ASSOCIATION BETWEEN HIV STATUS AND SOCIO-DEMOGRAPHIC CHARACTERISTICS OF CLIENTS SEEKING VOLUNTARY COUNSELLING AND TESTING (VCT) SERVICES IN SELECTED SITES IN KENYA

BY

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APRIL, 2009
DECLARATION

This thesis is my original work and has not been presented for a degree or any other award in any other university.

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Signature

Date
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To my family, particularly my four months-old son, Ray, for his patience during the most important phase of this work.
ACKNOWLEDGEMENT

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<tr>
<td>AIDS</td>
<td>Acquired Immuno Deficiency Syndrome</td>
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<tr>
<td>ANC</td>
<td>Antenatal Care Services</td>
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<td>ARV</td>
<td>Antiretroviral</td>
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<tr>
<td>BCC</td>
<td>Behaviour Change Communication</td>
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<td>BSS</td>
<td>Behavioural Surveillance Survey</td>
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<td>FHI</td>
<td>Family Health International</td>
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<td>IEC</td>
<td>Information, Education and Communication</td>
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<td>IMPACT</td>
<td>USAID’s Implementing AIDS Prevention and Care</td>
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<td>KAIS</td>
<td>Kenya AIDS Indicator Survey</td>
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<td>KDHS</td>
<td>Kenya Health and Demographic Survey</td>
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<td>KEMRI</td>
<td>Kenya Medical Research Institute</td>
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<td>KNH</td>
<td>Kenyatta National Hospital</td>
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<td>MTCT</td>
<td>Mother-to-Child Transmission of HIV</td>
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<tr>
<td>NASCOP</td>
<td>National AIDS and STDS Control Program</td>
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<td>NACC</td>
<td>National AIDS Control Council</td>
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<tr>
<td>NGO</td>
<td>Nongovernmental Organization</td>
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<tr>
<td>OI</td>
<td>Opportunistic Infection</td>
</tr>
<tr>
<td>PLWHA</td>
<td>People Living With HIV/AIDS</td>
</tr>
<tr>
<td>PMTCT</td>
<td>Prevention of Mother-to-Child Transmission of HIV</td>
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<tr>
<td>PTC</td>
<td>Post-Test Club</td>
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<tr>
<td>STD</td>
<td>Sexually Transmitted Diseases</td>
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<td>STI</td>
<td>Sexually Transmitted Infection</td>
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<td>UNAIDS</td>
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<td>UNICEF</td>
<td>United Nations Children Fund</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>VCT</td>
<td>Voluntary Counselling and Testing</td>
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<td>WHO</td>
<td>World Health Organization</td>
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OPERATIONAL DEFINITION OF TERMS

Acquired Immune Deficiency Syndrome (AIDS) - is a condition in which a person's immune system is so weakened that s/he becomes susceptible to conditions that occur rarely in those with intact function.

HIV - the virus that causes acquired immune deficiency syndrome (AIDS); it replicates in and kills the helper T cells.

HIV and AIDS- HIV infect certain cells and tissues of the human immune system and takes them out of commission, rendering a person susceptible to a variety of infections and cancers. These infections are caused by so-called opportunistic agents, pathogens that take advantage of the compromised immune system but that would be unable to cause infection in people with a healthy immune system.

HIV Counselling- Confidential dialogue between client and care provider aimed at enabling the client to cope with stress and take personal decisions related to HIV/AIDS

HIV incidence – This is the number of new HIV infections in a population per year. It is the key parameter that prevention efforts aim to reduce, since newly infected persons contribute to the total number of persons living with HIV; they will progress to disease and death over time.

HIV prevalence—the percentage of population living with HIV

HIV tests – These are used to detect the presence of the human immunodeficiency virus in serum, saliva, or urine. Such tests may detect HIV antibodies or antigens.

Pandemic - A disease prevalent throughout an extensive region, country, or continent, or throughout the world.
Prevalence - The number of people in a population affected with a particular disease or condition at a given time. Prevalence can be thought of as a snapshot of all existing cases of a disease or condition at a specified time.

Vertical Transmission - A term used to describe the transmission of a disease from parent(s) to offspring. For example, HIV can be spread vertically from mother to child during pregnancy, at birth, or through breastfeeding.

VCT - It is the confidential procedure that is followed when you decide (on a voluntary basis) to take an HIV test. As the result of the test can be life changing, it is important that one is properly counselled before taking the test.

Window period - This is the time from infection until a test can detect any change. The average window period with antibody tests is 22 days.

Statistical significance - The probability that the results observed during the study (or more extreme results) was not likely to be due to chance alone. The threshold for statistical significance is an arbitrary value called a p value which is usually set at 0.05 or 5%. If the probability that the observed result was due to chance is less than the set p value, the result is considered statistically significant.

95% confidence interval (95% CI): A confidence interval gives a range of possible values (using an upper and lower bound) within which the true population value of a variable (e.g. the mean, proportion, or rate) will fall 95 times out of 100. It is a measure of certainty and precision around the sample estimate when estimating the true population value.
ABSTRACT

Association Between HIV status and Socio-Demographic Characteristics of Clients Seeking Voluntary Counselling and Testing (VCT) Services in Selected Sites in Kenya

Gathuya, Samuel Wambugu

Several studies have shown that some demographic factors such as gender play an important role in the transmission of HIV. Recent studies have also shown some association between male circumcision and HIV/AIDS as well as other social factors such as casual sex and condom use during high risk sex. However, although substantial data on socio-demographic variables are collected during voluntary counselling and testing sessions, it is not known how those factors correlate with client’s HIV result, which would be important in informing HIV/AIDS programming. The main objective of this study was, to determine the association between socio-demographic characteristics of VCT clients and their HIV test results in selected sites in Kenya between 2002 and 2006. Analytic study design was applied. A retrospective study of 79,338 VCT client records and 17 Key Informant interviews with VCT site managers was undertaken. Records were considered for review if the client was above 18 years of age and had undergone full VCT and signed a consent form. Convenient sampling technique was used to select VCT sites. The VCT clients’ records were entered into Epi Info 2002 computer software program and analysed using Statistical Software for Social Scientists (SPSS) and Microsoft Excel. Chi square test of association between HIV and socio-demographic characteristics was used. Results were considered significant when p value was less than 0.05. The results revealed that a little over half of the clients were males (52.6% vs 47.3%) ($\chi^2 = 39859$, df=1, $P=0.000$), majority of them in the age group of 25-49 years (57%). The clients’ average age was 28 years (SD +/-8.6). Most of the clients were single (42.1%) or in monogamous relationships (43.8%) and nearly 3 out of 10 were in skilled occupation. Clients’ with secondary education accounted for 44.9% of the total. Nearly three-quarters (72.5%) of clients had sexual practices in the past and condom use with non-steady partners among the sexually active was low (20.1%). Prevalence of HIV infection was significantly higher among women than men; 19.5% and 9.4% ($\chi^2 = 1685.77$, $P=0.000$), higher among those with low or no education ($\chi^2 =998.76$, df=3, $P=0.000$) and varied with occupation levels. Clients with skilled occupation were less likely to be infected compared to those in unskilled occupation ($\chi^2 = 1720$, df=4, $P=0.000$). High prevalence of HIV was observed among those who have ever been in marital relationships, the less educated, the unemployed clients and also among clients who had started sex and who never used condoms. Generally, the findings suggest that HIV affects people of low socioeconomic status and who were exposed to high risk sexual practices. Considering the prevailing high level of HIV infection rate among VCT clients, stakeholders implementing HIV/AIDS programs need to design appropriate HIV prevention programs targeting people in marital or cohabiting relationships, less educated, unemployed and clients who are exposed to high risk sexual behavior that fuel spread of HIV.
CHAPTER ONE: INTRODUCTION

1.1 Background to the study

In relation to HIV and AIDS prevention, HIV counselling is the only practical means for promoting behaviour changes and adoption of long-term low risk behaviours. HIV voluntary counselling and testing is currently vital, because it has been shown to play a significant role in both HIV prevention and an entry into care for people with HIV infection. VCT provides people with an opportunity to learn and accept their HIV status in a confidential environment and provide referral for ongoing emotional support and medical care (Coates et al., 1998).

The Kenya national VCT guidelines (NASCOP, 2001) state that voluntary confidential counselling and testing targets behaviour change and that knowing one’s HIV status empowers people to make informed decisions about their sexual lifestyle that would otherwise predispose individuals to HIV infection. The Ministry of Health response to the HIV epidemic in its national strategic plan (1999–2004) includes the introduction of voluntary counselling and testing into the public health care system mainly because most of the people who are infected are not aware of their HIV status. This has also been re- emphasised in the subsequent strategic plan (2005 – 2010). This later plan provides a framework on how to undertake provider initiated counselling and testing so as to net as many people who present themselves to help facilities with other ailments.

1.1.1 Demand for VCT

A national household survey, the 2002 Behavioural Surveillance Survey (BSS) reported that a high proportion of the respondents expressed willingness to use VCT services if made available. This may imply that the community mobilization activities conducted over the last decade are
now yielding fruits, and increasingly, more people are convinced to take the test (BSS, 2002). The 2003 Kenya Health and Demographic Survey (KDHS) demonstrated that 66% of men and 63% of women of reproductive age in Kenya would want to know their HIV serostatus. The same survey indicated that only a small percentage reported ever being tested for HIV.

Not much change seems to have happened in meeting demand for VCT since the KDHS of 2003. The KAIS (2007) results show that, overall, 36 percent of Kenyans adults ages 15-64 had tested at least once for HIV and received results. Nearly two-thirds of Kenyans reported never having been tested for HIV, and are therefore unaware of their status and may not access appropriate services for prevention, care and treatment of HIV. Testing is particularly low among older Kenyans age 50-64. Among this cohort, only 17.5 percent have been tested for HIV. The disparity between urban and rural areas is substantial. Fifty percent of urban residents have been tested for HIV at least once compared to only 30 percent of rural residents. There is however a significant increase in HIV testing among women partly due to PMCT services and testing in antenatal clinics. Nearly one-third of women who reported having ever tested said they were tested at an antenatal clinic.

1.1.2 Burden of HIV/AIDS to Health Systems

The burden of HIV/AIDS continues to pose a major challenge to Kenya’s health care system. Strong government intervention over the last 10 years has given rise to high level of awareness but little corresponding behaviour change. According to previous household surveys, Kenya's HIV prevalence was 5.1% in 2006, down from 5.9% in 2005 and 6.1% in 2004. The latest AIDS indicator survey (NASCOP, 2007), however, indicates that the HIV prevalence has gone up to 7.4% among 15 – 64 age group and 7.8% among the 15 – 49 age group accounting for 1.4 million people with the virus and 102,000 of whom are younger than age 14. HIV prevalence
among men was 3.5% in 2006, compared with 6.7% among women. A higher proportion of women age 15-64 (8.7%) than men (5.6%) are infected with HIV according to KAIS 2007. This pattern is similar to what was observed in KDHS of 2003. This means that 3 out of 5 HIV-infected Kenyans are female, just as it has been since the first national household survey with HIV/AIDS component was conducted in 2003 (KDHS, 2003).

1.1.3 Socio-demographic Factors and HIV

According to National AIDS Control Council report of 2006, HIV prevalence in urban areas is about 8.3%, compared with 4% in rural areas. But in absolute terms, about three quarters of Kenyans live in rural areas of the country. Among those between 15 to 64 years, seven percent are infected with HIV according to KAIS, 2007. In urban areas, the prevalence is 9 percent. In addition, deaths from AIDS-related causes per year decreased from 120,000 in 2003 to 85,000 in 2006. The decline can be attributed to increased access to antiretroviral drugs. The Kenyan government provides access to no-cost antiretrovirals to HIV-positive people (NASCOP, 2007).

Other factors identified to vary with HIV infection rates are age, marital status, regions and education, according to Kenya AIDS indicator Survey (2007). For both females and males, HIV is occurring in all age groups. There are, however, some differences in prevalence across the life span. Among youth age 15-24, women are 4 times more likely to be infected than men (6.1% compared to 1.5%). A higher proportion of Kenyans ages 30-34 are currently infected with HIV than in any other age category. The decline in prevalence among women after age 34, and among men after age 44 could represent a decline in new infections in older age groups or an increase in HIV-related deaths in these age groups.
The foregoing statistics suggest that socio-demographic and behavioural characteristics of individuals may have a role in HIV and AIDS. Through VCT sites, thousands of clients are counselled and tested daily for HIV. Data were lacking on socio-demographic characteristics of clients undergoing VCT as exhibited by scanty published information in Kenya on the profile of clients attending VCT, especially their sexual behaviour and socio-demographics, and how they relate to HIV prevalence. This study therefore aims to fill this gap, and present results that program managers can use to design programs that target people based on their socio-demographic factors and consequently combat the pandemic.

1.2 Problem Statement

VCT is an important component of the HIV/AIDS prevention and control interventions. There has been a wide scale-up of VCT activities in the country through static and mobile counselling and testing but factors associated with HIV infection among clients attending VCT services have not been well characterized in Kenya.

Research has shown that men and women are affected differently. The Kenya AIDS Indicator Survey of 2007 shows that a higher proportion of women aged 15-64 (8.7%) than men (5.6%) is infected with HIV. This pattern is similar to what was observed in KDHS 2003. Recent research suggests that other factors such as age, education, marital status and region have a role to play in the HIV/AIDS burden (NASCOP, 2007). Such parameters become important information for HIV/AIDS program managers when they are designing programs. But these data are collected through national household surveys which are expensive and only conducted periodically. VCT data can provide a cheaper and hopefully more effective alternative, including current data that can be used in-between the national surveys. However, there is very little empirical evidence to
show socio-demographic correlates of VCT clients to their HIV results; whether or not such factors relate to HIV test results. This is because, the socio-demographic characteristics of VCT clients is unknown, and would need to be investigated using the routine data collected from every client.

1.3 Justification of the Study

This study reviewed records of clients who had visited selected VCT sites over a five years period starting in 2002. This study will provide an opportunity for other researchers, the Ministry of Health and particularly through National AIDS and STI Control programme and program managers to learn from the findings of this study and use recommendations to improve their programs.

In particular, the rich information on the socio-demographic factors of the VCT clients and more importantly, how these factors relate to HIV results will be useful in future by managers starting or strengthening counselling and testing programs. This study findings will also be important to managers of HIV/AIDS programs who want to make informed decisions while designing appropriate HIV prevention programs.

Future VCT clients, on the other hand, will benefit from the findings of this study since they will easily be targeted based on their socio-demographic characteristics. Organisations working in HIV prevention and care programs will be more effective in their activities by using evidence-based programming.

The survey information also revealed the trend in which the AIDS pandemic is moving, especially socio-demographic disparities in the HIV burden, based on VCT data. On the other hand, national studies that are used to measure the progress in the HIV pandemic are not only
very expensive but are conducted after several years. For instance, the Kenya Health and Demographic Surveys are conducted after 5 years whereas the natural Behavioural Surveillance Surveys have no regular pattern since only one such study has ever been conducted in Kenya. Another national house-hold survey, the KAIS, has only been conducted once and its periodicity is yet to be determined. Therefore, this study used sample VCT data not only to assess correlates of socio-demographic factors and HIV test results but also to show trends in HIV prevalence across the duration of data collection.

1.4 Research Questions

a) What are the socio-demographic characteristics of VCT clients in the selected VCT sites?

b) What is the relationship between socio-demographic characteristics of VCT clients with HIV infection levels?

c) What is the HIV prevalence level among VCT clients between 2002 and 2006 in the selected sites?

d) What is the ratio of female to males infection with HIV between 2002 and 2006?

1.5 Null Hypotheses

a) Differences in socio-demographic characteristics of VCT clients are not associated with differences in their HIV results.

b) The rate of HIV infection among males and females were not the same from 2002 to 2006.
1.6 Objectives

1.6.1 Overall Objective
The main objective of this study is to find out whether the differences in HIV status of clients seeking Voluntary Counselling and Testing (VCT) services are associated with their differences in socio-demographic characteristics.

1.6.2 Specific Objectives
a. To describe the socio-demographic characteristics of the VCT clients.
b. To determine whether there is a relationship between HIV prevalence of clients served in selected VCT clients and their socio-demographics
c. To explain the trend in HIV prevalence among VCT clients between 2002 and 2006.
d. To determine the male to female rate of HIV infection between 2002 and 2006.

1.7 Scope of the Study
The study covered selected high volume VCT sites in Nairobi, Rift Valley, Western and Coast provinces from 2002 to 2006, covering records of first time and repeat clients. In each of the regions, all the sites serving at least 2,000 clients annually and were supported by Family Health International were purposively selected. Records of all clients meeting the entry criteria and who visited the VCT sites for the purpose of HIV test during the period of study were automatically included in the sample. The sites were selected out of convenience because the researcher was an employee of Family Health International (FHI), an international non-governmental organisation that is supporting HIV/AIDS activities in Kenya. The selected sites had received financial and technical support from 2002 to 2006 when the IMPACT project ended.
1.8 Significance of the Study

The findings of this study were useful in identifying higher prevalence and higher-risk population groups that seek voluntary counselling and testing services and for strengthening prevention, care and support, and treatment programs.

1.9 Delimitation and limitation of the study

One of the limitations of this study was based on the self-reporting of sexual and other related high-risk behaviors. There was evidence that women tend to underreport and men tend to exaggerate their premarital and extramarital sexual activity (Zaba et al., 2002). The findings of this study may be biased to the extent men and women misreport the number of sexual partners, sex with non-regular partners, condom use, and other related higher-risk behaviors, or to the extent that the degree of misreporting is different across various socio-demographic groups of people.

Another limitation was that the data used in this study only allowed examining at associations of socio-demographic characteristics and HIV test results. It is not possible to identify any causal effects between various characteristics and behaviors and the risk of HIV infection. Moreover, the analysis correlates many recent (for the past 12 months) behaviors with HIV infection status at the time of the survey. It is quite possible that for many HIV-positive adults, the infection preceded their sexual and other behaviors recorded in the survey. Some of the associations may have been biased to the extent that some of the characteristics and behaviors of the infected people may have changed since getting infected.

In spite of these limitations, this study provided timely insights with regard to the spread and correlates of HIV infection among Kenya’s VCT clients.
1.10 Assumptions

The main assumption of this study was that findings could be generalised to the entire country, but this may not be entirely acceptable considering that the study population was drawn from major urban centres' high volume sites. Since these sites were donor funded, they may not be representative of all categories of VCT sites in Kenya.

Whereas the trends generated by these results mirrored the national trends produced by the national surveys, the data in this survey were from self selected clients who may not represent the general population.
CHAPTER TWO: LITERATURE REVIEW

2.1 HIV Pandemic in the World

Every day of 2007, over 6,800 persons became infected with HIV and over 5,700 persons died from AIDS, mostly because of inadequate access to HIV prevention and treatment services. The HIV pandemic remains the most serious of infectious disease challenges to public health. Nonetheless, the current epidemiologic assessment has encouraging elements since it suggests a reduction in HIV-associated deaths, partly attributable to the recent scaling up of treatment access; and a reduction in the number of annual new HIV infections globally (UNAIDS, 2007).

AIDS still kill more adults than all wars and conflicts combined, and are vastly bigger than current efforts to address it. A joint WHO/UN AIDS report showed that nearly three million people are now receiving anti-retroviral drugs in the developing world, but this is less than a third of the estimated 9.7 million people who need them (WHO, 2007).

2.2 HIV Prevalence in sub-Saharan Africa

This is the area in Africa south of the Sahara desert popularly known as Sub-Saharan Africa. This region remains the most seriously affected region, with AIDS remaining the leading cause of death there. More than two out of three (68%) adults and nearly 90% of children infected with HIV live in this region, and more than three in four (76%) AIDS deaths in 2007 occurred there, illustrating the unmet need for antiretroviral. Presently, of the 38.6 million people infected worldwide, 24.5 million are in sub-Saharan Africa (UNAIDS, 2006). There were 800,000 new infections among the children worldwide, of which 720,000 were from Sub-Saharan Africa.
The infection in African children is high accounting for 87% of the HIV infection worldwide (Gilkset et al., 2006). HIV rates is also high among the African women compared to women in developed countries (UNAIDS, 2007). By the end of 2007, women accounted for 48% of all adults living with HIV/AIDS worldwide, and for 59% in sub-Saharan Africa (UNAIDS, 2007). This is associated to male patriarchal systems, which favour widow inheritance, polygamy, multiple sex partners and economic dependence of men. Conflicting negative cultural practices also favour sexual harassment and abuse of women, hence promoting spread of HIV (NASCOP, 2007).

2.3 HIV/AIDS burden in Kenya

A large number of people in their reproductive age are HIV infected accounting for 1.4 million People aged between 15 - 64 years or 7.4% of adult population and 100,000 children are currently estimated to be infected (NASCOP, 2007). This figure ranks Kenya in the fifth position among countries that have the highest number of people living with HIV in the sub-Saharan Africa, with the prevalence of 5.1% in 2006, down from 5.9% in 2005 and 6.1% in 2004 (www.nacc.or.ke/downloads/aids_).

New infections in adults have drastically reduced from over 200,000 (1990) to 86,000 in 2006 (NASCOP, 2007). The decline in the HIV infection is due to a comprehensive effort by the government and its partners to confront the factors fuelling the spread of disease and the resultant impacts.

The death rate in Kenya is likely to continue to rise because of the large number of people infected in the 1990s. Over 1.5 million Kenyans have died from AIDS since 1984. This scourge has orphaned over 1.6 million children under the age of 15 years (UNAIDS/UNICEF/USAID, 2006). The AIDS scourge has created severe negative economic impact, which affects the
infected individuals themselves and the affected families. This has a multiplying effect on the entire macro-economy. Many young girls have discontinued schooling to take care of their sick parents at home (Lindsey, 2000). Many families have exhausted their savings and sold valuable assets to pay for drugs and funeral expenses, (Hansen et al., 1998). Loss of both skilled and unskilled labour has resulted in decline on productivity, especially in agriculture from which over 90% Kenyans make their livelihood (NASCOP, 2006).

A study on the impact of HIV/AIDS in agro-estates in three Kenyan provinces; Nyanza, Rift Valley and Eastern, revealed that the cumulative cases of AIDS accounted for as high as 34% of the workforce in Nyanza, 12% in Rift Valley and 3% in Eastern Provinces (NASCOP, 2001). A Study on the macro-economic impact of HIV/AIDS in Kenya revealed that the impact of AIDS could be substantial given that 80% of the HIV infection occurs in the economically active age-groups of 15 – 49 years (Hancock et al., 2002). The high morbidity and mortality of the most productive labour force has lowered economic growth, low savings and foreign investments. Forsythe et al., (1996) estimated the cost of hospital care for AIDS patient at Ksh. 27, 200 per month, which most Kenyans cannot afford. However the situation is now changing due to the availability of free of charge drugs in government health facilities.

2.4 Modes of transmission of HIV

There are three main modes of transmission of HIV in Kenya, which include heterosexual contact, blood and blood products contact, and vertical transmission or mother to child transmission (NASCOP, 2005). Heterosexual contact is the main mode of HIV transmission in Kenya accounting for (80%) of all the HIV infections (NASCOP, 2001). All programs designed to slow the spread of HIV among the population are focusing on reducing transmission through sexual contact. Pre-natal HIV transmission accounts for about 10 to 15% of all HIV
transmission, whereas transmission through blood and blood products accounts for 5% to 10% of the total HIV infection (NASCOP, 2001).

Given that there is better understanding that Kenya has a mixed epidemic, attention is being accorded to population groups that are particularly most at risk, which are perceived as drivers of the epidemic. These population groups include commercial sex workers, same-sex partners, injecting drug users, discordant couples, truckers, and cross-border mobile populations. In the past, baseline data on these groups has been insufficient or non-existent, thus posing a challenge to tailor intervention measures that are specific to these groups.

The HIV and AIDS epidemic is changing with the introduction of free delivery of antiretroviral treatment (ART). Annual adult AIDS deaths peaked at 120,000 in 2003, reflecting the expanding number of new infections in the early 1990s. AIDS deaths would have remained at that level if it had not been for the rapid and expansive rollout of free antiretroviral treatment. By 2006, the annual AIDS mortality number had dropped to 86,000 (NACC, 2007).

2.5 HIV prevention methods

HIV can be transmitted in three main ways: These include sexual transmission, transmission through blood and mother-to-child transmission. Wherever there is HIV, all three routes of transmission will take place. However the number of infections resulting from each route will vary greatly between countries and population groups. To be successful, a HIV prevention programme must make use of all approaches known to be effective.
For each route of transmission there are things that an individual can do to reduce or eliminate risk. There are also interventions that have been proven to work at the community, local and national level.

To be successful, an HIV prevention programme must make use of all approaches known to be effective, rather than just implementing one or a few selected actions in isolation. The share of resources allocated to each area should reflect the nature of the local epidemic - for example, if most infections occur among men who have sex with men then this group should be a primary target for prevention efforts (Gilkset et al., 2006).

CDC recommends that using latex condoms consistently and correctly can greatly reduce, but not completely eliminate risk. Consistently means using a latex condom from start to finish each and every time one engages in anal or vaginal sex. Correctly mean using a new condom for each act of intercourse, putting the condom on after the penis is erect and before any genital contact. If the penis is uncircumcised, one is advised to pull the foreskin back before rolling on the condom (CDC, 1998).

To prevent infection, one is advised to hold the tip of the condom and unroll it onto the erect penis, pinching the tip of the condom to ensure there is no air trapped in the condom's tip and to withdraw the penis immediately after ejaculation, holding the condom firmly at the base to keep it from slipping off. It is important to stop and replace immediately (with a new one) any condom that breaks or slips off during sex.

Although various population groups are affected by the HIV/AIDS epidemic differently, the basic methods of preventing infection and controlling the spread of HIV remain constant; to
abstain completely from sex or limit oneself to one, uninfected, monogamous partner. In the case of injecting drug users, they are advised not to share any drug equipment (WHO, 2005).

To prevent infection from mother-to-child (MTCT) during pregnancy, labour and delivery, or breastfeeding, effective prevention requires a three-fold strategy. This includes, preventing HIV infection among prospective parents, avoiding unwanted pregnancies among HIV positive women and preventing the transmission of HIV from HIV positive mothers to their infants during pregnancy, labour, delivery and breastfeeding. The last of these can be achieved by the use of antiretroviral drugs, safer infant feeding practices and other interventions (FHI, 2002).

There are infections that can occur in occupational settings through exposure to HIV-infected blood via a percutaneous injury (i.e. from needles, instruments, bites which break the skin, etc.). The average risk for HIV transmission after such exposure to infected blood is low - about 3 per 1,000 injuries. Nevertheless, this is still understandably an area of considerable concern for many health care workers (WHO, 2006). Certain specific factors may mean a percutaneous injury carries a higher risk, for example, a deep injury, a late-stage HIV disease in the source patient, visible blood on the device that caused the injury and injury with a needle that had been placed in a source patient’s artery or vein.

If percutaneous exposure occurs then the site of exposure should be washed liberally with soap and water but without scrubbing. Bleeding should be encouraged by pressing gently around the site of the injury (but taking care not to press immediately on the injury site). It is best to do this under a running water tap (CDC, 2007).
WHO (2006) also recommends employment of universal precautions, which means, taking precautions with everybody. If precautions are taken with everyone, health care workers do not have to make assumptions about people's lifestyles and risk of infection. Health care workers should have the right to be able to protect themselves against infection, whether it is HIV, Hepatitis or anything else.

Research evidence seems to suggest that the use of anti-HIV drugs if given soon after an injury can reduce the rate of transmission. Such treatment is referred to as Post Exposure Prophylaxis (PEP). PEP is recommended for health care workers if they have had a significant occupational exposure to blood or another high risk body fluid which is likely to be infected with HIV (Population Council, 2005).

Although exposure through needle stick injuries can usually be avoided by following good working practices, health care workers should consider the implications of taking PEP. This will help them to make a swift decision in the event of an accident where an injury occurs.

2.6 Socio-demographic characteristics and HIV/AIDS

Voluntary counselling and testing is a powerful weapon against the spread of HIV/AIDS. VCT is a key entry point for needed medical, psychological, social, and legal interventions for HIV-positive individuals and their families. Interventions include treatment and prevention of opportunistic infections; prevention of mother-to-child transmission of HIV; home-based care; orphan support; and post-test clubs. VCT is a catalyst for behaviour change, for clients who test HIV-negative as well as those who test positive. Clients are counselled about HIV prevention, and they develop HIV risk-reduction plans and receive referrals to post-test clubs to reinforce
behaviour change (NACC, 2002). There are in fact two major behaviour change methods that have been observed over time in VCT.

Previous research on the spread and correlates of HIV infection in sub-Saharan Africa has shown large differentials in the prevalence of HIV by age, sex, urban/rural residence, and geographical region within and between countries (Machekano, 2000, 2006; NACC, 2007). Some recent studies have linked socioeconomic status with HIV infection and demonstrated that wealth, operating through various underlying proximate factors, tends to be associated with higher risk of HIV infection (Machekano, 2000; Bingenheimer, 2007). Other socioeconomic factors, such as, education, occupation, marital status and exposure to media, that may influence risk-taking behaviors, also tend to be associated with the risk of HIV infection.

Individuals with little or no education tend to have poor access to information on safe sex and are less likely to use condoms (Lagarde et al., 2001). Mobility has been shown to increase HIV-related risk because well educated men and women and those with higher incomes are more likely to travel and thus have more opportunities for casual sexual contacts (Sweat et al., 2001; Wardlow, 2007). In addition, gender inequities are believed to be important for HIV transmission because many women in developing countries face strong economic, legal, cultural, and social disadvantages that compromise their ability to control their sexual encounters. Other studies have shown higher education predisposes people to HIV. According to Ethiopian Demographic Health Survey (2005), educated women and men were more likely to be HIV positive than non-educated women and men, but these effects were not statistically significant when other factors were controlled.
In terms of education levels, KAIS (2007) indicated that women age 15-64 with higher educational levels have significantly lower HIV prevalence than those with less education. Those with primary education have a prevalence of 10% compared to 7% with secondary education and 4% with tertiary education. Prevalence among women who have never attended school is 7%. For men, there is also a decrease in HIV prevalence with higher levels of education but the differences are less pronounced and not statistically significant.

KAIS (2007) has identified marital status as an important risk factor when exploring patterns of HIV transmission in a population. In Kenya, nearly 2 out of 3 Kenyans ages 15-64 are in a union (married or cohabitating). Kenyans in polygamous unions (one man, more than one woman) are more likely to be HIV infected than those in monogamous unions. Also, women who have ever been widowed and women who are currently divorced or separated have high HIV prevalence at 17-21 percent. This is especially relevant since the proportion of Kenyans (both women and men) currently widowed has more than tripled since 2003 (UNAID, 2006). One hypothesis is that the deceased partners of women respondents are likely to have died from HIV-related illness after years of infection, since HIV is the leading adult cause of death among Kenyans age 15-49. These women were potentially exposed to HIV for several years before their partners died.

Other findings show that women and men currently in a union (married or living with partner; monogamous or polygamous) have similar HIV prevalence rates. Among sexually-active men, those who have never been in a union have a prevalence of 2.8 percent compared to 7.4 percent among men currently in a union. The disparity is probably related to age and cumulative exposure to HIV; those never having been in a union are much younger than those currently in a union (NASCOP, 2007).
Women’s economic dependency on their male partners and lack of power in their relationship make it difficult for them to negotiate safer sex, and may force them into transactional sex (Kim and Watts, 2005). A number of studies have shown that having multiple sexual partners and having casual sexual partners increases the risk of getting infected with HIV and other sexually transmitted infections (Wilson, 2004; Shelton et al., 2004; Stoneburner and Low-Beer, 2004; Vermund, 1995; Chen et al., 2007). Young women aged 15–24 form another group that is particularly most at risk. They are 5.5 times more likely to become infected with HIV than young men of the same age. Taking note of this glaring discrepancy, efforts are under way to undertake research to establish the reasons for this phenomenon (UNAIDS, 2007).

Other recent research has shown that being faithful to one’s regular partner(s) can substantially reduce the risk of HIV infection (Mishra et al., 2007). More recently, considerable attention has been paid to the role of concurrent sexual partnerships and sexual networks in explaining widely varying levels of national and sub-national HIV prevalence. It has been argued that having concurrent sexual partners in a dense sexual network increases the risk of HIV infection by allowing the virus to spread rapidly to others (Halperin and Epstein, 2004; Kohler and Hellinger, 2006; Morris and Kretzschmar, 1997). Ethiopia DHS of 2005 results show that, one of the strongest correlates of HIV infection among both women and men was having multiple lifetime sexual partners, which was strongly associated with the likelihood of HIV infection independent of other factors. Having a non-spousal (non-marital, non-cohabiting) sexual partner in the past year was also positively associated with the likelihood of HIV infection, but this association was much diminished when the number of lifetime sexual partners and other socio-demographic and behavioral factors were statistically controlled (EDHS, 2005).
It has also been argued that condom use, especially with casual, higher-risk sexual partners, can reduce the risk of HIV infection. The effect of condom use in the prevention of sexually transmitted infections has been demonstrated in prospective studies (e.g., Shafer et al., 2006), but cross-sectional data collected in national household surveys have generally failed to find a negative association between condom use and HIV infection (for example, Cameroon, Uganda, and Zimbabwe). In these surveys, adults who reported using condom at last sex during the past year had higher prevalence of HIV, not lower (ORC Macro, 2004; Ministry of Health Uganda and ORC Macro, 2006; Central Statistical Office Zimbabwe and Macro International, 2007, NACC, 2007).

Three recent clinical trials in sub-Saharan Africa have shown that male circumcision can significantly reduce the risk of HIV infection (NIH, 2006; Shafer et al., 2006; Bessinger, 2005). Also, there is growing evidence that the risk of sexual transmission of HIV increases considerably in the presence of other untreated sexually transmitted infections (STIs). For example, there is evidence that individuals with herpes and other STIs are more likely to also have HIV infection (Mbizvo et al., 1996; Hansen, et al., 2002). The use of alcohol or other substances at sexual intercourse have been associated with higher-risk sexual behaviors, such as extramarital sex and sex with commercial sex workers, which in turn, increase the risk of HIV infection (Kongnyuy and Wiysonge, 2007).

The above studies however, have utilized data gathered from various surveys. None however, have utilized routinely collected VCT data to compare with above results, and hopefully use VCT data for designing programs and also for monitoring and evaluation of the HIV/AIDS pandemic.
2.7 Voluntary Counselling and Testing in Kenya

The Kenya program uses three models of VCT service provision: mobile, stand alone sites and those integrated into public health facilities such as large hospitals, smaller health centers, and rural dispensaries. The document, National Guidelines for Voluntary Counselling and Testing, published in 2001, ensures standardized, good-quality services among all the sites.

District health management teams made up of health professionals, community leaders, people living with HIV/AIDS, and others have been central to planning and implementing the voluntary counselling and testing sites, thus ensuring ownership and sustainability of the program. A mass media component for the program uses a combination of approaches to create awareness and encourage voluntary counselling and testing (MOH, 2004).

Overall, 36 percent of Kenyans adults ages 15-64 have tested for HIV at least once for HIV and received results. Nearly two-thirds of Kenyans report never having been tested for HIV, and are therefore unaware of their status and may not access appropriate services for prevention, care and treatment of HIV. Testing is particularly low among older Kenyans age 50-64; among this cohort, only 17.5 percent have tested for HIV. The disparity between urban and rural areas is substantial: 50 percent of urban residents have tested for HIV at least once compared to only 30 percent of rural residents (NASCOP, 2007). The increase in HIV testing among women is in part attributed to PMCT services and testing in antenatal clinics as KAIS report notes that nearly one-third of women who reported having ever tested said they were tested at an antenatal clinic.
A man walks by a billboard advertising Kenya’s VCT program with the Swahili message, “Well, what will I do if my partner has HIV?” Discuss this question with the staff at the nearest VCT centre.”

2.8 HIV Testing Algorithms

The HIV testing algorithm used in Kenya until 2005 has been parallel testing using rapid HIV 1 and 2 tests (Determine and Unigold) and also using whole blood specimens. In case of discrepant results, another blood specimen would be drawn and tested on long Elisa or instant screen at the nearest hospital. The testing algorithm was changed to serial testing in 2005 due to shortages of test kits that the country frequently experienced and also with the added confidence that the serial test algorithm was just as reliable with the proper selection of test kits.

During 2002, strategies were put in place to ensure quality of service both in counselling and testing. The Kenya Medical Research Institute (KEMRI) and Kenya Association of Professional Counsellors (KAPC) were contracted to help establish quality assurance and continuous quality improvement systems. They jointly identified potential counsellors to be trained as support
supervisors to offer both individualised counsellor support as well as group support supervision (NASCOP, 2005).

2.9 Barriers to VCT Implementation

Kenyans who have never been tested for HIV, according to the KAIS study (2007) cited the most common reason as low perception of risk. A small but notable proportion of respondents (14 percent) said they were unaware that there was a test for HIV or did not know how to access testing. Five percent cited distance to the nearest known testing site as the major barrier, which may suggest that mobile testing services should be given more consideration. In this study, the cost of the test or the lack of access to or availability of treatment was very infrequently cited as barriers to testing.

The decision to go for voluntary counselling testing (VCT) and being eventually referred after establishing a rapport with counsellor is not perceived to be confidential enough by the client, a belief that is likely to reduce the number of people that get tested. The fact that a counsellor listens to a client and then refers him or her to another person for further support is sometimes misconstrued to mean that confidentiality is breached.

The stigma directed towards the HIV/AIDS is also a challenge to effective implementation of counselling and testing programs. In situations where VCT services are not integrated with other services, there is a common notion that those who go for VCT are suspecting themselves of having the disease. That tag that all those who go for VCT are most likely to be HIV infected keeps many people away from going for VCT (NASCOP, 2006).
The youth, on the other hand, find the traditional VCT sites and counsellors old fashioned and they therefore shy away from such sites. They prefer youth friendly VCT sites. These type of sites have youth-friendly environment including counsellors (Liverpool, 2003).
CHAPTER THREE: METHODOLOGY

3.1 Study Design

In this study, an analytic study design was used. Analytic study designs are employed to test one or more specific hypotheses, typically whether an exposure is a risk factor for a disease or an intervention is effective in preventing or curing disease or any other occurrence or condition of interest (Donald, 1989). To investigate whether socio-demographic characteristics of VCT clients are risk factors for HIV, evaluation design was selected as the most appropriate design. Both quantitative and qualitative data were used to assess the relationship between socio-demographic factors of VCT clients and their HIV results in selected sites in Kenya.

3.2 Study Area

The study area covered VCT sites in four regions in Kenya namely; Nairobi, Coast, Nakuru and Western Kenya. The 17 sites selected for investigation comprised the following;

a) Nine sites located in Mombasa District of the Coast province. Mombasa is the second largest city in Kenya, lying on the Indian Ocean. According to project 1999 census data, Mombasa city has a population of 727,842 and is located on Mombasa Island, which is separated from the mainland by two creeks; Tudor Creek and Kilindini Harbour. The town is mainly occupied by the Muslim Mijikenda/Swahili people. Over the centuries there have been many immigrants and traders who settled in Mombasa, who came mainly as traders and skilled craftsmen. Even after four or five generations, their descendants continue to contribute highly to the economy of present day Mombasa and Kenya as a whole. It is also the coastal gateway to the country on the
Indian Ocean, and has all the characteristics of port cities, such as tourism, opportunities for transactional sex, and many people with disposable incomes.

b) Kenyatta National Hospital (KNH) VCT is situated at the KNH grounds. KNH is the largest referral hospital in the country and a teaching hospital for the University of Nairobi and other tertiary medical institutions. As a public hospital, it serves many middle- and low-income people.

c) Rift Valley Provincial General Hospital, based in Nakuru, the fourth largest town in Kenya. It is a referral hospital that attracts patients and clients from rural areas. The population in the region is mainly agricultural, and many workers and pastoralists are employed in subsistence and large-scale commercial farming.

d) St. Mary’s Hospital in rural Western Kenya, a missionary-run hospital. The site served a distinctive population of agriculturalists and factory workers around the site.

Overall, data were collected from sites with at least 2,000 clients in a year in these provinces. The sites and regions were selected out of convenience, because the researcher was an employee of the non-governmental organisation, (Family Health International) which offered technical assistance in establishing these sites and also provided financial and technical support to these sites.

3.3 Study Population

The study targeted clients going to high volume VCT sites that were FHI supported in Coast, Nairobi, Nakuru and Western Kenya regions with the intention of undergoing voluntary counseling and testing. All VCT clients visiting the selected sites for HIV test between 2002 and 2006 and who met the selection criteria were selected. For the clients to be eligible for test, they had to be at least 18 years of age and of sound mind. However, mature minors, meaning those
who are younger than 18 years but are sexually active or had exposed themselves to risk of HIV were eligible for VCT, some of which may be accompanied by their parents or guardians.

Figure 3.2: Map of the study area

3.4 Sampling

Nairobi, South Rift, Coast and Western were conveniently selected as the study regions, on the account that they were receiving support from FHI. In each of the regions, all the sites serving at least 2,000 clients annually and are supported by FHI were selected. Records of all clients meeting above 18 years of age, of sound mind and who had signed Consent Forms and had visited the VCT sites for the purpose of HIV test during the between 2002 and 2006 were automatically included in the sample.
3.5 Sample Size Determination

Fischer's formula was applied to determine the sample size, thus;

\[ n = \frac{Z^2pqD}{d^2} \]

Where \( n \) = the standard sample size (population > 10,000)

\( Z \) = the standard normal deviate usually 1.96, which corresponds to 95% confidence interval.

\( P = 0.5 \), since the proportion of target population with the characteristics being measured is unknown.

\( q = p - 1 \)

\( D \) = Design effect = 1

\( d \) = the level of statistical significance required = 0.05

Thus

\[ n = \frac{1.96^2 \times 0.5 \times 0.5 \times 1}{0.05^2} \]

Minimum sample size = 384

As the sample size increases, sampling error is reduced, precision increases hence all available records of 79,338 clients were taken for review.

In reviewing client records of between 2002 and 2006, the sample was unlimited as the whole population of clients meeting the criteria were included. Records without Consent Forms signed or thumb-printed, or records of clients that did not go through full VCT or were of clients below 18 years of age, were excluded. Out of the total 80,415, VCT records available, 79,338 records fitted within the inclusion criteria and were reviewed. These comprised of 37,959 (47.8%) from
Coast facilities, 28,061 (35.4%) from (Nairobi) KNH, 8,918 (12.2%) from 6 Western facilities and 4,399 (5.5%) served in Rift valley’s Provincial General Hospital.

In addition, for each VCT site, a key informant was interviewed, in this case, the VCT site manager. A total of 17 key informants were conveniently selected and interviewed.

3.6 Data Collection

The focus of this study was to explore information that could explain the relationship between socio-demographic characteristics of VCT clients and reviewed HIV test results. To achieve this, records of VCT clients’ were collected using a pre-existing National Counselling and Testing Forms. This NASCOP form is used country-wide by all the counselling and testing sites. It contains information on each client’s socio-demographic characteristics and sexual behavior.

Specifically, data were collected on gender, age, and marital, occupation and education; type of counseling session (whether for couples, individuals, or groups); type of service required and type of referral service; reasons for visiting the VCT site and sources of information on it; sexual history and use of condoms; and whether the client had ever been tested for HIV and the result of such tests.

For each client, one form is filled for each visit after client consents for VCT service. The client consented by either signing or thumb-printing on the data collection form. To maintain anonymity of results, only client codes were entered on data collection forms instead of a client’s name. The researcher had trained the counsellor supervisors on how to review the client forms for accuracy, completeness and consistency in recording client details. The researcher reviewed the forms for accuracy and consistency. In addition, 17 Key Informant interviews were conducted with VCT site managers, guided by an interview guide.
3.7 Ethical Consideration
Ethical clearance was sought at two levels. One, consent was sought from Family Health International to use data from sites that the organization supported. Two, records that were reviewed must have had the consent received from VCT clients by signing or thumb-printing Consent Forms. The HIV results were anonymous. Records with HIV results with identifying information to the client were not reviewed. Information collected and/or reviewed will only be used for the purpose of the study.
CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Methods of data analysis
Data were recorded in the national VCT forms by trained counsellors at the time of pre and post test counselling. The data were entered in a computer using EPI info computer software and analyzed using Statistical Package for Social Sciences (SPSS) software package. Univariate and bivariate analysis were done in order to produce estimates for various variables. Chi-square test of association between HIV and socio-demographic characteristics such as age, sex, marital status, occupation, education; behavioural factors such as HIV risk perception, number of sexual partners and condom use was used. Results were considered significant if the p value was less than 0.05. The analysed data were then presented in frequency tables, bar charts and line graphs. Qualitative data were analysed by themes, ideas and opinions of the informants.

4.1.1 Socio-Demographic Profiles
Majority of the records (94%) belonged to new clients whereas the remaining 6% were repeat clients. Over 7 in 10 clients (72.5%) had had prior sex encounter compared to 5% who reported to never have had sex. Key informants reported serving an average of 10 clients a day but attendance varied with seasons especially because of farming or inaccessibility of testing sites during seasons of heavy rains.

At a VCT site, clients were counseled as individuals, as couple, general groups or as specific e.g polygamous groups. Over 8 out of 10 clients or 81.6% were counselled as individuals whereas one-in-ten of clients were served as couples and the rest were counselled and tested either as general groups or polygamous groups.
4.1.2 Gender
Apart from Western Kenya sites where more females than males (68.7% vs. 31.3%) attended VCT, all other sites witnessed significantly more men going for VCT. Overall, a little over half of the clients (52.6%) were males (table 4.1 below). Males were significantly more than females; (52.6% vs 47.3%) ($\chi^2 = 39859$, df=1, $P=0.000$).

Table 4.1: Distribution of VCT clients by site and gender, 2002–2006

<table>
<thead>
<tr>
<th>Region</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nairobi</td>
<td>15,444 (55%)</td>
<td>12,613 (45%)</td>
<td>28,066</td>
</tr>
<tr>
<td>Western</td>
<td>2,794 (31.3)</td>
<td>6,107 (68.7%)</td>
<td>8,913</td>
</tr>
<tr>
<td>Coast</td>
<td>21,073 (55.6%)</td>
<td>16,882 (44.4%)</td>
<td>37,959</td>
</tr>
<tr>
<td>Nakuru</td>
<td>2,411 (54.5%)</td>
<td>1,969 (45.6%)</td>
<td>4,400</td>
</tr>
<tr>
<td>Total</td>
<td>41,722 (52.6%)</td>
<td>37,571 (47.4%)</td>
<td>79,338</td>
</tr>
</tbody>
</table>

There were no major changes in gender proportions over the first five years. After 2005, however, the gap between the genders narrowed, merging in 2006, at about 14,000 clients of either gender (Figure 4.3).

Figure 4.3: Trend by gender of VCT clients, 2002-2006
4.1.2.1 Gender and Sexual Behaviour

Almost one-fifth (19%) of the VCT clients had no sexual partners in the year preceding their going for VCT compared to three in five clients (59%) who had one sexual partner. Twenty two per cent (22%) of all the clients had at least two sexual partners, majority of who were men as shown in table 4.2 below.

About a third of men (30%) were likely to have two or more sexual partners in the year before they went for VCT compared to 14% of women. Females were more likely to have a one sexual partner compared to males (67% vs 51%). There are no significant differences between men and women who reported to have no sexual partner. Chi-square test shows a strong relationship between gender and number of partners, with men nearly 5 times more likely to have multiple partners compared to their women counterparts ($\chi^2 = 1182.38, P=0.000, OR = 0.45, 95CI = 0.43 - 0.47$).

**Table 4.2: Number of sexual partners last 12 months by gender, 2002 - 2006**

<table>
<thead>
<tr>
<th>No. of Sex Partners</th>
<th>Males</th>
<th>%</th>
<th>Females</th>
<th>%</th>
<th>Not declare</th>
<th>%</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>7,896</td>
<td>19%</td>
<td>7,242</td>
<td>19%</td>
<td>36</td>
<td>80%</td>
<td>15,174</td>
<td>19%</td>
</tr>
<tr>
<td>One</td>
<td>21,474</td>
<td>51%</td>
<td>25,206</td>
<td>67%</td>
<td>7</td>
<td>16%</td>
<td>46,688</td>
<td>59%</td>
</tr>
<tr>
<td>Two or more</td>
<td>12,352</td>
<td>30%</td>
<td>5,123</td>
<td>14%</td>
<td>2</td>
<td>4%</td>
<td>17,477</td>
<td>22%</td>
</tr>
<tr>
<td>Total</td>
<td>41,722</td>
<td>100%</td>
<td>37,571</td>
<td>100%</td>
<td>45</td>
<td>100%</td>
<td>79,340</td>
<td>100%</td>
</tr>
</tbody>
</table>

Overall, one-quarter (25%) of VCT clients in Coast had two or more partners, compared to 21% in Nakuru. Nairobi and Western had 19% and 18% of their clients with multiple partners respectively as shown in table 4.3 on page 34.
Table 4.3: Number and percent of sexual partners last 12 months by region, 2002 - 2006

<table>
<thead>
<tr>
<th>Region</th>
<th>No. of sexual partners</th>
<th>Total</th>
<th>%</th>
<th>Region</th>
<th>No. of sexual partners</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nairobi</td>
<td>None</td>
<td>6,722</td>
<td>24%</td>
<td>Western</td>
<td>None</td>
<td>956</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>One</td>
<td>15,914</td>
<td>57%</td>
<td></td>
<td>One</td>
<td>6,359</td>
<td>71%</td>
</tr>
<tr>
<td></td>
<td>Two or more</td>
<td>5,430</td>
<td>19%</td>
<td></td>
<td>Two or more</td>
<td>1,598</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>28,066</td>
<td>100%</td>
<td></td>
<td>Total</td>
<td>8,913</td>
<td>100%</td>
</tr>
<tr>
<td>Coast</td>
<td>None</td>
<td>6,371</td>
<td>17%</td>
<td>Rift</td>
<td>None</td>
<td>1,125</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>One</td>
<td>22,057</td>
<td>58%</td>
<td>Valley</td>
<td>One</td>
<td>2,357</td>
<td>54%</td>
</tr>
<tr>
<td></td>
<td>Two or more</td>
<td>9,531</td>
<td>25%</td>
<td></td>
<td>Two or more</td>
<td>918</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>37,959</td>
<td>100%</td>
<td></td>
<td>Total</td>
<td>4,400</td>
<td>100%</td>
</tr>
</tbody>
</table>

Across the four regions, it was consistent that males were likely to have more sexual partners than females. In Nakuru and Nairobi regions, among VCT clients with two or more sexual partners, men constituted 76.1% and 72.6% respectively. In Coast and Western, 70.2% and 63.8% of the clients with two or more partners were men respectively (table 4.4 on page 35). Except for Nairobi where there were equal proportions of females and males with one sexual partner, in other regions, females were more likely to have one sexual partner compared to men; (Nakuru (51.2%), Western (77.9%) and Coast (50.3%).
Table 4.4: Number of sexual partners of VCT clients by gender and region, 2002-2006

<table>
<thead>
<tr>
<th>Region</th>
<th>No. of sexual partners</th>
<th>Male</th>
<th>Female</th>
<th>Not declare</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nairobi</td>
<td>None</td>
<td>3546 (52.7%)</td>
<td>3168 (47.1%)</td>
<td>8 (0.2%)</td>
<td>6,722</td>
</tr>
<tr>
<td></td>
<td>One</td>
<td>7951 (50%)</td>
<td>7962 (50%)</td>
<td>1 (0.0%)</td>
<td>15,914</td>
</tr>
<tr>
<td></td>
<td>Two or more</td>
<td>3947 (72.6%)</td>
<td>1483 (27.4%)</td>
<td>-</td>
<td>5,430</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>15444 (55.0%)</td>
<td>12613 (44.9%)</td>
<td>9 (0.1%)</td>
<td>28,066</td>
</tr>
<tr>
<td>Western</td>
<td>None</td>
<td>371 (38.8%)</td>
<td>578 (60.5%)</td>
<td>7 (0.7%)</td>
<td>956</td>
</tr>
<tr>
<td></td>
<td>One</td>
<td>1404 (22.0%)</td>
<td>4951 (77.9%)</td>
<td>4 (0.1%)</td>
<td>6,359</td>
</tr>
<tr>
<td></td>
<td>Two or more</td>
<td>1019 (63.8%)</td>
<td>578 (36.1%)</td>
<td>1 (0.1%)</td>
<td>1,598</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2794 (31.3%)</td>
<td>6107 (68.5%)</td>
<td>12 (0.2%)</td>
<td>8,913</td>
</tr>
<tr>
<td>Coast</td>
<td>None</td>
<td>3415 (53.6%)</td>
<td>2952 (46.3%)</td>
<td>4 (0.1%)</td>
<td>6,371</td>
</tr>
<tr>
<td></td>
<td>One</td>
<td>10971 (49.7%)</td>
<td>11086 (50.3%)</td>
<td>-</td>
<td>22,057</td>
</tr>
<tr>
<td></td>
<td>Two or more</td>
<td>6687 (70.2%)</td>
<td>2844 (29.8%)</td>
<td>-</td>
<td>9,531</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>21073 (55.5%)</td>
<td>16882 (44.5%)</td>
<td>4 (0.0%)</td>
<td>37,959</td>
</tr>
<tr>
<td>Nakuru</td>
<td>None</td>
<td>564 (50.1%)</td>
<td>544 (48.4%)</td>
<td>17 (1.5%)</td>
<td>1,125</td>
</tr>
<tr>
<td></td>
<td>One</td>
<td>1148 (48.7%)</td>
<td>1207 (51.2%)</td>
<td>2 (0.1%)</td>
<td>2,357</td>
</tr>
<tr>
<td></td>
<td>Two or more</td>
<td>699 (76.1%)</td>
<td>218 (23.7%)</td>
<td>1 (0.2%)</td>
<td>918</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2411 (54.8%)</td>
<td>1969 (44.8%)</td>
<td>20 (0.4%)</td>
<td>4,400</td>
</tr>
</tbody>
</table>

4.1.2.2 Gender and Condom Use

Table 4.5 on page 36 shows data on frequency of condom use with a non-steady partner(s), 12 months that before they underwent VCT. Nearly 7 in 10 (65.5%) of female clients reported to never using a condom compared to 48% of their male counterparts. About one-quarter (24.7%) of females and a third of males (30.4%) said they used a condom ‘sometimes’ compared to
12.1% of females and 12.8% of males who reported using a condom all the time they had a sexual encounter. There is significant relationship between gender and condom use ($\chi^2 = 1536.64, P=0.000$). Men were more likely to use a condom with a non steady partner compared to women ($\chi^2 = 366.86, P=0.000$, OR = 1.89, 95 CI = 1.77 – 2.01). Generally, consistent condom use was low but much lower among women compared to men.

**Table 4.5: Frequency of condom use by gender, 2002 -2006**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency of condom use with a non steady partner, last 12 months</th>
<th>Never</th>
<th>Sometimes</th>
<th>Always</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td>8,078 (48%)</td>
<td>5,114 (30.4%)</td>
<td>3,650 (21.8%)</td>
<td>16,842 (100%)</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>7,277 (65.5%)</td>
<td>2,878 (24.7%)</td>
<td>1,490 (12.8%)</td>
<td>11,645 (100%)</td>
</tr>
</tbody>
</table>

Table 4.6 on page 36 shows that a huge majority of VCT clients in Western Kenya region (70%) never used condoms while having sexual intercourse with non-regular partner. Over half of Nakuru (54%) and Coast (53%) clients also reported never used a condom, as well 43% of clients from Nairobi. In all the regions, there were proportionately more women than men who were unlikely to use condoms. Men were more likely to use condoms inconsistently compared to women.
Table 4.6: Frequency of condom use by gender and regions, 2002-2006

<table>
<thead>
<tr>
<th>Region</th>
<th>Freq. of condom use</th>
<th>SEX</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>%</td>
<td>Female</td>
<td>%</td>
<td>Total</td>
<td>%</td>
</tr>
<tr>
<td>Nairobi</td>
<td>Never</td>
<td>1,693</td>
<td>41%</td>
<td>897</td>
<td>49%</td>
<td>2,590</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>1,532</td>
<td>37%</td>
<td>614</td>
<td>34%</td>
<td>2,146</td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>926</td>
<td>22%</td>
<td>310</td>
<td>17%</td>
<td>1,236</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4,151</td>
<td>100%</td>
<td>1,821</td>
<td>100%</td>
<td>5,972</td>
</tr>
<tr>
<td>Western</td>
<td>Never</td>
<td>953</td>
<td>60%</td>
<td>2,440</td>
<td>75%</td>
<td>3,394</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>463</td>
<td>29%</td>
<td>730</td>
<td>22%</td>
<td>1,194</td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>178</td>
<td>11%</td>
<td>103</td>
<td>3%</td>
<td>281</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1,594</td>
<td>100%</td>
<td>3,273</td>
<td>100%</td>
<td>4,871</td>
</tr>
<tr>
<td>Coast</td>
<td>Never</td>
<td>4,814</td>
<td>49%</td>
<td>3,431</td>
<td>60%</td>
<td>8,245</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>2,796</td>
<td>28%</td>
<td>1,354</td>
<td>24%</td>
<td>4,150</td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>2,232</td>
<td>23%</td>
<td>939</td>
<td>16%</td>
<td>3,171</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>9,842</td>
<td>100%</td>
<td>5,724</td>
<td>100%</td>
<td>15,566</td>
</tr>
<tr>
<td>Nakuru</td>
<td>Never</td>
<td>618</td>
<td>49%</td>
<td>509</td>
<td>62%</td>
<td>1,128</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>323</td>
<td>26%</td>
<td>180</td>
<td>22%</td>
<td>503</td>
</tr>
<tr>
<td></td>
<td>Always</td>
<td>314</td>
<td>25%</td>
<td>138</td>
<td>17%</td>
<td>452</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1,255</td>
<td>100%</td>
<td>827</td>
<td>100%</td>
<td>2,083</td>
</tr>
</tbody>
</table>

4.1.3 Age
There was a steady increase in the number of clients seeking VCT services particularly among the adults in 25 - 49 age-group from 2,000 clients served per year in year 2002 to about 16,000 served in year 2006 as shown in figure 4.4 (page 38). The records of youths accessing VCT aged 15 - 24 years show a geometric increase in the five years, with the graph levelling between 2005 and 2006 at 10,000 clients a year. Access to VCT services among clients of 50 years and above remained minimal across the 5 years as well as those who could not tell their age.
Table 4.7 below shows that 36.4% of VCT clients were in age groups 15 -24 for females and 25 - 34 years for males. Over one third of males (33.3%) and nearly two-fifths of females (39.5%) were in the 15 – 24 age-group. Overall, 77.1% of males and 73.9% of females were in the 15 – 34 age-group. The overall mean age for the clients is 28.4 years (SD +/-8.6). On the average, men were older than women by two years (the mean age for men was 29.4 vs 27.3 for women).

Table 4.7: Distribution of VCT clients by age, 2002-2006

<table>
<thead>
<tr>
<th>Age-group</th>
<th>Male n=41,745</th>
<th>Females n=37,593</th>
<th>Total N=78,338</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;15</td>
<td>0.2</td>
<td>0.4</td>
<td>0.3</td>
</tr>
<tr>
<td>15-24</td>
<td>33.3</td>
<td>39.5</td>
<td>36.4</td>
</tr>
<tr>
<td>25-34</td>
<td>43.8</td>
<td>34.4</td>
<td>39.1</td>
</tr>
<tr>
<td>35-44</td>
<td>14.2</td>
<td>10.9</td>
<td>12.6</td>
</tr>
<tr>
<td>45-54</td>
<td>6.4</td>
<td>14.1</td>
<td>10.2</td>
</tr>
<tr>
<td>55-64</td>
<td>1.6</td>
<td>0.6</td>
<td>1.1</td>
</tr>
<tr>
<td>65-74</td>
<td>0.5</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Mean age (years)</td>
<td>27.3</td>
<td>29.4</td>
<td>28.4</td>
</tr>
<tr>
<td>Median age (years)</td>
<td>25</td>
<td>27</td>
<td>26</td>
</tr>
</tbody>
</table>

All the regions had their clients with a mean age of between 28.3 years and 28.5 years and the standard deviations overlapped. Men were older than women in all the sites with the biggest age
difference in Western region at 4.5 years followed by Coast at 2.2 years. Male clients in Nakuru were only older by 0.9 years or about 11 months as shown in table 4.8 below.

Table 4.8: Distribution of age of VCT clients by region 2002-2006

<table>
<thead>
<tr>
<th>Region</th>
<th>Statistic</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nairobi</td>
<td>Mean age</td>
<td>29.1</td>
<td>27.5</td>
<td>28.4</td>
</tr>
<tr>
<td></td>
<td>Std Deviation</td>
<td>8.3</td>
<td>7.7</td>
<td>8.1</td>
</tr>
<tr>
<td>Western</td>
<td>Mean age</td>
<td>31.6</td>
<td>27.1</td>
<td>28.5</td>
</tr>
<tr>
<td></td>
<td>Std Deviation</td>
<td>12.1</td>
<td>9.3</td>
<td>10.6</td>
</tr>
<tr>
<td>Coast</td>
<td>Mean age</td>
<td>29.3</td>
<td>27.1</td>
<td>28.3</td>
</tr>
<tr>
<td></td>
<td>Std Deviation</td>
<td>8.7</td>
<td>7.7</td>
<td>8.3</td>
</tr>
<tr>
<td>Nakuru</td>
<td>Mean age</td>
<td>30.1</td>
<td>29.2</td>
<td>28.4</td>
</tr>
<tr>
<td></td>
<td>Std Deviation</td>
<td>10.1</td>
<td>9.3</td>
<td>8.1</td>
</tr>
</tbody>
</table>

4.1.3.1 Age and number of sex partners

In Kenya, the uppermost mode of HIV transmission is through multiple sexual partners. As part of their pre-test counseling, clients who reported to be sexually active were asked the number of sexual partners they had 12 months prior to going for VCT. Their responses have been cross-tabulated in the table 4.9 on page 40.

Nearly half (46.8%) of VCT clients aged 15 years and below had one sexual partner and 17.6% of them had at least two partners. Clients aged 15 – 24 years had 22.6% of them with two or more sexual partners as well as 23.6% of clients in 55 – 64 age group (table 4.9 on page 39). Although the proportions seemed high for clients with at least two sexual partners for clients above 64 years, the number of clients in those age groups were too few and should be interpreted cautiously. Chi-square test shows a significant association between age and number of sexual partners ($\chi^2= 381.7$, df =7, $P=0.000$). Clients over 15 years of age were 4.2 times more likely to have multiple partners compared to younger clients ($\chi^2 = 76.18$, $P = 0.000$; OR = 4.2, 95 CI= 2.92 – 6.06).
Table 4.9: Number of sexual partners of VCT clients by age, 2002 - 2006

<table>
<thead>
<tr>
<th>Age group</th>
<th>None (n=15,109)</th>
<th>One (n=47,471)</th>
<th>Two or more (n=15,758)</th>
<th>Total (%) (n=78,338)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;15</td>
<td>35.5</td>
<td>46.8</td>
<td>17.6</td>
<td>100</td>
</tr>
<tr>
<td>15-24</td>
<td>20.5</td>
<td>56.9</td>
<td>22.6</td>
<td>100</td>
</tr>
<tr>
<td>25-34</td>
<td>18.4</td>
<td>60.4</td>
<td>21.2</td>
<td>100</td>
</tr>
<tr>
<td>35-44</td>
<td>14.3</td>
<td>64.0</td>
<td>21.7</td>
<td>100</td>
</tr>
<tr>
<td>45-54</td>
<td>18.9</td>
<td>59.5</td>
<td>21.7</td>
<td>100</td>
</tr>
<tr>
<td>55-64</td>
<td>23.2</td>
<td>53.3</td>
<td>23.6</td>
<td>100</td>
</tr>
<tr>
<td>65-74</td>
<td>26.1</td>
<td>47.3</td>
<td>26.6</td>
<td>100</td>
</tr>
<tr>
<td>&gt;75</td>
<td>21.2</td>
<td>15.4</td>
<td>63.5</td>
<td>100</td>
</tr>
</tbody>
</table>

4.1.3.2 Condom use by age-groups

A question on frequency of condom use with non-steady partner was asked to all those who reported to ever had sex. Data have been classified and presented two groups usually targeted during HIV/AIDS interventions because of their unique needs. These groups were youths (15-24 years) and adults (25 - 49 years). Table 4.10 on page 41 shows that slightly over half (50.7%) of VCT clients who were in the 15 - 24 age group and 55.3% were in the 25 - 49 years age brackets reported to never using a condom with a non-steady sexual partner. One-third of clients in 15-24 years age bracket and 36.9% of clients in 25 - 49 years age bracket used a condom but inconsistently (sometimes) during their sexual encounters with non-steady partners. Nearly a fifth or 19.1% of clients in the 15-24 years age bracket and about a quarter (24%) of clients in 25 - 49 years bracket used a condom consistently (always). Chi-square test shows significant association between age and condom use with a non-regular partner ($\chi^2 = 414.4$, $p = 0.000$). Younger clients were more likely to use a condom with a non-regular client ($\chi^2 = 65.60$, $P=0.000$, OR = 0.82, 95 CI = 0.78 – 0.86).
Table 4.10: Frequency of condom by age-groups, 2002-2006

<table>
<thead>
<tr>
<th>Age-group</th>
<th>Never</th>
<th>Sometimes</th>
<th>Always</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-24 yrs</td>
<td>5,900 (50.7%)</td>
<td>3,494 (30.0%)</td>
<td>2,226 (19.1%)</td>
<td>11,620 (100%)</td>
</tr>
<tr>
<td>25-49 yrs</td>
<td>8,787 (55.3%)</td>
<td>4,295 (36.9%)</td>
<td>2,790 (24.0%)</td>
<td>15,872 (100%)</td>
</tr>
</tbody>
</table>

4.1.4 Marital Status
Clients who were either married to one partner or had a regular sexual partner living or not living together were all classified as married monogamous clients. Over one-fifth (21%) of clients had not been married and a nearly a half (48%) was in monogamous relationships (table 4.11 below). Thirteen per cent of the clients were either separated or divorced, 11% were widowed and 7% in polygamous relationships. Compared to the other regions, Western region had more clients in polygamous relationships (25%). All other regions had between 3% and 7% of their clients in polygamous relationships. Nakuru had the highest proportion of clients widowed (15%) and separated/divorced (19%).

Table 4.11: Marital status of VCT clients by region, 2002-2006

<table>
<thead>
<tr>
<th>Site</th>
<th>Never Married</th>
<th>Monogamous</th>
<th>Polygamous</th>
<th>Widow</th>
<th>Separated/divorced</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nairobi</td>
<td>825</td>
<td>1,736</td>
<td>121</td>
<td>406</td>
<td>393</td>
<td>3,541</td>
</tr>
<tr>
<td>Western</td>
<td></td>
<td></td>
<td>3%</td>
<td>11%</td>
<td>11%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>% within region</td>
<td>23%</td>
<td>49%</td>
<td>143</td>
<td>80</td>
<td>1,037</td>
</tr>
<tr>
<td>Coast</td>
<td>1,281</td>
<td>2,888</td>
<td>384</td>
<td>560</td>
<td>818</td>
<td>5,929</td>
</tr>
<tr>
<td></td>
<td>% within region</td>
<td>9%</td>
<td>44%</td>
<td>14%</td>
<td>8%</td>
<td>100%</td>
</tr>
<tr>
<td>Nakuru</td>
<td>117</td>
<td>323</td>
<td>42</td>
<td>109</td>
<td>138</td>
<td>729</td>
</tr>
<tr>
<td></td>
<td>% within region</td>
<td>16%</td>
<td>44%</td>
<td>15%</td>
<td>19%</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>2,320</td>
<td>5,403</td>
<td>808</td>
<td>1,218</td>
<td>1,429</td>
<td>11,236</td>
</tr>
<tr>
<td>% within region</td>
<td>21%</td>
<td>48%</td>
<td>7%</td>
<td>11%</td>
<td>13%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Over the five years covered by this study, the ratio of those never married and those in monogamous relationships remained largely the same. Majority of clients were either in monogamous relationships, or had not married prior to going for VCT (figure 4.5 below). Those who reported separated or divorced, widowed and those in polygamous relationships maintained a flat trend over the period and they were less than 2,000 each year.

![Trend by marital status, 2002-2006](image)

**Figure 4.5: Trend by marital status of VCT clients, 2002-2006**

4.1.4.1 Marital Status and Number of Sexual Partners

Data in table 4.12 (on page 43) show that VCT clients in polygamous relationships were more likely (30.1%) to have multiple sexual partners in the 12 months preceding VCT, followed by those who were never married (24.2%) and those who were separated or divorced (23.2%). There is a significant relationship between marital status and number of sexual partners ($\chi^2 = 1128.7, df = 7, p = 0.000$).
Table 4.12: Number of sexual partners of VCT clients by marital status, 2002 - 2006

<table>
<thead>
<tr>
<th>Marital status</th>
<th>Number of sexual partners of VCT clients by marital status, last 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
</tr>
<tr>
<td>Never married</td>
<td>9,841 (29.6%)</td>
</tr>
<tr>
<td>Married monogamous</td>
<td>2,781 (9.2%)</td>
</tr>
<tr>
<td>Polygamous</td>
<td>187 (4.9%)</td>
</tr>
<tr>
<td>Widow</td>
<td>1,046 (44.9%)</td>
</tr>
<tr>
<td>Separated/divorced</td>
<td>1,240 (24.8%)</td>
</tr>
<tr>
<td>Total</td>
<td>15,095</td>
</tr>
</tbody>
</table>

4.1.4.2 Condom use by Marital Status
The data in table 4.13 below shows low levels of condom use among all categories of marital status. Over half of clients in all marital status, except the single ones (never married) (46.5%) reported never using a condom with their non-regular sexual partners. Almost three-quarters (74.5%) of clients in polygamous unions and over two-thirds (63.8%) of widow(ers) never used a condom 12 months prior to going for VCT. About a third of those separated or divorced and those never married (30.1% vs 31.1%) used a condom ‘sometimes’. In each category of marital status, there is low consistent condom use. Slightly over one-in-five clients in the ‘never married’ category reported using a condom always just as 17% and 15.8% of separated/divorced and in monogamous unions respectively. Chi-square test shows significant relationship between condom use and marital status ($\chi^2 = 6404.44, P=0.000$).

Table 4.13: Frequency of condom use by marital status, 2002 - 2006

<table>
<thead>
<tr>
<th>Marital status</th>
<th>Never</th>
<th>Sometimes</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never Married</td>
<td>5621 (46.5%)</td>
<td>3,768 (31.1%)</td>
<td>2,694 (22.3%)</td>
</tr>
<tr>
<td>Monogamous</td>
<td>7,031 (58.1%)</td>
<td>3,162 (26.1%)</td>
<td>1,911 (15.8%)</td>
</tr>
<tr>
<td>Polygamous</td>
<td>1,297 (74.5%)</td>
<td>330 (18.9%)</td>
<td>115 (6.6%)</td>
</tr>
<tr>
<td>Widow</td>
<td>406 (63.8%)</td>
<td>140 (22.1%)</td>
<td>90 (14.1%)</td>
</tr>
<tr>
<td>Separated/divorced</td>
<td>980 (52.0%)</td>
<td>582 (30.1%)</td>
<td>320 (17.0%)</td>
</tr>
</tbody>
</table>
4.1.5 Education
Nearly all clients (96%) had at least primary education; about 45% had post-secondary education followed by 28% who had primary education. Twenty-three per cent (23%) of the clients had secondary education (table 4.14 below). Nairobi had the highest number of clients with formal education (99%) and also leads with clients who had attained post-secondary education (58%). These figures sharply contrasted with Western which had the least proportion of clients with formal education (90%) and lowest proportion with post-secondary education (25%). Apart from sites in Western region, all other regions had most of their clients with post-secondary education.

Table 4.14: Distribution of clients by education levels and regions, 2002-2006

<table>
<thead>
<tr>
<th>Education</th>
<th>No formal education</th>
<th>Primary</th>
<th>Secondary</th>
<th>Post-Secondary</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nairobi</td>
<td>280</td>
<td>3,902</td>
<td>7,564</td>
<td>16,320</td>
<td>28,066</td>
</tr>
<tr>
<td>% within region</td>
<td>1%</td>
<td>14%</td>
<td>27%</td>
<td>58%</td>
<td>100%</td>
</tr>
<tr>
<td>Western</td>
<td>917</td>
<td>4,888</td>
<td>864</td>
<td>2,244</td>
<td>8,913</td>
</tr>
<tr>
<td>% within region</td>
<td>10%</td>
<td>55%</td>
<td>10%</td>
<td>25%</td>
<td>100%</td>
</tr>
<tr>
<td>Coast</td>
<td>1,614</td>
<td>12,185</td>
<td>8,668</td>
<td>15,492</td>
<td>37,959</td>
</tr>
<tr>
<td>% within region</td>
<td>4%</td>
<td>32%</td>
<td>23%</td>
<td>41%</td>
<td>100%</td>
</tr>
<tr>
<td>Nakuru</td>
<td>130</td>
<td>1,304</td>
<td>1,360</td>
<td>1,606</td>
<td>4,400</td>
</tr>
<tr>
<td>% within region</td>
<td>3%</td>
<td>30%</td>
<td>31%</td>
<td>37%</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>2,941</td>
<td>22,279</td>
<td>18,456</td>
<td>35,662</td>
<td>79,338</td>
</tr>
<tr>
<td>% within region</td>
<td>4%</td>
<td>28%</td>
<td>23%</td>
<td>45%</td>
<td>100%</td>
</tr>
</tbody>
</table>

4.1.5.1 Education and Number of Sexual Partners
Data show that there is a strong association between number of sexual partners and education levels ($\chi^2 = 332.3$, df=6, $p = 0.000$) (table 4.15 on page 44). Clients who had some form of education appeared more likely to have multiple partners compared to those without formal
education ($\chi^2 = 12.2$, $p = 0.00$; OR = 1.18, 95% CI = 1.07 – 1.30). However, there was no significant difference within education levels and number of sexual partners ($F=10.23$, df = 3, $p=0.1$).

Table 4.15: Number of sexual partners of VCT clients by education levels, 2002 - 2006

<table>
<thead>
<tr>
<th>Education</th>
<th>Number of heterosexual partners for the last 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None (20.3%)</td>
</tr>
<tr>
<td>No formal education</td>
<td>598</td>
</tr>
<tr>
<td>Primary</td>
<td>3,403</td>
</tr>
<tr>
<td>Secondary</td>
<td>7,205</td>
</tr>
<tr>
<td>Post secondary</td>
<td>3,968</td>
</tr>
<tr>
<td>Total</td>
<td>15,174</td>
</tr>
</tbody>
</table>

4.1.5.2 Condom use by Education Levels

Across the four categories of education, there was low consistent condom use. However condom use improves with increasing levels of education. Among those with no formal education, 70.6% reported never using a condom, followed by 62.8% of those with primary education and half of those with secondary school education. Slightly more than two-fifth (42.9%) of clients above secondary school education reported never using a condom (Table 4.16 below).

Table 4.16: Frequency of condom use by education levels, 2002 - 2006

<table>
<thead>
<tr>
<th>Education</th>
<th>Frequency of condom use with a non steady partner</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never (70.6%)</td>
</tr>
<tr>
<td>No formal education</td>
<td>876 (70.6%)</td>
</tr>
<tr>
<td>Primary</td>
<td>5,888 (62.8%)</td>
</tr>
<tr>
<td>Secondary</td>
<td>6,100 (50.6%)</td>
</tr>
<tr>
<td>Post secondary</td>
<td>2,495 (42.9%)</td>
</tr>
</tbody>
</table>

VCT clients with secondary education were 0.22 times more likely to consistently use a condom with a non-steady partner ($95\ CI = 0.17 – 0.29$, $\chi^2 = 153.61$, $P=0.000$) compared to clients with
no formal education. Similarly, clients with post secondary education were 3.23 times more likely to use a condom consistently when they have sex with a non-steady partner compared to clients with no formal education \((95 \text{ CI} = 2.65 - 3.95, \chi^2 = 152.37, \text{P}=0.000)\) (figure 4.6 below).

![Figure 4.6: VCT clients never using a condom last 12 months with unsteady partners by education level, 2002 - 2006](image)

4.1.6 Occupation
Variables under the occupation category had been very loosely defined and left to the discretion of the counselor or the client filling out the form. While the category of “skilled occupation” mostly included artisans and carpenters; “unskilled” encompassed for example hawkers, shopkeepers and kiosk and market vendors. Unless prompted, many women without office jobs often categorized themselves as having no job.

Majority of clients were served in Nairobi region, about a third of them (31%) were in skilled occupation, same as 26 percent of clients served in Nakuru and a third of clients served at the Coast VCT sites. Most of the clients served in Western (44%) were in unskilled occupation. Nairobi region had the smallest proportion of its clients reporting to having no occupation whereas Western, Coast and Nakuru had students making the smallest proportion of its clients at
4%, 10% and 11% respectively (Table 4.17 below). Overall, about a third (29%) of all clients served were in skilled occupation compared to clients who had no occupation or were in unskilled occupation at 22% each. Clients in professional jobs and students made the smallest proportion at 14% and 13% percent, respectively.

Table 4.17: Distribution of VCT clients by their type of occupation and region, 2002 - 2006

<table>
<thead>
<tr>
<th>Site</th>
<th>None</th>
<th>Unskilled</th>
<th>skilled</th>
<th>Professional</th>
<th>Student</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nairobi</td>
<td>3,619</td>
<td>4,897</td>
<td>8,808</td>
<td>5,092</td>
<td>5,650</td>
<td>28,066</td>
</tr>
<tr>
<td></td>
<td>13%</td>
<td>17%</td>
<td>31%</td>
<td>18%</td>
<td>20%</td>
<td>100%</td>
</tr>
<tr>
<td>Western</td>
<td>2,642</td>
<td>3,924</td>
<td>1,402</td>
<td>583</td>
<td>362</td>
<td>8,913</td>
</tr>
<tr>
<td></td>
<td>30%</td>
<td>44%</td>
<td>16%</td>
<td>7%</td>
<td>4%</td>
<td>100%</td>
</tr>
<tr>
<td>Coast</td>
<td>10,708</td>
<td>7,193</td>
<td>11,518</td>
<td>4,782</td>
<td>3,758</td>
<td>37,959</td>
</tr>
<tr>
<td></td>
<td>28%</td>
<td>19%</td>
<td>30%</td>
<td>13%</td>
<td>10%</td>
<td>100%</td>
</tr>
<tr>
<td>Nakuru</td>
<td>508</td>
<td>1611</td>
<td>1134</td>
<td>654</td>
<td>493</td>
<td>4400</td>
</tr>
<tr>
<td></td>
<td>12%</td>
<td>37%</td>
<td>26%</td>
<td>15%</td>
<td>11%</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>17,477</td>
<td>17,625</td>
<td>22,862</td>
<td>11,111</td>
<td>10,263</td>
<td>79,338</td>
</tr>
<tr>
<td></td>
<td>22%</td>
<td>22%</td>
<td>29%</td>
<td>14%</td>
<td>13%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Figure 4.7 (page 47) shows trend of VCT clients by their occupation. In 2003, there were equal numbers of those who were not in skilled occupation and those who were in skilled occupation. However, after 2003 the trend shows a faster growth of those in skilled occupation with the biggest gap evident in 2006. Across the years, all the five categories examined under occupation show steep growth with those reporting that they were unskilled surpassing those who had no occupation in 2005. Those in professional occupation as well as students remain low but growing marginally. Trends in all the levels of occupation however, seemed to level off in 2006.
4.1.6.1 Occupation and Number of Sexual Partners

Table 4.18 on page 48 shows that clients with skilled occupation were more likely to have multiple partners (23.6%) compared to those without occupation ($\chi^2 = 76.26$, $P = 0.000$), those in professional occupation ($\chi^2 = 18.7$, $P = 0.000$), and students ($\chi^2 = 35.07$, $P = 0.000$). There was no significant difference in the number of multiple partners between those in skilled and unskilled occupation ($\chi^2 = 0.45$, $P = 0.5$). Overall, Chi-square test of association showed that there is a significant association between occupation and number of sexual partners ($\chi^2 = 1128.75$, $df=7$, $P = 0.000$).
Table 4.18: Number of sexual partners of VCT clients by occupation, 2002 -2006

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Number of sexual partners last 12 months</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>One N (%)</td>
<td>Two or more N (%)</td>
</tr>
<tr>
<td>None</td>
<td>3,007 (17.2%)</td>
<td>10,987 (62.9%)</td>
<td>3,483 (19.9%)</td>
</tr>
<tr>
<td>Unskilled</td>
<td>2,781 (15.7%)</td>
<td>10,741 (60.9%)</td>
<td>4,103 (23.4%)</td>
</tr>
<tr>
<td>Skilled</td>
<td>4,101 (17.7%)</td>
<td>13,374 (58.5%)</td>
<td>5,387 (23.6%)</td>
</tr>
<tr>
<td>Professional</td>
<td>2,180 (19.4%)</td>
<td>6,543 (58.9%)</td>
<td>2,388 (21.7%)</td>
</tr>
<tr>
<td>Student</td>
<td>3,105 (30.2%)</td>
<td>5,042 (49.1%)</td>
<td>2,116 (20.7%)</td>
</tr>
<tr>
<td>Total</td>
<td>15,174</td>
<td>46,687</td>
<td>17,477</td>
</tr>
</tbody>
</table>

4.1.6.2 Condom use by Occupation Levels

Two-thirds of both clients without occupation and those in unskilled (60.5%) occupation were more likely to never use a condom during high risk sex compared to clients in skilled (51.4%) and professional occupations (46.2%). The data show that students had the highest possibility of using a condom during such encounters. Only 15.4% and 12.6% of clients without skilled occupation and those in unskilled occupation reported using a condom at all times during high risk sex (table 4.19, page 49). One-fifth (19.9%) of clients in skilled occupation and about a quarter (24%) of clients in professional occupation reported using a condom consistently. There is a strongly relationship between occupation and condom use ($\chi^2 = 2253$, $P=0.000$). VCT clients who were in skilled and professional occupations were 10 times more likely to always use a condom during high risk sex compared to clients with no skills or were in unskilled occupation ($\chi^2 = 4819.81$, OR = 0.10, 95CI =0.1 -0.29).
Table 4.19: Frequency of condom use by occupation levels

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Never</th>
<th>Sometimes</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>3,692 (59.5%)</td>
<td>1,557 (25.1%)</td>
<td>956 (15.4%)</td>
</tr>
<tr>
<td>Unskilled</td>
<td>4,744 (60.5%)</td>
<td>2,114 (27.0%)</td>
<td>986 (12.6%)</td>
</tr>
<tr>
<td>Skilled</td>
<td>4,027 (51.4%)</td>
<td>2,251 (28.7%)</td>
<td>1,556 (19.9%)</td>
</tr>
<tr>
<td>Professional</td>
<td>1,621 (46.2%)</td>
<td>1,049 (29.9%)</td>
<td>842 (24.0%)</td>
</tr>
<tr>
<td>Student</td>
<td>1,275 (41.2%)</td>
<td>1,022 (33.0%)</td>
<td>800 (25.8%)</td>
</tr>
</tbody>
</table>

4.1.7 Reasons for going for VCT
The records show that clients visiting a VCT site were asked about the reason(s) that made them seek VCT services. The reasons cited were diverse, but an overwhelming majority (76.4%) of clients said they wanted to “plan their future” when they already knew their HIV status, followed by “planning to marry” at 14.7%. Other reasons cited by clients included client “feeling unwell” and living with a partner who was involved in “risky sexual behaviour”. These two accounted for 9.6% and 9.1%, respectively. Some clients named more than one reasons of going for VCT; hence percentages presented in the table 4.21 below were above 100%.

Table 4.20: Reasons for going for VCT, 2002 - 2006

<table>
<thead>
<tr>
<th>Reasons for going for VCT</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan for Future</td>
<td>76.4</td>
</tr>
<tr>
<td>Plan to marry</td>
<td>14.7%</td>
</tr>
<tr>
<td>Feeling unwell</td>
<td>9.6%</td>
</tr>
<tr>
<td>Risky partner behaviour</td>
<td>9.1%</td>
</tr>
</tbody>
</table>
4.2 HIV Prevalence by Socio-Demographic Characteristics

4.2.1 HIV Prevalence by gender

Figure 4.8 below shows that except for Western region where there was almost no difference in HIV prevalence among genders, all other regions point up that women were more than two times more likely to be HIV infected. Coast and Nakuru region had 23% and 24% of females visiting VCT sites HIV-infected compared to their men counterparts at 10% and 11% respectively. Aggregated data for all regions show that 9% of males were HIV infected compared to 24% of females. Further, the data show significant relationship between gender and HIV prevalence ($\chi^2 = 1685.77, P=0.000$). The data also confirm that women were particularly vulnerable to HIV infection compared to men (OR 2.35; 95 CI = 2.25 – 2.45) and that women who suspected that they were HIV-positive were more likely than men to go for VCT.

![HIV prevalence by region and gender](image)

**Figure 4.8: HIV prevalence by sex and region, 2002 - 2006**
4.2.2 HIV Prevalence by Age

Figure 4.9 below presents overall HIV prevalence by age for women and men. In every age-group, women were more likely than men to be HIV-infected. Seven percent (7%) of women aged 15–19 years were HIV-infected compared with 2% of men in the same age-group. HIV prevalence among women 20–24 years was almost four times that of men in the same age group (11% vs 3%). The peak prevalence among women was reached at ages 35–39 years (36%) and at age 40–44 (26%) for men. Comparing ages 15-24 and 25-49 years, there is a significant relationship between age and HIV ($\chi^2 = 2521.97$, df=1, $P=0.000$). Generally, the data show HIV prevalence among males and females forming a similar curve. The gap between the two curves widens up to 35-39 years age group, meaning that proportionately, more women than men get infected as they progress in age until they were 39 years, where the gap starts to reduce up to a difference of 2% points at age 70.

The data also confirmed that younger women were more vulnerable to HIV compared to men in the same age-group.

![HIV prevalence by age](image)

**Figure 4.9:** HIV prevalence by age-groups, 2002 -2006
4.2.3 HIV Prevalence by Education Levels

Figure 4.10 below presents HIV prevalence by the education levels. VCT clients with no formal education had almost twice the infection levels of those with secondary (OR= 2.80; 95 CI= 2.58 - 3.04). Clearly, HIV prevalence increases with decreasing levels of education ($\chi^2$ = 998.76, df=3, P=0.00). This trend however changes with clients with more than secondary education. Clients with post-secondary education have higher HIV infection rate compared to those with secondary education (12.9% vs 9.6%).

![HIV prevalence by education levels](image)

**Figure 4.10: HIV prevalence by level of education, 2002 - 2006**

Even within the regions, HIV infection was highest among clients with no formal education (figure 4.11, page 53). In both Coast and Nakuru regions, clients with no formal education were three times more likely to be HIV infected than those who had secondary education. In Nairobi, clients who had no formal education were more than two times likely to be HIV infected. In Western, although clients without formal education were at higher risk of HIV infection, the chances of HIV infection were not as high as in other regions. An interesting trend emerges among clients with post-secondary education. HIV prevalence seems to rise among the clients with post-secondary education in Nairobi, Coast and Nakuru region.
Figure 4.11: HIV prevalence by level of education and regions, 2002 - 2006

4.2.4 HIV prevalence by occupation

Figure 4.12 below shows that 19.3% of clients with no occupation and 17.2% of clients in unskilled occupation were HIV infected. Clients in skilled occupation and professionals had a prevalence rate of 14.5% and 11.3% respectively. Students had the lowest prevalence at 2.6%.

The data show that there is a strong association between HIV prevalence and occupation ($\chi^2 = 1720$, df=4, $P=0.000$).
The regions follow the same patterns as the overall prevalence except for Western region (Figure 4.13 below). In Nairobi, Coast and Nakuru, clients with no occupation had a prevalence rate of between 20% (Nairobi) and 21% (Nakuru). With the exception of Western region, clients in unskilled occupations had a HIV prevalence ranging between 18% (Nairobi) and 22% (Nakuru) whereas those in skilled occupation had their HIV prevalence lying between 14% (Nairobi) and 16% (Nakuru). In Western region however, clients without occupation, and those in unskilled and skilled occupations had the same levels of HIV prevalence of 12%. Professionals in Western region had a slightly higher HIV prevalence at 14%. Across all regions, students had the lowest chance of being HIV infected ranging between 2% (in Nairobi region) and 4% (Nakuru).

![HIV prevalence by type of occupation and by region](image)

**Figure 4.13: HIV prevalence by occupation and region, 2002 - 2006**

### 4.2.5 HIV Prevalence by Marital Status

HIV prevalence was correlated to marital status (figure 4.14, next page). HIV prevalence of married monogamous clients (18.0%) was lower than that of polygamous clients (21.3%) but more than two times that of single clients (7.0%). Two in five widows or widowers (40.5%) were HIV infected. The data show that HIV varied with marital status ($\chi^2 = 5,960$, df=3, $P=0.000$).

Comparing single clients and those who had been in any type of union, clients who had ever
been married were 3.2 times more likely to be HIV infected (OR = 3.21, 95 CI= 3.05 – 3.37, ($\chi^2 = 244.83$, $P = 0.000$).

Data presented by marital status and regions (figure 4.15, next page) show that HIV prevalence followed same patterns in all regions. HIV prevalence was highest among the widows/separated ranging between 39% (Nakuru and Coast) and 32% (Western). Clients who reported to be in polygamous relationships had their HIV prevalence of between 37% in Nakuru and 14% Western whereas clients who reported to have never been married had low HIV prevalence rates of between 8% in Coast and 5% in Western region.

**Figure 4.14: HIV prevalence by marital status, 2002 – 2006**
4.2.6 HIV Prevalence by sexual practice

Although HIV is mostly hereto-sexually transmitted, data show that 7% of clients who had never had sexual intercourse were HIV infected (figure 4.16, page 57). Clients who had had sexual intercourse were twice more likely to be HIV infected compared to those who never had sex (OR = 2.22, 95CI = 1.96 – 2.52, P = 0.000). HIV was more common (15.4%) among clients who did not declare their sexual behaviour were HIV infected. Data also show a significant association between HIV and sexual behaviour ($\chi^2 = 1,920$, df=2, P=0.000).
Figure 4.16: HIV prevalence by sexual practice, 2002 - 2006

When data were cross-tabulated with reported sexual behavior (figure 4.17, page 58), the results varied with regions. In Nairobi, clients who reported to have had sex prior to testing for HIV were more likely to be HIV infected (14%) compared to those who did not declare their sexual behavior (12%) or those who had never had sex (1%). The data from VCT sites in Western show that clients who did not declare their sexual behavior were two times more likely to be HIV infected compared to those who ever had sex and four times compared to those who never had sex. The scenario at the Coast shows that HIV was more common among clients who did not declare whether they have ever had sex.

Seventeen per cent (17%) of those who did not declare their sexual behavior, 15% of clients who ever had sex and 11% of clients who never had sex were HIV infected, according to the data collected from Coast’s VCT sites. In Nakuru, clients who reported to have had sexual experience were at a higher risk of HIV infection (17%) compared to 8% of clients who did not declare their sexual behavior and 5% of clients with no sexual experience.
4.2.7 HIV Prevalence by Number of Sexual Partners
Clients who reported being sexually active were asked the number of heterosexual partners they had had 12 months prior to going for VCT. Their responses were cross-tabulated with their HIV test results in the figure 4.18 on page 59. HIV prevalence among clients with no sexual partners was 12.9% compared to those with one partner at 15.2%. Those with two or more partners were at 12.7% infection rate. Chi-test shows a strong association between HIV prevalence and number of sexual partners ($\chi^2 = 88.27$, df =2, $P = 0.000$). Clients with sexual partners were more likely to be HIV infected (OR = 1.21, 95 CI = 1.14 – 1.27) compared to those without. Surprisingly, the data show that clients with two or more partners had lesser chance of being HIV infected compared to those who had one partner (OR = 0.81, 95 CI = 0.77 – 0.86).
HIV status and number of sexual partners, 12 months before VCT

<table>
<thead>
<tr>
<th>Percent of HIV infected VCT clients</th>
<th>No sex partner</th>
<th>One sex partner</th>
<th>at least 2 sex partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative</td>
<td>87.1</td>
<td>84.8</td>
<td>87.3</td>
</tr>
<tr>
<td>Positive</td>
<td>12.9</td>
<td>15.2</td>
<td>12.7</td>
</tr>
</tbody>
</table>

Figure 4.18: HIV prevalence by number of sexual partners, 2002-2006

Nairobi, Coast and Nakuru data agrees with the aggregated data above; that clients with one partner were at a higher risk of HIV infection compared to those with at least two sexual partners or no partners at all, 12 months prior to HIV test. However, in Western region, clients who reported to have had no sexual partner 12 months prior to going for VCT presented the highest rate of HIV infection. In Both Coast and Nairobi, there was no difference in HIV infection among clients who either had one partner or no sexual partner. In Western and Nakuru regions, clients with no sexual partners had a higher HIV prevalence than those with one partner (figure 4.19 below).

Figure 4.19: HIV prevalence by number of sexual partners and region
4.2.8 HIV prevalence by condom use
The results from these data reinforce the fact that condoms were important protective devices against HIV. From the data presented in figure 4.20 below, HIV prevalence increased with decreasing frequency of condom use. Among those who did not use a condom, the ratio of those who were reinfected to the ones who were HIV-free is more slightly more than 1:5 compared to 1:6 for those who use the condom sometimes. There is nearly one in every ten HIV infected among those who use the condom all the time.

Among those who reportedly did not use a condom during their last sexual act, the ratio of infected to uninfected is 9:2. This shows some relationship between condom use and HIV transmission. The data therefore elaborates the importance of condom use in protection towards HIV infection especially when engaging in high risk sex. There is significant difference in HIV results for clients who never use a condom or who use it inconsistently ($\chi^2 = 5.75$, $P=0.02$, OR = 0.91, $95\text{CI} = 0.84 - 0.98$) and those who always used a condom during high risk sex ($\chi^2 = 86.65$, $P=0.000$, OR = 0.61 95 CI= 0.55 -0.68). Therefore, any attempts to use a condom even if not every time, reduced the chance of HIV infection significantly.

![Figure 4.20: HIV prevalence by condom use with unsteady sexual partners, 2002-2006](image-url)
Across the four regions, HIV prevalence varied with condom use. Except for Nakuru region where clients who used condoms sometimes had a higher HIV prevalence than those who never used condoms, data from the other regions show that failure to use a condom during high risk sex predisposes one to HIV (figure 4.21 below). Clients who reported to have used condoms consistently had between 8% (Nairobi) and 10% (Coast) chance of HIV infection. Clients who reported to either have not used a condom or never used it at all sexual contacts had a high chance of HIV infection of between 10% and 17%.

![HIV prevalence by frequency of condom use with non-steady partners](image)

**Figure 4.21: HIV prevalence by frequency of condom use, 2002 - 2006**

### 4.2.9 Opinions of Key informants on socio-demographic factors and HIV results

Opinion was divided on whether socio-demographics have any role to play in predisposing one to HIV. One-quarter (25%) of the key informants believe that there is a relationship between socio-demographic factors and HIV results. They explained that “VCT clients who are women, with low education and were unemployed or with no gainful source of income” were more likely to have HIV positive results. However, 27% commented that people with higher socio-demographic status were “unlikely to attend public VCT sites” and therefore not possible to
compare the results objectively. Twenty-four percent (24%) had no opinion and 14 % said the socio-demographic factors had no role to play in HIV.

4.3 Trend of HIV prevalence between 2002 and 2006

4.3.1 Trend in HIV by region
The regions present different trends in HIV prevalence over the five years. There was no data on clients accessing VCT services in Nakuru in the first year (2002) since the site had not been set up. Since 2003, HIV prevalence for Nakuru region has been on a steady increase from 10% in 2003 to 22% in 2006. Nairobi region shows a slight drop in HIV prevalence between 2003 and 2004 and a gentle increase in the last two years, taking a similar path as Western Kenya region sites. Since 2003, Coast region’s HIV prevalence has been on a steady decline from a peak of about 17% in 2003 to about 12% in 2006. The trend further shows that except for Nakuru, all other regions had their HIV prevalence trends converging to a prevalence of about 13% (figure 4.22 below).

![Trend in HIV by regions, 2002-2006](image)

Figure 4.22: Trend of HIV prevalence by region, 2002-2006
4.3.2 Trend in HIV by gender

Figure 4.23 below shows the overall five-year trend in HIV prevalence among VCT clients. On average, 10 percent of men 20 percent of women were HIV infected. Over the five years covered by this study, the prevalence ratio of female to males has been changing. In 2002, 54.5% HIV infected VCT clients were females, compared to 66.7% HIV infected clients in 2003. In 2004 and 2005, the proportions changed to 67.7% and 65.5% respectively. In 2006, one-third (66.7%) of HIV infected VCT clients were females.

![Trend in HIV prevalence 2002 - 2006](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>2003</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>2004</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>2005</td>
<td>10</td>
<td>19</td>
</tr>
<tr>
<td>2006</td>
<td>10</td>
<td>20</td>
</tr>
</tbody>
</table>

Figure 4.23: Trend in HIV prevalence by sex, 2002 -2006

4.3.3 Trend in HIV by Age

For both females and males, HIV occurred in all age groups. Over the five years covered by this study, the HIV prevalence among VCT clients who were 15 years or younger seemed to be on the rise as well as for clients who were aged 50 years and above. In 2003, youth aged 15 years and below had a HIV prevalence of about 13% but in 2006, their HIV prevalence had more than doubled (27%). Although the HIV prevalence among clients aged 50 years and above had declined between 2003 and 2005, data for 2006 show that the prevalence is on the rise. HIV prevalence for VCT clients in the 25-49 and 15-24 age-groups had stabilized at 17% and 5% respectively (Figure 4.24 page 64).
4.3.4 Trend in HIV by Education levels

Over the 5 years covered by these data, HIV prevalence had generally been declining across the four levels of education (figure 4.25 below). HIV prevalence among clients with no formal education however remained high followed by clients with post-secondary education. Clients with secondary education have relatively low levels of HIV prevalence, about 10% between 2003 and 2005 and a decline to nearly 5% in 2006. Trend of HIV prevalence among clients with post secondary education; though higher than those with secondary education, assume the same patterns.

Figure 4.25: Trend of HIV prevalence by education levels, 2002 - 2006
4.3.5 Trend in HIV by Occupation

Figure 4.26 below shows that, HIV prevalence has been declining in all types of occupation from 2002 to 2006. HIV infection among the students remained low, below 5%, while prevalence among professionals was 12% in 2002 which dropped gradually to 10% in 2006. Prevalence among the clients in unskilled occupation recorded the greatest improvement from a high of 23% in 2002 to 17% four years later.

![Figure 4.26: Trend in HIV prevalence by occupation, 2002 - 2006](image)

4.3.6 Trend in HIV by Marital status

Apart from clients who reported to be in polygamous unions, trend in HIV prevalence by marital status shows that HIV prevalence dropped slightly from 2002 to 2003 in the other three categories of marital relationships (figure 4.27 on page 66). Over the period between 2003 and 2006, clients who have never married remained at a prevalence level of around 5% followed by clients in monogamous relationships at around 15%. HIV prevalence of clients in polygamous relationships dropped significantly from 30% to 20% in 2004 and maintained at that level in the later years. There was very little change in HIV prevalence of clients who were either widowed or separated from 2003 to 2006.
4.3.7 Trend in HIV by Sexual practice

The trend of HIV prevalence by sexual practice show that clients who had sex remained at higher rate of HIV infection compared to clients who reported to be sexually inexperienced (figure 4.28 below). However, the trend of HIV positive clients who did not declare their sexual behavior dropped from 18% in 2003 to 1% in 2005 before shooting up again to 12%. Whereas prevalence among clients who had had sex stabilized around 15%, data form sexually inexperienced clients show a declining trend, particularly in 2006 where the prevalence rate dropped from 8% in 2005 to 2% in 2006.
4.3.8 Trend in HIV by number of sexual partners

HIV trend for VCT clients who had one sexual partner dropped by 4 points from 2003 to 2004 and maintained a prevalence level of 13% onwards (figure 4.29 below). HIV prevalence of clients who reported to have had no sexual partners continued to rise steadily from 12% in 2002 to 15% in 2006. There was, however, a steady decline in prevalence for clients with at least 2 sexual partners' from 17% in 2002 to 10% in 2006.

Figure 4.29 Trend in HIV prevalence by number of sexual partners, 2002 - 2006

4.3.9 Trend in HIV by Condom use by non-regular partners

Generally, figure 4.30 on page 68 shows that HIV prevalence declined from since 2003 to 2006, regardless of whether one used a condom or not. Trend of HIV prevalence for VCT clients who reported to never using a condom while having sex with their unsteady partners presented a higher HIV prevalence over the 5 years than those who used a condom sometimes and those who used a condom all the time. There is a significant difference between clients who always use a condom and those who never used or used it inconsistently.
Figure 4.30: Trend in HIV prevalence by frequency of condom use with non-steady sexual partners, 2002 - 2006
4.4 DISCUSSION

4.4.1 Profile of clients who sought VCT services
Clients who sought voluntary counselling and testing services were mostly females with overall mean age of 28.4 years (table 4.8), but men were older than women by two years. Most of the clients were in 25 – 49 age group and either single or in monogamous relationships. About 68% of the clients had at least secondary education. The results have shown that client’s with secondary education and higher were more likely to have been tested for HIV. This finding supports the notion that highly educated individuals were more sensitive to the outcome of testing for HIV than less educated people (Carairo, 2004).

Nearly one-third, of the clients were in skilled occupation and nearly three-quarters of all clients (72.5%) had had sex. Over one-fifth, or 22.5% declined to declare their sexual experiences probably due to fear of being judged and for stigmatised.

Majority of clients went for VCT as individuals, whereas nearly half of the clients were in some type of sexual relationship, only one in ten of the clients went for VCT as couples. Most of the clients went for VCT mostly because they wanted to plan for their future (76%) or because they wanted to marry (14.7%) whereas a few of them said the reason for VCT is because they were unwell or that they suspected that their sex partner was involved in some risky behaviours (table 4.1).

It is extremely difficult to collect accurate data on sexual behaviour, because this behaviour is considered private and intimate, it is connected to self-image and personality, and some sexual behaviours are illegal or taboo. However once clients are counselled and assured of confidentiality of their information, they are more likely to give accurate sexual behaviour information.
Multiple partnerships were much more common among men, though similar patterns were seen with respect to socio-demographic characteristics. One-third of the men had at least two sexual partners' compared to slightly over one in ten women. Overall, youth aged 15–24 years, clients who were never married and those with primary and secondary education reported concurrent sexual relationships. Concurrent sexual relationships may have huge implications when it comes to the spread of sexually transmitted diseases including HIV.

HIV prevention programs encourage condom use with non-regular partners. In the context of this survey, higher risk sex is defined as sex with non-marital, no cohabiting partner in the last 12 months preceding VCT. Most of the clients never used a condom consistently when they had sex with their irregular partners (table 4.6). This finding concurs with a study conducted in Uganda that show that reported low condom use, with the proportions of men and women who reported frequent condom use with all non-spousal partners being 21-25% for men, and 11-24% for women (AIDS, 2001). Low condom use and concurrent partners have been identified as high-risk behaviours that increase vulnerability to sexually transmitted diseases including HIV (UNAIDS, 2006).

These socio-demographic characteristics and behaviours were not uncommon in other similar studies. A study conducted among the VCT clients in Malawi’s 3 sites presents a similar profile of self selected VCT clients. They were most likely to be unmarried (59%), unemployed (62%) men (74%) with at least a secondary school education (65%). While 94% of clients ever had sex, 83% reported no (29%) or only one (55%) partner in the last 6 months. Nearly all (90%) of clients reporting on condom use indicated inconsistent (68%) or no condom use (22%) in the last 3 months. Forty-six percent (46%) of all clients said the main reason for seeking VCT services was their own or a partner's risky behaviour, while another 8% reported feeling ill. While 27%
reported “planning for the future” (18%) or “marriage” (9%) as their main reason for seeking VCT services, few clients (7%) sought VCT services as couples. Nearly all (99%) clients who were tested received their results (CDC, 2004).

Similar studies in the region reveal that VCT clients have comparable characteristics. In a study of Ethiopia’s VCT outlets, a little over half (54.1%) of the clients were females and the clients’ average age was 27.4 years (SD +8.6). Seven in ten of the clients were never married and nearly half of the clients (48.8%) had attended secondary school education. Unemployed clients accounted for about two-thirds (66.4%) of the total clients. Condom use was low even during casual sex and there was a high proportion of clients in concurrent sexual relationships (Ethiop.J.Health, 2005).

4.4.2 Overall HIV Trend Among VCT Clients
Aggregated data from VCT clients presented from 2002 to 2006 show that on average, 10 percent of men and 20 percent of women was HIV infected (figure 4.23). However, trend analysis shows that the ratio of females to males who were HIV infected had not remained constant. Whereas in 2003 the ratio was almost 1:1, in the following years, the burden of HIV disease was heavy of women, oscillating between 65.5% and 67.7%, without taking a defined trend. The trends observed in this study agree with findings from country-wide VCT data collected and analyzed by NASCOP (2005).

HIV prevalence among VCT clients in this study and in other similar studies in the region shows that HIV prevalence is higher than in the general population, an indication that these VCT clients are probably a high risk group. Nationally, adult prevalence has declined from 10% in the late 1990s to 6.7% in 2003 (KDHS, 2003) and then rising again to 7.4% in 2007 (NASCOP, 2007).
However, the prevalence in 2003 (6.7%) and in 2007 (7.4%) is not statistically significantly different as 95% confidence intervals overlap.

Surveys indicate that both age at first sex and use of condoms are rising and that the percentage of adults with multiple partners is falling (NASCOP, 2007). Although the coverage of preventive interventions has expanded rapidly since year 2000, this expansion was too late to account for the beginnings of the decline in prevalence. More work is needed to understand fully the causes of this decline, but it is encouraging to see Kenya join the small list of countries experiencing significant declines in HIV prevalence.

Perhaps because VCT sites according to this survey are frequented by people who are likely to be HIV infected and whom also are most likely to be sick or suspecting partner’s risky sexual behaviour, significant HIV decline among VCT clients will take time to drop.

### 4.4.3 HIV Prevalence and Gender

The overall HIV prevalence levels among clients presenting themselves for VCT was found to be 14.2%, which is nearly three times higher than the national general population HIV prevalence of 5.1% (NACC, 2006). Of these, 9.4% were males compared to 24% of females (figure 4.9).

These findings also show significant relationship between gender and HIV prevalence ($\chi^2 = 1685.77$, $P=0.000$) and confirm a widely help opinion that women are particularly vulnerable to HIV infection compared to men (OR 2.35; 95 CI= 2.25 – 2.45).

A study by NASCOP using a national data set revealed similar ratios of HIV prevalence. Of those who were tested in that study, significantly more females tested positive ($P<0.0001$) and had twice as high chance of being infected by HIV (Odds ratio 2.27 with CI 2.23 to 2.31) than males (Otwombe, 2007).
Over the five years covered by this study, the prevalence ratio of female to male has been fluctuating. In 2002, 54.5% HIV infected VCT clients were females, compared to 66.7% HIV infected clients in 2003. In 2004 and 2005, the proportions changed to 67.7% and 65.5% females infected respectively. In 2006, one-third (66.7%) of HIV infected VCT clients were females (Otwombe, 2007). The apparent increase in HIV prevalence among the females over the years may be due to influence of ART drugs over the years which retain HIV infected people in the population. Other studies have also shown that there is increased HIV infection among married or cohabiting couples, and since women are more likely to contact HIV compared to men, this could explain the rise in HIV prevalence among women.

Other studies seem to agree with these results. Kenya Demographic and Health Survey of 2003 found women more vulnerable to HIV compared to their men counterparts at the female-to-male ratio of 1.9 to 1.

The latest national household survey, the Kenya AIDS Indicator Survey (NASCOP, 2007) findings show that a higher proportion of women age 15-64 (8.7%) than men (5.6 %) were infected with HIV. This means that 3 out of 5 HIV-infected Kenyans were female.

However, HIV prevalence of clients volunteering for counselling and testing is usually higher than in general population (KDHS, 2003). A study in Tanzania among VCT clients revealed HIV prevalence of 18.4% (95% CI 17.9 – 18.8) and this was higher than that officially reported in the general population in that community (14%) based on routine antenatal surveillance. The male-female ratio of HIV-positive clients was nearly 1:2 (Kintu, 2004).

The impact on women is more significant in sub-Saharan Africa, where women represent 61% of all adults living with HIV/AIDS, and their share is growing. Gender inequalities in social and
economic status and in access to prevention and care services increase women’s vulnerability to HIV. Sexual violence may also increase women’s risk, and women, especially young women, are biologically more susceptible to HIV infection than men. The epidemic has multiple effects on women: added responsibilities of caring for sick family members; loss of property if they become widowed and/or infected; and even violence when their HIV status is discovered (UNAIDS, 2005).

There are other reasons advanced for the increase in women vulnerability to HIV. Biologically, women have a much larger area of skin and tissue that is exposed to their partner's secretions during sex than men. Additionally, HIV-infected semen has a higher concentration of the virus than vaginal secretions (AIDS control council, 2002). The same study postulates that women may have less power in relationships to insist on regular condom use, and asking a male partner to wear a condom may involve fear of rejection or other reprisals, including violence. A study conducted in Zimbabwe with data from more than 4,400 men and women aged 15–24 indicate that the tendency of young women to have older partners, who are more likely to be infected—is a major factor in this differential (Gregson, S. and Gilks, C. (2002).

4.4.4 HIV Prevalence and Age
The findings from this study show that in every age-group, women were more likely than men to be HIV-infected. A higher proportion of women (7%) aged 15–19 years were HIV-infected compared with 2% of men in the same age-group. HIV prevalence among women 20–24 years was almost four times that of men in the same age group (11% vs 3%) (figure 4.10). Overall, prevalence among women aged 15–24 as indicated in the KDHS 2003 is 6%, compared with slightly over 1% among men, for an overall prevalence in youth of fewer than 4%. In this study, the peak prevalence among women was reached at ages 35–39 years (35%) and much older for
men at age 40–44 (25%) and then started to decline gradually. The peak age bracket for HIV among men is same as the one observed in the KDHS of 2003 while that of women was 25 – 29 years.

According to KAIS report of 2007, the burden of infections is statistically higher among females than males until age 35 after which the ratio of male to female infected starts to approach a ratio 1 to 1. The decline in prevalence among women after age 39, and among men after age 44 could represent a decline in new infections in older age groups or an increase in HIV-related deaths in these age groups.

A study in South Africa among the youth aged 15 – 24 years found an overall HIV prevalence of 10.2%. Males had a much lower prevalence of 4.8% compared to females at 15.5%. For those age 15-19 years the prevalence among males was 2.5% (1.8-3.4) and for females it was 7.3% and among those age 20-24 years the prevalence among males was 7.6% while among females it was 24.5% (Reproductive health Research Institute, 2004).

Teens and young adults, particularly girls and young women, continue to be at the center of the epidemic. Young people aged 15–24 account for about 40% of new HIV infections (among those 15 and over). In sub-Saharan Africa, on average, three young women are infected for every young man; in some countries in the Caribbean, young women are more than twice as likely to be infected with HIV compared to young men (UNAIDS, 2007). Since few HIV-infected children survive into their teenage years, infected youth represent more recent cases of HIV infection and serve as an important indicator for detecting trends in both prevalence and incidence.
4.4.5 HIV Prevalence and Education

VCT clients, across the four regions where data were collected indicated that clients without formal education had almost twice the infection levels of those with secondary education (OR= 2.80; 95 CI= 2.58 – 3.04), indicating that HIV prevalence increased with decreasing levels of education ($\chi^2 = 998.76$, df=3, P=0.000) (figure 4.11). A study in Uganda found out that HIV prevalence decreases significantly with each increase in education level for both men and women, and this association persists at secondary and higher education levels. Male and female VCT clients with more than secondary level education are 58 percent and 66 percent respectively, less likely to be HIV-positive than those with no education (AIDS and Behaviour, 2007). The study therefore concludes that HIV prevention and treatment interventions in Uganda should target less educated segments of the population including women, who have higher HIV prevalence and lower educational attainment than men.

KAIS (2007) study shows that women age 15-64 with higher educational levels have significantly lower HIV prevalence than those with less education. Those with primary education have a prevalence of 10 percent compared to 7 percent with secondary education and 4 percent with tertiary education. Prevalence among women who have never attended school is 7 percent. For men, there is also a decrease in HIV prevalence with higher levels of education but the differences are less pronounced and not statistically significant.

A study in Ethiopia (Ethiop.J.Health, 2005) found out that HIV prevalence decreases as client’s education level increases. For instance among illiterate and able to read clients, HIV prevalence found to be 33% and 34.5% respectively, whereas it was only 11.3% among clients with tertiary educational level.

However, these findings contradict the results of KDHS 2003, which show that those who completed primary school had higher infection levels than those with either less or more
education. Findings in this study also contradicts other studies that suggest that extra years of schooling may also lead to pre-marital sex because of delayed marriage. There have also been arguments that among men, education may lead to higher socio-economic status and a resource gateway that can be used to access commercial or casual sex (Bessinger, 2003).

In KDHS 2003, those who completed primary school had higher infection levels than those with either less or more education.

A study conducted in Nigeria shows that People Living With HIV/AIDS (PLWHA) are more likely to be employed and have basic to secondary school levels of education (Cartoux, 2007). These findings may therefore be interpreted to mean that too little education can influence HIV due to ignorance and lack of awareness whereas higher education has a higher chance of improving one’s economic status and hence his or her ability to engage in multiple partners and commercial sex.

4.4.6 HIV Prevalence by Marital Status
Marital status can be an important risk factor when exploring patterns of HIV transmission in a population. In Kenya, nearly 2 out of 3 Kenyans ages 15-64 are in a union (married or cohabitating) (KDHS, 2003). In this study HIV prevalence was correlated to marital status. HIV prevalence of married, monogamous clients was lower than that of polygamous (one man, more than one woman) clients, and was also high among widows and widowers. Compared to any other marital status, widowed clients had a significantly higher risk of HIV infection (40.5%). The data show that HIV varies with marital status ($\chi^2 = 5,960$, df=3, $P=0.000$). Comparing single clients and those who have been in any type of union, clients who have ever been married were 3.2 times more likely to be HIV infected (OR = 3.21, 95 CI= 3.05 – 3.37, ($\chi^2 = 244.83$, P = 0.000) (figure 4.15).
The above finding also agrees with other studies. According to KAIS (2007), women who have ever been widowed and women who are currently divorced or separated have high HIV prevalence at 17-21 percent. Among sexually-active men, those who have never been in a union have a prevalence of 2.8 percent compared to 7.4 percent among men currently in a union. This is especially relevant since the proportion of Kenyans (both women and men) currently widowed has more than tripled since 2003.

One hypothesis is that the deceased partners of widows and widowers were likely to have died from HIV-related illness after years of infection, since HIV is the leading adult cause of death among Kenyans age 15-49 (UNAIDS, 2006). These clients were potentially exposed to HIV for several years before their partners died.

However, these findings were not uniform with other studies; some agree and some reported contrary findings. Ever married clients in a study in Ethiopia are more likely to be HIV+ than never married ones (p=0.000). HIV prevalence for never married clients was estimated at 17.6% as opposed to currently married 30.9%. A significantly higher prevalence was found among clients whose marriages doom ended by divorce/separation (42.9%) and death of partner (61.8%) (Ethiop.J.Health, 2005). A study conducted in South Africa found out that HIV prevalence among married people was 10.5% compared with 15.7% among unmarried people (p-value < 0.001). The risk of HIV infection did not differ significantly between married and unmarried people (odds ratio (OR) = 0.85, 95% confidence interval (CI): 0.71 - 1.02) (Shisana, 2007).

In Tanzania, women in polygamous unions are more likely to be HIV positive (10 percent) than married women who were not in polygamous unions (7 percent); women who were not currently in a union were almost as likely to be HIV positive (9 percent) as polygamous married women.
Men in polygamous unions have the highest rates of infection; however, those who were not currently in a union have the lowest rates (Tanzania AIDS Indicator Survey, 2004). These findings clearly show that the relationship between marital status and HIV is complex. The risk depends on various demographic factors and sex behaviour practices. Increased prevention strategies that take socio-cultural context into account are needed for married people.

4.4.7 HIV Prevalence by Occupation
Findings from this study indicate that clients with skilled occupation were more likely to have multiple partners (23.6%) compared to those without occupation ($\chi^2 = 76.26$, $P = 0.000$). The findings also show that 19.3% of clients with no occupation and 17.2% of clients in unskilled occupation were HIV infected. The data show that there is a strong association between HIV prevalence and occupation ($\chi^2 = 1720$, df=4, $P=0.000$) (figure 4.14). The employment status of clients is important in influencing the rate of HIV infection. An AIDS Indicator Survey in Tanzania there is little difference in HIV prevalence by employment status, except that men who are not currently working have a lower level of HIV infection (4 percent) than working men (7 percent). The data also show a gradual increase in HIV infection with increasing wealth quintile for both women and men (Tanzania AIDS Indicator Survey, 2004). These findings were corroborated by the KDHS 2003 which found similar findings. These findings imply that availability of disposable income can lead to unhealthy behaviour that can lead to HIV and AIDS. Conversely, lack of income may lead people to engage in unhealthy commercial or forced sexual practices that are important in the spread of HIV.

4.4.8 HIV Prevalence and Multiple Sexual Partners
The spread of HIV depends upon unprotected sex with people who also have other partners. Most monogamous relationships were cohabiting, although the reverse is not necessarily true.
Partners who do not live together, who have sex only occasionally were those who were most likely to have other partners over the course of a year (BSS, 2002).

A general measure of the level of sexual activity in the population is the percent of sexually active respondents both married and unmarried with two or more non-regular (defined as non-marital or non-cohabiting) partners in the last 12 months. In this study, 12.9% of clients with no sexual partners were HIV infected compared to those with one partner. Those with two or more partners were at 12.7% infection rate. Clients with sexual partners were more likely to be HIV infected compared to those without (figure 4.18).

The data also show that, across the four regions, clients who reported having no sexual partners a year before they were tested for HIV appears high. This may mean that either they were sick, widowed or separated or suspicious of their HIV status and therefore opted to remain without partners.

A growing number of studies single out such behaviour in which men and women maintain two or more ongoing relationships as the most powerful force propelling HIV. The most potentially dangerous relationships, researchers say, involve men and women who maintain more than one regular partner for months or years. In these relationships, more intimate, trusting and long-lasting than casual sex, most couples eventually stop using condoms, studies show, allowing easy infiltration by HIV. In comparison with subjects reporting no or one sexual partner over 3 years, the estimated odds ratios (OR) of HIV serum positivity were 1.2 (95% confidence interval [CI] :0.6-2.3), 0.8 (95% CI : 0.4-1.8) and 0.3 (95% CI : 0.4-2.5) in subjects reporting 2-3, 4-5, and ≥6 partners, respectively (INIST-CNRS, 2007).
The distinction between having several partners in a year and several in a month is crucial because those newly infected with HIV experience an initial surge in viral loads that makes them far more contagious than they will be for years (Timberg, 2006). During the three-week spike -- which ends before standard tests can even detect HIV -- the virus explodes through networks of unprotected sex. This insight explained what studies were documenting: Africans with multiple, concurrent sex partners were more likely to contract HIV, and countries where such partnerships were common had wider and more lethal epidemics. A model of multiple sexual relationships presented at a Princeton University conference showed that a small increase in the average number of concurrent sexual partners -- from 1.68 to 1.86 -- had profound effects, connecting sexual networks into a single, massive tangle that, when plotted out, resembles the transportation system of a major city (FHI, 2000).

### 4.4.9 HIV Prevalence and Condom Use

The data show significant association between HIV and condom use. Using a condom is an important prophylaxis against HIV. In July 2001, a National Institute of Health study panel in the United States issued its report on condom effectiveness in preventing sexually transmitted infections, including HIV/AIDS. This report concluded that use of male latex condom effectively reduces transmission of HIV/AIDS in women and men. With HIV prevalence high in Kenya, it is important to encourage condom use in all types of sexual relationships, including consensual and legal unions, since both married and unmarried individuals engage in risky sexual behaviours (e.g., multiple partners and unprotected sex with non-regular partners) (International Family Planning Perspectives, 2006).

Furthermore, condom use may signal mistrust. Addressing these issues in information and education campaigns, including encouraging testing for married and regular partners and
continued use of condoms until the couple is able to undergo counseling and testing, should be an important component of HIV prevention efforts. The levels of condom use at last sex reported in this study (21% among men and 12% among women) represent significant increases over the levels found in the 2003 DHS (7% and 2%, respectively). The finding that condom use remains lower among ever-married than among never-married individuals is consistent with findings from previous work.

4.4.10 HIV Prevalence by region
Data from Nakuru sites show that the HIV prevalence trend was on the rise from 2003 to 2006, same as Western and Nairobi regions. It is only the Coast region where the prevalence was on a downward trend. Overall, HIV prevalence is higher in sites located in the urban areas. That is Nakuru, Nairobi and Coast (Mombasa) compared to Western sites which were rural sites (figure 4.22). These relative differences have also been found in other surveys. According to the latest KAIS report, among respondents of ages 15-64, seven percent (7%) were infected with HIV whereas in urban areas, the prevalence is 9%. The higher HIV prevalence in the urban areas could be attributed to high levels of poverty and jobless in urban areas, leaving the affected people with idle time which may be used in engaging in unprotected sex. Furthermore, the income differences between the urban population may lead to transactional sex, sometimes unprotected which easily predisposes one to HIV.

4.4.11 Importance of VCT in Society
This study was conducted in 17 VCT sites drawn from Coast, Nairobi, Rift valley and Western Kenya. The purpose was to determine the association between socio-demographic characteristics of VCT clients and their HIV test results in selected sites in Kenya between 2002 and 2006. Files of VCT clients were reviewed and Key informant interviews conducted in these
VCT sites. The results demonstrate that the uptake levels of VCT services were often poor, owing to mostly the lack of perceived benefit. The Key Informants in this study advised that, if VCT is linked with medical care, and effort was made to improve medical services for people with HIV, this would help to reduce this barrier to testing. Offering interventions to prevent mother to child transmission of HIV could also be recognized as a major benefit of VCT. In the prevention aspect, Key Informants affirmed that VCT helps people to learn about how HIV is transmitted, practice safer sex, get HIV test and, depending on the result, take steps to avoid becoming infected or infecting others.

Key Informants also cited the need for good support services and support networks. Whether the result was positive or negative, the VCT experience would have been painful, emotional and risky. Even a negative result did not necessarily reduce the stress. Key informants also reported that women ask question like: “How do I maintain my status in a polygamous relationship?”, “How do I negotiate for safer sex?”, “How do I demonstrate the value of wearing a condom?” If they tested positive, “how do I know that my husband or partner won’t throw me and my children out and so lose our livelihood?” These challenges were full of trauma for anyone who has recently been tested.

Within the care and support programs, HIV test results and follow up counselling meant an upsurge in people seeking VCT services because of the inherent benefits. With treatment to HIV becoming affordable in recent years, Key informants reported, there has been a corresponding increase in the number of people seeking VCT services.
CHAPTER V: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction
This chapter presents the summary findings of this study, the problems encountered during the study as well as conclusions drawn from the findings. Finally a raft of recommendations has been presented and areas of possible further studies identified.

5.2 Summary
The number of VCT clients increased seven-fold over the five years partly as a result of the initiation of ART services and mass media campaigns (NASCOP, 2006). VCT services had attracted largely young people in their 20s and 30s. Most said they went because they were planning for the future or getting married though women were also more likely to go when they felt unwell and because of their partners’ risky behaviour.

Youth aged 15 -24 years as well as clients who reported to have never married and those with primary and secondary education commonly reported concurrent sexual relationships. Concurrent sexual relationships may have huge implications when it comes to the spread of sexually transmitted diseases including HIV. Concurrent partnerships were an important sexual network characteristic because of the way they connect people to each other. These kinds of relationships can spread HIV through a population faster than the same number of monogamous relationships.

The analysis indicated that condom use was low among the VCT clients, with less than half of the clients who had had sex with more than one partners reporting to have used a condom in the last 12 months prior to testing. Females were particularly less likely to use condoms than their
male counterparts. These differences could be attributed to women low negotiation skills on the use of condom or men's negligence and engagement in high risk sexual behaviour.

A major component of HIV-prevention programs is encouraging young people to delay their sexual debut. Young males were more likely to delay sex debut than their female counterparts. The age pattern for HIV prevalence rates among VCT clients revealed that the prevalence is higher among older clients than younger ones. However, what was of concern among clients of 15 years and above is that they were 4.2 times more likely to have multiple partners compared to younger clients and this behaviour can easily fan the spread of HIV. At a prevalence rate of 34.4%, female clients aged 35-39 years exhibited the highest HIV infection rate.

Among men, prevalence rose gradually to peak at 40-44 (33%). This is the same peak age observed in the KDHS 2003 but at a lower prevalence of 9%. Among the young women aged 15-24 years, 17.4% of them were HIV infected. The patterns were similar among men but present lower prevalence rates within same age groups. Since few HIV infected children survive into their teenage years, infected youth represent more recent cases of HIV infection (incidence) and serve as an indicator for detecting trends in both prevalence and incidence.

The findings revealed that a little over half of the clients were males. Whereas almost same number of clients by gender were counselled and tested between 2002 and 2003, the following three years saw increasingly more women than men going for VCT services, and with significantly higher HIV prevalence. The data showed HIV prevalence of 9.5% and 19.5% among men and women respectively in the study subjects who were significantly higher than the
prevalence figure for the country which stands at 6.7% and 3.5% females and males respectively (NACC, 2006).

Education is an important determinant of an individual behaviour. Higher education attainment may lead to positive changes to sexual behaviour. The findings from this study show that VCT clients with no formal education had almost twice the infection levels of those with secondary. Clearly, HIV prevalence increased with decreasing levels of education.

5.3 Implications of the study findings

These findings will help in more focused setting up of counseling and testing services targeting the socio-demographic characteristics identified in this survey. Appropriate counseling and testing services should particularly be established for those who have ever been in marital relationships, clients with low education, unemployed clients and clients who report engaging in unprotected high risk sex. This will in effect target the resources to areas where they will be more effective, both for provision of counseling and testing programs and also for HIV prevention programs.

The findings of this study are subject to at least several limitations. First, the survey asked about behaviours in the last 12 months before HIV test. The respondents may have contracted HIV before 12 months and it is possible that their behavior in the 12 months preceding the HIV test was not related to the test outcome. Second, for questions that depended on recall, such as the number of sexual partners a person had in the last 12 months, or condom use, the responses may be biased by the variations in capacity for recall.
Finally, sexual behaviour is a largely private activity, subject to varying degrees of social, cultural, religious, moral and legal norms and constraints. A key challenge is to generate unbiased and precise measures of individual behaviour patterns.

5.4 Conclusion

The study concludes that the findings from this study, which agrees with many others, that prevalence of HIV infection among VCT clients varied by socio demographic variables. The sex of clients, marital status, employment status, level of education, number of concurrent sexual partners and consistent condom use appeared to be extremely important variables in determining the prevalence of HIV infection. In such cases, females, the unemployed, divorced or separated, those with multiple sexual partnerships and those who never used condoms were found to have a high likelihood of HIV infection than others.

High prevalence of HIV was observed among those who have ever been in marital relationships, the less educated, the unemployed clients and also among clients who had started sex and who never used condoms. Generally, the findings suggest that HIV affects people of low socioeconomic status and who were exposed to high risk sexual practices. Exposures happening due to other factors than sexual practices have also contributed to HIV infection. This was demonstrated by the observed considerable infection rate of 6.5% among clients who had had no sexual exposure. The findings from this study agree with many others studies which show that prevalence of HIV infection among VCT clients varies by socio demographic variables.
5.5 Recommendations

a) Leading agencies in the campaigns against HIV/AIDS such as NACC, UNAIDS, World Bank and the US government agencies (USAID and CDC) need update VCT policies and services to make them attractive to older people, especially men of 50 years and above. Results of this study show that there is need to pay attention to older people beyond the reproductive age as older people carry a significant burden of HIV. When individuals know their HIV status, they were likely to protect themselves and their sexual partners. In addition, the ministry of Culture, Gender and Sport as well as non-governmental organizations such as Help Age International need to include aspects of HIV prevention in their programs that target the old.

b) The Government of Kenya through the ministry of Gender, Culture and Sports and well as religious organizations need to design information targeting people in marital relationships about these findings with an aim of promoting open discussion about prevention of HIV in marital unions. There has been a long-held perception that people in marital unions were safe from HIV and hence need not protect themselves when having sex. However, findings in this study and some others project different facts. Eighteen percent (18%) and 21% of married monogamous and polygamous clients respectively were HIV infected. People in marital unions should therefore be encouraged to take HIV tests, ideally as couples but as a minimum, as individuals.

c) National AIDS Control Council (NACC) need to lead in designing appropriate Behaviour Change Communication (BCC) strategies particularly focused on people with low socioeconomic status to help them lead healthy lives in order to counter the prevailing high level of HIV infection rates among VCT clients. Most importantly, the data shows that over time, more men access VCT services compared to women, yet
women were more likely to be HIV infected. In addition, the HIV prevention programs, with the leadership of the National AIDS Control Council (NACC), must design programs that attract more women to VCT services by integrating them with other services that women frequent such as the family planning. Other avenues should be explored where people with low socioeconomic may be educated on the importance of accessing VCT services especially those who are still within the child bearing age. Besides protecting the parent, such services would also ensure that the epidemic is curtailed by advising the parents of available help should they be HIV infected; that would increase the chances of giving birth to a HIV-free child.

d) Since the findings from this study show that HIV prevalence trends compare well with findings from national house-hold surveys such as KDHS, it is recommended that in-between the national surveys, VCT data can be used for HIV surveillance. This is especially because the data are collected routinely, at lower costs and country-wide. Should repeated studies collaborate these findings as this study, then the country should consider removing HIV/AIDS questions from the Kenya Demographic and Health Survey studies and use VCT data for HIV surveillance.

5.6 Research Suggestions

a) The data show that a significant number of clients—especially women—were infected with HIV through non-sexual behaviours since HIV prevalence of women who had never had sex was almost twice as high as men in that category. Further studies need to undertaken to explore the factors behind 7.8 percent of women who had never had sex were HIV infected.
b) Future studies need to be conducted to find out why many VCT clients who report one sexual partner and no condom use also seek VCT. Further, there is need to find out what hinders people in general and women in particular, from using condoms particularly for those who are engaged in unsafe sexual practices.
REFERENCES


Appendices

Appendix 1- National VCT client form

This is the form used for collecting data that has been presented in this study.

National Voluntary Counselling & HIV Testing Form

<table>
<thead>
<tr>
<th>Date</th>
<th>Province</th>
<th>District</th>
<th>Site</th>
<th>Site Type</th>
<th>Counsellor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Return Visit? No [ ] Yes [ ] New Code? No [ ] Yes [ ] Client Code [ ] [ ] [ ] [ ] [ ]

Partner Code [ ] [ ] [ ] [ ] [ ] Mother's Maiden Name [ ] [ ] [ ] [ ] [ ]

1. Sex
   1. Male
   2. Female

2. Age [ ] [ ] [ ] [ ] [ ]

3. Occupation (pick one)
   0. None
   1. Unskilled
   2. Skilled
   3. Professional
   4. Student

4. Education (pick one)
   0. None
   1. Some primary
   2. Some secondary
   3. Some Post secondary

5. Marital Status (pick one)
   0. Never married
   1. Steady partner, not living together
   2. Steady partner, living together
   3. Married, monogamous
   4. Married, polygamous
   5. Widowed
   6. Separated/divorced

6. Client seen as (pick one)
   1. Individual
   2. Couple
   3. Group
   4. Polygamous group

7. Client Pregnant (Women) (pick one)
   0. No
   1. Yes
   2. Don’t know

8. Service required (pick one)
   1. Information only
   2. Counselling only
   3. Full VCT service

9. Why here today (pick all that apply)
   - Plan to get married
   - Plan to get pregnant
   - Plan for the future/know status
   - Client risk behaviour
   - Partner risk behaviour
   - Feel unwell
   - Had blood transfusion
   - Partner Pregnant (Men)
   - Reunion
   - Referred by other client
   - Referred by health worker
   - Child HIV positive/died
   - Partner HIV positive/died
   - New sexual partner
   - Tested elsewhere
   - After window period
   - Had circumcision
   - Exchanged sex for money or favours
   - Intravenous drug use
   - Raped
   - Other—please specify

10. How did client learn about this service (pick all that apply)
    - Television
    - Radio
    - Newspaper
    - Poster/Sign post
    - Pamphlets
    - Relative/friend
    - Sex partner/spouse
    - Another VCT client
    - Religious meeting
    - Community meeting
    - Health worker
    - Peer educators
    - Other—please specify

11. Has client ever had sex?
    - No
    - Yes

12. Sexual partners in last 12 months
    - Heterosexual
    - Homosexual

13. Condom use in the last 12 months
    Steady partner:
      0. Never
      1. Sometimes
      2. Always
      3. No sex last 12m
      4. No steady partner
      9. Never had sex
    Non—steady partner:
      0. Never
      1. Sometimes
      2. Always
      3. No sex last 12m
      4. No non-steady partner
      9. Never had sex

14. Condom use last sex (pick one)
    0. No
    1. Yes
    2. Yes, but condom broke
    3. Not sexually active 12m
    9. Never had sex

15. If not tested, why not (pick one)
    1. Changed mind
    2. Wants to test later
    3. Wants to test with partner
    4. No test kits available
    9. Tested today

16. Has client had an HIV test before (pick one)
    0. No
    1. Yes, negative
    2. Yes, positive
    3. Yes, do not know result

17. HIV result today:
    Test no. 1 (pick one per test)
    0. Negative
    1. Positive
    2. Inconclusive
    9. Not done
    Test no. 2
    0. Negative
    1. Positive
    2. Inconclusive
    9. Not done

18. Syphilis result today:
    0. No
    1. Positive
    9. Not done

19. Couple Discordant (pick one)
    0. No
    1. Yes
    9. N/A

20. Condoms given (pick one)
    1. Yes
    2. Refused
    3. Client would rather get/buy condoms elsewhere
    4. Out of stock
    8. No condoms this Agency

21. Referred to:
    (pick all that apply)
    - HIV Care Specialist/ARV
    - STI services
    - Inpatient services
    - TB services
    - PMTCT
    - Family planning
    - Other outpatient services
    - Home based/family care
    - Post test club
    - Ongoing counselling
    - Spiritual support
    - PLWHA support group
    - Legal Services
    - Other
Appendix II- Key Informant Guide

My name is Samuel Wambugu, a Masters Degree student in Public Health at Kenyatta University. As a requirement of my studies, I am conducting a research on the socio-demographic characteristics of clients seeking Voluntary Counselling and Testing (VCT) services in selected sites in Kenya. Besides reviewing records of clients served with VCT services between 2002 and 2006, I am also collecting views and opinions of program managers who played active roles in supporting the services.

1. Record name of the VCT centre.
2. Record sex  a. Male  b. Female
3. For how long have you worked in this VCT site?
4. On average, how many clients do you attend to daily?
5. What benefits to the who one tests for HIV
6. How is community mobilization carried out to encourage people to come for VCT?
7. What challenges are there in providing VCT services?
8. What other activities are carried out in this VCT site other than counselling and testing
9. How do you deal with clients who
   a. Test positive
   b. Whose results are discordant with their partners?
10. In your opinion do you think that demographic characteristics of clients have any relationship with HIV test outcomes?
Appendix III – Map of Kenya representing data collection sites
## Appendix IV – VCT sites covered in the study

<table>
<thead>
<tr>
<th>Name of the site</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bomu clinic</td>
<td>Coast province</td>
</tr>
<tr>
<td>Ganjoni Health Centre</td>
<td>Coast province</td>
</tr>
<tr>
<td>Kisauni Health centre</td>
<td>Coast province</td>
</tr>
<tr>
<td>Likoni Health Centre</td>
<td>Coast province</td>
</tr>
<tr>
<td>Mikindani Health Centre</td>
<td>Coast province</td>
</tr>
<tr>
<td>Mombasa Youth Counselling Centre</td>
<td>Coast province</td>
</tr>
<tr>
<td>Mvita Clinic</td>
<td>Coast province</td>
</tr>
<tr>
<td>Tudor Clinic</td>
<td>Coast province</td>
</tr>
<tr>
<td>Port Reitz Hospital</td>
<td>Coast province</td>
</tr>
<tr>
<td>Kenyatta National Hospital</td>
<td>Nairobi Province</td>
</tr>
<tr>
<td>Rift Valley Provincial General Hospital</td>
<td>Rift Valley</td>
</tr>
<tr>
<td>Butula Hospital</td>
<td>Western Province</td>
</tr>
<tr>
<td>St. Elizabeth, Mukumu</td>
<td>Western Province</td>
</tr>
<tr>
<td>Busia District Hospital</td>
<td>Western Province</td>
</tr>
<tr>
<td>Port Victoria</td>
<td>Western Province</td>
</tr>
<tr>
<td>Kakamega Provincial General Hospital</td>
<td>Western Province</td>
</tr>
<tr>
<td>St. Marys Hospital, Mumias</td>
<td>Western Province</td>
</tr>
</tbody>
</table>
To Kenyatta University,
Graduate School,
25th June, 2006:

Dear Sir/Madam

Ref: Study on “Association between HIV status and socio-demographic characteristics of clients seeking voluntary counselling and testing (VCT) services in selected sites in Kenya”

This is in reference to the above study using data gathered from Voluntary Counselling and Testing (VCT) sites under the Ministry of Health but supported by USAID through Family Health international (FHI). The researcher, Samuel Wambugu, is our employees and is in charge of monitoring and evaluation of our projects and is therefore authorised to use the data for furtherance of his university education.

Results of his study will be very important in evaluating the Counselling and Testing component of our programs.

Please accord him the necessary support.

Sincerely,

Dr. Baker Maggwa,
Regional Research, Evaluation and Surveillance Director