

In this section, I present the multilevel multiple logistic regression results for condom use at last intercourse by gender followed by the regression results for intentions to use condoms. It should be noted from the Spearman rho correlation coefficients (Table 17) that several variables were relatively highly correlated with each other. For example, condom use attitudes scores were highly correlated with scores on the condom use self-efficacy scale (females: $r_s(546) = .48, p < .0001$; males: $r_s(1199) = .57, p < .0001$). This high correlation indicates some level of multicollinearity among the independent variables included in the regression models, which might have resulted in underestimation of the relationships between these variables and the dependent variable.

Table 17. Spearman Correlations between Continuous Variables

Variable	Age	SES	Gender role attitudes (self)	Gender role attitudes (adult)	HIV/AIDS knowledge	Risk behavior	Perceived risk	Condom use attitudes	Condom use self-efficacy	Peer attitudes	Parental attitudes
a) Female											
Age	1	-.13***	.01	.05	-.01	.07*	.05	-.00	.05	.11***	.11***
Socioeconomic Status		1	-.29***	-.16***	.20***	.22***	-.01	.12***	.21***	.21***	.05
Gender role attitudes (self)			1	.31***	-.30***	-.07*	.12***	-.15***	-.21***	-.18***	.00
Gender role attitudes (adult)				1	-.04	-.09***	.07*	-.13***	-.03	-.07	-.01
HIV/AIDS knowledge					1	.04	-.03	.13***	.28***	.19***	.03
Risk behavior						1	.02	.13***	.23***	.22***	.20***
Perceived risk							1	-.01	.07	.10**	.09***
Condom use attitudes								1	.48***	.34***	.29***
Condom use self-efficacy									1	.56***	.26***
Peer attitudes										1	.19***
Parental attitudes											1
b) Male											
Age	1	-.09***	.13***	.08***	.03	.21***	.03	.01	.06	.06*	.18***
Socioeconomic Status		1	-.16***	-.15***	.19***	.26***	-.02	.09**	.20***	.09***	.07*
Gender role attitudes (self)			1	.41***	-.17***	.10***	.04	-.19***	-.21***	-.15***	.07*
Gender role attitudes (adult)				1	-.06*	.02	.05*	-.21***	-.22***	-.13***	-.04
HIV/AIDS knowledge					1	.08**	-.04	.10**	.17***	.12***	-.05
Risk behavior						1	.06*	.14***	.23***	.13***	.32***
Perceived risk							1	-.06*	-.04	.03	.08***
Condom use attitudes								1	.57***	.34***	.27***
Condom use self-efficacy									1	.49***	.22***
Peer attitudes										1	.10***
Parental attitudes											1

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Condom Use at Last Intercourse

Females

In order to assess the association between the independent variables and condom use at last intercourse, multilevel multiple logistic regression was employed. First, a model was fit with perceived risk as the only dependent variable. In subsequent models, blocks of independent variables were added sequentially as shown in Table 7 in the Methods Chapter. Table 18 presents the results of the effects of the independent variables on condom use at last intercourse for females. Model statistics are not presented for model 4 and model 5 because the parameter covariance matrix could not be computed for the latter and standard error estimates for the former indicated that there were a large number of numerical problems present. Initial analyses indicated that a large standard error was associated with the type of partner variable; thus, this variable was collapsed into two levels: boyfriend and other.

As shown in the table, perceived risk did not emerge as a predictor of condom use at last intercourse in any of the models. Among psychosocial factors, an increasingly positive attitude towards condom use was associated with greater odds of condom use at last intercourse when controlling for psychosocial variables (e.g. gender role attitudes). Condom use attitudes remained a significant predictor even when perceived risk was added as a predictor variable (model 2b). However, when behavioral factors were added to the model, condom use attitudes failed to emerge as a significant predictor. On the other hand, condom use self-efficacy did not emerge as a significant predictor of condom use. It should be noted, however, from Table 17 that condom use self-efficacy was relatively highly correlated with attitudes towards condom use ($r_s(546) = .48, p \leq .001$) indicating some level of multicollinearity, which may have depressed the association between self-efficacy and condom use. In the final model, gender role attitudes emerged as a significant predictor of condom use at last intercourse, with increasingly gender discriminating attitudes being associated with a greater likelihood of condom use at last intercourse.

Table 18. Multilevel Logistic Regression Analysis: Condom Use at Last Intercourse for Females

Variables	Model 1a		Model 1b		Model 1c		Model 2a		Model 2b		Model 3		Model 3 Stepwise	
	Odds Ratios	Odds Ratios	Odds Ratios	Odds Ratios										
<u>Perceived Risk</u>	0.99						0.95		0.82			0.70		
<u>Behavioral variables</u>														
Age at first intercourse		1.17*					1.25*					1.06		
		(1.01-1.36)					(1.05-1.48)							
Type of partner (ref= Boyfriend)														
Other		0.41					0.51				0.02*		0.07*	
											(<0.01-0.73)		(0.01-0.69)	
Risk Behavior		1.12*					1.13*				0.85			
		(1.02-1.23)					(1.03-1.25)							
<u>Psychosocial variables</u>														
HIV/AIDS knowledge					1.07				1.05		1.44			
Condom use self-efficacy					1.05				1.06		1.06			
Condom use attitudes					1.05*				1.06*		1.11		1.08**	
					(1.00-1.10)				(1.01-1.12)				(1.02-1.15)	
Gender role attitudes (self)					1.09				1.14		1.28*			
											(1.02-1.62)			
Model chi square	0.08	22.21***	14.90**	26.03***	18.77**	27.77***	17.85***							
Degrees of freedom	1	3	4	4	5	8	2							
Sample size N	166	126	60	121	58	47	47							

Note: Confidence intervals provided for factors that were significantly associated with the outcome variable

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Among behavioral factors, increasing age at first intercourse was associated with greater odds of condom use at last intercourse when controlling for other behavioral factors and controlling for perceived risk and other behavioral factors (model 1b and model 2a, respectively). Engaging in risk behavior was also associated with increasing odds of having used condoms in the same models. The type of partner at last intercourse was associated with condom use at last intercourse when controlling for behavioral factors, psychosocial variables and perceived risk.

As stated earlier, model statistics could not be computed for models 4 and 5. Therefore, a logistic regression model with the variables in model 3 was run using the forward stepwise entry method.

Condom use attitudes and the type of partner emerged as the only significant predictors of condom use at last intercourse, with increasingly positive attitudes towards condoms being associated with greater odds of condom use (OR = 1.06, $p = .021$), and having a non-steady partner being associated with lower odds

of condom use (OR = 0.15, $p = .031$). The accuracy rate of this model in predicting condom use at last intercourse was 72%.

Males

In the multilevel multiple regression models built to predict condom use at last intercourse among males, school type was included as a background sociodemographic variable because differences in condom use were observed across the levels of this variable in the bivariate analyses. Living arrangements during the school term was dropped as a variable in the final model because a large standard error was associated with the variable even after collapsing the levels of the variable. The results of the models fitted to predict condom use at last intercourse for males are presented in Table 19. The accuracy rate of the final model in predicting condom use at last intercourse was 81%.

As with female data, perceived risk on its own did not emerge as a significant predictor of condom use at last intercourse, neither was it a significant predictor when controlling for intermediate and background level factors in subsequent models. Among behavioral factors, age at first intercourse was a significant predictor of condom use in all but one model (model 4). In all cases, increasing age at first intercourse was associated with greater odds of condom use at last intercourse. Having sex with a friend (acquaintance) was associated with significantly lower odds of having used condoms at last intercourse than having sex with a girlfriend in models 1 - 4. However, the type of sexual partner was not a significant predictor of condom use at last intercourse when community level variables were added to the model.

I had hypothesized that young people who engage in risk behaviors would be less likely to report actual condom use. However, engaging in risk-taking behavior, such as alcohol use, was associated with significantly greater odds of condom use at last intercourse in all the models. Among psychosocial variables, condom use self-efficacy was a significant predictor of condom use at last intercourse in all the models. As expected, increasing condom use self-efficacy was associated with greater odds of condom use. Gender role attitudes also emerged as a significant predictor when controlling for perceived risk, and

intermediate and background level factors with increasingly gender discriminating attitudes being associated with lower odds of condom use.

Among background variables, peer attitudes towards safe sex was found to be associated with condom use with increasingly positive peer attitudes towards safer sex being associated with greater odds of condom use. Having lived in an urban area for the past five years, on the other hand, was associated with significantly lower odds of condom use at last intercourse. Lastly, respondents from boys-only boarding schools had a lower likelihood of reporting condom use than those in boys-only day or day and boarding schools. None of the background sociodemographic variables reached statistical significance.

Seven variables remained in the stepwise regression model. Five of these seven variables were significantly associated with condom use at last intercourse. Specifically, the odds of reporting condom use at last intercourse were greater if the respondent last had sexual intercourse with a steady partner compared to a friend. In addition, the likelihood of condom use at last intercourse was greater with: increasing age at first intercourse, increasing frequency of engaging in risk behavior, increasing condom use self-efficacy, and increasingly positive peer attitudes towards safer sex. The accuracy rate of the stepwise regression model in predicting condom use at last intercourse was 75%.

Table 19. Multilevel Logistic Regression Analysis: Condom Use at Last Intercourse for Males

Variables	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b	Model 3	Model 4	Model 5	Model 5 Stepwise
	Odds Ratios	Odds Ratios	Odds Ratios	Odds Ratios	Odds Ratios	Odds Ratios	Odds Ratios	Odds Ratios	Odds Ratios
<u>Perceived Risk</u>	0.99			0.99	1.02	1.01	1.00	0.99	
<u>Behavioral variables</u>									
Age at first intercourse		1.12*** (1.06-1.17)		1.11*** (1.06-1.17)		1.08	1.18* (1.02-1.37)	1.25* (1.04-1.48)	1.17* (1.03-1.32)
Type of partner (ref = girlfriend)									
Friend		0.60** (0.42-0.85)		0.57** (0.39-0.82)		0.47* (0.25-0.88)	0.16** (0.05-0.50)	0.40	0.31* (0.12-0.81)
Other		0.62		0.62		0.60	0.18	0.14	0.19
Risk behavior		1.10*** (1.06-1.14)		1.09*** (1.05-1.14)		1.09* (1.01-1.17)	1.38*** (1.18-1.61)	1.40*** (1.17-1.68)	1.29*** (1.13-1.47)
<u>Psychosocial variables</u>									
HIV/AIDS knowledge			0.93		0.93	0.93	1.02	0.99	
Condom use self-efficacy			1.04*** (1.02-1.06)		1.04*** (1.02-1.06)	1.05*** (1.02-1.08)	1.10*** (1.04-1.15)	1.06* (1.01-1.12)	1.05* (1.01-1.08)
Condom use attitudes			1.01		1.01	1.01	1.01	0.98	
Gender role attitude (self)			1.00		1.00	0.99	0.93* (0.87-0.99)	0.95	
<u>Individual background sociodemographic variables</u>									
Age							1.09	0.89	
Religiosity (ref = low or medium low)									
Medium high							0.96	1.08	
High							0.46	0.56	
Socioeconomic Status							1.00	1.26	
Living arrangements during school term (ref = both parents)									
Single parent							0.05		
Boarder at school							3.95		
Other							2.09		

Variables	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b	Model 3	Model 4	Model 5	Model 5
	Odds Ratios	Stepwise Odds Ratios							
Living arrangements during school vacation (ref = both parents)									
Single parent							0.70	0.42	
Relative or sibling							2.10	3.68	
Other							0.08*	0.66	
							(0.01-0.85)		
School type (ref = Boys-only day or day and boarding)									
Boys boarding							0.32	0.25	
Mixed day or mixed day single gender boarding							0.72	0.45	
Mixed boarding or day and boarding							3.81	2.73	
Day Scholar (Ref = boarder)								0.38	0.38
<u>Community level variables</u>									
Gender role attitude (adult)								1.04	
Urban residence (ref = rural)								0.17*	
								(0.04-0.69)	
Parental attitudes								1.17	
Peer attitudes								1.26**	1.23**
								(1.06-1.51)	(1.06-1.43)
Model Chi Square	0.06	59.71***	28.20***	57.50***	29.07***	45.92***	100.23***	80.18***	59.41***
Degrees of freedom	1	4	4	5	5	9	22	24	7
N	828	669	285	637	280	231	171	145	145

Note: Confidence intervals provided for factors that were significantly associated with the outcome variable

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Intended Condom Use

Females

To assess predictors of intended condom use among females who reported that they had never had sexual intercourse, multilevel multiple logistic regression models were built as described above with intention to use condoms as the outcome variable. Table 20 presents the regression results.

Perceived risk did not emerge as a significant predictor of intentions to use condom either on its own or when controlling for psychosocial and/or behavioral factors. However, when background level factors were added (model 4 and model 5) increasing perceived risk was associated with greater odds of intending to use condoms. On the other hand, engaging in risk behaviors was associated with intended condom use both on its own or when controlling for perceived risk and/or psychosocial variables and background sociodemographic variables. In all cases, engaging in risk behaviors, such as consuming alcohol, with increasing frequency was associated with greater odds of intentions to use condoms.

Among psychosocial variables, condom use attitudes and condom-use self-efficacy were significant predictors of intentions to use condoms in all but the final model (model 5). In all instances, increasing self-efficacy and increasingly positive attitudes towards condom use were associated with greater odds of intending to use condoms. In the final model (model 5) gender role attitudes were significantly associated with intentions to use condoms with increasingly gender discriminative attitudes being associated with greater odds of intending to use condoms.

In model 4, professing a high level of religiosity was associated with lower odds of intending to use condoms than professing low or medium low religiosity. None of the background sociodemographic or community level variables with the exception of peer attitudes towards safer sex reached statistical significance in models 4 and 5. Increasing perceptions of positive peer attitudes towards safer sex was associated with greater odds of intending to use condoms.

Five significant variables remained in the stepwise regression model run using the variables in the highest order model: perceived risk, individual gender role attitudes, condom use self-efficacy, peer attitudes towards safer sex, and parental attitudes towards sex and condoms.

Table 20. Multilevel Logistic Regression Analysis: Condom Use Intentions for Females

	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b	Model 3	Model 4	Model 5	Model 5 Stepwise
Variables	Odds Ratios	Odds Ratios	Odds Ratios	Odds Ratios	Odds Ratios	Odds Ratios	Odds Ratios	Odds Ratios	Odds Ratios
<u>Perceived risk</u>	1.01			1.01	1.05	1.07	1.13** (1.04-1.24)	1.14* (1.02-1.29)	1.13* (1.02-1.26)
<u>Behavioral variable</u>									
Risk behavior		1.12*** (1.07-1.17)		1.13*** (1.08-1.19)		1.09	1.18* (1.02-1.37)	1.09	
<u>Psychosocial variables</u>									
HIV/AIDS knowledge			1.07		1.08	1.08	1.03	0.97	
Condom use self-efficacy			1.04*** (1.02-1.07)		1.04*** (1.02-1.07)	1.04*** (1.02-1.07)	1.06*** (1.03-1.09)	1.03	1.04* (1.01-1.07)
Condom use attitudes			1.03*** (1.01-1.05)		1.03*** (1.01-1.05)	1.03** (1.01-1.05)	1.03* (1.01-1.05)	1.02	
Gender role attitudes (self)			1.03		1.03	1.03	1.07* (1.01-1.13)	1.16*** (1.06-1.26)	1.09** (1.02-1.16)
<u>Individual background sociodemographic variables</u>									
Age							0.85	0.95	
Religiosity (ref = low or medium low)									
Medium high							0.39	0.44	
High							0.45* (0.21-0.94)	0.44	
Socioeconomic status							1.03	1.11	
Living arrangements during school term (ref = both parents)									
Single parent							2.14	2.72	
Boarder at school							1.72	1.66	
Other							1.41	1.73	
Living arrangements during school vacation (ref = both parents)									
Single parent							0.49	0.38	
Relatives or sibling							2.91	2.75	
Other							2.13	1.82	

Variables	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b	Model 3	Model 4	Model 5	Model 5 Stepwise
	Odds	Odds							
	Ratios	Ratios							
<u>Community level variables</u>									
Gender role attitudes (adult)								0.98	
Urban residence								2.28	
Parental attitudes								1.55	1.59* (1.08-2.36)
Peer attitudes								1.30*** (1.14-1.47)	1.25*** (1.12-1.41)
Model Chi Square	0.14	21.97***	53.98***	24.96***	54.99***	54.23***	76.64***	82.09***	62.57***
Degrees of freedom	1	1	4	2	5	6	16	20	5
<i>N</i>	1171	1140	317	1066	309	290	244	191	191

Note: Confidence intervals provided for factors that were significantly associated with the outcome variable

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Males

In the multilevel multiple regression models built to predict intentions to use condoms among males who reported that they had never had sexual intercourse, whether a student was attending a national or provincial school was included as a background sociodemographic variable because differences in condom use were observed across the two levels of this variable in the bivariate analyses. Table 21 shows the results of the regression analyses to predict intentions to use condoms among males. Odds ratios are not provided for model 5 because the large standard errors indicate that numerical problems, such as multicollinearity, might have existed.

Perceived risk did not emerge as a significant predictor of intentions to use condoms among virgin males. On the other hand, engaging in risk behaviors with greater frequency was associated with higher odds of intending to use condoms both when included as a single predictor and when controlling for perceived risk.

Among psychosocial variables, condom use attitudes were a significant predictor in all the models in which it was included with increasingly positive attitudes towards the use of condoms being associated with greater odds of intent. On the other hand, condom use self-efficacy and HIV/AIDS knowledge emerged as significant predictors of condom use intentions in models 1c, 2b, and 3. In all cases, increasingly positive attitudes towards condom use, increasing condom use self-efficacy, and increasing levels of HIV/AIDS knowledge were associated with greater odds of condom use intentions. No background level variables emerged as significant predictors of intentions to use condoms.

Table 21. Multilevel Logistic Regression Analysis: Condom Use Intentions for Males

Variables	Model 1a Odds Ratios	Model 1b Odds Ratios	Model 1c Odds Ratios	Model 2a Odds Ratios	Model 2b Odds Ratios	Model 3 Odds Ratios	Model 4 Odds Ratios	Model 4 Stepwise Odds Ratios
<u>Perceived risk</u>	1.01			1.00	1.06	1.06	1.04	
<u>Behavioral variable</u>								
Risk behavior		1.13*** (1.07-1.20)		1.14*** (1.08-1.21)		1.01	0.93	
<u>Psychosocial variables</u>								
HIV/AIDS knowledge			1.23* (1.04-1.45)		1.25** (1.06-1.49)	1.23* (1.02-1.47)	1.24	1.21
Condom use self-efficacy			1.04** (1.01-1.07)		1.04** (1.01-1.07)	1.04* (1.01-1.07)	1.01	
Condom use attitudes			1.03** (1.01-1.06)		1.04** (1.01-1.06)	1.04*** (1.02-1.06)	1.10***	1.09*** (1.06-1.13)
Gender role attitudes (self)			1.01		1.01	1.01	1.03	
<u>Individual background sociodemographic variables</u>								
Age							0.83	
Religiosity (ref = low or medium low)								
Medium high							0.60	
High							0.32	
Socio-economic status							1.05	
Living arrangements school term (ref = both parents)								
Single parent							0.57	
Boarder at school							3.35	
Relatives or others							1.28	
Living arrangements school vacations (ref = both parents)								
Single parent							2.41	
Relatives or sibling							2.36	
Other							0.29	
National school							1.74	3.01* (1.26-7.21)
Model Chi Square	0.06	21.63***	47.25***	22.47***	49.11***	45.53***	67.10***	55.34***
Degrees of freedom	1	1	4	2	5	6	17	3
N	776	722	225	688	222	206	148	148

Note: Confidence intervals provided for factors that were significantly associated with the outcome variable

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

As stated above, the large standard error estimates for some of the variables in model 5 indicated that multicollinearity might have been a problem; therefore, a logistic regression model with all the variables in model 4 was run using the forward stepwise entry method. Two significant predictors remained in the model: condom use attitudes (OR = 1.09, $p < .0001$) and attending a national school (OR = 3.01, $p = .013$). HIV/AIDS knowledge remained as a predictor, but did not reach statistical significance. The accuracy rate of this model in predicting intentions to use condoms was 77%.

Summary of Multilevel Logistic Regression Analyses

The multilevel multiple regression analyses results indicate there are some difference in the factors that are associated with actual condom use and intentions to use condoms. In addition, there were substantial disparities in the factors associated with intended or actual condom use between males and females. Table 22 lists the variables significantly associated with the outcome variable in the highest order model that converged or that remained as significant variables in the stepwise regression model.

Table 22. Summary of Multilevel Logistic Regression Analyses:

Variables	Condom use at last intercourse		Intentions to use condoms	
	Females	Males	Females	Males
<u>Community Level Variables</u>				
Rural or urban residence		√ †		
Parental attitudes towards sex and condom use			√ *	
Peer attitudes towards safer sex		√ ‡	√ ‡	
<u>Individual Level Sociodemographic Variables</u>				
National or provincial school				√ *
<u>Behavioral Variables</u>				
Age at first intercourse		√ ‡		
Type of sexual partner	√ ‡	√ *		
Risk behavior		√ ‡		
<u>Psychosocial Variables</u>				
Condom use self efficacy		√ ‡	√ *	
Condom use attitudes	√ *			√ ‡
Gender role attitudes	√ †		√ ‡	
<u>Risk Perceptions</u>				
			√ ‡	

Note: Table shows the variables significantly associated with outcome variable in the highest order model

* Variables that remained in stepwise regression model.

† Variables present in highest order model that converged

‡ Variables present in highest order model that converged and also remained in stepwise regression model

Factors that Distinguish Condom User Groups

Multinomial logistic regression analysis was used to distinguish among condom user groups. Due to sample size limitations, the analysis was restricted to sexually experienced male respondents. As described in the methods section (description of measures), three condom user groups were defined: *consistent* condom users, *sporadic* condom users, and *nonusers*. The model omitting outliers had a classification accuracy rate that was 4.6% points greater than the model with all cases; thus, the former model was interpreted. The existence of a relationship between the independent variables and condom user classification was supported (model $\chi^2(36, N = 150) = 114.06, p < .0001$). The multinomial regression model correctly classified 70% of the cases, which was greater than the proportional by chance criteria of 44%. The parameter estimates, p-values, odds ratios and 95% confidence interval values for variables included in the model are provided in Table 23.

Comparisons of Consistent Users and Non-Users

As shown in Table 23, respondents who frequently engaged in risk behavior, such as alcohol use, were more likely to be consistent condom users than nonusers. Age at first intercourse also predicted group membership with consistent users being more likely to have initiated sexual activity at an older age. Peer attitudes also played a significant role in differentiating between consistent users and non-users with the likelihood of being classified as a consistent user increasing with greater perception of peer acceptance of safer sex. Last, male respondents attending mixed boarding or mixed day and single gender boarding schools were significantly less likely to be classified as consistent users compared to males attending mixed boarding or mixed day and boarding schools.

Comparison of Sporadic Condom Users and Non-Users

The multinomial regression estimates provided in Table 23 indicate that young males who frequently engaged in risk activities had greater chances of being categorized as sporadic users than non-users. Increasing perceptions of peer acceptance of safer sex were also associated with a greater likelihood of being a sporadic condom user than a nonuser. Compared to males professing high

religiosity, males professing low religiosity were more likely to be classified as sporadic condom users than nonusers.

Comparison of Consistent and Sporadic Users

Of special interest is the need to understand the difference between consistent and sporadic users because of the importance of using condoms consistently to prevent HIV infection. Factors associated with condom user classification were: religiosity, age at first intercourse, and the type of school.

Compared to males professing high religiosity, those professing low or medium low religiosity were more likely to be classified as sporadic condom users than consistent users. Respondents who initiated sexual contact at a young age were more likely to be categorized as sporadic users than consistent users.

Compared to respondents attending mixed boarding or mixed day and boarding schools, respondents attending mixed day or mixed day single gender boarding, had greater odds of being classified sporadic users.

Table 23. Correlates of Condom User Group

	Consistent vs. nonuser		Sporadic vs. nonuser		Sporadic vs. consistent	
	OR	95% CI for OR	OR	95% CI for OR	OR	95% CI for OR
<u>Community level variables</u>						
Gender role attitudes (adult)	0.98	(0.91-1.06)	1.03	(0.97-1.11)	1.05	(0.98-1.13)
Area of residence						
Rural	3.04	(0.71-13.00)	1.73	(0.44-6.74)	0.57	(0.14-2.30)
Urban (ref)	--		--		--	
Parental attitudes	1.22	(0.76 - 1.95)	1.16	(0.74-1.82)	0.95	(0.61-1.50)
Peer attitudes	1.30*	(1.05-1.62)	1.44***	(1.16-1.79)	1.11	(0.89-1.38)
<u>Individual level background variables</u>						
Age	0.97	(0.61-1.56)	1.24	(0.84-1.81)	1.27	(0.80-2.03)
Religiosity						
Low or medium low	0.57	(0.16-2.01)	4.31*	(1.35-13.73)	7.53**	(2.08-27.26)
Medium high	0.55	(0.08-4.00)	0.66	(0.09-4.92)	1.20	(0.13-10.92)
High (ref)	--		--		--	
Socioeconomic status	1.27	(0.97-1.66)	1.28	(1.00-1.65)	1.01	(0.77-1.33)
<u>Behavioral variables</u>						
Age at first intercourse	1.55***	(1.25-1.92)	1.09	(0.92-1.28)	0.70***	(0.56-0.87)
Risk behavior	1.36***	(1.14-1.62)	1.24**	(1.05-1.46)	0.92	(0.78-1.07)
<u>Psychosocial variables</u>						
Condom use self efficacy	1.03	(0.98-1.09)	0.98	(0.93-1.03)	0.95	(0.90-1.00)
Condom use attitudes	1.02	(0.97-1.07)	1.01	(0.97-1.06)	0.99	(0.95-1.04)
Gender role attitudes (self)	1.00	(0.92-1.09)	1.01	(0.94-1.09)	1.01	(0.93-1.10)
<u>School-related variables</u>						
National or provincial school						
Provincial	0.94	(0.24-3.74)	1.58	(0.41-6.05)	1.68	(0.40-7.13)
National School (ref)	--		--		--	

	Consistent vs. nonuser		Sporadic vs. nonuser		Sporadic vs. consistent	
	OR	95% CI for OR	OR	95% CI for OR	OR	95% CI for OR
Type of school						
Boys-only day or day and boarding	0.08	(0.01-1.23)	0.91	(0.07-12.40)	11.16	(0.93-134.37)
Boys boarding	0.10	(0.01-1.04)	0.55	(0.05-6.52)	5.61	(0.65-48.65)
Mixed day or mixed day and single gender boarding	0.04*	(0.00-0.70)	0.84	(0.05-14.64)	22.51*	(1.38-367.31)
Mixed boarding or day and boarding (ref)	--		--		--	
Day or boarder						
Boarder	0.15	(0.02-1.24)	0.30	(0.05-1.97)	2.02	(0.29-14.31)
Day scholar (ref)	--		--		--	

* p -value $\leq .05$; ** p -value $\leq .01$; *** p -value $\leq .001$

Chapter Summary

Bivariate and multivariate analyses were conducted to examine factors associated with condom use at last intercourse among sexually experienced high school students and with intentions to use condoms among high school students reporting no prior sexual contacts. Multinomial logistic regression analysis was used to examine variables that distinguished between condom user groups, that is, those that use condoms consistently, sporadically, or never.

Bivariate analyses conducted to provide a preliminary indication of the relationships between study variables and the outcome variables indicated that a wide range of factors were associated with sexual activity and condom use at last intercourse or intentions to use condoms. Multilevel logistic regression analysis revealed considerable differences between males and females with regard to the classes of variables found to be significant predictors of the outcome variables.

Due to the small number of female respondents meeting the criteria for inclusion, the multinomial regression analysis was restricted to data from male participants. Results indicated that males who reported consistent condom use tended to have initiated sexual intercourse at an older age than sporadic condom users. Compared to nonusers, consistent and sporadic condom users were more likely to have to have greater perceptions of peer acceptance of safer sex, and to engage in risky behavior more frequently.

CHAPTER 5

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

The present study had two primary purposes: (a) to empirically examine sociodemographic, behavioral, and psychosocial factors associated with condom use (or intentions to use condoms) for HIV prevention among a sample of 3612 students attending high school in and around Nairobi, Kenya; and (b) to investigate factors that distinguish different types of condom users, that is, consistent, sporadic, and non-users. This final chapter is organized in four sections. The first section discusses the results of the study. The second section highlights the implications for policy and practice. The third section identifies the limitations of the present study. Finally, the fourth section presents suggestions for further research.

Discussion

Sexual Behavior

Consistent with previous school-based research conducted in Kenya (Kiragu, 1991; Pattullo et al., 1994), the present study found that a greater proportion of males (50%) than females (11%) reported prior sexual activity. In the United States, the 2003 Youth Risk Behavior Surveillance System (YRBSS) data indicated that almost equal proportions of male (48%) and female (45%) high school students, surveyed nationally, had engaged in sexual intercourse during their lifetime (Centers for Disease Control and Prevention [CDC], 2004). Several explanations for the observation that a lower proportion of Kenyan females report sexual experience have been put forth. First, males may overreport their sexual behavior while females may underreport their sexual behavior due to societal expectations of female virginity at marriage and an acceptance of sexual mobility among males both prior to and during marriage (Akwara et al., 2003; Baylies, 2000). Second, the secondary school enrollment ratio for females in Kenya is relatively low (36%) (UNFPA, 2005b). Thus, by limiting the study to school-going youth, it is plausible that the female participants represent a group of young people who are high achievers (Mensch, Clark, Lloyd, &

Erulkar, 2001) and who are, therefore, more likely to abstain from sexual intercourse compared to out-of-school female peers because unplanned pregnancies and other negative consequences of sexual activity would impede the achievement of educational and career goals. Further, pregnant females may have dropped out from school. The most recent national Kenyan Demographic and Health Survey, which includes a more representative sample of the Kenyan population, found that 63% of females aged 15-24 years have had sexual intercourse (CBS et al., 2004).

In the present study there was an increase in the proportion of students reporting that they were sexually experienced with increasing grade level: females - 9th grade (6.5%), 10th grade (11.3%), 11th grade (13.3%), and 12th grade (16.4%), males - 9th grade (40.1%), 10th grade (47.8%), 11th grade (50.9%), and 12th grade (63.8%). The YRBSS data indicated a similar trend among American high school students: 9th grade (32.8%), 10th grade (44.1%), 11th grade (53.2%), and 12th grade (61.6%) (Centers for Disease Control and Prevention [CDC], 2004). Thus, both in Kenya and in the United States, there is an increase in the proportion of sexually experienced youth with increasing age.

The mean age at sexual debut and the mean ages of sexual partners suggest that males are more likely to seek sexual partners who are their age, while females first engage in sexual intercourse with males who are on average 4 years older than they are. This has important implications for the practice of safer sex because research indicates that a significant age difference between sexual partners (with the male being older) may interfere with the female's ability to negotiate safer sex (Kordoutis, Loumakou, & Sarafidou, 2000). The age differences may also reflect the possibility that young females seek older partners in the hope of receiving material or monetary remuneration in return for sexual favors, a phenomenon that has been cited as one of the reasons why younger females are more likely to be HIV positive than their male peers (Baylies, 2000).

Condom Use

The first aim of this study was to examine individual and contextual factors that are associated with condom use at last intercourse and intended condom use. Bivariate analyses were performed to provide a preliminary indication of the relationship between study variables and condom use, while

multilevel multiple logistic regression analyses were used to examine the combined effects of these factors in predicting condom use at last intercourse and intentions to use condoms. In this section, I discuss the results of both levels of analyses. The results are discussed in light of possible implications for HIV prevention efforts.

Contrary to expectations regarding *gender differences* in condom use, males were no more likely than females to have ever used condoms or have used them at last intercourse. As indicated in the results chapter, 40% of males and 41% of females who were sexually experienced reported condom use at last intercourse. These findings are noteworthy as prior research (Bertrand et al., 1991; Volk & Koopman, 2001; Wilson et al., 1991) indicates that condom use tends to be higher among males both in terms of consistent condom use and ever having used condoms. The higher than expected proportion of females who reported condom use at last intercourse may indicate that females who participated in this study have a greater inclination to use condoms perhaps because by conducting the study among high school students, the females included are a self-selected group that is high achieving in terms of educational aspirations given the relatively smaller number of females who advance into secondary school compared to males (Mensch et al., 2001). Thus, this group of female may be more likely to use condoms to avoid the negative consequences of unprotected intercourse on academic achievement. The high proportion of females reporting condom use may also be reflective of the fact that the sample for this study was largely drawn from Nairobi, a metropolitan urban city whose cultural mix and modern ethos may result in more liberal attitudes towards sexual expression for males and females. However, consistent condom use for both males and females is low (less than 30% reported that they *always* use condoms during intercourse), which raises concerns about the number of young people exposing themselves to the risk of acquiring sexually transmitted diseases through unprotected sexual intercourse.

Sexual behavior is mediated by gender role ideologies, which dictate expected codes of conduct within relationships (Varga, 2003). Thus, it is important to consider the possible effect of gender role ideologies when studying the factors that predispose adolescents to risky sexual behavior. Young people construct their conceptualization of masculinity and femininity from their social environment. Thus, this

study examined the relation between adolescent sexual behavior and their perception of the *gender role attitudes held by adults in their community*. However, this variable was not significantly associated with condom use at last intercourse or with intentions to use condoms. The lack of association may be explained by the fact that none of the items in the gender role attitudes scale referred specifically to gendered differences in expectations of sexual conduct especially with regard to whether males and females are equally responsible for ensuring safe sex. The lack of specific items addressing sexual conduct may have resulted in the lack of association between adult gender role attitudes, and condom use and intentions to use condoms. Nonetheless, previous research conducted in Africa, suggests that femininity is associated with expectations of sexual passivity and sexual availability to male partners (Varga, 2003), while masculinity is associated with sexual prowess and dominance in sexual decision making (Buve, Bishikwabo-Nsarhaza, & Mutangadura, 2002; MacPhail & Campbell, 2001; Schoepf, 1995) suggesting that the male partner may bear a greater responsibility in ensuring safe sex.

The higher prevalence of HIV in urban areas compared to rural areas (Buve et al., 2002; UNAIDS/WHO, 2004) suggests that *area of residence* should be considered in the study of sexual behavior. In general, it is thought that urban residents engage in more risky sexual behavior than rural residents for a variety of reasons including; more liberal views on sexual activity in urban areas (Buve et al., 2002; Voeten, Egesah, & Habbema, 2004), the high level of rural-urban migration, which results in large numbers of men and women who are separated from their spouses, and higher levels of commercial sexual activity resulting from high unemployment rates in urban areas (Buve et al., 2002). While rural or urban residence was not associated with condom use at last intercourse for females, males from urban areas were more likely to report condom use at last intercourse. However, when controlling for behavioral, psychosocial, demographic, and other community level variables, males from urban areas were significantly less likely to report condom use at last intercourse. Again, as suggested above, this may mean that urban males are more likely to engage in risky sexual behavior. Among males and females reporting no prior sexual contacts, those from urban areas had greater intentions of using condoms in the

future. However, the difference failed to reach statistical significance when controlling for other individual and contextual factors.

Voeten and others (2004) found that urban females were more likely to report consistent condom use with nonspousal partners compared to their rural counterparts, while urban males were less likely to report multiple partners during the 12 months preceding the survey. It is, therefore, likely that the higher prevalence of HIV in urban areas than in rural areas has prompted many urban residents to take precautions to reduce the likelihood of infection. In addition, HIV prevention programs in Africa have tended to be concentrated in urban areas because of the differences in HIV prevalence (Voeten et al., 2004), which might also explain why urban residents appear to be more likely to report condom use or intentions to use condoms. Furthermore, in many African cultures, sexual activity is important only for reproduction and for continuation of family lineages and is not viewed as an expression of love, which is considered a Western concept (Brockman, 1997). In urban areas where traditional sexual values are perhaps less influential and the exposure to Western media greater, people may engage in sexual intercourse for intimacy and may, therefore, use condoms to avoid pregnancy.

Results of the bivariate analyses examining the relation between adolescent sexual behavior and perceived *parental or caregiver attitudes towards sexual activity and condom use* indicated that perceptions of permissive attitudes were associated with a greater likelihood reporting condom use or intended condom use in the bivariate analysis. Parental attitudes remained a significant predictor of condom use intentions among females in the multivariate analyses. Two studies conducted among African adolescents have found a significant positive association between adolescents' perception of family (Giles, Liddell, & Bydowell, 2005) and parental (Fekadu & Kraft, 2001) endorsement of condom use and intentions to use condoms. Thus, educating parents about the need to discuss issues related to sexual behavior with their preadolescent and adolescent children may be an important strategy in the fight against HIV/AIDS. For example, parents should be informed that young people's perceptions of parental disapproval of sex and condom might deter sexually active youth from using condoms, thereby placing them at high risk of adverse consequences of unprotected sexual intercourse.

Increased identification with peer groups and increased importance of peers are some of the defining characteristics of adolescence (Haffner, 1995). As the importance of acceptance into peer groups peaks during adolescence, peers serve as important models of appropriate behavior and influence the extent to which young people take sexual risks (Ben-Zur, 2003; Giles et al., 2005). For example, MacPhail and Campbell (2001) report that many young males they interviewed reported non condom use as a result of negative feedback from their peers. It is therefore not surprising that higher levels of perceived peer approval of safer sex were associated with greater likelihood of condom use at last intercourse for males and intended condom use for females in the bivariate analysis. Perceived peer attitudes also remained as a significant predictor of condom use at last intercourse for males, and condom use intentions for females when controlling for other variables. The finding that peer attitudes regarding safer sex influences sexual behavior lends support to the need to include a peer education component in reproductive health campaigns targeted to young people.

I had hypothesized that increasing *age* would be associated with a greater likelihood of actual or intended condom use. The results indicated that for males and females, the mean age of those who had used condoms at last intercourse was higher than those who had not used condoms at last intercourse for both males and females; however, the difference was only significant for males. Age did not emerge as a significant predictor of condom use when controlling for other factors. While age does not appear to be a significant predictor of condom use, older youth may be less apprehensive or shy about using condoms and more assertive about the use of condoms.

Previous research indicates that engaging in religious or spiritual activities is associated with a delay of coital activity (McCree, Winwood, DiClemente, Davis, & Harrington, 2003; Rostosky, Wilcox, Wright, & Randall, 2004). The effect of *religiosity* on condom use is less clear. In the present study, religiosity was only associated with condom use at last intercourse among males in the bivariate analysis. Specifically, males reporting a high level of religiosity had a lower likelihood of reporting condom use. While these findings should be interpreted with caution, they do suggest the possibility that sexual ideologies promoted by religious institutions have some influence over adolescent sexual behavior. For

example, sexually active youth belonging to religious groups that openly oppose the use of contraceptive devices, including condoms, may be less willing to use condoms. These findings imply that faith-based organizations should be involved in HIV prevention programs.

There is a dearth of information on the influence of the *socioeconomic context* on adolescent sexual behavior. However, previous research indicates that low socioeconomic status is often associated with higher levels of adolescent sexuality (Eaton et al., 2003). On the other hand, given the 40% unemployment rate and the high percentage (50%) of people living below the poverty line in Kenya (U.S. CIA, 2005), high socio-economic status may be an indication that both parents work outside the home. Thus, young people in the high socioeconomic group may have less adult supervision, which provides them with sufficient privacy to engage in sexual intercourse and other risk taking behavior. Results did indicate that the frequency of risk behavior increased with higher socioeconomic status. With regard to the association between socio-economic status and condom use behavior, I had hypothesized that young people from high socioeconomic status would be more likely to report actual or intended condom use because they would have a greater financial capacity to purchase condoms. In addition, youth from high socioeconomic status may be more likely to have educated parents and who, therefore, have a greater awareness of the prophylactic benefits of condom use and more liberal attitudes towards sexual behavior. The bivariate analyses results supported the hypothesis both for males and females. However, socioeconomic status was not a significant predictor of condom use when controlling for other variables. The bivariate analysis finding that increasing socioeconomic status is associated with a greater likelihood of condom use suggests that a lack of financial resources to acquire condoms may limit the ability of young people to engage in safer sex. However, increasing socioeconomic status was also associated with increasingly egalitarian gender role attitudes, more favorable attitudes towards condom use, greater condom use self-efficacy, and higher perceptions of peer support for safer sex. These correlations may mask any association between socioeconomic status and condom use in the multivariate analysis.

Family structure – also referred to as *living arrangements* – is a key variable in understanding adolescent sexual behavior (Young, Jensen, Olsen, & Cundick, 1991). Young et al. (1991) posit that the

traditional two parent family structure may be protective against sexual activity because of the availability of both parents for guidance and because this family structure provides a social, economic, and emotional situation that serves as a model for more traditional sexual values. On the other hand, adolescents from single-parent homes may have to rely more on peer models and may be more likely to observe nonmarital sexual behavior. The effect of family structure on other aspects of adolescent sexual behavior, such as condom or contraceptive use, is less clear. Young males who were boarders at school had greater odds of reporting intentions to use condoms than males who were day scholars and who lived with both parents. However, family structure was not associated with condom use at last intercourse or with intentions to use condoms in the present study. The lack of association between condom use and family structure is consistent with previous research findings (Santelli, Lowry, Brener, & Leah, 2000).

Precocious sexual activity might be an indication of problem behavior in adolescents. Assuming that engaging in risk-taking behavior is an indication of feelings of invulnerability, one can hypothesize that the likelihood of condom use at last intercourse would be lower with decreasing age at first intercourse. The bivariate analysis results supported this hypothesis and indicate that males and females who used condoms at last intercourse initiated sexual activity at a significantly older age than those who did not use condoms at last intercourse. In addition, age at first intercourse remained a significant predictor of condom use at last intercourse for males when controlling for other study variables. Adih and Alexander (1999) in their study of the sexual behavior of Ghanian youth also found that condom use was greater among those who initiated sexual activity at an older age. Delaying coital activity may mean that young people engage in sexual intercourse when they are able to make mature decision about their sexual health. Thus, HIV prevention campaigns that encourage the use of condoms should also highlight the benefits of postponing coital debut.

The nature of *the relationship between sexual partners* may influence the use of condoms. For example, steady relationships are characterized by feelings of trust and intimacy, which might create a situation where suggesting the use of condoms is deemed as an indication of lack of trust or infidelity (Kordoutis et al., 2000). In addition, long-term relationships may result in partners believing that they

know each other well enough to forgo the use of condoms because of judgment of low risk of being infected with HIV or acquiring other STDs (Kordoutis et al., 2000). Contrary to these expectations and previous research (Bertrand et al., 1991; Camlin & Chimbwete, 2003; Meekers, 2003), young people who last had intercourse with a steady partner were more likely to report the use of condoms at last intercourse than those who last engaged in coital activity with acquaintances or other persons. For both males and females, the difference in condom use remained significant even when controlling for other variables. Manning, Longmore, and Giordano (2000), in their study of the influence of the relationship context on contraceptive use among a sample of female adolescents in the United States, found that contraceptive use tended to be higher among females who were romantically involved with their partners. This suggests that people in steady relationships have a great propensity to consider the implications of unsafe sex because of issues of mutual trust and care. Further, young people in steady relationships may be more aware about the likelihood of engaging in sexual intercourse and are, therefore, more likely to be prepared. In addition, they may engage in higher levels of communication than those in nonromantic sexual relationships (Manning et al., 2000).

The co-occurrence of risky sexual behavior and other risk behavior, such as substance use, has been observed in several studies conducted in Africa and other parts of the world. The coupling of risk behaviors has been the impetus for HIV prevention campaigns that address other risk behavior, such as alcohol abuse. In the present study, respondents who stated that they intended to use condoms or reported condom use at last intercourse were also more likely to engage in risky behavior. For males, engaging frequently in risk behavior was also associated with significantly great odds of condom use at last intercourse, when controlling for other study variables. People who engage in risk-taking behavior may perceive themselves to be invulnerable to the negative consequences of harmful behavior. Thus, the study findings were somewhat unexpected. However, young people who engage in risk behavior such as attending nightclubs and consuming alcohol may have personalities that make them less apprehensive about engaging in behavior more appropriate for adults. These young people may, therefore, be more willing (or less embarrassed) than the typical adolescent to obtain and use condoms. Further, the activities

classified here as risk behavior are generally considered to be inappropriate for high school students. Thus, there is the possibility that young people who engage in these behavior come from homes with a more liberal environment and, therefore, perceive greater parental endorsement of the use of condoms compared to those coming from households with more conservative values.

The average scores on the *HIV/AIDS knowledge* scale indicated a relatively high awareness of HIV/AIDS. Contrary to findings in previous research (Camlin & Chimbwete, 2003; Messersmith et al., 2000; Zellner, 2003), scores on the knowledge scale were not associated with sexual activity or condom use at last intercourse. However, among virgin youth, those who reported intent to use condoms had higher HIV/AIDS knowledge than those who did not intend to use condoms. In the multivariate analysis, however, HIV/AIDS knowledge was not a significant predictor of condom use intentions for either males or females. The lack of a significant association between HIV/AIDS knowledge and condom use may reflect the fact that none of the questions specifically related to condom use in relation to HIV/AIDS prevention. In addition, the responses to specific questions on the scale suggest that while general knowledge about HIV is high, respondents possess inadequate specific knowledge. For example, results indicated that a substantial proportion of respondents were not aware of the latency period between infection and appearance of symptoms, and issues pertaining to HIV testing, such as anonymity during testing and the appropriate window period between possible infection and HIV testing. A lack of awareness about the aforementioned issues might prevent positive behavior change because young people may misjudge their risk of infection and may have a false sense of security following negative test results (Hou, 2004). Further, there is the possibility that when the aforementioned studies were conducted (1994-1998), there were large differences in people's awareness of HIV infection and its prevention. Thus, it was possible to observe an association between increasing levels of HIV knowledge and condom use. In general, however, there is widespread acceptance that HIV/AIDS knowledge alone is unlikely to lead to behavior change (Hartell, 2005; James, Reddy, Taylor, & Jinabhai, 2004).

Previous research conducted among African youth indicates that *condom use self-efficacy* or the belief that one can successfully engage in the use of condoms is associated with a higher likelihood of use

(Adih & Alexander, 1999; Giles et al., 2005; Karim et al., 2003). In the present study, bivariate analysis results indicated that greater condom use self-efficacy was associated with greater odds of condom use at last intercourse among sexually experienced youth and with higher odds of intending to use condoms among those reporting no previous coital activity. When controlling for other study variables, condom use self-efficacy remained a significant predictor of condom use at last intercourse for males and condom use intentions for females. These results support the need for HIV/AIDS education program to emphasize skill building particularly in regard to communicating effectively with sexual partners about safer sex and making responsible decisions about one's sexual health.

Respondents' *attitudes towards condoms* were assessed by having students complete a condom attitude scale with items about the usefulness of condoms, the acceptability of condom use by parents and sexual partners, the safety of condoms, and the availability and accessibility of condoms. Respondents who reported condom use at last intercourse had more positive attitudes towards condoms than those who did not use condoms. In addition, among respondents who had never had sexual intercourse, those who intended to use condoms in the future reported more positive attitudes towards condoms than those not intending to use condoms. When controlling for individual and contextual factors, condom use attitudes remained a significant predictor of condom use at last intercourse for females and intentions to use condoms for males. Similar findings on the association between condom use attitudes and condom use have been reported in previous research conducted in Africa (Lule & Gruer, 1991; Mnyika et al., 1995). Thus, contrary to views that personal considerations have less bearing on sexual decision making in African cultures where behavior is greatly influenced by social factors (Giles et al., 2005), personal attitudes towards condoms may have a significant bearing on the use of condoms. Reproductive or sexual health programs should therefore attempt to dispel negative attitudes or beliefs that hamper the practice of safer sex.

As mentioned earlier, sexual behavior in traditional African societies may be mediated by *gender role ideologies*, which govern appropriate sexual conduct. From a theoretical standpoint, young females who hold more gender discriminating attitudes in paternalistic societies may suffer from low self-esteem

because they view themselves as being less important than males and therefore have a greater likelihood of succumbing to pressure to engage in unprotected coital activity. In addition, as indicated before, traditional gender roles may call for females to be sexually available to their male partner (Varga, 2003). Thus, females who have internalized traditional gender role scripts calling for female subservience in sexual matters may be more likely to engage in unprotected sexual intercourse. Results only partially supported this hypothesis. Condom use at last intercourse was not significantly associated with gender role attitudes; though, mean plots indicated that those who used condoms held more egalitarian attitudes. Among those reporting no prior sexual contacts, those who intended to use condoms in the future held more egalitarian gender role attitudes than those who did not intend to use condoms. The difference was significant for males and marginally so for females. These results suggest that egalitarian gender role attitudes may be associated with a greater likelihood of condom use. Karim, et al. (2003) found that egalitarian gender role attitudes were associated with higher odds of consistent condom use and, among males, higher odds of use during first and last intercourse.

Surprisingly, among females, when controlling for other study variables, the opposite relationship was observed. Specifically, increasingly gender discriminative attitudes were associated with greater odds of condom use at last intercourse and intentions to use condoms. Spearman correlation values also indicated a negative association between increasingly gender discriminative attitudes and condom use attitudes, condom use self-efficacy, HIV/AIDS knowledge, and peer attitudes towards safer sex. One might speculate that females who subscribe to traditional gender role scripts play a less instrumental role in sexual encounters and believe that it is unacceptable for women to carry condoms or negotiate their use. However, they may be more likely to be discriminative in their choice of sexual partners than females subscribing to more egalitarian gender role scripts. Thus, females holding more gender discriminative attitudes may be choosing partners who are more attentive to their sexual health.

Another plausible explanation for the above observation is that females who embrace more traditional gender roles may be more nurturing and may have a greater need to use condoms during sexual intercourse in order to protect themselves, their partners, and their offspring. In other words, among

females embracing traditional gender role ideologies, negative attitudes towards condoms and lower condom use self-efficacy are balanced by a greater need to protect the health of their partner and potentially their offspring. Evidence that young females who embrace traditional gender role ideologies are less likely to engage in risky sexual behavior is provided to some extent by findings by Lucke (1998), who found that young Australian females who held more egalitarian attitudes towards women's role in society were more likely to engage in risky behavior like having multiple sexual partners and consuming alcohol or drugs with their most recent non-steady partner. The above discussion indicates that gender role scripting may have some influence on sexual decision making, and as such, sexual health programs may profit from including a component on gender-role based communication (Buysse & van Oost, 1997).

A noteworthy finding was that perceived risk to HIV and other sexually transmitted diseases appeared to play a minor role in influencing young people's sexual behavior. In fact perceived risk was only found to be a significant predictor of intentions to use condoms for females in the multivariate analysis but did not predict condom use at last intercourse for sexually experienced males and females. As mentioned earlier, condom use is often the least adopted behavior (compared to reduction in number of sexual partners, monogamy etc.) in response to perception of risk to HIV (Bertrand et al., 1991; Kapiga & Lugalla, 2002). Thus, high perception of risk to HIV and other STDs may not be associated with condom use per se, but with overall change in risky sexual behavior.

Schools are a potentially important contextual factor influencing young people's sexual behavior because they typically represent the most important socialization setting outside of the family (Mensch et al., 2001). Schools may, for example, function as a medium through which societal norms on gender roles are reinforced through instructional mode and materials. They may also provide young people with the opportunity to engage in sexual intercourse or conversely, provide young people with adequate supervision to deter high-risk behavior (Kaufman, Clark, Manzini, & May, 2004). Following is a discussion of the results of analyses examining the association between various school-related variables and condom use.

Whether a student was attending a *national* or *provincial* school was not associated with condom use or intentions to use condoms for females, or with condom use at last intercourse for males. However, males attending a national school were more likely to report intentions to use condoms. The latter was true both when national school was considered as a single predictor of condom use and when controlling for other study variables. National schools in Kenya typically recruit students who obtain top scores in the national primary school-leaving examinations; thus, students in national schools may place a higher value on scholastic achievement than the average high school student. Previous research has found that valuing academic achievement is associated with a lower likelihood of having intercourse (Chewning et al., 2001; Kiragu, 1991). Thus, males in national schools may perceive that they have more to lose with regard to career and academic achievement and may therefore be more likely to intend to use condoms. The lack of association between attendance national or provincial schools and condom use for females may reflect the fact that, in general, a relatively low proportion of young people attend secondary school. Therefore, the differences between those attending national and those attending provincial schools may be subtle.

Whether a student is a *day scholar* or *boarder* may have some influence on sexual behavior. Boarding school students in Kenya usually spend an entire school term away from their homes; therefore, they have less adult supervision because of the smaller adult to child ratio (Kiragu, 1991). Students in boarding school may also be more likely to be influenced by peers because of the considerable time spent together. On the other hand, because most boarding schools are single-gender, students in these schools may be somewhat less likely to have opportunities to have sexual contacts. In addition, boarding schools are typically viewed as being more conducive for academics. Thus, students in boarding schools may be higher academic achievers and, therefore, more likely to abstain from sexual intercourse or to engage in protected sexual intercourse to avert the negative consequences of unprotected sexual intercourse, such as pregnancy, which would negatively impact academic progress. Whether a student was a day scholar or boarder did not predict condom use or intentions to use condoms for females. For males, being a day scholar was associated with lower odds of condom use at last intercourse or intentions to use condoms than a boarder. However, whether a student was a day scholar or a boarder did not predict condom use or

condom use intentions when controlling for other variables. Again, if high academic achievement is indicative of a greater propensity to engage in safer sex, the lack of association between school type and condom use or intentions to use condoms may reflect the fact that given the low secondary school enrollment, in general, there is little difference between day scholars or boarder in terms of academic achievement.

Single-gender schools may reduce the opportunities available for members of opposite gender to meet. Therefore, single-gender schools may have a lower proportion of sexually experienced students than co-educational schools. However, the association, if any, between condom use and the *type of school* is more difficult to ascertain. The type of school was not significantly associated with condom use at last intercourse or intended condom use for females. Type of school was also not a significant predictor of condom use at last intercourse or intentions to use condoms in the multivariate analysis. However, in the bivariate analysis, males attending mixed day or mixed day and single gender boarding schools had significantly lower odds of condom use at last intercourse than males attending boys-only day or day and boarding schools. On the other hand, males attending boys-only boarding schools had significantly greater odds of reporting intentions to use condoms than their peers in boys-only day or day and boarding schools. It can be argued that males attending single-gender schools are more likely to be influenced by peer norms because of the considerable length of time spent together with peers. In addition, many of the top-performing schools tend to be single-gendered schools. Thus, being in a single-gender school may be indicative of high academic achievement, which, as alluded to earlier, may be associated with a greater likelihood of condom use. Therefore, males in single-gender schools may have a greater propensity to use condoms because of peer support for the behavior and because they may have more at stake if they engage in unprotected intercourse. Perhaps the same would apply to females; however, the analysis was limited by the small sample size of sexually experienced females.

Figure 4 shows the modified conceptual model with only the variables that were significantly associated with condom use in the multivariate analyses. None of the individual level sociodemographic variables were significant predictors of condom use in the multivariate analyses. The lack of association

between sociodemographic variables and condom use suggests that some of the more commonly used theories, such as the theory of reasoned action, may be useful in identifying factors associated with sexual behavior among African youth. Overall, an examination of the results reveals that attitudinal factors appear to be the primary predictors of intentions to use condoms among young males and females who report no previous sexual contacts. On the other hand, behavioral factors, such as age at first intercourse and engaging in risk behavior, and the nature of the relationship between sexual partners play an additional role in predicting condom use at last intercourse. Further, a wide range of factors appear to influence condom use, which suggests that comprehensive sex education programs that incorporate a wide range of topics and that adopt more than one approach to improve the sexual health of young people are more likely to be successful.

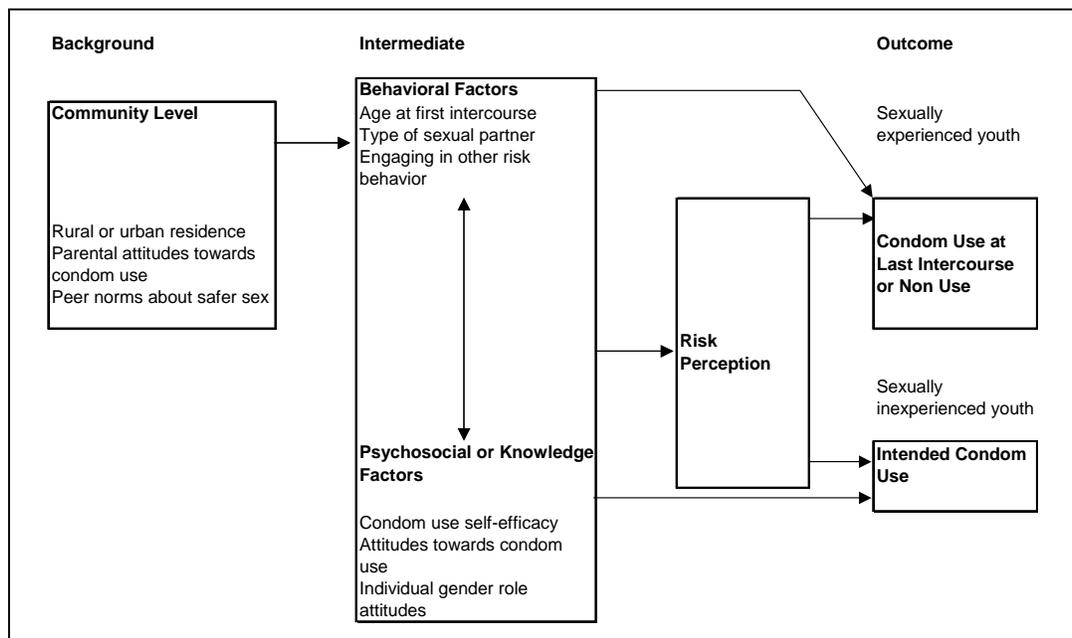


Figure 4. Modified conceptual model showing variables significantly associated with condom use

Condom User Groups

Correct and consistent condom use is one of the actions recommended for the prevention of HIV (Davis & Weller, 1999). However, young people may fail to use condoms or may use them inconsistently and as a result, may increase their susceptibility to HIV infection. For example, in the present study, 42% of sexually experienced females and 41% of males reported that they used condoms *all or most of the time*. Another, 25% of females and 21% of males reported that they used condoms *some of the time or not very often*, while 33% and 38% of females and males, respectively reported that they *never* use condoms. Thus, a large proportion of youth may be placing themselves at risk of HIV infection because of inconsistent condom use or non-use. For this reason, the present study also examined factors that distinguished among different types of condom users i.e. consistent, sporadic, and non- condom users because this information may aid in the development of more precisely targeted interventions.

The results of the multinomial logistic regression indicated that compared to both consistent and sporadic condom users, nonusers had lower odds of engaging in risk taking behavior. As stated in the second chapter, Tawk et al. (2004) also found that consistent condom users were more likely than non users to report multiple sexual partner and to engage in injecting drug use. Thus, nonusers may have adopted other prevention measures, such as monogamy or avoiding risk behavior like injecting drug use, to protect themselves against the risk of HIV and STD infection (Mahoney et al., 1995). In addition, the results indicated that increasingly higher levels of perceived peer support for safer sex was associated with a greater likelihood of being classified as a consistent or sporadic condom user than a nonuser. Thus, nonusers may fail to use condoms because they lack the necessary peer support to do so.

Initiating sexual activity at a young age was associated with greater odds of being classified as a sporadic user than a consistent condom user. As stated previously, early age at sexual debut can be an indication of problem behavior. Previous research also suggests that sporadic condom users are more likely to engage in risky sexual behavior than the other two groups (Mahoney et al., 1995).

These findings have several implications for reproductive health programs seeking to reduce the rate of HIV infection among young people by encouraging condom use. First, while the results indicate

that males who never use condoms have a lower likelihood of engaging in risky sexual behavior, it is unclear whether the risk of infection is low for this group. This is because no information was collected about the respondents' awareness of their partner's HIV sero-status. As a result, this group may fail to use condoms because they have adopted other prevention measures, but may be placing themselves at risk if they are unaware of their partners' sero-status. Nonusers may, therefore, need to be informed that while monogamy or reduction in the number of sexual partners lowers the risk of infection by reducing possible contacts with infected persons, it should be accompanied with knowledge of the partner's HIV sero-status. In addition, as suggested above, nonusers may perceive a lack of peer support for condom use and may, therefore, benefit from peer-led education sessions on the importance of condoms. Further, emphasizing the contraceptive properties of condoms might encourage condom use among nonusers.

Second, study findings and existing literature suggest that sporadic condom use is associated with a greater likelihood of other problem behavior such as alcohol use and precocious sexual activity, which predispose young people to risky sexual behaviors that place them at high risk of HIV infection. Thus, sporadic users may benefit from programs that address some of these risk behavior. For example, young people should be educated on how drug or alcohol use can impair one's judgment leading to unprotected sexual intercourse. In addition, young people should be encouraged to postpone sexual intercourse until they are more mature.

Implications for Practice and Policy

While HIV/AIDS knowledge was relatively high, informal discussions with the study participants revealed some misconceptions regarding condoms and reproductive health, in general. For example, students repeatedly raised the following questions: How many condoms should be used in a single sex act? Can condoms be laced with (contain) HIV? Why are some condoms free? In reference to the latter question, several students claimed that the free condoms provided in various institutions must be defective because they are not for sale. Further, students stated that they were particularly interested in learning how to choose condoms, how to use condoms correctly, and in finding out more about the female

condom. In two girls' only schools, questions about the risk of HIV infection from oral sex and whether condoms should be used in such cases were raised. The question raised about the risk of HIV infection from oral sex suggests a possibility that young people may unknowingly be placing themselves at risk of HIV infection by engaging in oral sex under the presumption that this is a safe alternative.

Current public campaigns advocating condom use for HIV prevention in Kenya emphasize self-protection and fail to address the relational context of sexual decision-making. The current data indicate that the relationship between two sexual partners is a significant predictor of condom use at last intercourse for both males and females both on its own and when controlling for confounding variables. Intervention programs should, therefore, take into account the types of sexual relationships young people have and should involve a discussion about the situational contexts in which sexual intercourse occurs. For example, in addition to discouraging young people from engaging in casual sexual encounters, prevention campaigns should emphasize the need for young people to view safe sex as a way of demonstrating love and concern for one's partners (Gebhardt et al., 2003).

The data suggest that females who report more gender discriminative attitudes are more likely to have used condoms; however, female submissiveness increases the possibility that females will consent to unprotected sexual intercourse leading to increased susceptibility to STDs and unwanted pregnancies. The likelihood that females are coerced into sexual intercourse is substantiated by the revelation by some of the female students during informal discussions that sexual encounters occur under some level of emotional pressure from males. As stated previously, sexual health campaigns may benefit from including an educational component on the association between gender role ideologies and sexual health.

The results and discussion above indicate a need for more comprehensive reproductive health education. In addition, results indicate that young people may benefit more from skill-building approaches than from prevention efforts that aim to increase HIV/AIDS awareness. However, the current Kenyan education policy requires schools to teach students to be morally upright and does not permit safe sex education in schools (V. Muutu, personal communication, September 7, 2004). This stance is probably reflective of the heavy religious influence in the development of educational policy as religious

leaders are included in many policy-making panels. The impact of this shortcoming on HIV and STD infection rates is difficult to measure. However, the lack of comprehensive sex education means that young people are probably lacking an avenue to obtain potentially life saving information on their sexual and reproductive health. Elsewhere in the world, research evidence indicates that young people receiving contraceptive information are more likely to use contraceptives (Mabray & Labauve, 2002). Study results also reveal that providing young people with information about condoms and contraceptives does not hasten the onset of sexual activity (Jemmott et al., 1998; Kirby & Coyle, 1997) as feared by many critics of comprehensive sex education.

Research Limitations

The present study had several limitations. First, researchers would, ideally, like to know what factors cause a person to engage in a certain behavior. Causality can only be investigated in longitudinal studies, which are costly and time-consuming undertakings. Due to cost and time restrictions, a cross-sectional design was utilized in the present study. While causality cannot be demonstrated in a cross-sectional study, the present research does provide invaluable information about the existing state of condom use behavior for HIV prevention among secondary school students.

Second, participation in the study was restricted to young people attending high school because they represent an accessible sample of adolescents. Unfortunately, this method of selection limits the generalization of the results to out-of-school adolescents, who may engage in higher rates of sexual activity and may, therefore, be at greater risk of HIV infection (Karim et al., 2003). Within schools, participants were selected using convenience sampling (classrooms) rather than random sampling, which presents uncertainty about the representativeness of the student population. However, randomly sampling students would have reduced guarantees of anonymity. Data collection was also restricted to those students who were present at the time of survey administration and students were not under any obligation to respond to all questions. The restriction of the study to those present at the time of data collection potentially introduced self-selection bias if the students who were absent or who fail to respond to some

or all of the questions differed significantly from those who participated. For example, in one school, a relatively large number of students had been sent home because of failure to pay school fees. Thus, the numbers presented here may impact the measures of association between sexual behavior and socioeconomic status. Last, among limitations arising from recruitment procedures is that the findings from the study may not be generalizable to students attending schools in other parts of Kenya, particularly the rural areas. This is because students in Nairobi, a metropolitan urban city, may hold more Western values due to media influence and interaction with culturally diverse groups of people.

As a result of the sensitivity of the information sought from participants, self-report bias must be considered. Although students were informed that they were not obligated to participate in the study or to answer all questions, there is still the potential for misrepresentation. For this reason, students were assured that all responses were anonymous and whenever possible, teachers were asked to leave the classrooms during data collection.

The small sample of female respondents who were sexually experienced proved to be a substantial limitation in the analysis of female data. There were several drawbacks on efforts to recruit a larger sample of females. First, all of the schools that declined to participate in the study were either girls' only schools or mixed schools. Efforts to recruit more schools were limited by the fact that the study was conducted during the third term, which is a busy term as high school seniors are sitting for the final national school leaving exams; thus, school principals were reluctant to allow the study.

In addition, a relatively small numbers of male and female respondents completed the questionnaire in its entirety, which may have substantially affected the power of the statistical tests. One probable reason for the low numbers of complete surveys was that students felt that some questions were not relevant. For example, several students said that they were unable to complete the questions of condom use self-efficacy or condom use attitudes because they had no prior sexual experience or had never used condoms.

Lastly, several contextual factors may have influenced student responses and may affect results of future studies within the same population. At the time of survey administration, there was a public

campaign “*Je una yako?* (Do you have yours [condom]?)”, and heavy airplay of a popular song, “*Manyake*,” both of which encouraged the use of condoms. The effects of these contextual factors on participants’ responses are unknown, but they may have influenced participants to provide socially desirable answers. Further, towards the end of the survey administration, a new public campaign “*Tume Chill!*” encouraging abstinence among teenagers began to be aired frequently on public media, which may affect the results of future studies within the same population.

Recommendations for Further Research

Future studies may benefit from a more thorough investigation of the factors associated with condom use among females. As indicated above, a relatively small sample of females reported prior sexual contacts. Thus, part of the analyses was restricted to data from male respondents. Knowing what factors are associated with condom use among females is especially important because young females are over two times more likely to be infected with HIV. In addition to a more thorough investigation of the correlates of female sexual behavior, informal discussions with students suggest that collecting supplemental qualitative data may provide a more complete picture of the factors that play into adolescent sexual decision-making and behavior.

Due to practical considerations, this study was limited to students attending schools in and around Nairobi, an urban center. As indicated earlier, rural or urban residence could potentially impact adolescent sexual behavior. For example, young people in rural areas may have lower exposure to Western media and have stronger ties to their ethnic groups and, thus, be more likely to adhere to traditional sexual norms (Brockman, 1997). Research also indicates that out-of-school youth may be more likely to engage in risky sexual behavior (Karim et al., 2003; Roth, Fratkin, Ngugi, & Glickman, 2001) and represent a greater proportion of young people aged 15 – 24 years. Thus, future research may extend this research to include more rural schools and include samples of young people who are outside of the school system.

The present study was restricted to factors associated with the male condom. During informal discussions with study participants, several students indicated an interest in learning more about the

female condom. At present, the relatively low availability and greater cost of the female condom limits its use. Research, however, indicates a considerable interest in its use among African females, who are increasingly interested in female-controlled disease prevention and contraceptive methods (Hart et al., 1999). Future research may, therefore, benefit from an extension of similar research to investigate the correlates of the use of the female condom

There is some evidence that a number of young people are involved in same-gender sexual relationships (Kiama, 1999). The present research indicates that the relational context influences the use of condoms. It would be beneficial to investigate the factors that influence condom use behavior in this population given a sociocultural context where same-sex intercourse is disapproved and viewed as deviant (Kiama, 1999).

While the results presented here are based on only a small sample of respondents, it is surprising that those females who hold more gender discriminative attitudes appear to have a greater likelihood of using condoms. It would be beneficial to explore the association between gender role ideologies and sexual behavior further because it may mean that encouraging women to take greater control over their sexuality may be negatively impacting them by leading them to engage in high-risk sexual behavior as an expression of sexual freedom. In addition, as stated previously, none of the items in the gender role attitudes scale specifically referred to gendered differences in expectations of sexual conduct, including whether males and females are equally responsible for ensuring safe sex. Future studies investigating the association between gender role ideologies and sexual conduct should therefore include specific items that refer to gendered differences in sexual conduct.

In the present study, ethnicity was not included as a predictor variable. However, compared to males belonging to Bantu, Nilotic or “other” ethnolinguistic groups, a relatively higher proportion of Cushitic males reported that they used condoms at last intercourse. It is unclear why Cushitic males were more likely to report condom use. In the present study, the majority of Cushitic males were Muslims. Islamic doctrine has strict codes on appropriate sexual conduct and dictates that both males and females should abstain from sexual intercourse outside of marriage (Muslim Women's League, 1995). Thus, it is

plausible that the fear of dire consequences of impregnating a female or acquiring a sexually transmitted infection may have served as an incentive for condom use among Cushitic males. Also, the strict separation of the sexes among practicing Muslims (Kemp & Rasbridge, 2001) may mean that young Muslim have strong peer networks that heighten peer support for safer sex. The ethnic differences described above suggest that further examination of the association between ethnicity and sexual behavior may be beneficial in identifying culture-specific factors that can influence adolescent sexual behavior. For example, in some ethnic groups, young people are expected to undergo initiation rites marking the passage from childhood to adulthood. In some cases, the initiates receive instruction on acceptable sexual conduct (Njambi, 2004) while in others, cultural practices, such as socially sanctioned pre-marital intercourse and partner sharing among initiates (Njambi, 2004; Roth et al., 2001) may represent high risk sexual behavior. Among those who receive instruction of appropriate sexual conduct as part of the initiation process, it would also be useful to examine whether young people receive instruction on how to protect themselves from sexually transmitted infections.

Chapter Summary

The association between various demographic, contextual, behavioral, and psychosocial variables and condom use was examined. Analyses revealed that condom use or intentions to use condoms among Kenyan high school students is associated with a wide array of factors. This implies that sex education programs targeting the youth should incorporate wide range of topics and should adopt multiple educational approaches in order to increase the likelihood of success in enabling young people to make responsible decisions about their sexual health. Several recommendations for future research are highlighted. These include the extension of similar research to include out-of-school youth and the examination of factors associated with the use of the female condom.

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APPENDICES

APPENDIX A

Health and Social Indicators for Kenya

Gross Domestic Product (GDP) per capita (2004 est.) ¹	1,100 US dollars
Population living below poverty levels (2000 est.) ¹	50%
Population growth rate (2005 est.) ¹	2.56%
Age structure (2005 est.) ¹	
0-14 years	42.5%
15-64 years	55.2%
65 years and over	2.3%
Infant mortality rate (2002 est.) ¹	61.47 deaths/1000 live births
Total fertility rate (2005 est.) ¹	4.96 children born/woman
Life expectancy at birth (2005 est.) ¹ – Female	47.09 years
Life expectancy at birth (2005 est.) ¹ – Male	48.87 years
Religious affiliation ¹	
Catholic	33%
Protestant	45%
Indigenous beliefs	10%
Muslim	10%
Other	2%
Literacy rate (definition: age 15 and over that can read and write) (2003 est.) ¹	
Total population	85.1%
Male	90.6%
Female	79.7%
Male primary school enrollment ratio (2000 est.) ¹	95.0%
Female primary school enrollment ratio (2000 est.) ¹	93.0%
Male secondary school enrollment ratio (2000 est.) ¹	39.0%
Female secondary school enrollment ratio (2000 est.) ¹	36.0%
Contraceptive prevalence rate for women (15-49) (2002 est.) ²	
Modern methods*	31.5%
Any method	39.0%
Modern contraceptive prevalence rate for women (15-49) (2002 est.) ²	
Urban	41.0%
Rural	29.0%
Adolescent women (15-19 years) began childbearing ²	
Urban	17.5%
Rural	21.8%
Total expenditure on health as % of GDP (2002 est.) ³	4.9%
Per capita total expenditure on health (2002 est.) ³	19 US\$
General government expenditure on health as % of total expenditure on health (2002 est.) ³	44.0%
Private expenditure on health as % of total expenditure on health (2002 est.) ³	56.0%
Prepaid plans as % of private expenditure on health (2002 est.) ³	6.9%
Out-of-pocket expenditure on health as % of total expenditure on health (2002 est.) ³	80.0%

Sources: ¹(CIA, 2005), ²(UNFPA, 2005b), ³(WHO, 2005).

* Modern methods include oral contraceptives, intrauterine devices, diaphragms, cervical caps, injectables, condoms, implants, emergency contraception, and sterilization (UNFPA, 2005a).

APPENDIX B

Summary of Findings from Studies Examining Young People's Sexual Risk Behavior in Kenya

Study	Purpose of Evaluation or Research	Sample Description	Summary of findings
Hawken et al, 2002	Cross sectional study to provide baseline data for targeted sexually transmitted infections and HIV infection prevention interventions by studying parameters of sexual behaviors and knowledge of HIV infection and STIs, measuring health seeking behavior related to STIs, and measuring gonorrhoea, chlamydia, syphilis, and HIV-1 prevalence among Kenyan youth living in Mombasa, the second largest city in Kenya	Of 1497 (includes people 25+ years) people with complete demographic information Gender: 49.9% female Mean age: Men 28.5 +/- 8.8 years, women 27.1 +/- 8.3 years Males 15-19 years <i>n</i> = 127 Males 20-24 years <i>n</i> = 164 Females 15-19 years <i>n</i> = 169 Females 20-24 years <i>n</i> = 156	Percent of respondents who had ever had intercourse: 56% (males) 48% (females) - 15-19 years 88% (males) 80% (females) - 20-24 years Of those who were sexually active, percentage with 2 or more partner in past 12 months: 32% (males) 1% (females) - 15-19 years 27% (males) 2% (females) - 20-24 years Of those who were sexually active, percentage who had used condoms 47% (males) 24 % (females) - 15-19 years 59% (males) HIV prevalence 2% (males) 4 % (females) - 15-19 years 1% (males) 16% (females) - 20-24 years
Kiragu & Zabin, 1993	Cross sectional study to investigate factors that are correlated with premarital sexual behavior of adolescents in Nakuru District, Kenya	Demographics of secondary school students: <i>n</i> = 1244 - males, <i>n</i> = 815 - females; average age: 17.8 years - males, 17.2 years - females; percent in urban schools: 38.1 % - males, 41.1% - females; religion: 93.1% - males, 97.1% - females Christian; 82.4% of males, 90.9% of females have reached puberty; median age of puberty: 15.5 years - males, 14.5 years - females; mean number of children in family: 9.2 males, 8.7 females; Percentage who are sexually experienced: 69.3% males, 27.0% females; mean age at first sex 13.1 years males, 15.5 years females.	69.3% of male and 27% of female secondary school students were sexually experienced. Of those who had ever had intercourse, 77% of males and 26% of females had more than one lifetime partner with 14.1% of males reporting more than 10 lifetime partners
Lema, 1990	Cross sectional study to evaluate determinants of sexual activity among adolescents schoolgirls in Nairobi, Kenya	1751 female students from 20 randomly selected schools (four private girls' schools, five private co-ed schools, five government girls' schools, and 6 government co-ed schools). Age range: 12-19 years, mean age: 16.2; Family relationships: 84.4% stayed either with both parents or one parent, 15.0 with siblings or other relatives, 0.6% with friends; Religious affiliation: 89.5% Christians, 4% Moslem, 1.6% Hindu, 5.2% Other Sects or none.	Peak age of sexual debut = 16 years Percentage that was sexually experienced = 24% Percentage of sexually experienced youth with two or more lifetime sexual partners = 32%
Patullo & Malonza, 1994	Cross sectional study to evaluate the knowledge, attitudes, and sexual behaviors with respect to HIV/AIDS among Kenyan secondary students in 11 schools in Nairobi Kenya	3018 students enrolled in 11 secondary schools in Nairobi. There were five girls' schools, four boys' schools, and one mixed skills training center. 51.2% of respondents were female. Mean age of female students: 15.9 +/- 1.6 years. Mean age of male students: 16.7 +/- 1.7 years	75% of males and 29% of females were sexually experienced. Of those who had ever had intercourse, 21% of males and 3% of females reported more than five partners over their lifetime. 59% of sexually active students reported that they never use condoms

APPENDIX C

Excluded Questionnaires

One hundred and sixty five questionnaires were excluded from the analysis for several reasons. Reasons for exclusion included: failure to indicate gender, providing conflicting answers to the questions on sexual history, unclear markings, having many erased responses, failure to respond to over half of the items, or giving answers whose credibility was doubtful. Of the 165 questionnaires, 93 were from male students, 56 from females, and the remaining 12 had no gender indicated. Table A 1 indicates the number of excluded questionnaires by the type of school.

Table A 1. Poor Quality Questionnaires By Type of School.

Type of School	Males <i>N</i> (%)	Females <i>N</i> (%)	Missing Gender <i>N</i> (%)
Single Gender Day School	3 (3.2)	20 (35.7)	
Single Gender Boarding School	34 (36.6)	7 (12.5)	
Single Gender Day and Boarding	12 (12.9)		
Mixed Day School	17 (18.3)	5 (8.9)	4 (25.0)
Mixed Day and Boarding School	20 (21.5)	18 (32.1)	7 (43.8)
Mixed Day Single Gender Boarding School	7 (7.5)	6 (10.7)	5 (31.3)
Total	93 (100)	56 (100)	16 (100)

Table A 2 provides a breakdown of the excluded questionnaires by school (represented by a school code). While male-only boarding schools had the highest percentage of excluded questionnaires, 41% of these were from a single school. In this particular school, the school administration required the students to fill the questionnaires while on break, thus, the students were not supervised by the research team. The same situation arose when conducting the research in schools 9, 11, 14, 19, 23, and 29.

Table A 2. Excluded Questionnaires by School

Type of School	Males School (# of questionnaires)	Females School (# of questionnaires)	Missing Gender School (# of questionnaires)
Single Gender Day School	01(3)	03 (8)04 (7) 11 (2)13 (2) 17 (1)	
Single Gender Boarding School	19 (5)20 (4) 22 (1)26 (2) 28 (1)29 (6) 30 (1)32 (14)	14 (1) 15 (6)	
Single Gender Day and Boarding	07 (4)16 (3) 18 (4)25 (1)		
Mixed Day School	05 (9)12 (8)	05 (4)12 (1)	05 (2)12 (2)
Mixed Day and Boarding School	06 (14)09 (6)	06 (4)09 (14)	06 (4)09 (3)
Mixed Day Single Gender Boarding School	10 (5)23 (2)	10 (1)23 (5)	10 (2)23 (3)
Total	93	56	16

APPENDIX D

Factor Analyses

Factors were extracted using principal component analysis with varimax rotation. Items were assigned to factors based on the highest factor loading values. Where an item loaded relatively high on more than one factor, then a subjective decision was made in the assignment. Table A 3 and Table A 4 show the factors, item and factor loadings for the two scales.

Table A 3. Factors, Items, and Factor Loadings for the Condom Attitude Scale

Factors and Items	Loading
Factor 1: Usefulness of condoms [(Madu & Peltzer, 2003) – Personal false and misleading beliefs]	
1. Condoms can't prevent AIDS, so it is useless using them	.72
2. AIDS is a foreigner's disease, so I don't need to use condoms	.51
3. Condoms prevent only pregnancy but not AIDS, so it is useless using them for the prevention of AIDS	.72
4. There are other ways one can contract HIV/AIDS, so it is useless using condoms	.73
5. When condoms tear, you don't notice it, so what is the point of using them ^a	.61
6. Condoms tear during sex, so it is useless using them ^a	.65
7. Only prostitutes or those who have sex with prostitutes use condoms, I am not one of them and so I do not use condoms ^b	.41
Factor 2: Partner acceptance and comfort [(Madu & Peltzer, 2003) – poor relationship]	
1. The use of condoms makes the partner suspect that I am not faithful (that I have sex with other people)	.79
2. The use of condoms is a sign of mistrust for the partner	.78
3. Condoms don't allow me to reach orgasm or derive maximum pleasure from sex	.66
4. The use of condoms makes my partner suspect that I have HIV/AIDS	.73
5. Condoms don't allow me to feel comfortable	.65
Factor 3: Acceptability of condom use [(Madu & Peltzer, 2003) – Socially negative attitudes]	
1. My parents would beat me if they see me with a condom or find it in my cupboard or pocket	.73
2. I fear what my parents will say or do when they see me with condoms	.78
3. I feel ashamed to carry about condoms	.75
4. It is shameful to go the health center to collect free condoms	.60
5. The use of condoms is against our religion	.30
6. If others find I have a condom they would think I have very low morals ^b	.59

Factors and Items	Loading
Factor 4: Availability and accessibility of condoms [(Madu & Peltzer, 2003) – non availability of condoms]	
1. The number of condoms you need may not be readily available	.66
2. Condoms are not readily available when you need them	.72
3. When condoms tear you may not have another one available, so it is useless using them at all	.52
4. Condoms are very costly to buy	.68
5. The places one can buy condoms are far from home	.72
Factor 5: Safety of condoms [(Madu & Peltzer, 2003) – inconvenience of using condoms]	
1. When condoms tear, I have fears of many things	.48
2. Condoms slip out during sex	.55
3. When a condom tears or slips out, I regret using it at all	.55

^a Items classified under “inconvenience of using condoms” in the Madu and Peltzer (2003) study

^b Items not in the Madu and Peltzer (2003) scale

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) = 0.886

Bartlett’s Test of Sphericity (χ^2 (325) = 17577.675, $p < 0.0001$)

Table A 4. Factors, Items, and Factor Loadings for the Condom Use Self-Efficacy Scale

Factors and Items	Loading
Factor 1: Mechanics of condom use [(Mahoney et al., 1995) – Mechanics]	
1. I feel confident in my ability to put a condom on myself or my partner	.77
2. I would feel embarrassed to put a condom on myself or my partner	.60
3. I feel confident in my ability to put on a condom correctly	.78
4. I feel confident that I can easily remove and dispose off a condom after sexual intercourse	.78
5. I feel confident in my ability to put a condom on myself or my partner quickly	.72
6. I feel confident that I would use as condom successfully	.77
Factor 2: Relationship [(Mahoney et al., 1995) – Partner’s disapproval]	
1. If I were to suggest using a condom to a partner I would feel afraid that he or she would reject me	.67
2. If I were unsure of my partner’s feeling about using condoms, I would not suggest using one	.68
3. I would not feel confident using condoms with a new partner because I would be afraid he or she would think I have a sexually transmitted disease	.79
4. I would not feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I thought they had a sexually transmitted disease	.79
5. With my boy/girl friend I would not dare suggest using a condom because he/she might end our relationship ^a	.74
6. With my boy/girl friend I would not bother to use or suggest the use of condoms because I think he/she has no HIV. He/she looks healthy ^a	.68

Factors and Items	Loading
Factor 3: Condom use discussion and use while under the influence [(Mahoney et al., 1995)	
– Separate scales: Assertiveness and Intoxicants]	
1. I feel confident in my ability to discuss condom use with any partner I might have	.62
2. I feel confident in my ability to suggest using condoms with a new partner	.65
3. I feel confident I would suggest using a condom without my partner feeling “diseased”	.64
4. I feel confident in my ability to persuade a partner to accept using a condom when we have sexual intercourse	.65
5. I feel confident that I would remember to use a condom even after I have been drinking ^b	.78
6. I feel confident that I would remember to use a condom even if I were feeling high ^b	.77
7. I feel confident that I could stop to put a condom on myself or my partner even in the heat of passion ^b	.49

^a Items not in Mahoney et al. (1995) scale

^b Items classified under “Intoxicant” scale in Mahoney et al. (1995) study

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) = 0.910

Bartlett’s Test of Sphericity (χ^2 (171) = 15297.370, $p < 0.0001$)

APPENDIX E

Research Instrument

The following questions are about yourself and your family.

1. How old are you now? _____ years
2. What is your gender? (Circle only one answer)
 - a. Male
 - b. Female
3. When were you born? _____ (Day/Month/Year)
4. What class are you in? (Circle only one answer)
 - a. Form 1
 - b. Form 2
 - c. Form 3
 - d. Form 4
5. What is your religion? (Circle only one answer)
 - a. Catholic
 - b. Moslem
 - c. Protestant
 - d. No religion
 - e. Other (specify) _____
6. How many times did you attend religious services in the last month? _____
7. How important is religion to you (circle only one answer)
 - a. Very important
 - b. Somewhat important
 - c. Not very important
 - d. Not at all important
8. What is the highest level of education you plan to complete? (Circle only one answer)
 - a. Secondary school
 - b. Vocational school
 - c. Training college (e.g. teacher training, secretarial)
 - d. University
 - e. Other (specify) _____
 - f. Don't know/ not sure
9. What ethnic group (tribe) do you belong? _____
10. What is the name of the area you live in now? (Write the name of the estate, location or village. For example Buruburu or Kibera) _____
11. In your school, are you a day scholar or a boarder? _____
12. Is your school (circle only one answer)
 - a. A girls only - day school
 - b. A girls only – boarding school
 - c. A girls only – day and boarding school
 - d. A boys only – day school
 - e. A boys only – boarding school
 - f. A boys only – day and boarding school
 - g. A mixed – day school
 - h. A mixed – boarding school
 - i. A mixed – day and boarding school
 - j. Other (specify) _____
13. What is the highest level of education your father or male guardian has completed?
 - a. Did not go to school
 - b. Primary school
 - c. Secondary school
 - d. Vocational school
 - e. Training college
 - f. University
 - g. Other _____
 - h. Don't know / not sure
14. Is your father or male guardian employed?
 - a. Yes, he has job now. (What is his job? _____)
 - b. Yes, he is self employed (What business does he do? _____)
 - c. He is retired. (What was his job? _____)
 - d. He is temporarily unemployed (what was his job? _____)
 - e. No, he is not employed.
15. What is the highest level of education your mother or female guardian has completed?
 - a. Did not go to school
 - b. Primary school
 - c. Secondary school
 - d. Vocational school
 - e. Training college
 - f. University
 - g. Other _____
 - h. Don't know / not sure
16. Is your mother or female guardian employed

- a. Yes, she has job now. (What is his job? _____)
 - b. Yes, she is self employed (what business does she do? _____)
 - c. She is retired. (What was her job? _____)
 - d. She is temporarily unemployed (what was her job? _____)
 - e. No, she is not employed.
17. The house you usually live in has which of the following? (Circle all that apply)
- a. Electricity
 - b. Running water
 - c. Flushing toilet
 - d. A functioning/working radio
 - e. A functioning/working fridge/refrigerator
 - f. A functioning/working television/TV
 - g. A functioning/working video cassette deck (VCR)
 - h. A functioning/working car
18. Are your parents or guardians married? (Circle only one answer)
- a. Yes, they are married
 - b. Yes, but they are separated
 - c. No, they are divorced
 - d. No, they never got married
 - e. Yes, but one of them died
 - f. Yes, but both died
19. In the past 5 years, have you lived mostly in town, or in the rural area
- a. Town
 - b. Rural area
20. If you are a day scholar, whom do you **usually** live with while you are attending school? (Circle only one answer)
- a. Both mother and father
 - b. Father but not mother
 - c. Mother but not father
 - d. Relatives
 - e. My parents friends
 - f. My friends
 - g. My brother / sister
 - h. I am a boarder at school
 - i. Other (specify)_____
21. Who do you **usually** live with during school holidays? (Circle only one answer)
- a. Both mother and father
 - b. Father but not mother
 - c. Mother but not father
 - d. Relatives
 - e. My parents friends
 - f. My friends
 - g. My brother / sister
 - h. I remain in school
 - i. Other (specify)_____

The following statements are about YOUR beliefs about the roles of males and females

1	Males and females should have equal rights	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
2	It is okay for a boy to do household chores	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
3	In a relationship a boyfriend and girlfriend should have equal say in important decisions	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
4	Boys should be asked to spend as much time on household chores as girls	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
5	When family money is scarce only boys should be sent to school	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
6	When family money is scarce only girls should be sent to school	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
7	A girl should leave her boyfriend if he beats her, no matter the reason	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
8	A boyfriend should expect his girlfriend to wash his clothes and cook for him	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
9	Women should have the same opportunities as men to hold leadership positions in my town or village	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
10	It is okay for a boyfriend to beat his girlfriend to show her who is in control	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
11	A girlfriend should leave her boyfriend if he does not give her money for her needs	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
12	A girlfriend should leave her boyfriend if he does not love her	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
13	A boyfriend should leave his girlfriend if she does not love him	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
14	A girlfriend should expect a boyfriend to be faithful to her	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
15	A boyfriend should expect a girlfriend to be faithful to him	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree

The following statements are about the beliefs held by THE ADULTS IN YOUR COMMUNITY about the roles of males and females. Adults in your community refer to your parents, adult relatives, teachers, or other adults that live in your community (school, home etc.)

1	Adults in my community believe that males and females should have equal rights	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
2	Adults in my community believe that it is okay for a boy to do household chores	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
3	Adults in my community believe in a relationship a boyfriend and girlfriend should have equal say in important decisions	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
4	Adults in my community believe boys should be asked to spend as much time on household chores as girls	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
5	Adults in my community believe when family money is scarce only boys should be sent to school	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
6	Adults in my community believe when family money is scarce only girls should be sent to school	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
7	Adults in my community believe a girl should leave her boyfriend if he beats her, no matter the reason	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
8	Adults in my community believe a boyfriend should expect his girlfriend to wash his clothes and cook for him	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
9	Adults in my community believe women should have the same opportunities as men to hold leadership positions in my town or village	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
10	Adults in my community believe it is okay for a boyfriend to beat his girlfriend to show her who is in control	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree

11	Adults in my community believe a girlfriend should leave her boyfriend if he does not give her money for her needs	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
12	Adults in my community believe a girlfriend should leave her boyfriend if he does not love her	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
13	Adults in my community believe a boyfriend should leave his girlfriend if she does not love him	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
14	Adults in my community believe a girlfriend should expect a boyfriend to be faithful to her	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
15	Adults in my community believe a boyfriend should expect a girlfriend to be faithful to him	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree

The following questions are about your knowledge about HIV/AIDS. Please circle the answer you think is correct.

1	Secondary school students and college students are at high risk of being infected with HIV	True	False	Not Sure
2	HIV/AIDS can be transmitted through mosquito bites	True	False	Not Sure
3	HIV can be transmitted to me if I <u>donate</u> my blood	True	False	Not Sure
4	HIV can be transmitted to me if I <u>receive</u> a blood transfusion	True	False	Not Sure
5	Taking an HIV test one week after sleeping with someone can tell a person if he/she has HIV/AIDS	True	False	Not Sure
6	A person can get HIV even if he/she has unprotected sex with another HIV infected person only once	True	False	Not Sure
7	In general, it takes about 3-6 months for a person with HIV to develop AIDS	True	False	Not Sure
8	HIV testing in the hospital cannot be done unless you request or agree to have it done	True	False	Not Sure
9	A person would know if he/she had been infected with HIV immediately	True	False	Not Sure
10	A person with HIV can look and feel healthy	True	False	Not Sure
11	A pregnant woman with HIV can give the virus to her unborn baby	True	False	Not Sure
12	It is harder for women to get HIV from men than for men to get HIV from women	True	False	Not Sure
13	HIV testing is usually anonymous and/or confidential	True	False	Not Sure
14	Any time blood is drawn in the hospital, it is tested for HIV	True	False	Not Sure
15	It takes about 3-6 months for HIV to be found in blood after a person has been exposed to HIV	True	False	Not Sure

The following questions regard sexual relations between males and females.

1. Have you ever had sex (sexual intercourse)?
 - a. Yes
 - b. No
2. Are you currently sexually active (that is have you had sex in the **past 12 months**)?
 - a. Yes
 - b. No
 - c. I have never had sex
3. Have you ever used a condom?
 - a. Yes
 - b. No
 - c. I have never had sex
4. In the **past 12 months** have you used a condom?
 - a. Yes
 - b. No
 - c. I have never had sex
5. How old were you when you had sex for the **first time**? _____ years old.
6. How old was your partner when you had sex with him or her for the **first time**? (If you do not know his or her age, about how old was he or she) _____ years old.
7. Which of the following describe why you had sex the **first time**? (Circle only one answer).

<ol style="list-style-type: none"> a. I have never had sex b. To show love for my partner c. To get the experience my friends had told me about d. To enjoy myself 	<ol style="list-style-type: none"> e. To test whether my sex organs are normal f. I do not know g. Other reason (explain) _____
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8. At the time when you **first had sex**, was it with

<ol style="list-style-type: none"> a. I have never had sex b. Boyfriend c. Girlfriend 	<ol style="list-style-type: none"> d. Friend e. Other (specify) _____
------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------
9. Did you or your partner use a condom the **first time** you had sexual intercourse?
 - a. Yes
 - b. No
 - c. Do not remember
 - d. Don't know
 - e. I have never had sex
10. When was the **last time** you had sex? _____ (Month and Year)
11. How old were you when you had sex for the **last time**? _____ years old.
12. How old was your partner when you had sex with him or her for the **last time**? (If you do not know his or her age, about how old was he or she) _____ years old.
13. At the time when you **last had sexual intercourse**, was it with

<ol style="list-style-type: none"> a. I have never had sex b. Boyfriend c. Girlfriend d. Friend 	<ol style="list-style-type: none"> e. Other (specify) _____
-------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------
14. Did you or your partner use a condom the **last time** you had sexual intercourse?
 - a. I have never had sex
 - b. Yes
 - c. No
 - d. Don't know/ don't remember
15. How many people have you **ever** had sex with? _____

<ol style="list-style-type: none"> a. I have never had sex b. One c. Two 	<ol style="list-style-type: none"> d. Three e. Four f. Five or more
-----------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------

16. With how many sexual partners have you **always** used condoms?
- a. None
 - b. One
 - c. Two
 - d. Three
 - e. Four
 - f. Five or more
 - g. I have never had sex
17. **In the past year** how many people have you had sex with? _____
- a. None
 - b. One
 - c. Two
 - d. Three
 - e. Four
 - f. Five or more
 - g. I have never had sex
18. With how many sexual partners have you **always** used condoms **in the past year**?
- a. None
 - b. One
 - c. Two
 - d. Three
 - e. Four
 - f. Five or more
 - g. I have never had sex
19. Have you and your partner ever talked about condom use?
- a. Yes
 - b. No
20. Has your partner ever asked you to use condoms?
- a. Yes
 - b. No
21. How often would you say you used condoms during sex?
- a. Always
 - b. Most of the time
 - c. Some of the time
 - d. Not very often
 - e. Almost never or never
 - f. I have never had sex
22. Have you ever been pregnant or made someone pregnant?
- a. Yes
 - b. No
 - c. Don't know
23. Have you ever had a sexually transmitted disease
- a. Yes
 - b. No
 - c. Don't know
24. Even if you are not sexually active right now, do you plan to use condoms in the future?
- a. Yes
 - b. No
 - c. Not sure

25. How often do you do the following things
- | | | | | |
|--------------------------------------------------------------------|-------|-----------|--------|-------|
| • Go to the disco or club | Often | Sometimes | Rarely | Never |
| • Go to parties meant for your peer group or for young people only | Often | Sometimes | Rarely | Never |
| • Smoke cigarettes | Often | Sometimes | Rarely | Never |
| • Drink beer | Often | Sometimes | Rarely | Never |
| • Drink changaa or other brews | Often | Sometimes | Rarely | Never |
| • Smoke marijuana or bhangi | Often | Sometimes | Rarely | Never |
| • Used other drugs (give the name(s)
_____) | Often | Sometimes | Rarely | Never |
26. It is possible that I am infected with HIV/AIDS even though I have not been tested
- | | |
|-------------------------------|----------------------|
| a. Strongly agree | d. Disagree |
| b. Agree | e. Strongly disagree |
| c. Neither agree nor disagree | |
27. It is likely that I will acquire HIV/AIDS within the next five years
- | | |
|-------------------------------|----------------------|
| a. Strongly agree | d. Disagree |
| b. Agree | e. Strongly disagree |
| c. Neither agree nor disagree | |
28. It is possible that I am infected with a sexually transmitted disease even though I have not been diagnosed with one
- | | |
|-------------------------------|----------------------|
| a. Strongly agree | d. Disagree |
| b. Agree | e. Strongly disagree |
| c. Neither agree nor disagree | |
29. It is likely that I will acquire a sexually transmitted disease within the next five years
- | | |
|-------------------------------|----------------------|
| a. Strongly agree | d. Disagree |
| b. Agree | e. Strongly disagree |
| c. Neither agree nor disagree | |

The following statements are about YOUR attitudes towards MALE condoms e.g., Trust Condoms.

Please circle only one response for every statement

1	The use of condoms makes the partner suspect that I am not faithful (that I have sex with other people)	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
2	The use of condoms is a sign of mistrust for the partner	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
3	Condoms don't allow me reach orgasm or derive maximum pleasure from sex	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
4	The use of condoms makes my partner suspect that I have HIV/AIDS	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
5	Condoms don't allow me feel comfortable	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
6	Condoms can't prevent AIDS, so it is useless using them	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
7	AIDS is a foreigner's disease, so I don't need to use condoms	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
8	Condoms prevent only pregnancy but not AIDS, so it is useless using them for the prevention of AIDS	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
9	There are many other ways one can contact HIV/AIDS, so it is useless using condoms	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
10	When condom tears, I have fears of many things	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
11	When condoms tear, you don't notice it, so what is the point using them?	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
12	Condoms slip out during sex	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
13	Condoms tear during sex, so it is useless using them	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
14	When condom tears or slips out, I regret using it at all	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
15	My parents would beat me if they see me with a condom or find it in my cupboard or pocket	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree

16	I fear what my parents will say or do when they see me with condoms	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
17	I feel ashamed to carry about condoms	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
18	It is shameful to go to the health center to collect free condoms	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
19	The use of condoms is against our religion	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
20	The number of condoms you need may not be readily available	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
21	Condoms are not readily available when you need them	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
22	When the condom tears, you may not have another one available, so it is useless using them at all	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
23	Condoms are very costly to buy	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
24	The places one can buy condoms are far from home	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
25	If others find I have a condom they would think I have very low morals	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
26	Only prostitutes or those who have sex with prostitutes use condoms. I am not one of them and so I do not use condoms.	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree

The following statements regard your confidence in using MALE condoms e.g., Trust Condoms.

Please circle only one response for every statement

1	I feel confident in my ability to put a condom on myself or my partner	Strongly Agree	Agree	Not sure	Disagree	Strongly Disagree
2	I would feel embarrassed to put a condom on myself or my partner	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
3	I feel confident in my ability to use a condom correctly	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
4	I feel confident I can easily remove and dispose of a condom after sexual intercourse	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	I feel confident in my ability to put a condom on myself or my partner quickly	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
6	I feel confident that I would use a condom successfully	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
7	If I were to suggest using a condom to a partner, I would feel afraid that he or she would reject me	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
8	If I were unsure of my partner's feeling about using condoms, I would not suggest using one	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
9	I would not feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I have a sexually transmitted disease	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
10	I would not feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I thought they had a sexually transmitted disease	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
11	I feel confident in my ability to discuss condom use with any partner I might have	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
12	I feel confident in my ability to suggest using condoms with a new partner	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
13	I feel confident I could suggest using a condom without my partner feeling "diseased"	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
14	I feel confident in my ability to persuade a partner to accept using a condom when we have sexual intercourse	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
15	I feel confident that I would remember to use a condom even after I have been drinking	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
16	I feel confident that I would remember to use a condom even if I were feeling high	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
17	I feel confident I could stop to put a condom on myself or my partner even in the heat of passion	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
18	With my boy/girl friend I would not dare suggest using a condom because he/she might end our relationship	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree

19	With my boy/girl friend I would not bother to use or suggest the use of condoms because I think he/she has no HIV. He/she looks healthy.	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
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The following statements refer to you and your friends. Please circle only one response for every statement

1	My friends and I encourage each other before dates to practice safer sex	Almost always	Sometimes	Almost never
2	If a friend knew that I might have sex on a date, he/she would ask me if I were carrying a condom	Almost always	Sometimes	Almost never
3	If I thought one of my friends had sex on a date, I would ask them if they used a condom	Almost always	Sometimes	Almost never
4	When I think that one of my friends might have sex on a date, I ask them if they have a condom	Almost always	Sometimes	Almost never
5	My friends talk a lot about safer sex	Almost always	Sometimes	Almost never
6	If I had sex and I told my friends that I did not use condoms, they would be angry or disappointed	Almost always	Sometimes	Almost never
7	If a friend knew that I had sex on a date, he/she wouldn't care if I had used a condom or not	Almost always	Sometimes	Almost never

The following statements refer to your parents or the adults you live with. Please circle only one response for every statement.

1	Suppose you were having sex and your parents (or the adults you live with) found out, they would be:	Very angry	Somewhat angry	Probably not mind
2	If your parents (or the adults you live with) found out that you carry condoms, they would be	Very angry	Somewhat angry	Probably not mind

Thank you very much for helping with this survey!