

**BARRIERS TO HIV TESTING AND COUNSELING  
UPTAKE AMONG YOUNG PEOPLE AGED 18-24  
YEARS IN NYERI MUNICIPALITY**

**BY**

**MUNYUA PETER MACHARIA**

**H/57/70962/07**

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE AWARD OF MASTERS OF  
PUBLIC HEALTH, UNIVERSITY OF NAIROBI**

**NOVEMBER 2013**

DECLARATION AND APPROVAL

I declare that this thesis, titled '**Barriers to HIV Testing and Counseling uptake among young people aged 18-24 years in Nyeri Municipality**' is my original work and has not been submitted either wholly or in part to this or any other University for the award of any degree or diploma.

Signed.....

Date: .....

Munyua Peter Macharia

**Certificate**

This is to certify that this thesis entitled ‘**Barriers to HIV Testing and Counseling uptake among young people aged 18-24 years in Nyeri Municipality**’ is a bona fide research work carried out independently by Munyua Peter Macharia under our guidance and supervision.

**Internal Supervisors**

**1) Dr Peter K. Njoroge, MBChB, MPH.**

Lecturer, Disease Prevention and Health Promotion Unit, School of Public Health,  
University of Nairobi

Signature ..... Date: .....

**2) Mr. Erastus K. Njeru, BSc, MSc.**

Lecturer, Epidemiology and Biostatistics Unit, School of Public Health,  
Director, Clinical Epidemiology Unit, School of Medicine,  
University of Nairobi

Signature ..... Date: .....

**Approved by**

**Dr Dismas Ongore, MBChB, MPH, PhD.**

The Director, School of Public Health, University of Nairobi

Signed..... Date

## Dedication

Dedicated to my daughters Lynne and Bernice.

## Acknowledgements

I express deep gratitude to my supervisors and course co-ordinators for their guidance, advice and direction throughout the process of developing this dissertation.

I appreciate my research assistants Mwatha and Mercy for their dedication in the process of data collection, and many thanks to all the young people who gave their time and responded to the questionnaires.

Finally, I appreciate my family for their patience and encouragement throughout the course.

## **Table of Contents**

Declaration.....	ii
Certificate .....	iii
Dedication .....	iv
Acknowledgements .....	v
Table of contents.....	vi
List of Tables.....	x
List of figures .....	xi
List of Abbreviations.....	xiii
Definitions of Operational terms.....	xiv
Abstract .....	xv
<b>Chapter 1.0 Introduction</b>	<b>1</b>
1.1 Background to the study.....	1
1.2 Statement of research problem.....	6
1.3 Justification.....	7
1.4 Objectives.....	9
1.4.1 Research objectives.....	9
1.4.2 Specific objectives.....	9
1.5 Research hypotheses.....	9
1.6 Conceptual Framework.....	10

<b>Chapter 2.0 Literature review</b>	11
2.1 Knowledge on HIV/AIDS.....	12
2.2 Attitude to HTC.....	13
2.3 Confidentiality.....	16
2.4 Access to HTC.....	16
<b>Chapter 3.0 Materials and methods</b>	18
3.1 Study design.....	18
3.2 Study Population.....	18
3.3 Study Area.....	18
3.4 Sampling.....	20
3.4.1 Sample size determination.....	20
3.4.2 Sampling procedure.....	20
3.5 Selection criteria.....	21
3.6 Variables.....	21
3.6.1 Independent variables.....	21
3.6.2 Outcome variable.....	21
3.7 Data collection .....	22
3.8 Data processing and analysis.....	23
3.9 Quality assurance.....	23
3.10 Ethical considerations.....	24
3.11 Study Limitations.....	24

<b>Chapter 4.0 Results</b>	25
4.1 Social demographic characteristics.....	25
4.2 HIV and AIDS knowledge.....	29
4.3 HIV Testing.....	38
4.4 Young people’s perception of counselors’ attitude.....	43
4.5 Young people’s AIDS attitude.....	46
4.6 Relationship between HIV/AIDS knowledge and socio-demographic factors.....	51
4.7 Relationship between social demographic characteristics and young peoples' perception of counselors’ attitude.....	53
4.8 Relationship between social demographic characteristics and young people’s HIV and AIDS attitude.....	55
4.9 Relationship between HIV testing and social demographic characteristics.....	58
4.10 Relationship between HIV testing and young peoples' perception of counselors’ attitude.....	60
<b>Chapter 5.0 Discussion, Conclusion and Recommendations</b>	63
5.1 Discussion.....	63
5.2 Conclusion.....	67
5.3 Recommendations .....	69
<b>References</b> .....	70



**Appendices**

1. Questionnaire..... 77

2. Consent Explanation/Form..... 84

3. Sampling frame..... 86

4. List of Clusters..... 87

## List of tables

Table		Page
4.1	Prevalence of self-reported testing.....	38
4.2	Perception of counselors' attitude.....	43
4.3	Young people's AIDS Attitude.....	47
4.4	Relationship between HIV and AIDS knowledge and socio demographic factors.....	51
4.5	Relationship between socio demographic factors and perception of counselors' attitude.....	53
4.6	Results for relationship between socio demographic factors and young people's HIV and AIDS attitude.....	56
4.7	Relationship between HIV testing and socio demographic factors.....	59
4.8	Relationship between HIV testing and knowledge, attitude and perception...	61
4.9	Relationship between comprehensive AIDS knowledge and testing.....	62
4.10	Logistic regression- HIV testing, sociodemographic variables, knowledge, attitude and perception .....	62

## List of figures

Figure		Page
1	HIV prevalence among adults aged 15-64 years by province, Kenya 2007....	2
2	HIV prevalence among adults by districts in 2006.....	3
3	Sex distribution.....	25
4	Age and sex distribution.....	26
5	Marital status.....	26
6	Occupation.....	27
7	Level of education.....	28
8	Religious affiliation.....	28
9	Correct responses to questions on HIV transmission.....	29
10	Correct responses to questions on knowledge of Mother to child transmission of HIV.....	30
11	Correct responses to questions on dispelling common myths and misconceptions.....	31
12	Correct responses to questions on knowledge of Mother to child transmission of HIV.....	32
13	Comprehensive HIV and AIDS knowledge.....	33
14	Comprehensive HIV and AIDS knowledge by sex	34
15	Comprehensive HIV and AIDS knowledge by age	34
16	Risk perception for infection.....	35
17	Knowledge score distribution.....	36
18	Mean knowledge score by sex.....	37

19	Mean knowledge score by age.....	37
20	Self-reported testing by sex.....	39
21	Self-reported testing by age.....	39
22	Testing place.....	40
23	Reasons for not testing.....	41
24	Sources of information.....	42
25	Breakdown of positive perception responses by sex.	44
26	Perception of counselors' attitude score distribution.....	45
27	Mean perception score by sex.....	45
28	Mean perception score by age.....	46
29	Accepting attitudes breakdown by sex	48
30	Young people's HIV and AIDS attitude score distribution.....	49
31	Young people's mean HIV and AIDS attitude score by sex.....	49
32	Young people's men HIV and AIDS attitude score by age.....	50
33	Relationship between age and testing.....	58

## List of Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
ART	Anti-retroviral Therapy
CBS	Central Bureau Of Statistics
CCC	Comprehensive Care Clinic
HIV	Human Immunodeficiency Virus
HTC	HIV Testing and Counseling
KAIS	Kenya AIDS Indicator Survey
KNBS	Kenya National Bureau of Statistics
MOH	Ministry of Health
MOP	Ministry of Planning and National Development
NASCOP	National AIDS and STDs Control Programme
PITC	Provider Initiated Testing and Counseling
PLHIV	People Living With HIV
PMTCT	Prevention of Mother -to-child transmission of HIV
STI	Sexually Transmitted Infection
UNAIDS	United Nations Joint Programme on HIV/AIDs
VCT	Voluntary Counseling and Testing
WHO	World Health Organisation

## **Definition of operational terms**

<b>Attitude</b>	The way people feel, think or behave towards a person with HIV/AIDS.
<b>Barrier</b>	Factor/s that prevent or hinder one from accessing HTC.
<b>CCC</b>	Comprehensive care clinic (HIV clinic).
<b>Confidentiality</b>	The nondisclosure of information except to another authorized person.
<b>HTC</b>	Process by which a client undergoes counseling to enable him or her make informed choice about being tested for HIV. This may be initiated either by the client or by a health care provider.
<b>Household</b>	A household includes all the persons who occupy a housing unit.
<b>Knowledge</b>	A collection of information and/or facts on HIV/AIDS that are gained through education or experience.
<b>Stigma</b>	Prejudice directed at people living with HIV/AIDS, which can result into being rejected, avoided, discriminated against or even physically hurt.
<b>STI</b>	Sexually transmitted infection.
<b>Youth</b>	Those persons between the ages of 15 and 24 years (UN definition).The Commonwealth's definition of young people is 15-29 years. This study is confined to young people between the age of 18 and 24 years who can consent.

## **ABSTRACT**

### **Background**

HIV testing and counseling (HTC) is an important strategy in HIV and AIDS prevention and control in Kenya. The prevalence of testing in Kenya remains low among adults as reported in KAIS 2007 and also in KDHS 2008/9.

### **Objectives**

This study set out to determine HTC prevalence and testing barriers among young people aged 18-24 years in Nyeri Municipality, Central Kenya.

### **Design**

A cross sectional study was conducted using cluster sampling technique. A total of 600 young people were sampled in 30 clusters randomly chosen using probability proportionate to the number of households in each sub location. Data were collected using an interviewer administered questionnaire, during the month of August 2011. Data collected was on HIV Testing and Counseling, HIV and AIDS knowledge and attitude, and youths' perception of HCW attitude. All ethical considerations were respected by ensuring voluntary participation with written consent and upholding of utmost confidentiality.

### **Results**

The study found near universal HIV and AIDS awareness (99.8%) and a similar level of HTC awareness (99.6%) with 95.8% of the respondents acknowledging that the disease was a serious threat to young people in the community. Nearly all (98.5%) knew of a place where they could access testing and 62% of them thought they were at risk of infection. The mean HIV and AIDS knowledge score was 82.8% and was influenced by education level ( $p < 0.001$ ) and age ( $p = 0.015$ ). The mean HIV and AIDS attitude score was 71.7% and was influenced by education

level ( $p < 0.001$ ). Young people's perception of counsellors' attitude mean score was 47.7% and was significantly related to education level ( $p = 0.0047$ ). The study found self reported HIV testing prevalence of 69.2% (CI 65.4%-72.8%) with nearly all those tested reporting they received their results. Their main sources of HIV testing and counselling information were schools (23.8%) followed by health workers (16.7%) and churches (15.2%). The most popular testing places were public health facilities for over 53% of tested youths.

Respondents advanced many reasons for never having taken a test; 34.6% thought they were not at risk, 20% had no reason, 18.4% were held back by fear, 14.6% had never been offered a test, 9.7% said they were too young. The rest, less than 3%, of the respondents either did not know about the test, where to get tested, or did not see the need because their partners had tested negative.

### **Conclusion**

The study showed that HIV testing is significantly related to age ( $p < 0.001$ ), sex ( $p < 0.001$ ), marital status ( $p < 0.001$ ), occupation ( $p = 0.001$ ) and young people's perception of counsellors' attitude ( $p < 0.001$ ). The study recommends training and retraining of HTC counselors to enable them provide youth friendly services to improve uptake of HTC by young people.



# CHAPTER 1.0 INTRODUCTION

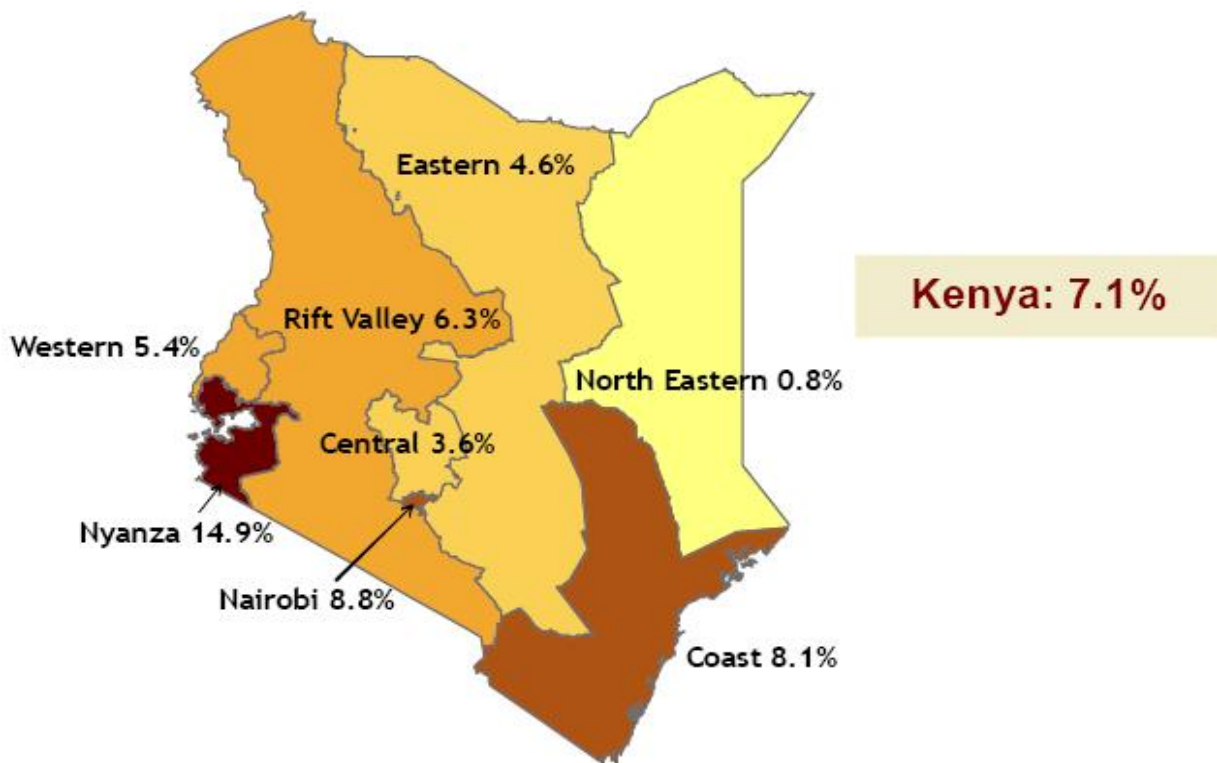
## 1.1.1 Background to the Study

The HIV pandemic is one of the most serious infectious disease challenge in public health today. The number of people infected with HIV globally was estimated at 34 million by the end of 2010 (UNAIDS 2010) of whom 12.5 million are young people aged 15-24 years (UNAIDS 2010). The epidemic is reported to be stabilising due to both reduced new infections and longer survival associated with wider availability of antiretroviral therapy (UNAIDS 2007). It was estimated that 2.7 million people were newly infected with HIV in 2008 (UNAIDS 2009), one million of them being young people (UNAIDS 2010).

Sub-Saharan Africa is the most seriously affected region with AIDS being the leading cause of death (UNAIDS 2007). The region accounts for 68% of HIV infections worldwide (UNAIDS 2011) and has 75 % of all youth living with HIV though it is home to only 10% of the world's youth. The region suffered 72% of the 2 million global AIDS related deaths in 2008(UNAIDS 2009) with the disease being the leading cause of death among young people in the region (WHO 2007). The main mode of infection in the region is heterosexual infection (UNAIDS 2010) with some infected perinatally and have survived to adolescence (Gray 2010). An estimated 45% of all new HIV infections occur in the age group 15-24 years (UNAIDS 2009). In this group, in Africa, the prevalence tends to be higher among females than males (UNAIDS 2009).

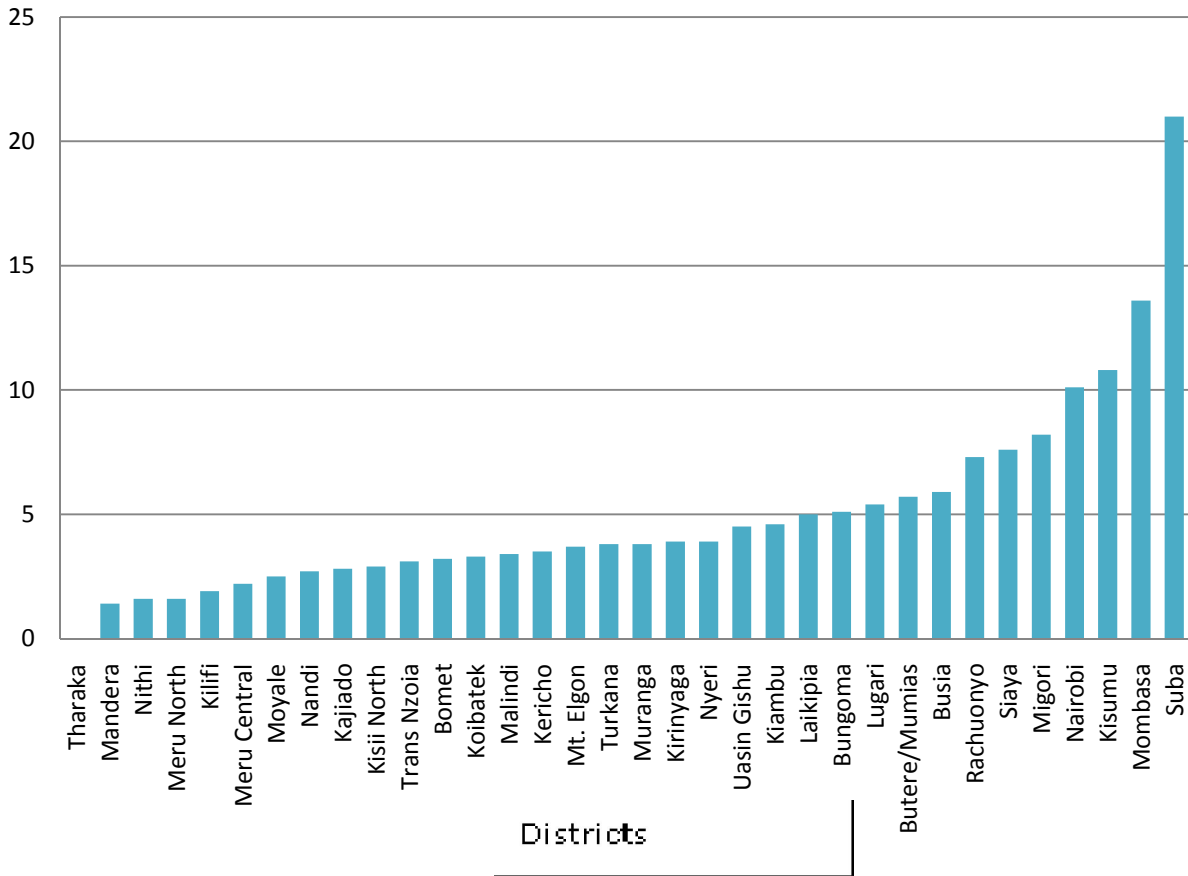
According to KAIS 2007 report, 1.4 million Kenyan adults are infected with HIV (NASCOPI 2009). The HIV/AIDS epidemic in Kenya exhibits wide gender, regional and age variation in prevalence. According to KDHS 08/09 the prevalence of HIV among Kenyan adults aged 15-49 is 6.3% with the prevalence higher among women at 8% compared to men at 4.3% (KNBS &ICF 2010). The provincial prevalence estimates vary across the country with Nyanza highest at 14% and North Eastern province lowest at 1% (KNBS &ICF 2010). Central has 4.6% prevalence in adults (KNBS &ICF 2010). According to the 2006 sentinel surveillance report, Suba and Homa Bay districts have the highest HIV prevalence of over 20% among adults. Nyeri's prevalence was estimated at 3.9% (NACC 2007).

**Fig 1: HIV prevalence among adults aged 15-64 years by province, Kenya 2007.**



Source: KAIS 2007 Final report

**Fig 2: HIV prevalence among adults by districts in 2006**



Data Source: 2006 Sentinel Surveillance report (NACC 2007)

There are rural -urban differences in HIV prevalence with high urban prevalence of 7.2% against 6% of the rural adult population infected (KNBS & ICF 2010). However, the burden of disease is high in the rural Kenya despite the lower prevalence as three quarters of the population is rural (NASCO 2009).

The HIV prevalence in young people aged 15 -24years is 3.8%, with the prevalence among males at 1.4%, and that of females being 5.6% which is four times higher (NASCOP 2009). The HIV scourge among young people has not been fully addressed resulting to an aggravated epidemic in this group. This is being fuelled largely by risky sexual behaviour in the background of low condom use, multiple sexual partners, older sexual partners reported among female adolescents, alcohol and drug use (Nzioka 2002). About two thirds of young people in Kenya are sexually active (NASCOP 2009) with most engaged in unsafe sex. Studies on condom use in sexually active adolescents have found rampant low condom use (Cherutich 2008, Nzioka 2002) putting them at risk of HIV infection and early pregnancy.

### **1.1.2 HIV Testing and Counseling**

In the year 2000 the first three VCT centres were set up in the country (NASCOP 2005). There are now about 1000 VCTs (NACC 2010) and numerous HIV testing and counseling centres manned by trained and certified counselors around the country.

Counseling and testing for HIV has been demonstrated to be a cost effective strategy for HIV prevention in the developing world (Sweat 2000). It has been proven to reduce unprotected sex significantly among those tested (Coates 2000). After knowing their status, individuals are empowered to plan and make important decisions in their life concerning risk reduction for HIV infection as well as care and treatment which are now widely available in the country. The introduction of couple counseling and testing has assisted couples deal with disclosure issues as well as enable them plan and deal with HIV positive status or serodiscordance (Coates 2000).

With counseling, couples are also assisted to deal with the decision of having more children in the future, family planning with dual protection and care and support of their infected children (Coates 2000).

There are two main broad types of HTC in Kenya, namely, client-initiated counseling and testing and provider initiated testing and counseling (NASCO 2008). Client initiated HIV Testing and Counseling involves individuals actively seeking HIV testing and counseling from service providers. It can be conducted in many setups such as health facilities, stand-alone centres outside health institutions, mobile services in community based settings and even in peoples' homes (NASCO 2008). Provider initiated Testing and Counseling is HIV testing and counseling which is recommended by health care providers to persons attending health care facility as a standard component of medical care (NASCO 2008). Both types of testing and counseling are based on the premise of consent and confidentiality (WHO 2007). Testing involves a rapid blood test conducted in such a way that the client can see and interpret results for themselves, boosting confidence in the results and avoidance of clerical errors (WHO 2007). Rapid tests reduce waiting time for receiving results thereby minimizing loss to follow up and stress (Angotti 2009).

HTC is recommended for all age groups in Kenya as the country is facing a generalized HIV epidemic. Youths over the age of 18 years can consent for a HIV test but younger youths require the consent of a parent or guardian. However they may give their own consent if they are symptomatic, have sexually transmitted infection, pregnant, married, a parent, a sex worker or if engaged in behavior that puts them at risk of contracting HIV (NASCO 2008).

The uptake of HTC is low as only 34% of Kenyan adults have ever been tested (NASCOP 2009). The prevalence of testing varies greatly geographically with Nairobi having the highest prevalence and North Eastern Province recording the lowest (KNBS & ICF 2010). People living in urban areas have higher testing rates than those living in rural areas. Higher testing rates were also found in those with higher education level and higher wealth quartile (KNBS & ICF 2010). There are more females tested than males, and among young people aged 15-24 years, 33.6% and 49.6% of males and females respectively have been tested (KNBS & ICF 2010).

## **1.2 Statement of Research Problem**

The prevalence of HIV counseling and testing among young people in the country is low, standing at 33.6% and 49.6% among males and females (respectively) aged 15-24 years (KNBS & ICF 2010). Testing and counseling for HIV is the entry point to care and treatment (WHO 2007). It is also the entry point for PMTCT program. The benefits of HTC cannot be over emphasized. It is an important strategy in HIV prevention. HTC has been shown to be effective in fostering a reduction in risky sexual behaviour for HIV among clients (Sweat 2000). In Kenya, where 80% of those infected are unaware of their serostatus (NASCOP 2009), unknowing HIV transmission continues to occur as well as low uptake of care and treatment including the uptake of life saving antiretroviral medication. It is by HTC that those infected shall be diagnosed and started on treatment early enough to abate severe immunosuppression associated with opportunistic infections and high infectivity. Prevention among discordant couples can be achieved with HTC (Coates 2000). A study by Granich (2008) describing a mathematical model for elimination of HIV is of the view that to put the world on the path to total elimination of

HIV, universal voluntary HIV testing is necessary to diagnose all the infected and put them on treatment.

Kenya had set a target to test 80% of the adult population by the year 2010, but by 2008 only 34% had been tested, and to reach this target requires reaching 75% of adult males and 60% of adult females (NASCO 2009). Olugbenga et al (2008) in a study on knowledge and uptake of VCT in Nigerian youths found a very low prevalence of testing of 7.1%. This was against a high positive attitude to VCT among the youths, and a high level of awareness. Another study on youths in Tanzania (Mgasha 2009) had similar findings. These studies found that the high knowledge and the high positive attitude have not translated to high uptake of HTC. There are barriers that account for this disparity and they have not been adequately researched on among young people (Olugbenga 2008). This study seeks to determine these barriers among young people in Nyeri Municipality.

### **1.3 Justification**

Despite the availability of free HIV testing and counseling services in government health facilities and in most private setups, the uptake of the service is still low (NASCO 2009). Knowledge of HIV/AIDS in the community is high and the attitude to testing positive, but the actual uptake of testing has not been commensurate (Olugbenga 2008).

Control of the HIV pandemic is one of the millennium development goals. One of the strategies to achieve this is by increasing testing and counseling and Kenya targets to test 80% of the population by the year 2013(NACC 2009). This is a step towards the ultimate goal of universal

testing. It is only through testing that all those infected with HIV can be diagnosed and put on care and treatment. This is intended to improve the health of the PLHIV and greatly boost prevention efforts in the community resulting to a healthy workforce as envisaged Kenya's Vision 2030 (MOP 2007).

The aim of this study is to investigate the barriers to testing and counseling that exist among young people living in the setting of a rural municipality with a HIV prevalence lower than the national average. The setting of the study is Nyeri Municipality, a densely populated area with both rural and urban settlements and very well endowed with numerous health facilities, both public and private. These facilities are well distributed geographically and most of them offer HTC services to the public free of charge.

The study targets young people aged 18-24 years, who form part of the age group 15-24 years that accounts for 45% of all new HIV infections globally (UNAIDS 2009) and can independently consent to the research. In this age group the HIV prevalence more than doubles from 2.3 % for the 15-19 year olds to 5.2 % for the 20-24 year olds (NASCOP 2009). There is evidence of a sharp rise in prevalence from the age of 18 years (2.9 %) to 24 years (8%) (NASCOP 2009).



## **1.4 Study Objectives**

### **1.4.1 Broad objective**

To determine barriers to HIV Testing and Counseling uptake in the age group 18-24 years in Nyeri Municipality.

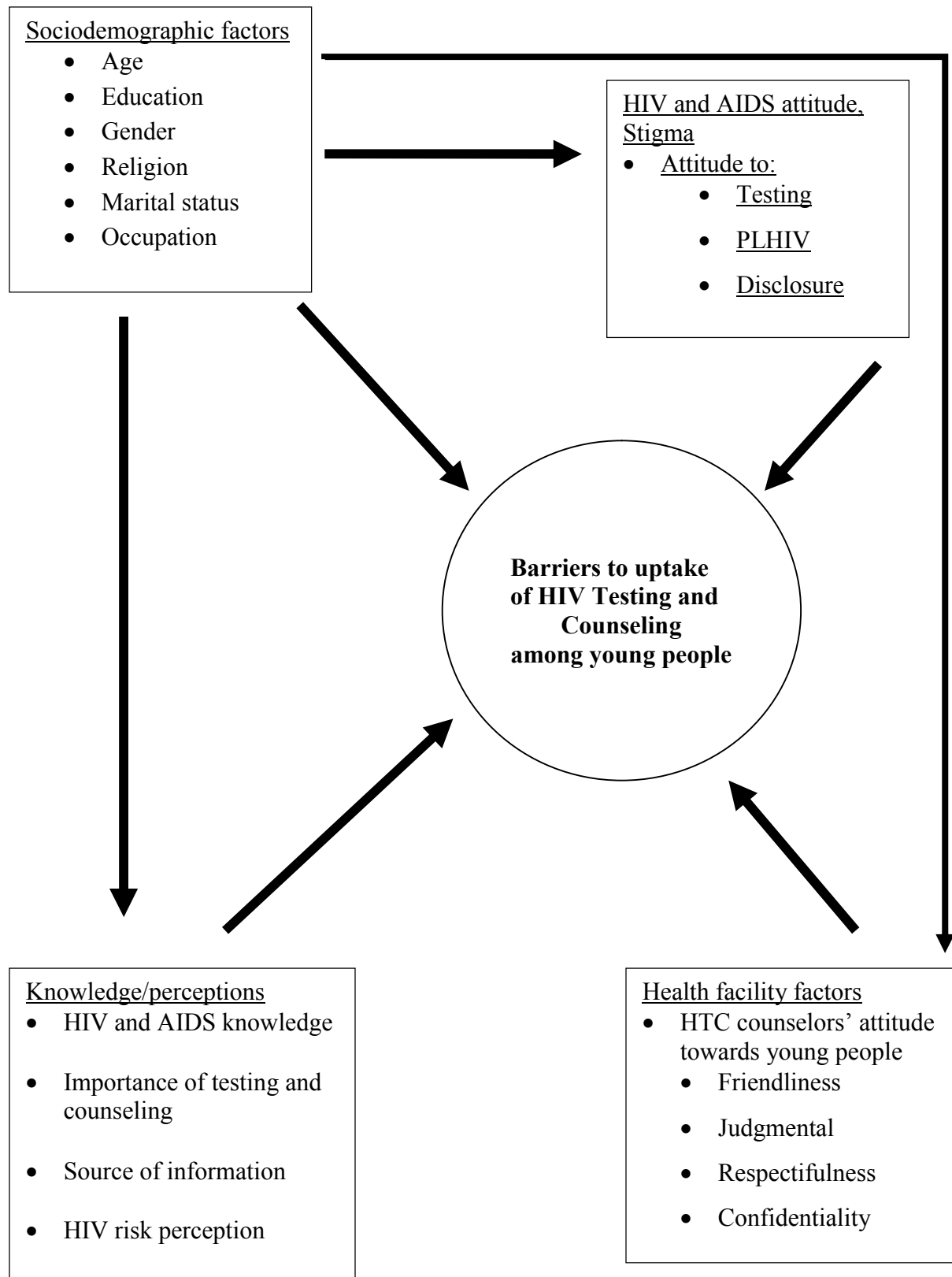
### **1.4.2 Specific objectives are to:**

1. Determine the proportion of young people in Nyeri Municipality that have had HTC.
2. Establish the sociodemographic characteristics of young people in Nyeri Municipality that influence uptake of HTC.
3. Determine the level of knowledge and attitude to HTC among the young people.
4. To establish young people's perception of the attitude of health workers/counselors offering HIV testing services.
5. To determine the relationship between uptake of HTC and level of knowledge and attitude.

## **1.5 Research Hypotheses**

1. There is no relationship between HTC uptake and level of knowledge and attitude.
2. Sociodemographic characteristics do not influence HTC uptake.

## 1.6 Conceptual Framework



## **Chapter 2.0 LITERATURE REVIEW**

Inadequate testing rates impede HIV and AIDS responses contributing to late entry into medical care for people who are HIV infected and unknowing HIV transmission. Globally, only about 10% of the people have taken a HIV test (UNAIDS 2007). Young people constitute the age group with the highest rate of new HIV infections. In Kenya the prevalence of HIV in young people aged 15-24 years is 3.8% with the prevalence among females being fourfold that of males (NASCOP 2009). They are prone to such negative outcome because of high risk behaviour which includes early sex debut, multiple sex partners, unprotected sex, alcohol and other drugs abuse. Almost two thirds of young people are sexually active and a quarter report sexual debuts before the age of 15 years (NASCOP 2009). Only a small proportion of these young people use condoms for protection from HIV and other STIs. Despite the high risk of infection not many have attended testing and counseling.

Olugbenga et al (2008) in a study on knowledge and uptake of VCT in Nigerian youths aged 15-25 years found a 7.1% prevalence of testing. This is against a high positive attitude to VCT of 93.6% of the youths, and an awareness of 64.6% of VCT, and an intention to go for the test in the future of 78.1 % (Olugbenga 2008). The study found that the high knowledge and the positive attitude has not translated to high uptake of HTC. A study in Tanzania likewise found high VCT awareness and a high willingness to test but low uptake of testing among students aged 18-25 years (Mgosha 2009). The foregoing demonstrates that there are barriers that exist and that account for this disparity between the high knowledge, positive attitude and intention on one hand and the poor uptake on the other hand.

According to KAIS 2007 (NASCOP 2009) only 34 % of adults in Kenya aged 15-64 years have been tested at least once in their life time. A higher prevalence of testing has been found in urban areas as opposed to in rural areas (KNBS & ICF 2010, NASCOP 2009) with a wide geographical variation seen across the country with Nairobi recording the highest prevalence and North Eastern Province having the lowest (KNBS & ICF 2010). The prevalence of testing among young people aged 15-24 years exhibits age and sex differences. Males (15-24 years) have a testing rate of 33.6% while their female counterparts have a rate of 49.6%. Within this age group, a higher testing rate is observed among those age 20-24 years though the sex difference is maintained (KNBS & ICF 2010). Among sexually active young people, a higher testing prevalence of 53 % in the 20-24 years group was found and a 31 % rate in the 15-19 years age group.

## **2.1. Knowledge on HIV/AIDS**

Knowledge on HIV and AIDS in the population seems to be high, but proper understanding of HIV/AIDS by the community is still low (Alemu 2004). Studies done have shown that knowledge especially on HIV transmission and prevention is strikingly poor with a lot of misconceptions (Alemu 2004). For example, according to Alemu (2004) in a study done in Ethiopia, there are people who still believe they can contract the disease by sharing a meal, cutlery and utensils, toilets, or taking food prepared by PLHIV. Others fear casual contacts with PLHIV like hugging, shaking hands or sharing beddings. This misconception and poor knowledge is associated with low uptake of HTC (Alemu 2004). At the same time, young people continue to engage in sexual behaviours that place them at risk of contracting the disease. They are, for instance, involved in risky sexual behavior like having multiple sexual partners, with history of STIs and sex under the influence of alcohol and early sex debut (Mgoshia 2009). This takes place in the setting of low condom use (Cherutich 2008, Nzioka 2002). This misinformation

leads to an incorrect risk perception for HIV infection (Manirankunda 2009,Olugbenga 2008). The low perception of risk to HIV among young people has been associated with reduced testing uptake ((Mgosha 2009,Olugbenga 2008). Evidence from available studies show that people who perceive themselves to have high risk behaviour for HIV have higher testing uptake (Wringe 2008).

## **2.2. Attitude to HTC**

Several studies have shown positive attitudes to testing and counseling among young people, including willingness to take up testing in the future (Mgosha 2009, Olugbenga 2008, NASCOP 2009). This positive attitude has however not translated to uptake of testing. Research shows that there are factors that influence attitude to testing.

There is preference to take up HIV testing during sickness (Alemu 2004). This is more so among men who take onset of a sickness as a better or enough reason to attend testing than merely turning up in a health facility for just a test. They seek a more pressing issue rather than HTC only, to travel to hospital (Mutale 2006). A study in Zimbabwe found that clients described having an opportunistic infection and weight loss as reason for seeking testing (Morin 2006). This study found that clients take up testing to confirm a suspicion of symptoms of possible HIV – related disease. Conditions arousing suspicion include TB, STI or unexplained weight loss or illness or death of a spouse or child. Among women pregnancy is associated with high uptake of testing and counseling to prevent mother to child HIV transmission. Positive testing attitudes are also linked to risky sexual practices like having had unsafe sex and those who perceive

themselves to be at risk from the behaviour of their spouses. According to the study by Morin (2006) women suspicious that their husband or male partners had other sexual partners or move with commercial sex workers seek testing and press their partners to take up testing.

Though more girls seek HCT than boys (Juma 2002), youths in general express reservations to testing in VCT clinics both in health facilities and stand alone centres (Meiberg 2008). They prefer youth only sites (McCauley 2004) rather than health facilities where they may meet adults who know them (Juma 2002).

### **HIV and AIDS stigma**

HIV and AIDS stigma has been identified as an important hindrance to HTC (Meiberg 2008). AIDS related stigma and discrimination is widely reported in the community (Ngozi 2009). Stigma has resulted in fear to undertake a HIV test even among people with past risky behaviour, they are afraid of a positive result and the related personal and social consequences (Manirankunda2009). Stigma associated with HIV emanates from the perceived seriousness and contagiousness of the disease (Meiberg 2008). The disease is still associated with emaciation and opportunistic infections. The absence of a cure has resulted in the disease being associated with death and dying by the community. Even those infected, though not developed AIDS, are still pitied as dying (Meiberg 2008).The infected are blamed for getting the disease as a result of having immoral behaviour and promiscuity (Meiberg 2008) which are practices the society disapproves. People are not comfortable about being in contact with them or even those merely suspected of being infected (Meiberg 2008). They face rejection and exclusion from family and

friends when they disclose their status. A study done by Alemu (2004) in Ethiopia found that people refuse to share a meal with PLHIV or even buy materials from shops owned or served by PLHIV. Some have faced physical violence (Weiser 2006).

Stigma and discrimination in health care is also evident (Meiberg 2008). A study conducted by USAID in 2007 (USAID 2007) showed that health workers stigmatize PLHIV by treating or handling them differently from other patients. The study highlights situations where PLHIV receive less care than other patients. In some instances PLHIV have been assigned to junior health care providers in some health facilities. The study noted that health care workers may take extra caution when sterilizing instruments used on HIV positive patients and unnecessary use of latex gloves while conducting non-invasive medical examination on clients suspected to have HIV. It further notes that some health care workers and health facilities have policy for preference that PLHIV only get limited inpatient stay in facility and more home based care. In addition, research has shown that health care workers working in PLHIV clinics are negatively viewed by other health care workers and the society (Hossain 2010).

There is evidence to show that people with stigmatizing attitudes are less likely to take up HTC whereas those with equitable attitudes have a higher HTC uptake (Meiberg 2008, Weiser 2006, Kalichman 2003). More stigmatising views are associated with people not tested who are also more likely to perceive adverse testing outcomes than to view beneficial outcomes (Kalichman 2003).

### **2.3 Confidentiality**

Concerns have been raised about breaches of confidentiality by health care workers. In a study in Thailand 34% of clients reported breach of confidentiality by health care workers (UNAIDS 2008). Clients do not trust some counselors as they spread information on positive test results, more so for counselors who know them or are from their community. They prefer counselors who do not know them (Angotti 2009). In most health facilities VCT clinics and other HIV testing rooms are usually situated in openly labeled areas and make the purpose of the visit to be exposed to others attending the facility (Chirawu 2010). Young people express displeasure at having tests in these centres where they are likely to meet adults who know them; preferring youth only sites (McCauley 2004).

### **2.4 Access to HTC**

Distance is an obstacle to HTC (Angotti 2009). Travel to testing centres and health facility involves cost in fares and opportunity costs (Nuwaha 2002). Transport costs are a barrier among members of poor households, mostly affecting married women who have to seek approval from their husbands before being given or incurring those costs (Prost 2007). A study in rural Zambia reported high uptake of testing by males in home based HCT –where services are offered at home in both rural and urban setups (Helleringer 2008). This community based approach attempts to circumvent barriers to testing and counseling associated with logistics such as distance, fares for transport and time (Angotti 2009). PITC strategy attempts to improve on HTC uptake in health care settings (WHO 2007). However, in some health facilities testing may not always be offered to patients and clients as standard form of care ( Manirankunda 2009) and some of those offered decline. Some avoid a visit to the doctor altogether for fear of being



subjected to a test by coercion (Weiser 2006). One Mexican study (Moyer 2008) dealing with intravenous drug users found missed opportunities for counseling and testing in two thirds of the participants. Missed opportunities are high in areas with shortages of health workers (WHO 2007), especially those able to conduct testing without evoking fears of misinterpretation of results (Prost 2007). Further, there is evidence of shortages of adequately trained health care workers equipped with proper communication skills to handle clients and especially young people. Some counselors are rude and unfriendly (Angotti 2009), scaring especially young people, who prefer counselors who will be non-judgmental and who will not reprimand them for being sexually active (Juma 2004).

## **Chapter 3.0 MATERIALS AND METHODS**

### **3.1 Study Design**

A descriptive cross-sectional study was conducted to study the barriers to uptake of HIV testing and counseling among young people living in a low HIV prevalence area.

### **3.2 Study population**

The study population consisted of young people aged 18 – 24 living in a low HIV prevalence area.

### **3.3 The Study Area**

The study was conducted in the Nyeri municipality. The study area has both an urban and a rural setup including slum settlements, and this setting enabled gathering of data from young people from diverse backgrounds.

Nyeri Municipality covers the Nyeri Central District, one of the eight administrative Districts forming the new Nyeri County. It covers an area of 169 km<sup>2</sup>. The District lies in the Eastern dissected slopes of the Aberdares and is mostly characterised by hills and valleys with Nyeri Hill standing prominently. Nyeri town, the main urban centre is at average altitude of 1769m above sea level and is situated on 0.5° latitude south of the equator and 36.95° East longitude.

Administratively the Municipality is divided into two locations namely, Mukaro and Kiganjo. These locations are further sub divided into twenty two (22) sub locations.

According to the Population and Housing census of 2009, Nyeri Municipality had a population of over 119,000 people and over 36,000 households (KNBS 2010). Young people aged 18 – 24 years comprise 15% of the population. (KNBS 2010). The urban population is estimated at over 51,000 with approximately 20,000 living in slum conditions (MOP 2008). The main economic activity in the area is agriculture with the area also housing a number of industrial plants some of which are agro-based and numerous light industries (MOP 2008). The area is an important tourist destination as well as an important educational centre being home to a University, several colleges, secondary and primary schools.

Christianity is the main religion with the main denominations being represented. Muslims, Hindus and traditionalists are a small minority. The main ethnic group living in the area is the Kikuyu. Other Kenyan ethnic groups, Asians and Europeans are a minority.

An estimated 31 % of the Nyeri Municipality population lives in abject poverty, mostly in rural areas and urban slums (MOP 2008). Here poverty is caused by landlessness in an area where agriculture is the main economic activity and the collapse of the coffee industry which was the main source of income.

Since the first case of HIV in Nyeri was reported in 1987, the number of infected people continues to rise and the estimated prevalence now stands at 3.6% (NASCOOP 2009). HIV testing and counseling services are available around Nyeri Municipality which is served by four main hospitals-both public and private, over ten dispensaries and health centres and several private and faith based clinics around the main shopping centres. Most of these facilities offer HTC services routinely. Five of these facilities have CCC for HIV Care and Treatment, with over 5000 clients

on follow-up (source District Health office). HTC services on offer in the community include Mobile, Moonlight and Home based testing and counseling.

### **3.4 Sampling**

#### **3.4.1 Sample Size Determination.**

The sample size was derived using the sample size determination formula on proportions (Daniel 2004).

$$n = \frac{z^2 (p(1 - p))}{d^2} * d.e$$

d= the desired precision of the confidence interval set at 0.05.

d.e= design effect (set at 1.5)

p= Prevalence of AIDS knowledge in female 15-24 years of 48 % (KDHS 2008/09)

z = the standard normal deviate corresponding to 95% confidence level (=1.96).

n= desired sample size

The calculated sample size was 574. For ease of allocating an equal number of participants to each of the 30 clusters, a sample size of 600 was used.

#### **3.4.2 Sampling Procedure**

The sample was selected using two-stage cluster sampling technique. A sampling frame was prepared by making a cumulative list of all households in all the sub locations of the Municipality as per the 2009 population census. A total of 30 clusters were selected by probability proportionate to the number of households in each sub location from the list (WHO 2001). In each of the 30 selected clusters, 20 young people were interviewed. Starting at a central

point in the cluster, households were chosen by random walk method (WHO 2007). A prominent structure or feature was identified and used to obtain the starting household. Only one young person aged 18-24 years from each of the target households was interviewed. Where a household had more than one eligible person, the youngest eligible youth was interviewed. Starting from the first household the next nearest was visited in turn until 20 people had been interviewed.

### **3.5 Selection Criteria**

#### **3.5.1 Inclusion Criteria**

Young people of both gender aged 18-24 years living in Nyeri Municipality.

#### **3.5.2 Exclusion Criteria**

Those who had not been resident for at least three (3) months.

### **3.6 Variables**

#### **3.6.1 Predictor Variables**

1. Sociodemographic
  - i. Age
  - ii. Sex
  - iii. Marital Status
  - iv. Education
  - v. Occupation
  - vi. Religion
2. AIDS and HTC Knowledge
3. AIDS Attitude
4. Perception of health workers attitude

#### **3.6.2 Outcome Variable**

HTC Uptake –ever tested or never tested

### **Measuring HIV and AIDS knowledge**

The 17 selected questions testing for knowledge (question 9-25) were scored. A correct response got a score and no score for an incorrect or a 'don't know' response. A total score was obtained by summing the scores. The overall correct HIV and AIDS knowledge score was calculated using the attained score divided by the maximum possible score of 19 and converted to a percentage. Those who answered all the questions correctly were assigned 100% score.

The proportion of respondents with Comprehensive HIV and AIDS knowledge was determined based on the UNGASS criteria.

### **Measuring young people's HIV and AIDS attitude and perception of counselors' attitude**

Questions measuring attitude on a 5-point Likert scale were analysed by using a marking scheme assigning scores from 1-5 based on the 5 possible responses. A score of 5 was assigned the response representing the most positive attitude while a score of 1 was assigned to the response representing the most negative attitude. The highest possible score for the AIDS attitude, from the eight questions, was 40 and the lowest possible was 8. The highest possible score for the perception of counselors' attitude, from the five questions, was 25 and the lowest was 5. The total score for each was computed as a percentage.

### **3.7 Data Collection**

Data were collected in the month of August 2011 using an interviewer administered questionnaire. The questionnaire consisted of structured closed questions. These included questions of dichotomous choice of yes/no, multiple choice questions and Likert scale for attitude questions. The questionnaire had four sections, namely, social demographic, awareness

and knowledge, HIV testing and attitude sections. The social demographic section included age, gender, marital status, education, occupation and religion. Knowledge questions dwelt on awareness, transmission, prevention and treatment. The questions assessing knowledge and attitude were mainly adapted from KAIS 2007 (NAS COP 2009) questionnaire. The questionnaire was pretested before the actual data collection began. Research assistants familiar with the study area were recruited for data collection. The research assistants were trained in a day long session on the contents of the questionnaire and on how to administer it. They were trained on how to interview and solicit accurate information. During data collection all the filled questionnaires were checked daily for accuracy and completeness.

### **3.8 Data processing and Analysis**

Data from filled questionnaires was coded as appropriate and data entry conducted. Data was analyzed using Stata version 11. Descriptive statistics were computed and presented using graphs and tables. Chi square test and Students t-test was used to compare differences between variables among the tested and non-tested youths. Logistic regression for significantly related variables was included in the analysis. A confidence level of 95% was used and a p-value of 0.05 was used to determine significance.

### **3.9 Quality assurance**

1. The questionnaire was pretested to improve on clarity.
2. Research assistants administering the questionnaire were adequately trained and supervised.

3. To reduce on acquiescence bias, where respondents tend to agree with statements as presented, questions on Likert scale were balanced to have some positively phrased and others negatively phrased.

### **3.10 Ethical Considerations**

1. All research related ethical standards were observed throughout the course of this study. The Kenyatta National Hospital/ University of Nairobi Ethics and Research Committee's approval was sought before embarking on data collection.
2. Participation was voluntary and informed consent was obtained from each participant prior to administering the questionnaire.
3. All data obtained was treated confidentially with no identifying details collected.

### **3.11 Study Limitations**

1. The study relied on self-reported testing as there were no independent means of verifying it and the study did not factor in the time elapsed since testing.
2. Respondents who were not sexually active were included in the study.



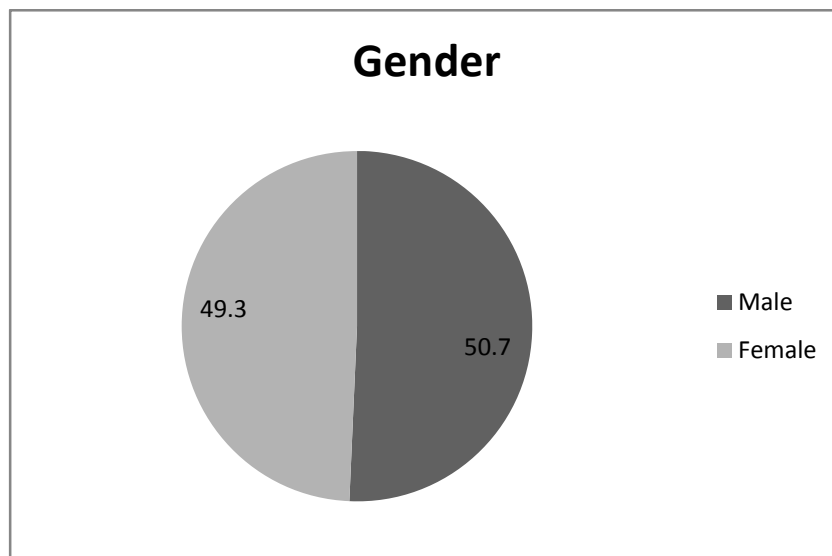
## 4.0 RESULTS

### 4.1 Social demographic characteristics of the sample

#### Age and Sex Distribution

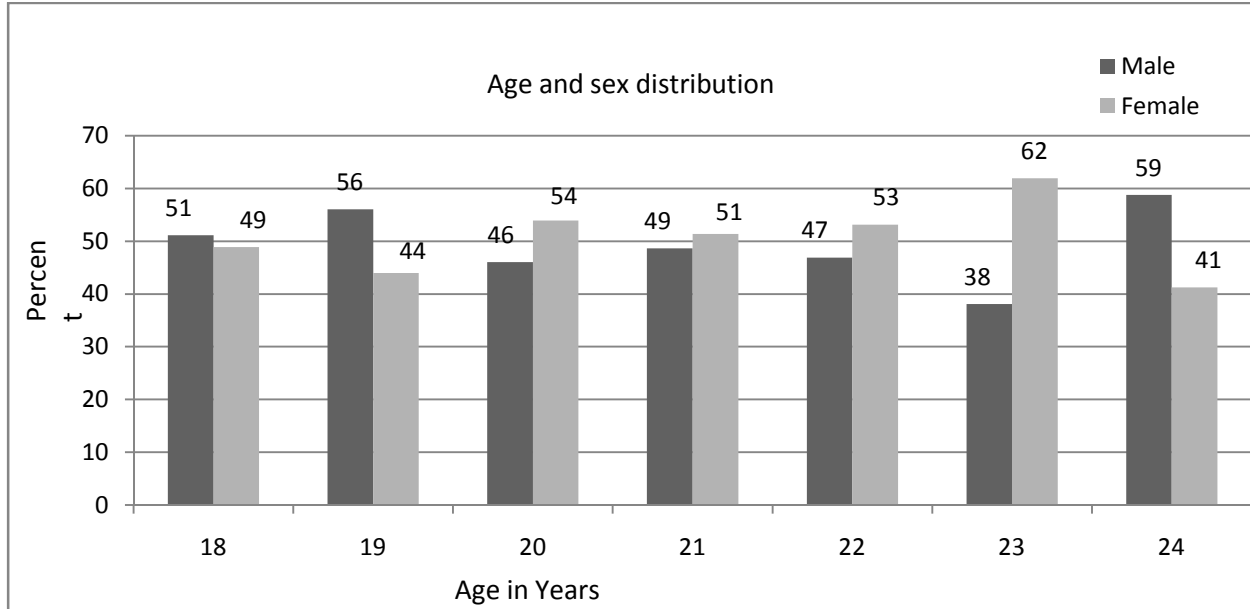
A total of 600 respondents were interviewed, 304 males (50.7%) and 296 females (49.3%). This is presented in fig. 3 below.

*Figure 3: Sex distribution*



The respondents were aged 18 to 24 years with an overall mean age of 20.4 years, 20.42 years and 20.44 years for males and females respectively. The median age was 20 years. Respondents aged 18 years were the majority accounting for 22.5% followed by 19 year old at 19.3%. Respondents aged 23 years were the least at 7%. The proportion of males was highest in the ages of 24 and 19 years at 58.8% and 56.0% respectively while that of females was highest in the ages of 23 and 20 years at 61.9% and 53.9%. Figure 4 summarises age and sex distribution.

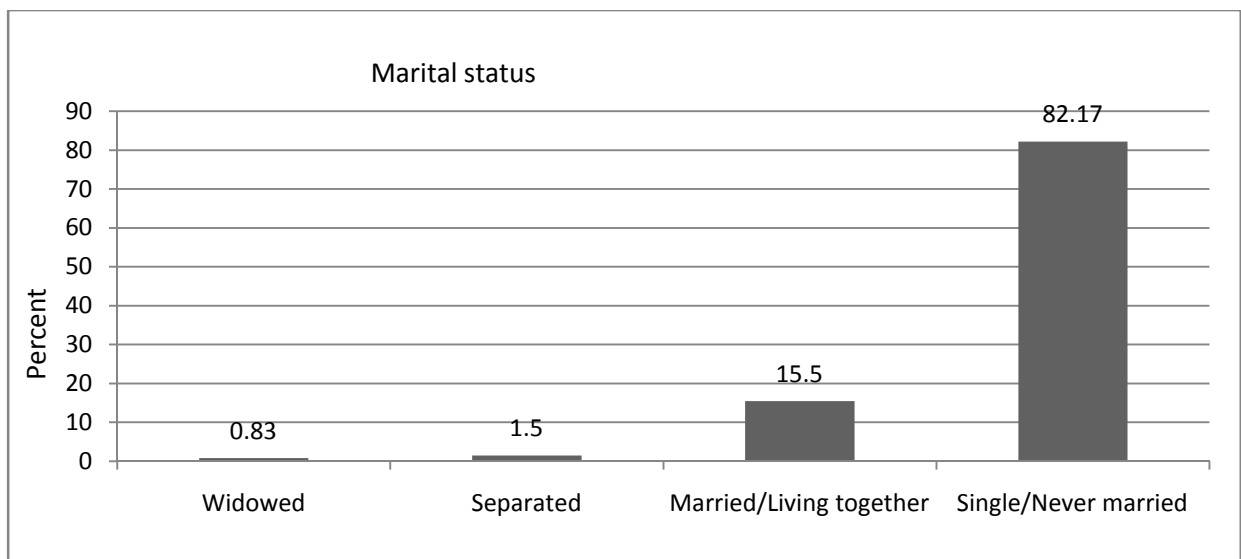
Figure 4: Age and sex distribution



### Marital Status

The majority of the participants were single (82.2%) with 15.5% being married or living together, 1.5% separated and 0.8% widowed (fig. 5).

Figure 5: Marital status



## Occupation

With regards to occupation, 13.3% were employed, 16.1% were self employed and 33.5% were unemployed youths with 36.5% were still in school (fig. 6).

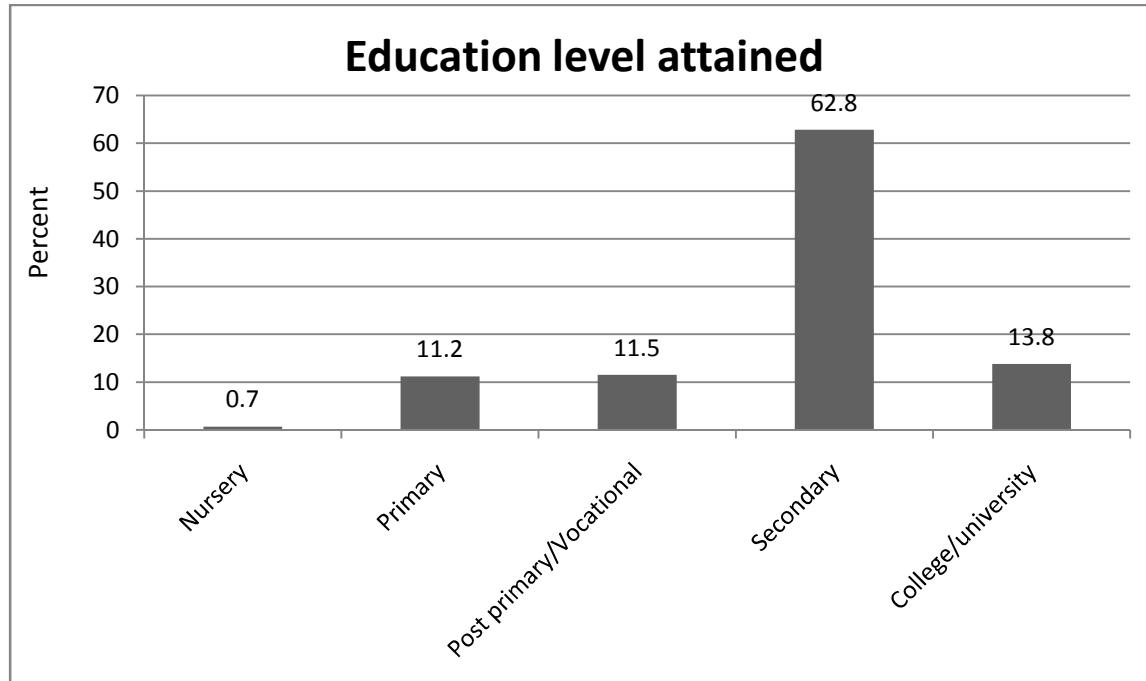
Figure 6: Occupation



## Education

Those educated up to secondary level were 62%, and 13% had gone beyond secondary level. Primary and vocational level accounted for 11% of the respondents each while those with only nursery school education were less than 1% (fig. 7).

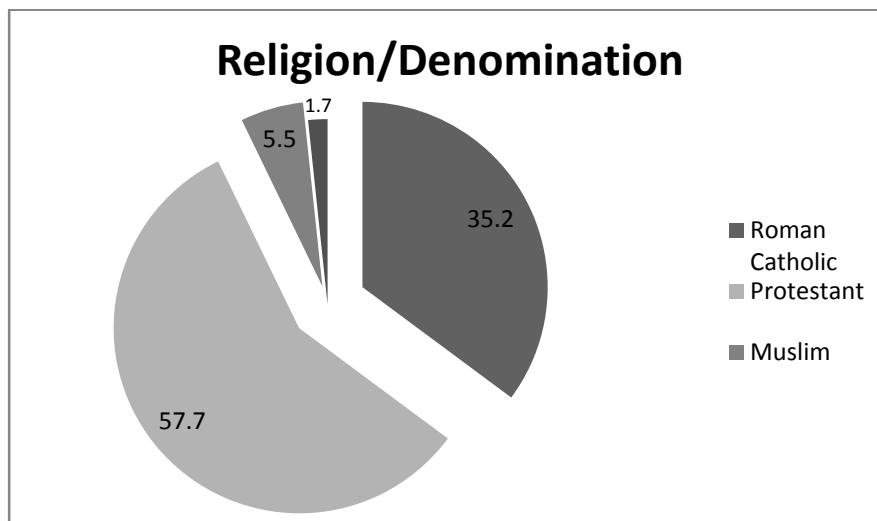
Figure 7: Level of education



## Religion

Protestants formed 57.6% of the respondents, with 35% being Roman Catholics and 5.5% Muslims, with 1.6% professing other faiths (fig. 8).

Figure 8: Religious affiliation



## 4.2 HIV and AIDS knowledge

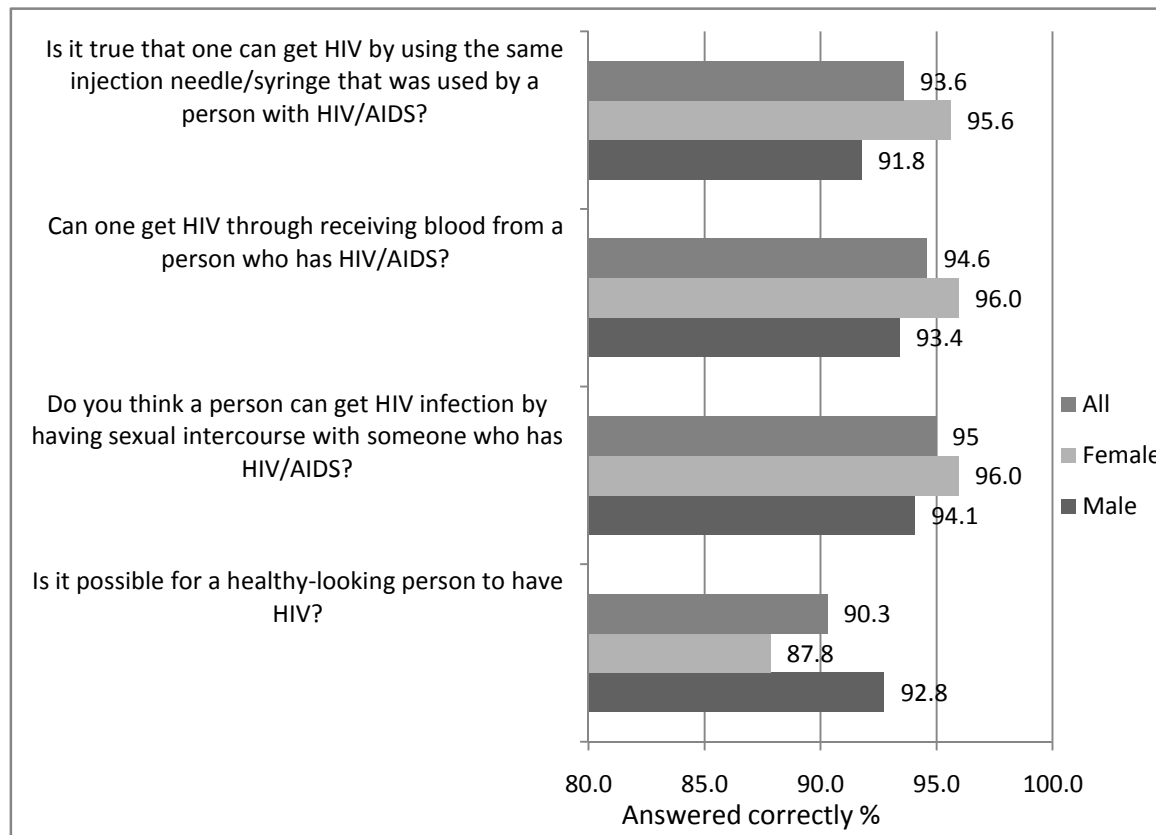
### HIV and AIDS Awareness

Overall 99.8% of the respondents had heard of HIV and AIDS. Only 1 respondent out of 600 cited no awareness. Nearly 96% thought that the disease poses a serious threat to young people.

### Knowledge on HIV modes of transmission

Most of the participants (90.3%) were aware that a healthy looking person can be a carrier of HIV with 95% correctly stating that HIV can be transmitted by having sexual intercourse with an infected person. Receiving blood from an infected person was identified as a means of HIV transmission by 94.6% while 93.6% knew that using the same injection needle/syringe used by an infected person can transmit HIV (fig 9).

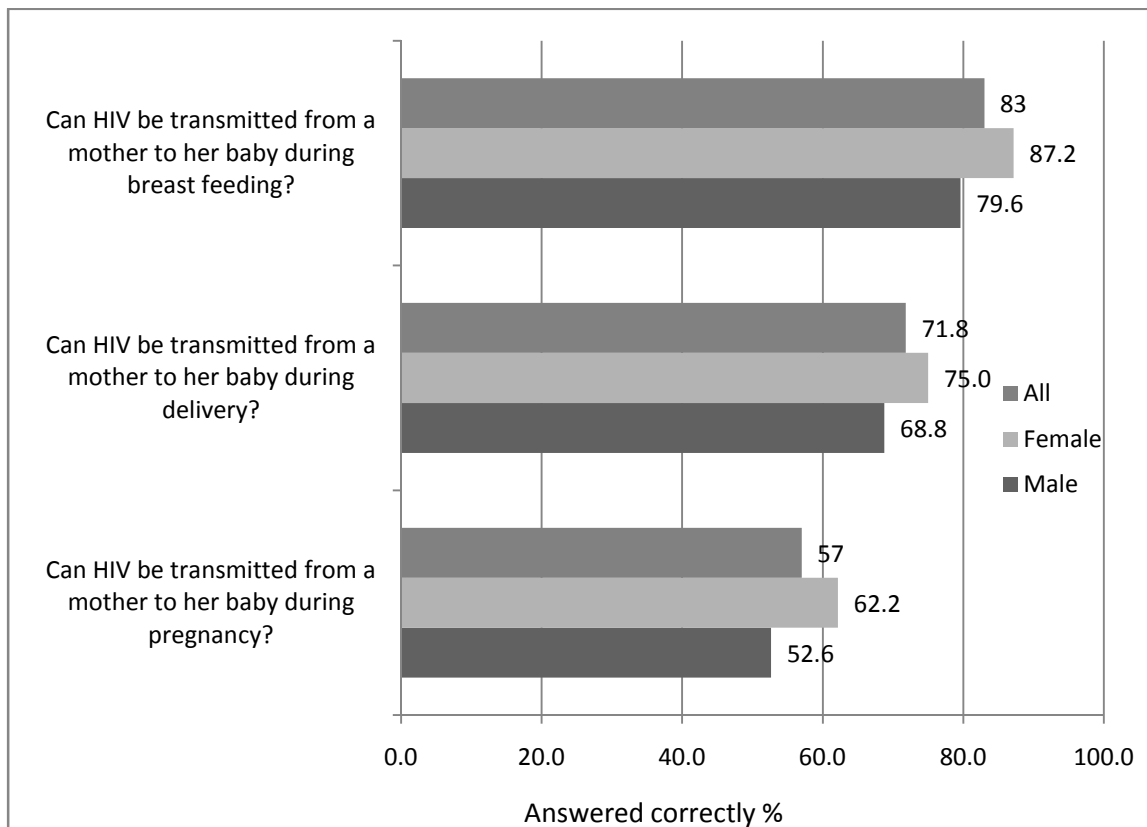
Fig 9: Correct responses to questions on HIV transmission



## Knowledge of Mother to child transmission of HIV

On the question of mother to child transmission, 88.6% stated that HIV can be transmitted from a mother to her baby. However, on exact modes of transmission only 57% of these were correct in stating that transmission can occur during pregnancy, and 71.8% of them correctly stated that it can be transmitted during delivery (intrapartum) and 83% stated it can be transmitted during breastfeeding (fig 10). Altogether, 48.6% knew the three modes of vertical transmission, 27.1% responded correctly to two modes, 12% responded correctly to only one method.

Fig 10: Correct responses to questions on knowledge of Mother to child transmission of HIV

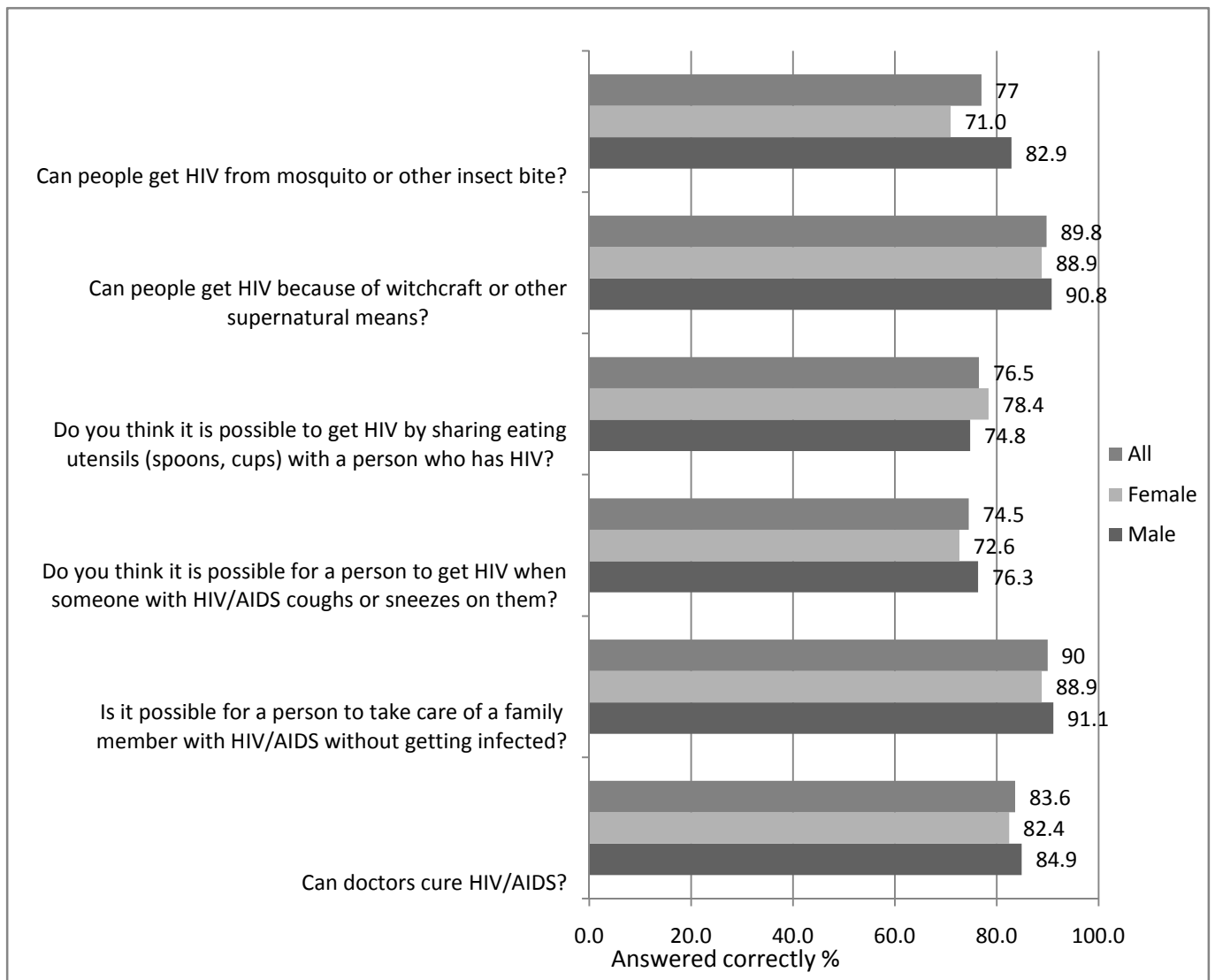


## Myths and misconceptions

Pertaining to myths and misconceptions, 77% knew that mosquitoes or other insect bites do not transmit HIV, and 89.8% knew that HIV cannot be transmitted by witchcraft or other supernatural means while 76.5% knew that sharing utensils with an infected person does not

transmit the disease. In addition, 74.5% of the respondents knew that coughs and sneezes from an infected person do not transmit the disease. Those who knew that it is possible to take care of an infected family member without themselves getting infected were 90%. The proportion of respondents aware there is no cure yet for HIV and AIDS was 83.6%. Overall, on the six questions dispelling myths and misconceptions (fig 11), only 38.3% answered all of them correctly.

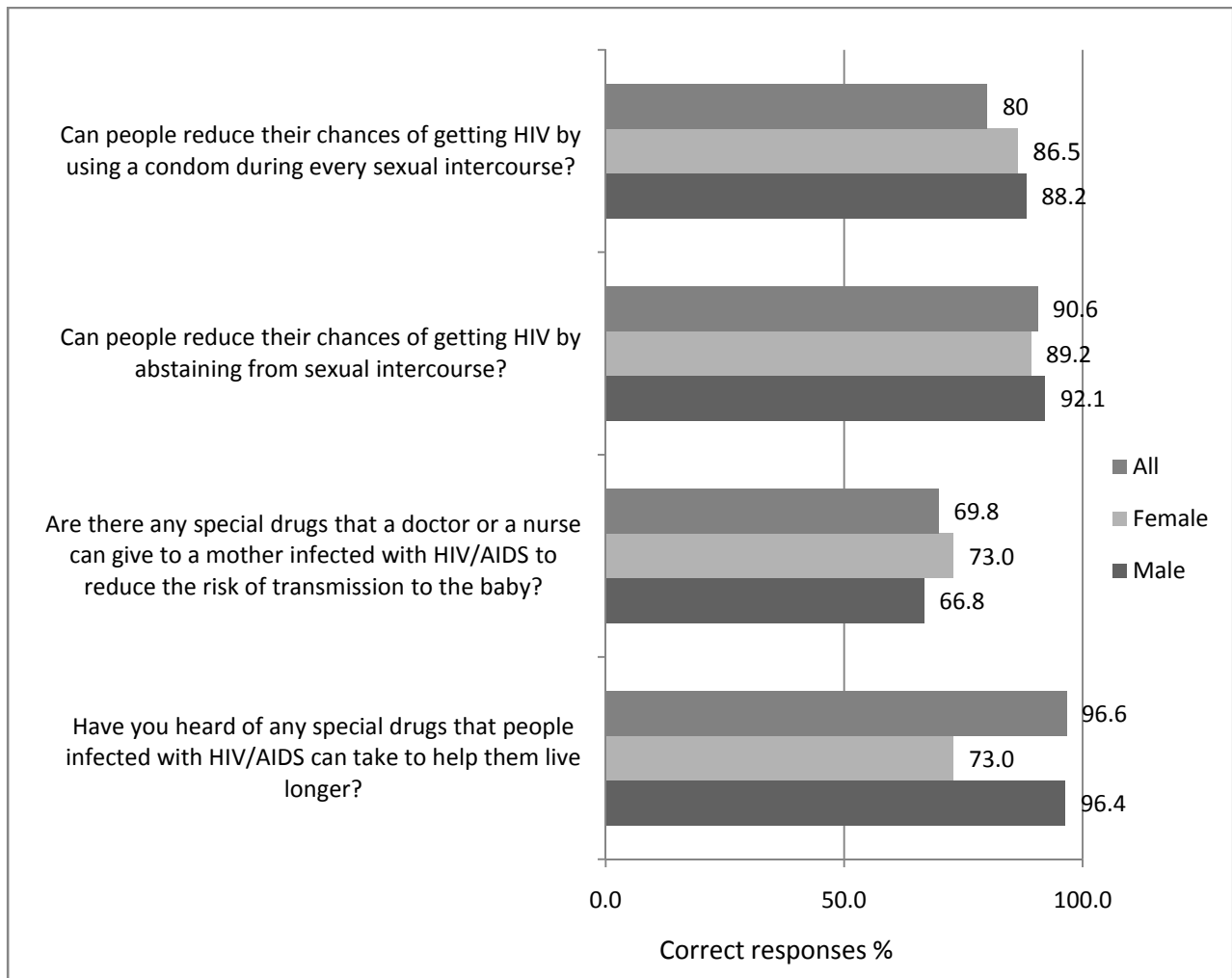
*Fig 11: Correct responses to questions on dispelling common myths and misconceptions*



## Knowledge of HIV prevention and treatment

Most of the respondents, 96.6%, had heard of anti-retroviral drugs for use by HIV infected patients and 69.8% were aware of anti-retroviral drugs for use in PMTCT (fig 12). Knowledge of HIV prevention by use of condoms during every sexual intercourse was 80%, while knowledge of prevention by abstinence was 90.6%.

Fig 12: Correct responses to questions on knowledge of Mother to child transmission of HIV





### Comprehensive HIV and AIDS knowledge

The proportion of young people that had comprehensive HIV and AIDS knowledge, by answering the five questions (UNGASS scoring) correctly, was 49.2% (fig. 13). Among the male respondents, 52.3% had comprehensive HIV and AIDS knowledge as had 46% of the female respondents (Fig 14). The distribution of prevalence of comprehensive HIV and AIDS knowledge by age of respondents is shown in fig 15. Respondents aged 24 years had the highest rate (51.3%) while those aged 22 years had the lowest (46.9%).

Fig 13: Comprehensive HIV and AIDS knowledge

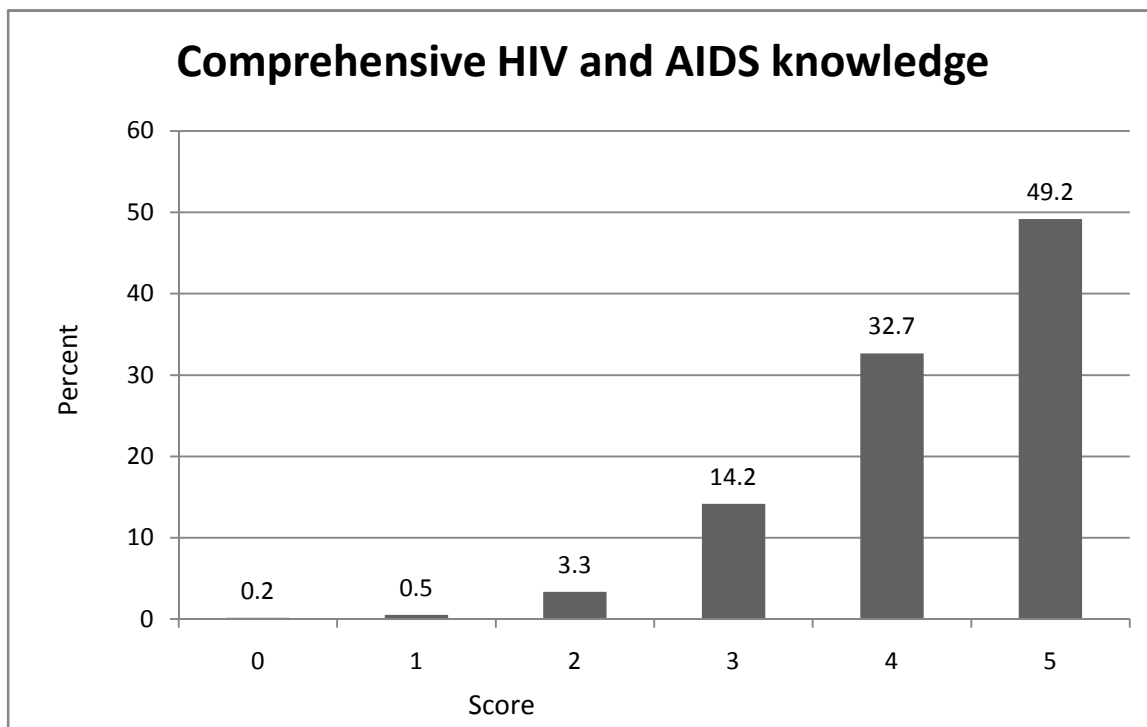


Fig14: Comprehensive HIV and AIDS knowledge by sex

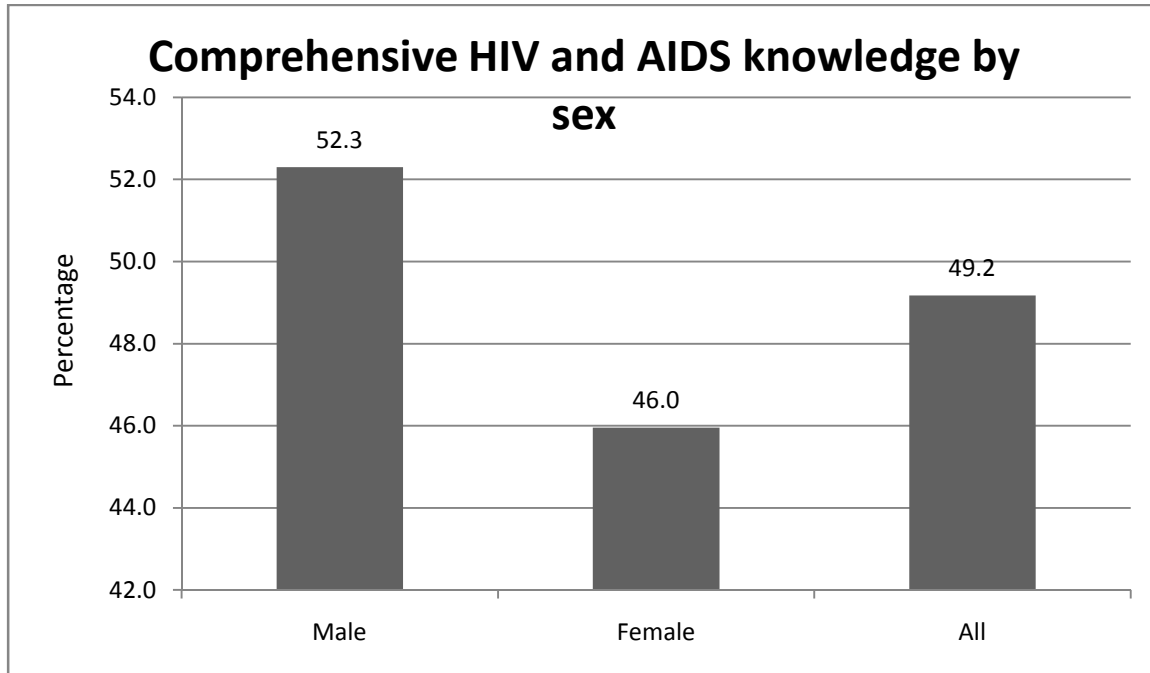
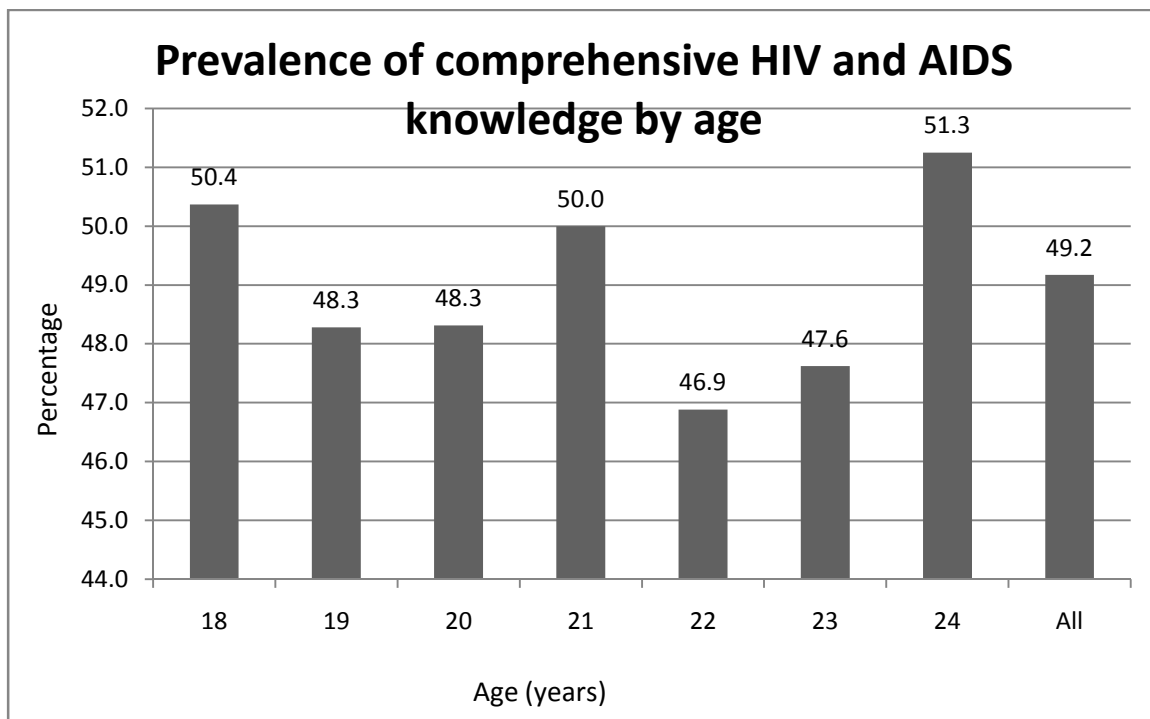


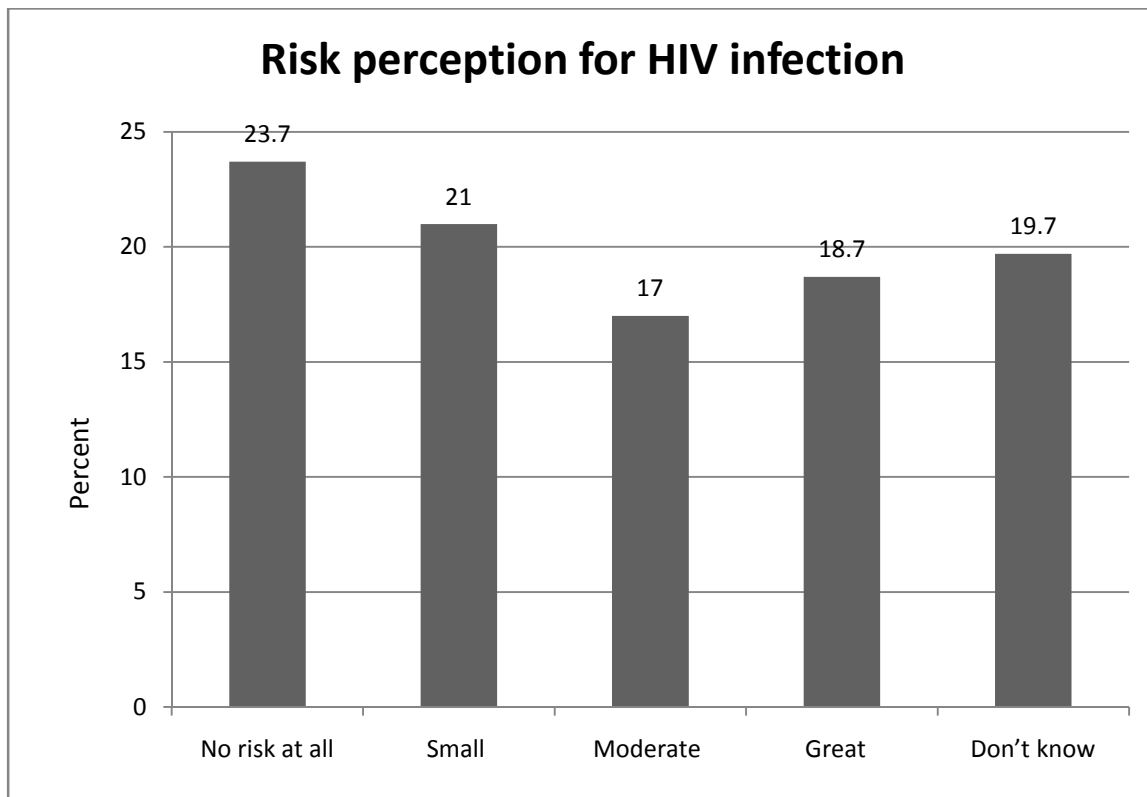
Fig 15: Comprehensive HIV and AIDS knowledge by age



## Risk perception for infection

Nearly 62% of the respondents thought they were at risk of HIV infection while 31% thought they were not at risk and 7% did not know whether they were at risk. On the question assessing respondents perception of their level of risk for infection, 56.6% thought they were at small, moderate or great risk for infection while 23% thought they were not at any risk and about 20% did not know (fig. 16).

*Figure 16: Risk perception for infection*



## HIV and AIDS knowledge score

The mean knowledge score was 82.8%, with a minimum score of '0' and a maximum score of 100%. Figure 17 shows the score distribution. Females had a mean score of 83.0% while males had a mean of 82.5% (fig. 18). Figure19 shows mean knowledge score aggregated by age.

*Figure 17: Knowledge score distribution*

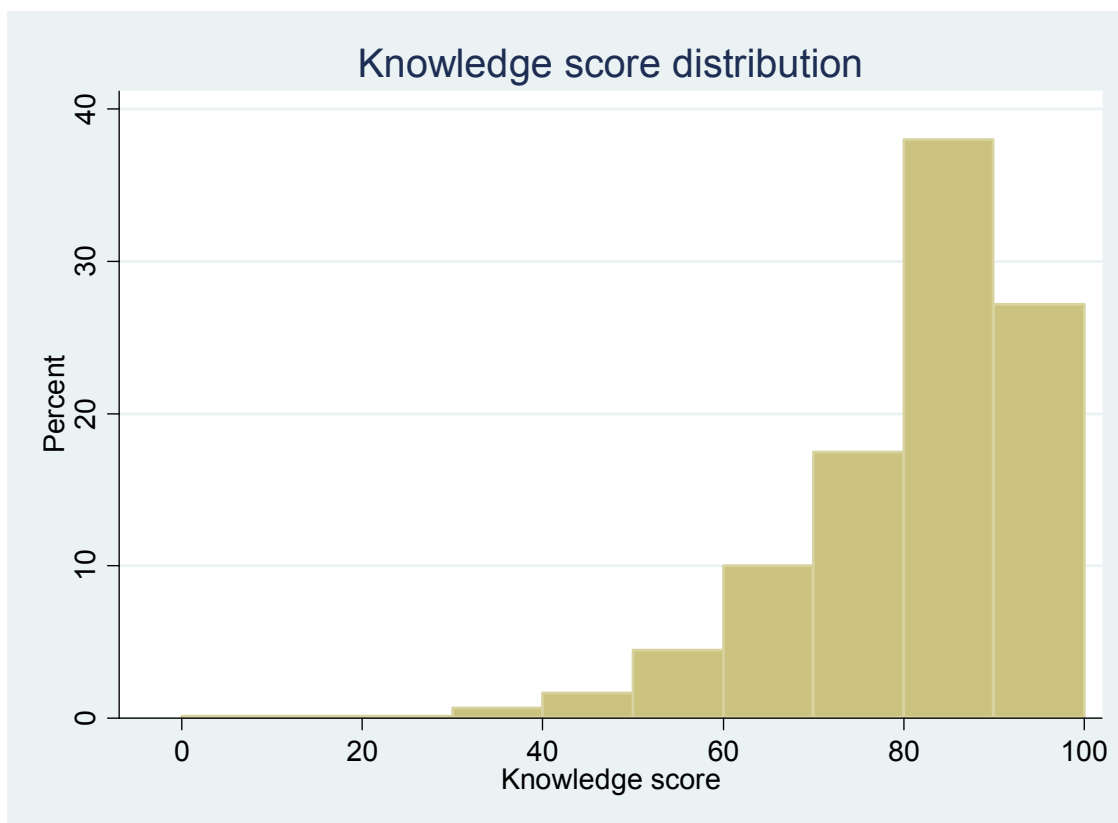


Figure 18: Mean knowledge score by sex

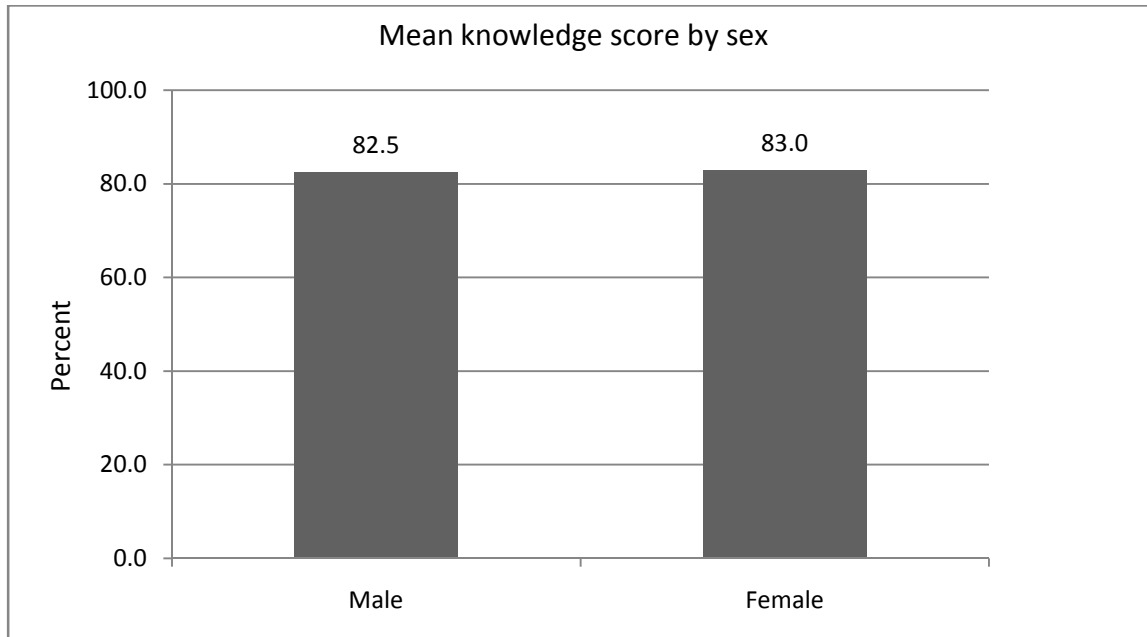
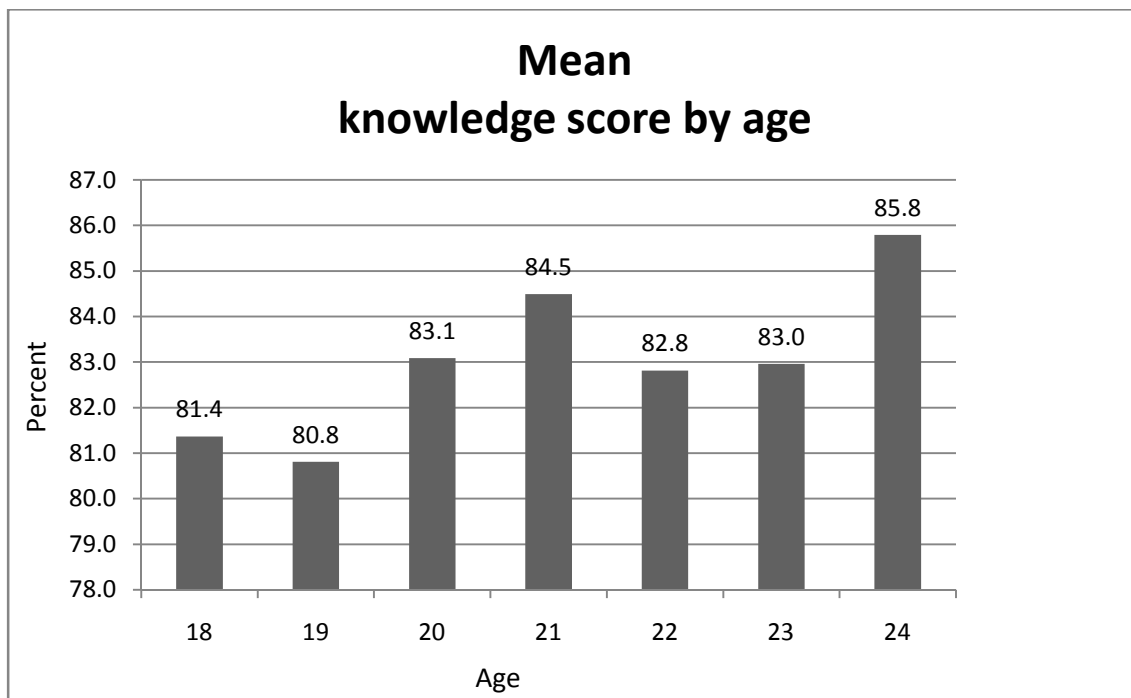


Figure 19: Mean knowledge score by age



### 4.3 HIV testing

#### HCT Awareness

Nearly all respondents, 99.6%, were aware of HIV testing and counseling and 98.5% of them knew of a place where one can be tested.

#### Self-reported testing

The proportion of respondents who reported having ever been tested was 69.2% (CI 65.4%-72.8%). Among male respondents, 61.5% had been tested while 77.4% of the female respondents had been tested (fig. 20). The highest testing rate was among the respondents aged 23 years at 92.9% while respondents aged 18 years had the lowest testing rate at 57.8% (fig. 21). Nearly all the tested respondents, 98.8%, had received their test results.

*Table 4.1 Prevalence of self reported testing*

Test Status	Frequency	Percent
Tested	415	69.2
Not tested	185	30.8
Total	600	100.0

Figure 20: Self-reported testing by sex

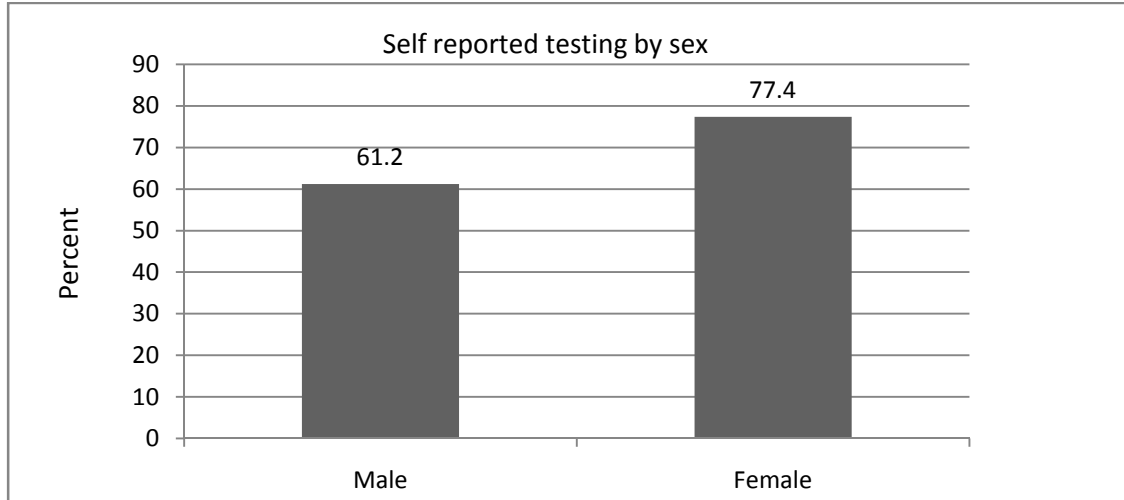
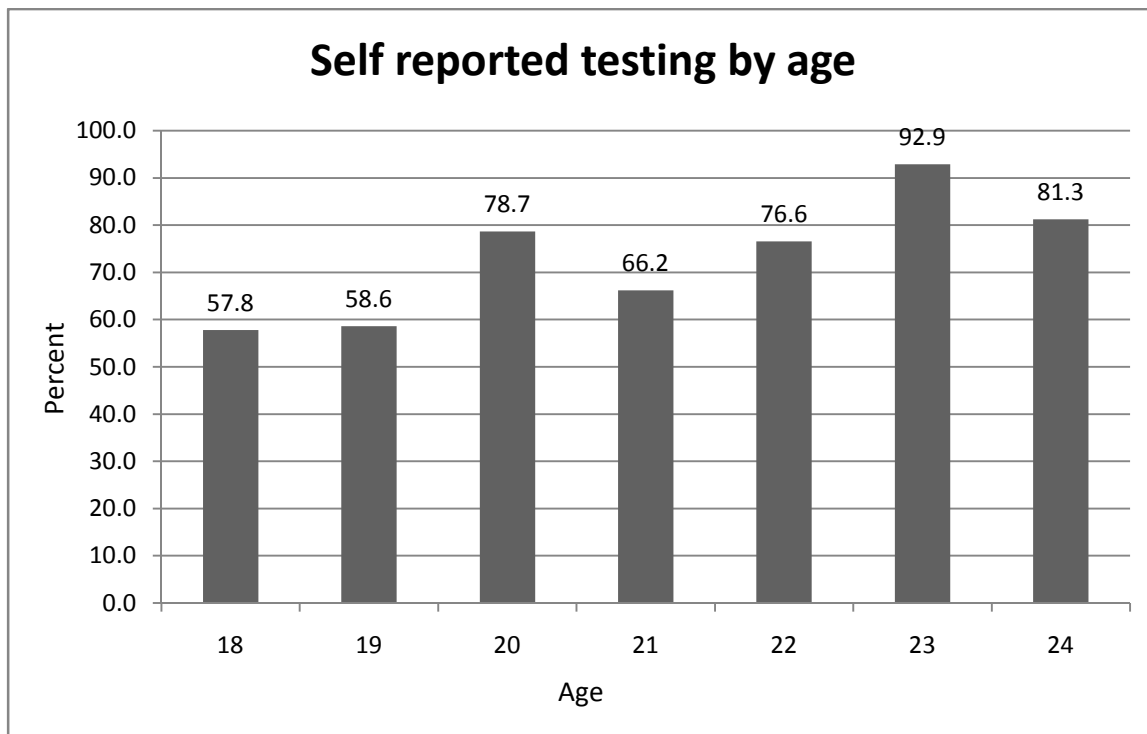


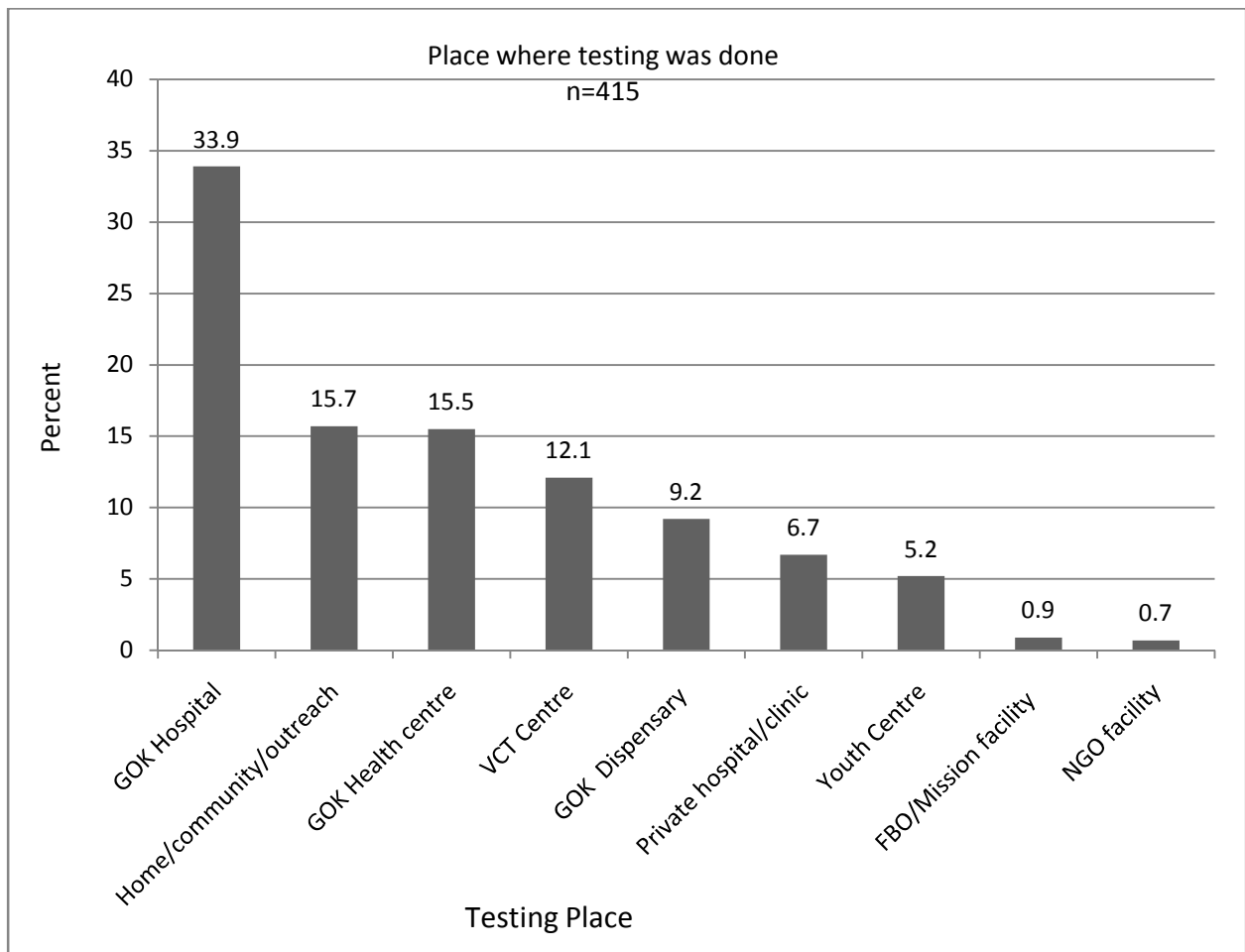
Figure 21: Self-reported testing by age



## Testing places

Figure 22 shows the places in which respondents underwent testing. Most of the respondents, 58.6%, had been tested in a Government Health facility (hospital, health centres or dispensary). The other main places of testing were home and community outreaches which covered 15.7% of the respondents, and VCT centres which tested 12.1% of the respondents.

Figure 22: Testing place

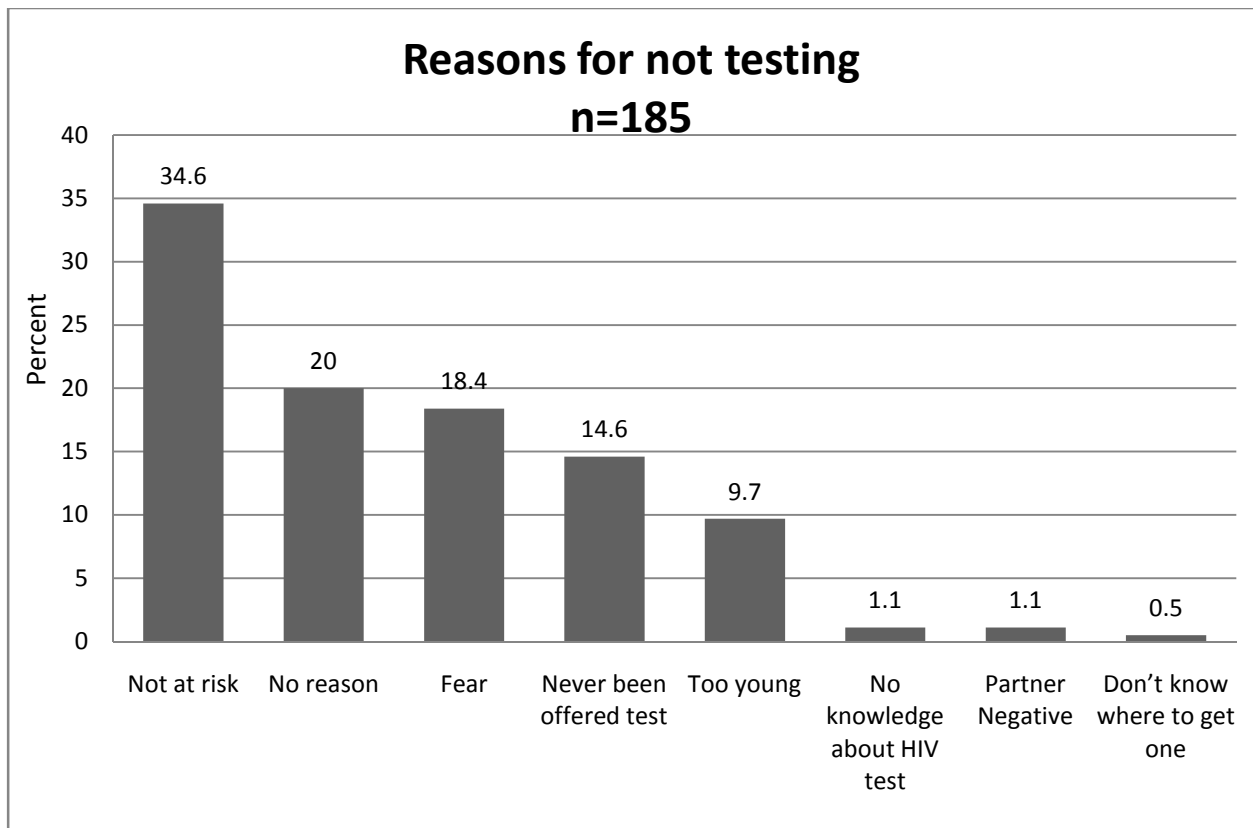




## Reasons for not testing

The proportion of respondents who have never been tested because they thought they were not at risk of HIV infection was 34.6% and those who had no reason were 20.0%, while 14.6% cited never having been offered a test (fig. 23). Another 18.4% were held back by fear and 9.7% said they were too young to be tested. Less than 3% have not been tested because they did not know about the test, where they could be tested or because their partners had tested negative.

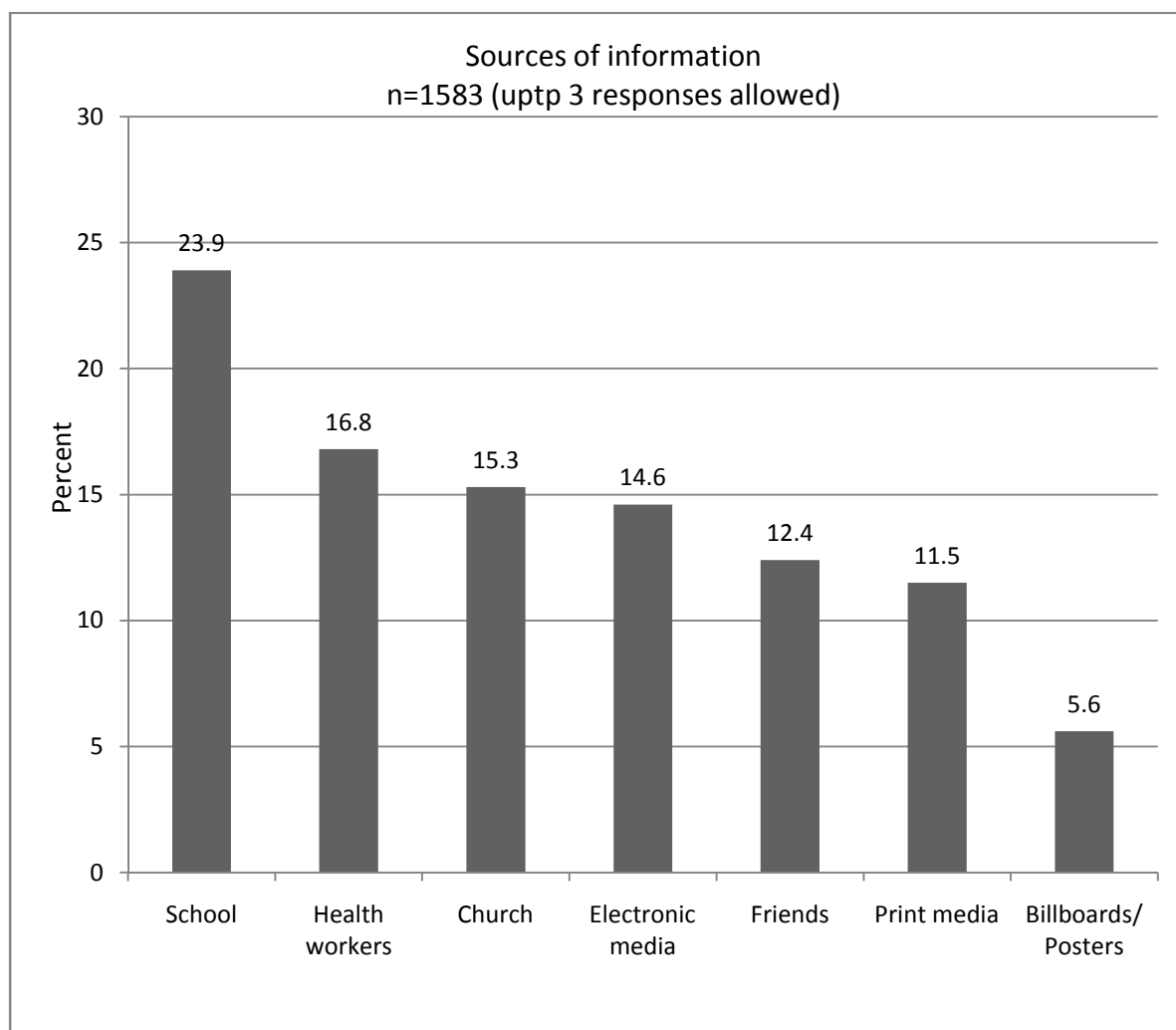
Figure 23: Reasons for not testing



## Sources of information on HTC

The main sources of information on HIV testing cited by the respondents include school as the most popular source at 23.9%, followed by health workers at 16.8%, church at 15.3% and electronic media at 14.6% (fig. 24). Friends, print media and billboards/posters were the least cited at 12.4%, 11.5% and 5.6% respectively.

*Fig 24: Sources of information*



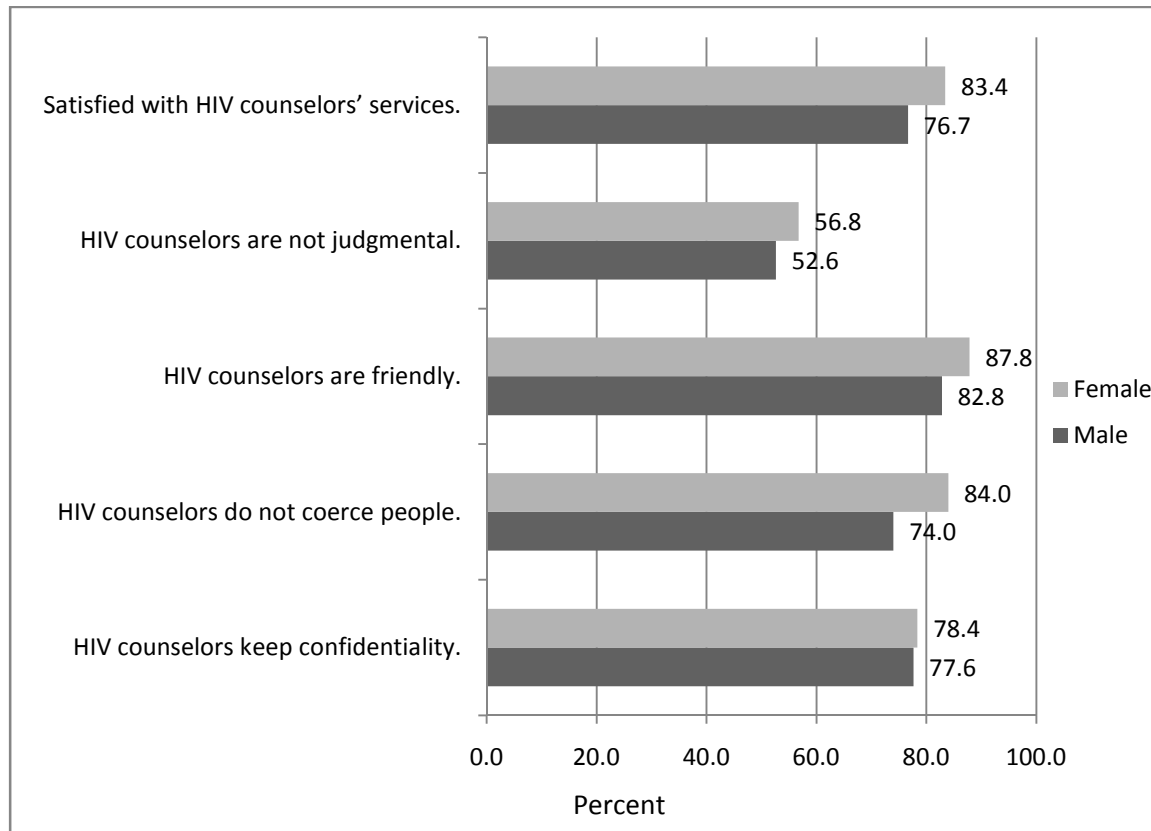
#### 4.4 Young people’s perception of counsellors’ attitude

Eighty per cent of the respondents expressed satisfaction with HIV counsellors’ services (agreed or strongly agreed) while 5.2% expressed dissatisfaction with 14.8% being neutral. Over half of the respondents (54.6%) indicated that counsellors are non-judgemental while 24.3% felt that counsellors are judgemental and another 21% expressed no opinion. On the question of whether counsellors are friendly, 85.3% affirmed while 5% disaffirmed with 9.2% being neutral. The proportion of youths who indicated that counsellors do not coerce them into testing were 73.4% while 14% perceive counsellors as coercive with 12.5% expressing no opinion. While 78% support HCW as upholding confidentiality, 8% perceive them as breaching confidentiality with 13.8% being neutral. Table 4.2 below summarises the responses and fig 25 shows the breakdown of positive perception responses by sex.

*Table 4.2 Perception of Counsellors’ attitude*

<b>Do you agree or disagree with the following statement:</b>	<b>Strongly agree (%)</b>	<b>Agree (%)</b>	<b>Neutral (%)</b>	<b>Disagree (%)</b>	<b>Strongly disagree (%)</b>
I am satisfied with HIV counsellors’ services.	23.3	56.7	14.8	4.7	0.5
HIV counsellors are judgemental.	3.7	20.7	21.0	44.2	10.5
HIV counsellors are friendly.	28.2	57.2	9.2	6.7	0.8
HIV counsellors coerce people.	1.8	12.2	12.5	57.2	16.3
HIV counsellors keep confidentiality.	21.7	56.3	13.8	6.7	1.5

Fig 25: Breakdown of positive perception responses by sex.



### Perception score

The mean score for young people's perception of counsellors' attitude was 47.7%, with a minimum score of 44% and a maximum of 100%. The median score was 47.5%. Figure 26 shows the perception scores distribution. The female respondents' mean was 47.9% and the males' was 47.4% (fig.27). The respondents aged 20 years had the highest mean at 48.1% while respondents aged 19 years had the lowest mean at 47% (fig. 28).

Figure 26: Perception of counsellors' attitude score distribution

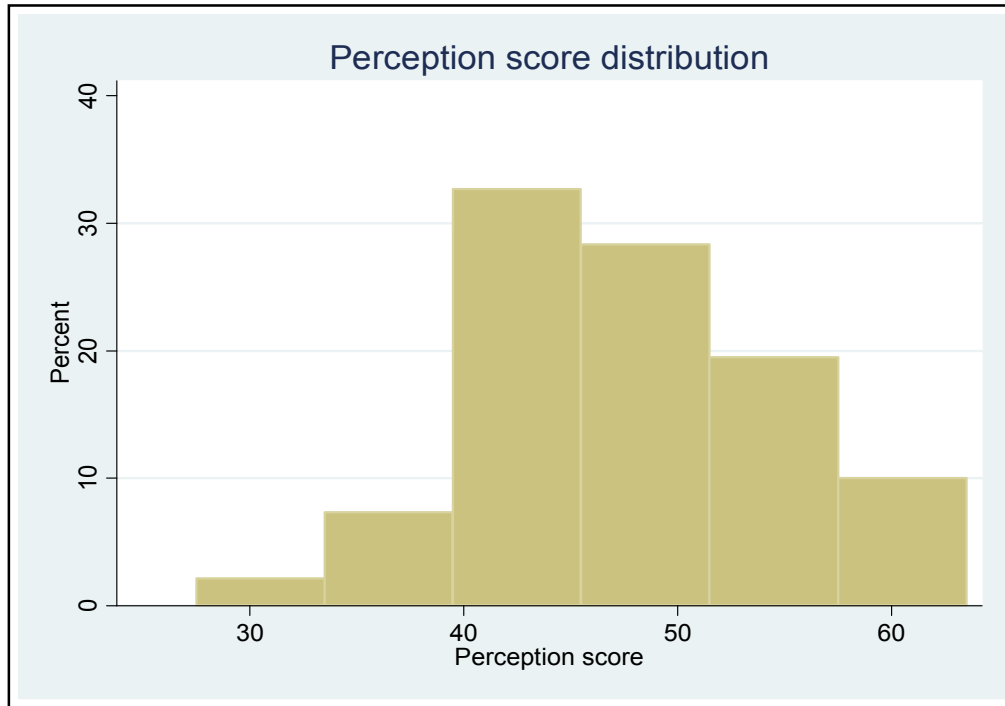


Figure 27: Mean perception score by sex

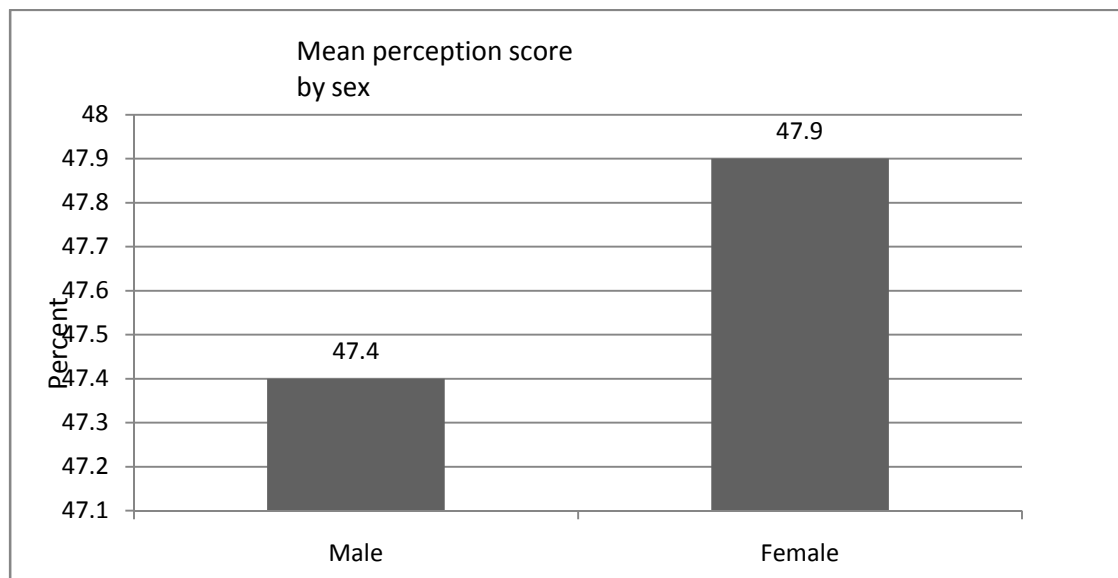
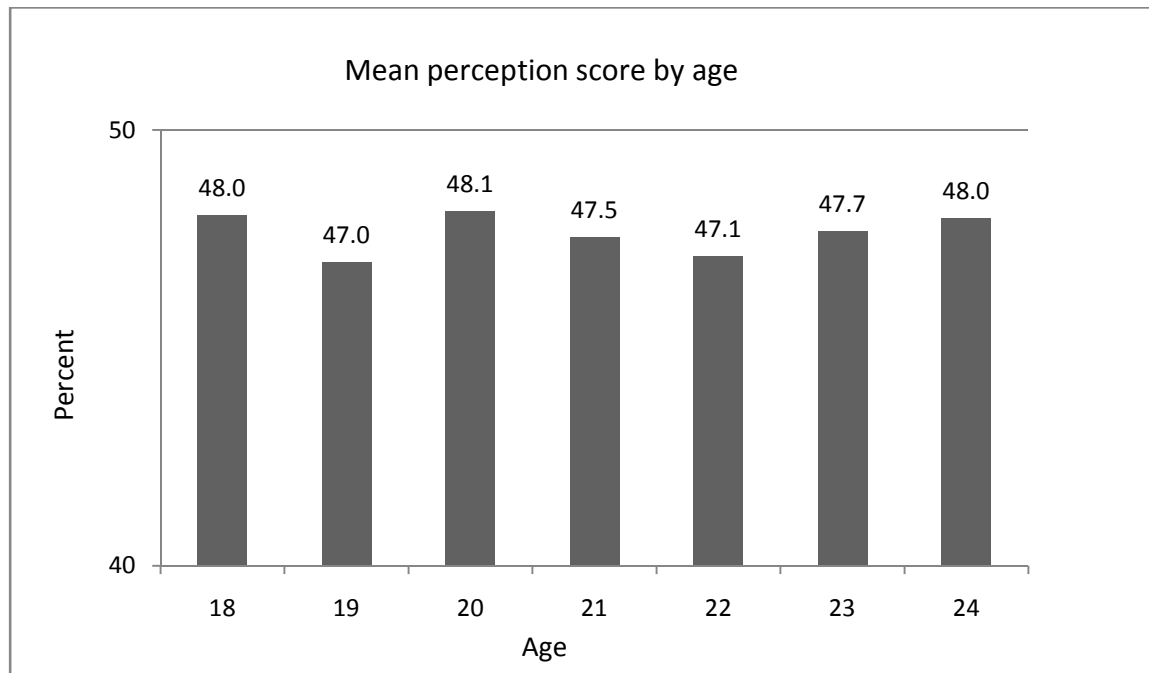


Figure 28: Mean perception score by sex



#### 4.5 Young people's AIDS Attitude

The proportion of respondents who felt that people close to them would abandon them if they tested HIV positive was 24%. About half of the respondents (50.1%) supported disclosure of HIV positive status. A small proportion of the respondents (2.8%) indicated that they would be content not knowing their HIV status, while 66.8% indicated they wanted to know their status. Majority (86.6%) were willing to buy groceries from a HIV positive vendor. The respondents who would not want a family member's HIV positive status disclosed (to remain a secret) were 48% while 41% would not mind disclosure. The respondents who indicated they would take care of a relative with HIV in their own households were 87.3%. Those of the opinion that people living with HIV should not feel guilty or ashamed of themselves were 83.3%. A fifth of the

respondents (20%) felt that people living with HIV should be blamed for the spread of HIV in the community. Table 4.3 summarises the young people's responses and fig. 29 shows the breakdown by sex.

The respondents mean AIDS attitude score was 71.7%, with the minimum score being 40% and the maximum score was 100%. The median score was 72.5%. Figure 30 shows the scores distribution. The mean for male respondents was 72.1% while the female respondents had a mean of 71.4% (fig. 31). The respondents aged 21 years had the highest mean at 73.1% while respondents aged 23 years had the lowest mean at 69.9% (fig. 32).

*Table 4.3: Young people's AIDS Attitude*

	<b>Do you agree or disagree with the following statement:</b>	<b>Strongly agree (%)</b>	<b>Agree (%)</b>	<b>Neutral (%)</b>	<b>Disagree (%)</b>	<b>Strongly disagree (%)</b>
40	People in my life would abandon me if I had HIV.	6.0	18.8	25.0	39.2	11.0
41	People who test HIV positive should not disclose to others.	4.5	31.7	12.7	40.5	10.7
42	I would rather not know if I have HIV.	5.0	17.8	10.3	47.3	19.5
43	I would buy fresh vegetables from a vendor who has HIV.	19.8	60.8	6.2	11.0	2.2
44	If a member of my family got infected with HIV I would want it to remain a secret.	10.0	38.0	10.8	34.0	7.2
45	If my relative with HIV became sick, I would be willing to take care of him or her in my own household.	25.8	61.5	6.0	5.5	1.2
46	People with HIV should be ashamed of themselves.	1.5	7.8	7.3	51.2	32.2
47	People with HIV should be ashamed for bringing the virus to the community.	5.2	14.8	8.8	43.0	28.2

Fig 29: Accepting attitudes breakdown by sex

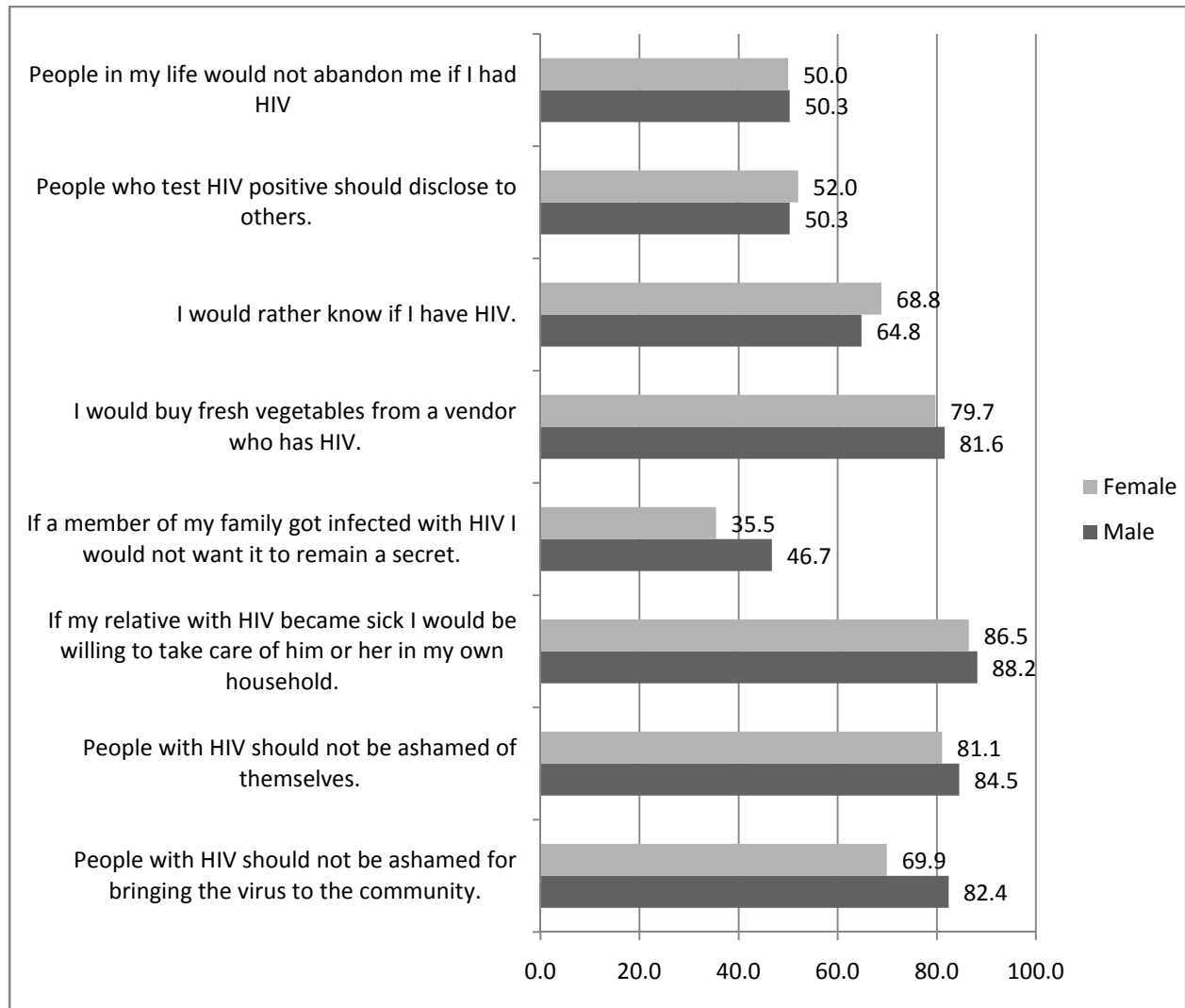




Figure 30: Young people's AIDS attitude score distribution

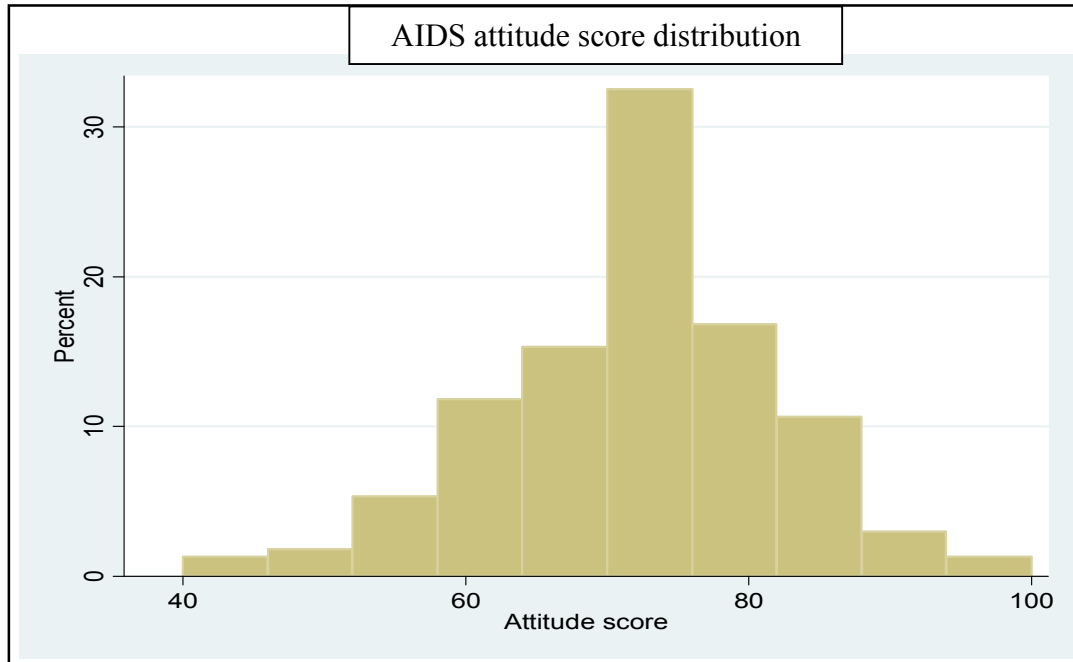


Figure 31: Young people's mean AIDS attitude score by sex

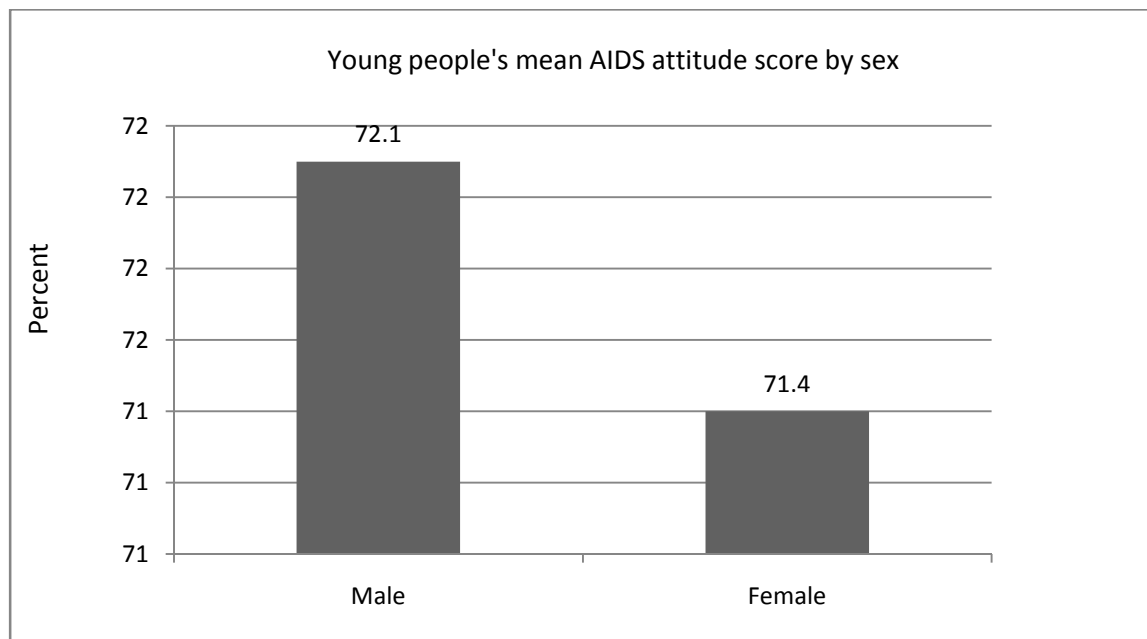
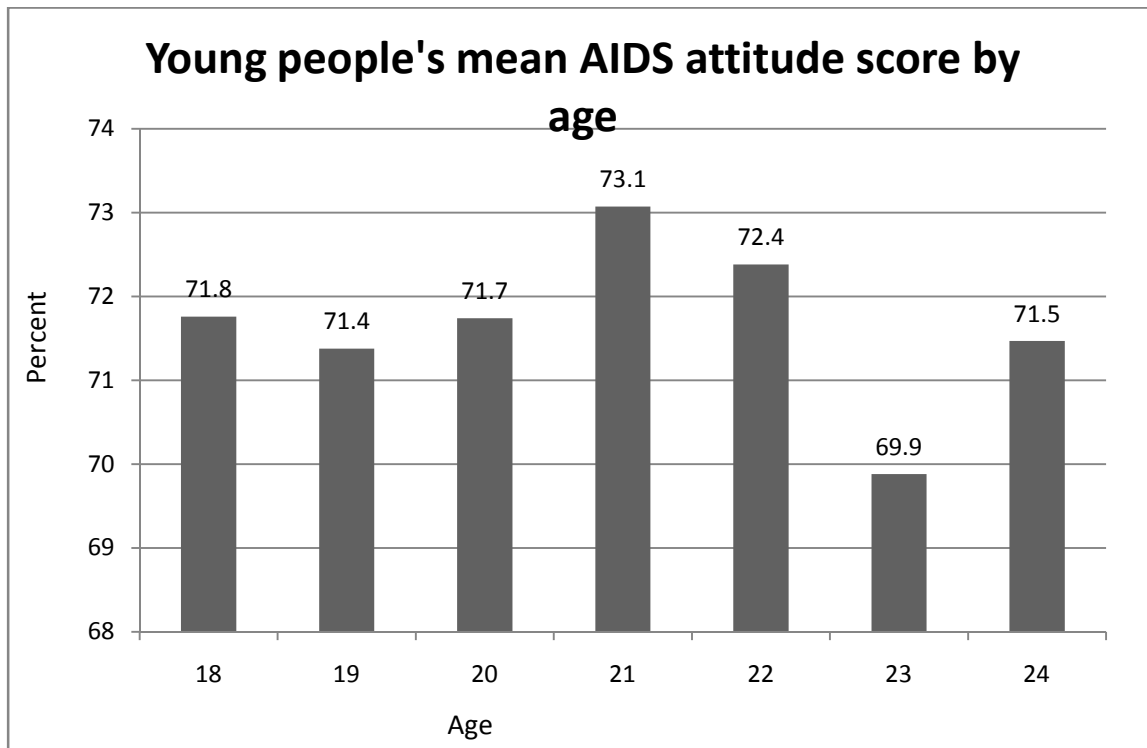


Figure 32: Young people's mean Attitude score by age



## 4.6 Relationship between HIV and AIDS knowledge and socio-demographic factors

Table 4.4 below shows the results for the relationship between HIV and AIDS knowledge and socio-demographic factors. The relationship between knowledge score and age was carried out using linear regression. Student's t-test analysis was used to determine the relationship between knowledge score and sex, marital status, education and occupation. The relationship between knowledge score and religion was analysed using one-way ANOVA.

*Table 4.4 The results for the relationship between HIV and AIDS knowledge and socio-demographic factors*

<b>Variable</b>	<b>Test statistic</b>	<b>p value</b>
<b>Age</b>	F=5.99	0.0147
<b>sex</b>	t=-0.4825	0.6296
<b>marital</b>	t=-1.2861	0.1989
<b>Education</b>	t=-0.73941	0.0000
<b>Occupation</b>	t=-1.7784	0.0759
<b>Religion</b>	F=1.08	0.3416

### Age

On the relationship between age and knowledge, there was a statistically significant positive relationship on simple linear regression analysis (F=5.99, p= 0.015)

### Sex

The mean AIDS knowledge score for males was 82.5% while the mean for females was 83%. However, the difference between the two means was not statistically significant (p=0.629).

**Marital status**

Respondents who had ever been married had a mean AIDS knowledge score of 81.2% the respondents who had never been married had a mean score of 83.1% but the difference between the two means was not statistically significant ( $p = 0.989$ ).

**Education**

Respondents educated lower than secondary level had a mean knowledge score of 75.3% while those with secondary and college educational level had a mean of 85%. The difference between the two means was statistically significant ( $p < 0.001$ ).

**Occupation**

Respondents with an occupation that generates an income had a mean knowledge score of 81.2% while the group that had no income had a mean of 83.4%. the difference between the two means was not statistically significant ( $p = 0.075$ ).

**Religion**

In relation to religion, Roman Catholic respondents had a mean knowledge score of 81.8%, Protestants respondents had a mean of 83.6% and Muslim respondents had a mean of 82.8%. There was no statistically significance difference between the means ( $p = 0.341$ ).

### **Knowledge and significantly related variables**

Level of education and age were significantly related to knowledge. Marital status, sex occupation and religion were not significantly related to knowledge.

### **4.7 Relationship between sociodemographic factors and young people's perception of counsellors' attitude**

Table 4.5 shows the results for the relationship between young people's perception of counsellors' attitude and socio-demographic factors. The relationship between perception score and age was carried out using linear regression. Student's t-test analysis was used to determine the relationship between perception score and sex, marital status, education and occupation. The relationship between perception score and religion was analysed using ANOVA.

*Table 4.5 Relationship between sociodemographic factors and young people's perception of counsellors' attitude*

<b>Variable</b>	<b>Test statistic</b>	<b>p value</b>
<b>Age</b>	F=0.00	0.9924
<b>Sex</b>	t=-0.8902	0.3737
<b>Marital status</b>	t=-0.3346	0.7380
<b>Education</b>	t=-2.8384	0.0047
<b>Occupation</b>	t=-1.6574	0.098
<b>Religion</b>	F=2.37	0.0941

## **Age**

On the relationship between age and perception of counsellors' attitude, there was no statistically significant relationship on simple linear regression analysis ( $F=0$ ,  $p= 0.992$ )

## **Sex**

The mean perception score for males was 47.4% while the mean for females was 47.9%. However, the difference between the two means was not statistically significant ( $p=0.373$ ).

## **Marital status**

Respondents who had ever been married had a mean perception score of 47.5% the respondents who had never been married had a mean score of 47.7% but the difference between the two means was not statistically significant ( $p = 0.989$ ).

## **Education**

Respondents educated lower than secondary level had a mean perception score of 46.3% while those with secondary and college educational level had a mean of 48.1%. The difference between the two means was statistically significant ( $p < 0.004$ ).

## **Occupation**

Respondents with an occupation that generates an income had a mean perception score of 47% while the group that had no income had a mean of 48%. The difference between the two means was not statistically significant ( $p = 0.098$ ).

## **Religion**

In relation to religion, Roman Catholic respondents had a mean perception score of 46.9%, Protestants respondents had a mean of 48.1% and Muslim respondents had a mean of 47.9%. There was no statistically significance difference between the means ( $p = 0.094$ ).

## **Perception and significantly related variables**

Level of education was significantly related to perception. Marital status, age, sex, occupation and religion were not significantly related to perception.

## **4.8 Relationship between sociodemographic factors and young people's HIV and AIDS attitude**

Table 4.6 shows the results for the relationship between young people's HIV and AIDS attitude and socio-demographic factors. The relationship between HIV and AIDS attitude score and age was carried out using linear regression. Student's t-test analysis was used to determine the relationship between HIV and AIDS attitude score and sex, marital status, education and occupation. The relationship between HIV and AIDS attitude score and religion was analysed using one-way ANOVA.

*Table 4.6 Results for the relationship between sociodemographic factors and young people's HIV and AIDS attitude*

<b>Variable</b>	<b>Test statistic</b>	<b>p value</b>
<b>Age</b>	F=0.04	0.8352
<b>Sex</b>	t=8283	0.4078
<b>Marital status</b>	t=-0.9294	0.3530
<b>Education</b>	t=-5.4744	0.0000
<b>Occupation</b>	t=-1.5939	0.1115
<b>Religion</b>	F=0.21	0.7485

### **Age**

On the relationship between age and AIDS attitude, there was no statistically significant relationship on simple linear regression analysis (p= 0.835)

### **Sex**

The mean AIDS attitude score for males was 72.1% while the mean for females was 71.4%. However, the difference between the two means was not statistically significant (p=0.407).

### **Marital status**

Respondents who had ever been married had a mean AIDS attitude score of 70.9% the respondents who had never been married had a mean score of 71.9% but the difference between the two means was not statistically significant (p = 0.353).



## **Education**

Respondents educated lower than secondary level had a mean AIDS attitude score of 67.8% while those with secondary and college educational level had a mean of 72.9%. The difference between the two means was statistically significant ( $p < 0.001$ ).

## **Occupation**

Respondents with an occupation that generates an income had a mean AIDS attitude score of 70.8% while the group that had no income had a mean of 72.2%. The difference between the two means was not statistically significant ( $p = 0.111$ ).

## **Religion**

In relation to religion, Roman Catholic respondents had a mean AIDS attitude score of 71.9%, Protestants respondents had a mean of 71.7% and Muslim respondents had a mean of 73.1%. There was no statistically significance difference between the means ( $p = 0.748$ ).

## **AIDS attitude and significantly related variables**

Level of education was significantly related to AIDS attitude. Marital status, age, sex, occupation and religion were not significantly related to AIDS attitude.

## 4.9 Relationship between HIV testing and sociodemographic factors

### Age

The mean age of youths who had been tested was 20.7 years while the mean age of those not tested was 19.8 years (fig. 33). The difference was statistically significant ( $p < 0.001$ )

Figure 33: Relationship between age and testing

```
. ttest age, by( test)
Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	415	20.71325	.1019819	2.077529	20.51279	20.91372
2	185	19.81622	.1370916	1.864647	19.54574	20.08669
combined	600	20.43667	.083895	2.055001	20.2719	20.60143
diff		.8970368	.1780807		.5472973	1.246776

```
diff = mean(0) - mean(2)
Ho: diff = 0
Ha: diff < 0
Pr(T < t) = 1.0000
Ha: diff != 0
Pr(|T| > |t|) = 0.0000
Ha: diff > 0
Pr(T > t) = 0.0000
t = 5.0372
degrees of freedom = 598
```

**Table 4.7 Relationship between HIV testing and other sociodemographic factors**

Factors		Tested		Total	Chi Square	p-value
		Yes	No			
Sex	Male	186 (61.2%)	118 (38.8%)	304	18.4	0.000
	Female	229 (77.4%)	67 (22.6%)	296		
Marital status	Ever married	99 (92.5%)	8 (7.5%)	107	33.3	0.000
	Single/Never married	316 (64.1%)	177 (35.9%)	493		
Education	Less than Secondary	105 (75%)	35 (25%)	140	2.91	0.088
	Secondary and above	310 (67.4%)	150 (32.6%)	460		
Occupation	With Income	141 (78.8%)	38 (21.2%)	179	11.03	0.001
	With No income	274 (65.1%)	147 (34.9%)	421		
Religion	Roman Catholics	146 (69.2%)	65 (30.8%)	211	0.12	0.930
	Protestants	241 (69.7%)	105 (30.3%)	346		
	Muslims	22 (66.7%)	11 (33.3%)	33		

### Sex

Among males 61.1% had been tested and 77.3% females had been tested (table 4.7). More females had been tested than males. There was a statistically significant relationship between sex and testing for HIV ( $p = 0.002$ )

### Marital status

Among respondents who are ever married 92.5% had been tested while 64% of those never married had been tested. There was a statistically significant relationship between testing and marital status ( $p < 0.001$ )

### **Education**

Among respondents with educational level lower than secondary school, 75% had been tested, while 67% had been tested among those with educational level of secondary and above. There was no statistically significant relationship between testing and educational level attained ( $p = 0.088$ )

### **Occupation**

Out of 179 respondents with an occupation that generates an income, 78.7% had been tested while in the group that had no income 65% had been tested. There was statistically significant relationship between testing and occupation ( $p = 0.005$ )

### **Religion**

Among the Roman Catholic respondents 69.6% had been tested as were 70.5% and 66.6% Protestants and Muslim respondents respectively. There was no statistically significant relationship between religion and testing ( $p=0.93$ )

## 4.10 Relationship between HIV testing and knowledge, attitude and perception

*Table 4.8 Relationship between HIV testing and knowledge, attitude and perception.*

Variable	Mean Score%		Mean difference %	t-test	P value
	Yes	No			
	Tested				
Perception	48.86	44.84	4.02	7.0198	<0.0000
Attitude	72.51	69.95	2.56	2.9267	0.0036
Knowledge	83.69	80.59	3.1	2.4767	0.0135

### Perception and testing

The difference between the mean perception score of those tested (48.6%) and those never tested (44.84%) was 4.02% (table 4.8). This difference was statistically significant ( $p < 0.001$ ).

### Attitude and testing

The difference between the mean attitude score of those tested (72.51%) and those not tested (69.95%) was 2.56% (table 4.8). This difference was statistically significant ( $p = 0.003$ ).

### AIDS knowledge and testing

The difference between the mean knowledge score of those tested (83.69%) and those never tested (80.59%) was 3.1% (table 4.8). This difference was statistically significant ( $p = 0.013$ ).

The relationship between comprehensive AIDS knowledge and testing (table 4.9) was not significant ( $p=0.994$ ).

Table 4.9: Relationship between comprehensive AIDS knowledge and testing

Comprehensive AIDS knowledge	Tested		Total	Chi square	p-value
	Yes	No			
Yes	211(50.8%)	94(50.8%)	305(50.8%)	0.0001	0.994
No	204(49.2%)	91(49.2%)	295(49.2)		
Total	415	185	600		

### Independent predictors of HIV testing

Logistic regression was carried out to determine the relationship between testing and significantly related variables (table 4.10). Age, sex, marital status, occupation and perception were significantly related to testing independently of other variables. Education, knowledge and attitude were not related to testing independently.

Table 4.10: Logistic regression- HIV testing, sociodemographic variables, knowledge, attitude and perception.

Variable	Wald	df	Sig.	Odds ratio	95% C.I. for Odds ratio	
Age	9.11	1	0.003	0.847	0.76	0.943
Sex	10.35	1	0.001	1.934	1.294	2.890
Marital status	12.61	1	0	0.232	0.104	0.520
Education	0.46	1	0.498	0.822	0.466	1.450
Occupation	4.11	1	0.043	0.594	0.359	0.983
Knowledge score	0.94	1	0.331	0.993	0.978	1.008
Attitude score	0.2	1	0.655	0.995	0.973	1.017
Perception score	32.4	1	0	0.908	0.879	0.939
Constant	27.93	1	0	2685.15		

## **Chapter 5.0**

# **DISCUSSION, CONCLUSION, RECOMMENDATIONS**

### **5.1 Discussion**

The level of awareness of HTC was near universal with the most popular sources of information on HTC being schools and health workers. Knowledge of centres where HTC services can be accessed was equally high with most respondents being aware of other people who had accessed HIV testing services.

#### **HIV testing and counselling**

Self reported ever testing among the respondents, young people aged 18-24 years, stood at 69.2%. These findings are higher than the national rate reported in KAIS of testing prevalence of 34% by the end of 2007 among adults (NASCOPI 2010) and that of KDHS 2008/09 of 45% among young people aged 15-24 years (KNBS & ICF 2010). The reported testing rate, however, still falls below the universal testing rate the country sets to achieve of 80% testing (NASCOPI 2010).

The availability of testing services in the numerous government health facilities, which were the most preferred testing site, that are also accessible in terms of distance in an area where awareness is almost universal will also explain the high rate of testing. Only 1.44% of those tested did not obtain their results after testing. KAIS recorded that 1.8% of those tested did not receive their results (NASCOPI 2010). Most of the young people, 61.2%, were tested in government health facilities. Availability of home based testing has been found to contribute to

increased uptake of testing (Bateganya 2007), and in this study 16.6% were tested in home and community outreaches. The only youth centre in the area tested 3% of the youths. Alemayehu (2010) in a study on Ethiopian University students found a preference of youths to test in youth centers/clubs and in government/public health facilities. Choice of facilities to test in is also determined by proximity to service delivery points (Mulogo 2011). Knowledge of testing places was high at 98%, above those of KAIS and KDHS 2008/9 which stood at 92 % (NAS COP 2010, KNBS & ICF 2010). In this study the most cited reason for not taking a test was respondents' low risk perception with 34.6% of those not tested perceiving themselves as having no risk. In KAIS 2007, 47% of those who have never been tested perceived themselves as low risk for HIV and 20% gave no reason (NAS COP 2010). Incorrect risk perception has been observed in other studies (Manirankunda (2009), Olugbenga (2008), Mghosha (2009). According to Wringe (2008), a high risk perception is associated with high uptake of testing.

### **Testing and Social Demographic Characteristics**

Tested youths were more likely to be female, married and older. Females had higher testing rates, a trend similarly reported in KAIS and KDHS 08/09 ( KNBS & ICF 2010, NAS COP 2010) and other studies by Ziraba (2011) and Alemayehu (2010. In this study older youths were more likely to be tested. Similar findings have been recorded in other studies that have found that testing increases with rising age, as found by Ziraba (2011), where 20-24 year olds were more likely to be tested than any other age group. This group has had more contact with the health system including testing within PMTCT and the fact that they can independently consent for a test after attaining the age of 18 years. The married had higher testing rates. Pre-marital testing



and subsequently couple testing increases testing prevalence among the married. Education status and religion did not influence testing in this study though KDHS 2008/9 and other studies have found higher education status to be associated with testing (KNBS & ICF 2010, Ziraba 2011).

### **HIV and AIDS Knowledge**

The overall mean knowledge score was 82.8%. This was higher than that found in KAIS 2007 where 56% of adults had satisfactory knowledge. High knowledge score in this study was associated with higher education level and rising age. High AIDS knowledge score has been associated with higher education status, income and age in other studies (KNBS & ICF 2010). Though the sex difference was not significant in this study, some studies have found females to be more knowledgeable (Alemayehu 2010) yet others reported higher knowledge in males (KNBS & ICF 2010). In this study 49.1% of the respondents had comprehensive AIDS knowledge which is similar to findings in KDHS 2008/09 where only about half of youths aged 15-24yrs had comprehensive knowledge about AIDS (KNBS & ICF 2010), but higher than that of KAIS 2007 of 44.4% (NAS COP 2010).

Knowledge that transmission of HIV can occur through breastfeeding stood at 83.3%, lower than the finding of KDHS 2008/9 which stood at 87% (KNBS & ICF 2010). Those who knew that the risk of MTCT can be reduced by special drugs given to the mother were 69.8% similar to the level of knowledge observed in KDHS of about 70%. Whereas 88.6% of young people were aware that HIV can be transmitted from a mother to her baby, only 48.6% answered correctly the

three modes of transmission, namely during pregnancy, delivery and breastfeeding. Studies in Ethiopia by Shitaye ( 2004) and Shiferaw (2011) noted that AIDS knowledge was high but proper understanding still remains low, especially knowledge on transmission and prevention.

In this study, knowledge was not associated with testing uptake. There are other studies that have similarly not show any relationship between testing and HIV and AIDS knowledge (Kalichman(2003), Olugbenga (2008)).

### **AIDS attitude**

Overall the mean AIDS attitude score was 71.4%. Higher educational status resonates with a more positive attitude in this study, similar to the finding in KAIS 2007 and KDHS 08/09. There was no association with age, sex, religion or occupation. KDHS 2008/9 found positive AIDS attitude to be associated with higher socioeconomic status, being male and to increasing age in the young people. Attitude in this study did not influence testing. Weiser (2006) and Kalichman (2003) found negative attitude to be associated with reduced testing uptake.

### **Perception of Counsellors' attitude**

Overall the mean perception score of counsellors attitude was 47.7%. A more positive perception of counsellors' attitude was associated with testing in this study. A study by Kapologwe (2011) in Tanzania among health workers found a negative attitude to provider initiated testing and counselling in a third of health care workers, which was a barrier to testing.

## **5.2 Conclusion**

This study showed that the prevalence of testing among young people was lower than the targeted universal testing rate of 80%, though higher than that recorded by KAIS 2007 and KDHS 2008/09. In this study, HIV testing is influenced by age, sex, occupation and young people's perception of counselors' attitude.

The findings from the study have been analysed to find out if the study hypotheses have been affirmed or negated.

### **1. Hypothesis that sociodemographic characteristics do not affect testing**

- Age: age has been shown to influence testing. Older youths are more likely to be tested.
- Sex: gender has been shown to affect testing. More females take up testing than males. They are also more at risk of infection and suffer a higher prevalence.
- Marital status: the ever married youths are more likely to be tested. Pre-marital testing and couple counselling and testing services do impact.
- Occupation: the youths with an occupation with income are more likely to take up testing than those without an income.
- Religion and education level did not influence testing uptake.

## **2. Hypothesis that knowledge and attitude does not affect testing**

- Perception of health workers attitude: perception of health workers attitude affects testing. Youths who perceive health workers attitude as positive were more likely to be tested.
- HIV and AIDS knowledge did not influence testing uptake.

### **5.3 Recommendations**

Despite the wide availability of free HIV testing and counseling services, uptake of HTC among young people remains low. This renders ineffective the main aim of HTC of enhancing early diagnosis among the infected so that they benefit from care and treatment, and foster prevention among the uninfected.

Health workers attitude towards young people evidently affects their testing uptake. Rude and unfriendly counselors scare youths away. Health care workers should be equipped with proper communication skills to handle youths and should uphold confidentiality and an accommodative attitude. The right attitude will inspire confidence, more so on those with fear of testing who will require persuasion to cut down on missed opportunities.

This study recommends:

1. The Ministry of Health should invest in training and re-training of HIV counselors to equip them with necessary skills to provide HTC services to young people.
2. The Ministry of Health should put more emphasis on provision of youth friendly services in health facilities.

## References

1. Amuyunzu-Nyamongo M., Okeng'o L., Wagura A. et al. Putting on a brave face: The experiences of women living with HIV and AIDS in informal settlements of Nairobi, Kenya. *AIDS Care* 2007, 10:24-34.
2. Angotti N., Bula A., Gaydosh L. et al. Increasing the acceptability of HIV counseling and testing with three C's: Convenience, confidentiality and credibility. *Society of Science & Medicine* 2009, 68: 2263–2270.
3. Bateganya M., Abdulwadud O., Kiene S. Home-based HIV voluntary counseling and testing in developing countries. *Cochrane Database System Rev.* 2007 Oct 17 ;( 4): CD006493.
4. Cherutich P., Brentlinger P., Nduati R. et al. Condom use among sexually active Kenyan female adolescents at risk for HIV-1 infection. *Journal of AIDS and Behavior* 2008, 12: 923-9.
5. Chirawu P., Langhaug L., Mavhu W. et al. Acceptability and challenges of implementing voluntary counselling and testing (VCT) in rural Zimbabwe: Evidence from the Regai Dzive Shiri Project. *AIDS Care* 2010, 22:81 – 88.
6. Coates T., Grinstead A., Gregorich S., et al. The Voluntary HIV-1 Counseling and Testing Efficacy Study: A Randomized Controlled Trial in Three Developing Countries. *Lancet* 2000, 356:103-12.
7. **Daniel W.**, *Biostatistics: A Foundation for Analysis in the Health Sciences*, Edition 7 *Wiley, John & Sons*, 1999.

8. Granich R., Gilks C., Christopher D., et al; Universal Voluntary HIV testing with immediate antiretroviral therapy as a strategy for elimination of HIV transmission: A mathematical model. *The Lancet* 2009, 373: 48 - 57.
9. Gray G. Adolescent HIV—Cause for Concern in Southern Africa. *PLoS Med* 2010, 7(2): e1000227. doi:10.1371/journal.pmed.1000227. Accessed at <http://www.plosmedicine.org>, on 15/8/2010.
10. Helleringer S., Kohler H., Frimpong J. et al. Increasing Uptake of HIV Testing and Counseling Among the Poorest in Sub-Saharan Countries Through Home-Based Service Provision. *Journal of Acquired Immune Deficiency Syndromes* 2009,51:185-193.
11. Hossain M. and Kippax S. HIV-related Discriminatory Attitudes of Healthcare Workers in Bangladesh. *Journal of Health Population and Nutrition* 2010, 28:199-207.
12. Juma M., McCauley A., Kirumira E., et al. Gender variations in uptake of VCT services among youth in Uganda. Presented at: International Conference on AIDS; 2002 Jul 7-12; Barcelona, Spain. Horizons Program/Population Council, Nairobi, Kenya
13. Kalichman S. and Simbayi L. HIV testing attitudes, AIDS stigma, and voluntary HIV counseling and testing in a black township in Cape Town, South Africa. *Sexually Transmitted Infections* 2003, 79: 442-447.
14. Kapologwe N., Kabengula J., Msuya S. Perceived barriers and attitudes of health care providers towards Provider-Initiated HIV Testing and Counseling in Mbeya region, southern highland zone of Tanzania. *The Pan African Medical Journal*. 2011; 8:17
15. Kenya National Bureau of Statistics (KNBS). 2009 Population and Housing Census. Volume 1A, Population distribution by administrative units, 2010.

16. Kenya National Bureau of Statistics (KNBS) and ICF Macro. Kenya Demographic and Health Survey 2008-09. Calverton, Maryland: KNBS and Macro, 2010.
17. Manirankunda L., Loos J., Alou T. et al. "It's better not to know": perceived barriers to HIV voluntary counseling and testing among sub-Saharan African migrants in Belgium. *AIDS Education and Prevention* 2009, 21:582–593.
18. Madise N., Ziraba A., Kebaso J. et al. HIV and AIDS in the City: Prevalence among Residents of Informal Urban Settlements in Nairobi, Kenya. 2008. Accessed at: <http://paa2008.princeton.edu/download>, on 15/8/2010.
19. McCauley, A. Equitable access to HIV counseling and testing for youth in developing countries: A review of current practice, Horizons Report. Washington, DC: Population Council, 2004.
20. Meiberg A., Bos A., Onya H. et al. Fear of stigmatization as barrier to Voluntary HIV Counselling and Testing in South Africa. *East African Journal of Public Health* 2008, 5:49-54.
21. Mgosha C., Kweka E., Mahande A., et al. Evaluation of uptake and attitude to voluntary counseling and testing among health care professional students in Kilimanjaro region, Tanzania. *BMC Public Health* 2009,9:128.
22. Ministry of Planning and National Development, Kenya. Nyeri South District Development Plan 2008-2012, Nyeri, 2008.
23. Ministry of Planning and National Development, National Economic and Social Council. Kenya: Vision 2030. 2007.



24. Morin S., Khumalo-Sakutukwa G., Charlebois E. et al. Removing Barriers to Knowing HIV Status Same-Day Mobile HIV Testing in Zimbabwe. *Journal of Acquired Immune Deficiency Syndrome* 2006, 41:218–224.
25. Moyer L., Brouwer K., Brodine S. et al. Barriers and missed opportunities to HIV testing among injection drug users in two Mexico - US border cities. *Drug Alcohol Review* 2008, 27:39 – 45.
26. Mulogo E., Abdulaziz A., Guerra R., et al. Facility and home based HIV Counseling and Testing: a comparative analysis of uptake of services by rural communities in southwestern Uganda. *BMC Health Services Research* 2011, 11:54 doi:10.1186/1472-6963-11-54. Accessed at <http://www.biomedcentral.com/1472-6963/11/54> on 6-6-2012
27. Mutale W., Michelo C., Fylkesnes K. High uptake of home-based delivery of HIV counseling and testing among young people. Presented at: International Conference on AIDS. 2006 Aug 13-18; Toronto, Canada.
28. NACC(National AIDS Control Council), Kenya National AIDS Strategic Plan, 2009/10-2012/13, Delivering on universal access to services. 2009.
29. National AIDS Control Council and the National AIDS and STD Control Programme. National HIV Prevalence in Kenya. 2007.
30. National AIDS and STI Control Programme, Kenya. Kenya AIDS Indicator Survey 2007: Final Report. 2009.
31. National AIDS and STI Control Programme, Ministry of Health, Kenya. *AIDS in Kenya*, 7th ed. Nairobi: NASCOP; 2005.
32. National AIDS and STI Control Programme (NASCOP), Ministry of Public Health and

- Sanitation, Kenya. Achieving Universal Access to knowledge of HIV status. The Kenya HTC report 2011. Nairobi, NASCOP; 2012.
33. NASCOP (National AIDS and STI Control Programme), Ministry of Public Health and Sanitation, Kenya. Guidelines for HIV Testing and Counseling in Kenya. Nairobi; 2008.
34. Ndugwa R. An added AIDS risk in the slum setting: evidence from Nairobi slums. Presented at: 15th International Conference on AIDS; Jul 11-16, 2004; Bangkok, Thailand.
35. Ngozi C., Bart B., Nanne K. et al. Stigma of People with HIV/AIDS in Sub-Saharan Africa: A Literature Review. *Journal of Tropical Medicine* 2009, article ID 145891, 14 pages doi: 10.1155/2009/145891
36. Nuwaha F., Kabatesi D., Muganwa M., et al. Factors influencing acceptability of voluntary counseling and testing for HIV in Bushenyi District of Uganda. *East Africa Medical Journal* 2002, 79: 626–632.
37. Nzioka C. Condom use practices and experiences among adolescents in Kenya; Presented at: International Conference on AIDS; 2002 Jul 7-12; Barcelona, Spain.
38. Olugbenga-Bello A., Amusan O., Oladele E. et al. Knowledge, Attitude and uptake of voluntary Confidential Counseling and Testing (VCCT) for HIV/AIDS among young adults in an urban settlement in Southwest Nigeria. *The Social Sciences* 2008, 3: 442-447.
39. Omer S. and Haidar J. VCT uptake and associated factors among teachers from Harari Administrative Region. *Ethiop. J. Health Dev.* 2009, 23:199-205.

40. Prost A., Griffiths C., Anderson J., et al. Feasibility and acceptability of offering rapid HIV tests to patients registering with primary care in London (UK): a pilot study. *Sex Transm Infect* 2009,85:326-329.
41. Shiferaw Y., Alemu A., Girma A., et al. Assessment of knowledge, attitude and risk behaviors towards HIV/AIDS and other sexual transmitted infection among preparatory students of Gondar town, North West Ethiopia. *BMC Research Notes* 2011, 4:505.
42. Shitaye A., Nuru A., Getu D., et al. Knowledge and attitude towards voluntary counseling and testing for HIV: A community based study in northwest Ethiopia. *Ethiop.J.Health Dev.* 2004, 18: 82-89.
43. Sweat M., Gregorich S., Sangiwa G., et al. Cost-effectiveness of voluntary HIV-1 counselling and testing in reducing sexual transmission of HIV-1 in Kenya and Tanzania. *Lancet* 2000, 356:113-21.
44. Odundo P., and Korir J. Measuring the degree of S&D in Kenya: An index for HIV/AIDS facilities and providers. USAID 2007.
45. UNAIDS 2008 Annual Report: Towards Universal Access, Joint United Nations Programme on HIV/AIDS (UNAIDS) 2009.
46. UNAIDS 2008 Report on the global AIDS epidemic. UNAIDS/08.25E / JC1510E. Joint United Nations Programme on HIV/AIDS. 2008.
47. UNAIDS AIDS epidemic update 2007. Joint United Nations Programme on HIV/AIDS and World Health Organization (WHO) 2007.
48. UNAIDS Outlook Report 2010. Joint UN Programme on HIV /AIDS 2009. Accessed at: [www.unaids.org](http://www.unaids.org), on 15/8/2010.

49. UNAIDS, AIDS epidemic update: November 2009, “UNAIDS/09.36E / JC1700E”. Accessed at: [www.unaids.org](http://www.unaids.org), on 5/8/2010.
50. UN-Habitat. The Challenge of Slums. Global Report on Human Settlements. United Nations Human Settlements Programme, 2003. Accessed at: <http://www.unhabitat.org/>, on 5/8/2010.
51. Weiser S., Heisler M., Leiter K. et al. Routine HIV testing in Botswana: A population-based study on attitudes, practices and human rights concerns. *PLoS Med* 2006,3(7): e261. DOI: 10.1371/journal.pmed.0030261.
52. World Health Organization; Guidance on provider initiated HIV testing and counseling in health facilities. WHO 2007.
53. Wringe A., Isingo R., Urassa M. et al. Uptake of HIV voluntary counselling and testing services in rural Tanzania: implications for effective HIV prevention and equitable access to treatment. *Tropical Medicine and International Health* 2008, 13:319–327.
54. World Health Organization. Description and comparison of the methods of cluster sampling and lot quality assurance sampling to assess immunization coverage, WHO 2001.
55. Ziraba A., Madise N., Kimani J., et al. Determinants for HIV testing and counselling in Nairobi urban informal settlements. *BMC Public Health* 2011, 11:663 doi:10.1186/1471-2458-11-663. Accessed at <http://www.biomedcentral.com/1471-2458/11/663> on 6-6-2012.

## Appendix 1

### QUESTIONNAIRE

#### QUESTIONNAIRE

Barriers to HIV Testing and Counselling uptake among young people aged 18-24 years in Nyeri Municipality.

Questionnaire No.....	Cluster No.....	Cluster Name.....	Interviewer's Name.....	Date.....	Tick	Code
<b>Sociodemographic</b>						
1	Age					
2	Record the sex of the respondent		Male			1
			Female			2
3	Marital Status		Married/Living together			1
			Separated			2
			Divorced/			3
			Widowed			4
			Single/Never married			5
4	Highest education level attained		Nursery			1
			Primary			2
			Post primary/vocational			3
			Secondary			4
			College/University			5
			Other (specify).....			6
5	Occupation:		Employed			1
			Self employed			2
			Unemployed			3
			Schooling			4
			Others (specify).....			5
6	Religion/Denomination		Roman Catholic			1
			Protestant			2
			Muslim			3
			Others (specify).....			4
<b>Knowledge</b>						

7	Have you ever heard of an illness called HIV/AIDS?	Yes	1	
		No	2	
		Do not know	77	
8	Do you think AIDS poses a serious threat to young people in your community?	Yes	1	
		No	2	
		Do not know	77	
9	Is it possible for a healthy-looking person to have HIV?	Yes	1	
		No	2	
		Do not know	77	
10	Do you think a person can get HIV infection by having sexual intercourse with someone who has HIV/AIDS?	Yes	1	
		No	2	
		Do not know	77	
11	Can HIV be transmitted from a mother to her baby? (if No skip 12)	Yes	1	
		No	2	
		Do not know	77	
12	Can HIV be transmitted from a mother to her baby			
		i. •During Pregnancy?	Yes	1
			No	2
		Do not know	77	
	ii. •During delivery?	Yes	1	
		No	2	
		Do not know	77	
	iii. •During breast feeding?	Yes	1	
		No	2	
		Do not know	77	
13	Can people get HIV from mosquito or other insect bite?	Yes	1	
		No	2	
		Do not know	77	
14	Can people get HIV because of witchcraft or other supernatural means?	Yes	1	
		No	2	
		Do not know	77	

15	Do you think it is possible to get HIV by sharing eating utensils (spoons, cups) with a person who has HIV?	Yes	1
		No	2
		Do not know	77
16	Can one get HIV through receiving blood from a person who has HIV/AIDS?	Yes	1
		No	2
		Do not know	77
17	Is it true that one can get HIV by using the same injection needle/syringe that was used by a person with HIV/AIDS?	Yes	1
		No	2
		Do not know	77
18	Do you think it is possible for a person to get HIV when someone with HIV/AIDS coughs or sneezes on them?	Yes	1
		No	2
		Do not know	77
19	Is it possible for a person to take care of a family member with HIV/AIDS without getting infected?	Yes	1
		No	2
		Do not know	77
20	Can people reduce their chances of getting HIV by using a condom during every sexual intercourse?	Yes	1
		No	2
		Do not know	77
21	Can people reduce their chances of getting HIV by abstaining from sexual intercourse?	Yes	1
		No	2
		Do not know	77
22	Are there any special drugs that a doctor or a nurse can give to a mother infected with HIV/AIDS to reduce the risk of transmission to the baby?	Yes	1
		No	2
		Do not know	77
23	Have you heard of any special drugs that people infected with HIV/AIDS can take to help them live longer?	Yes	1
		No	2
		Do not know	77
24	Can doctors cure HIV/AIDS?	Yes	1
		No	2
		Do not know	77
25	Do you think you are at risk of HIV Infection?	Yes	1
		No	2

	Do not know	77
26	What do you think your chances of getting HIV infection are?	
	No risk at all	1
	Small	2
	Moderate	3
	Great	4
	Has HIV or ARVs	5
	Don't know	77

### Testing and Counseling

27	Have you ever heard of HIV Testing and counseling? (If yes go to 28, if no go to 29)	Yes	1
		No	2
28	What are the main sources from which you obtained information on HIV Testing? (Interviewer to tick options mentioned)		
	Electronic media(Radio, TV)		1
	Print media (Newspapers, magazines)		2
	Billboards/ Posters		3
	School		4
	Church		5
	Friends		6
	Health workers		7
	Others (specify).....		8
29	Do you know of a place where people can go to get tested for HIV?	Yes	1
		No	2
30	Have you ever been tested? (If Yes go to 31 and 32, if No go to 33)	Yes	1
		No	2
31	Did you get the results?	Yes	1
		No	2

32	Where was the test done? (Interviewer to tick response from answer given)		
	GOK Dispensary		1
	GOK Health centre		2
	GOK Hospital		3
	FBO/Mission facility		4
	NGO facility		5
	Private hospital/clinic		6
	Home/community/outreach		7



	VCT Centre	8
	Youth Centre	9
	Others-specify	10
33	(If No to Q30)Why have you never had a test for HIV? <b>(Interviewer to tick response corresponding to answer given).</b>	
	No knowledge about HIV test	1
	Not at risk	2
	Too young	3
	Never offered test	4
	Don't know where to get one	5
	Other (specify)	6
34	Have any of your friends taken a HIV test?	
	Yes	1
	No	2
	Do not know	77
<b>Perception of health workers attitude</b>		
<b>(Answer whether you agree or disagree with the statements in this section)</b>		
35	I am satisfied with HIV counselors' services.	
	Strongly agree	1
	Agree	2
	Neutral	3
	Disagree	4
	Strongly disagree	5
36	HIV counselors are judgmental.	
	Strongly agree	1
	Agree	2
	Neutral	3
	Disagree	4
	Strongly disagree	5
37	HIV counselors are friendly.	
	Strongly agree	1
	Agree	2
	Neutral	3
	Disagree	4
	Strongly disagree	5
38	HIV counselors coerce people.	
	Strongly agree	1
	Agree	2
	Neutral	3
	Disagree	4
	Strongly disagree	5
39	HIV counselors keep confidentiality?	
	Strongly agree	1
	Agree	2

Neutral	3
Disagree	4
Strongly disagree	5

### Young People's Attitude

40 Do you agree or disagree with the following statement: people in my life would abandon me if I had HIV.	Strongly agree	1
	Agree	2
	Neutral	3
	Disagree	4
	Strongly disagree	5

41 Do you agree or disagree with the following statement: people who test HIV positive should not disclose to others.	Strongly agree	1
	Agree	2
	Neutral	3
	Disagree	4
	Strongly disagree	5

42 Do you agree or disagree with the following statement: I would rather not know if I have HIV.	Strongly agree	1
	Agree	2
	Neutral	3
	Disagree	4
	Strongly disagree	5

43 Do you agree or disagree with the following statement: I would buy fresh vegetables from a vendor who has HIV.	Strongly agree	1
	Agree	2
	Neutral	3
	Disagree	4
	Strongly disagree	5

44 Do you agree or disagree with the following statement: if a member of my family got infected with HIV I would want it to remain a secret.	Strongly agree	1
	Agree	2
	Neutral	3
	Disagree	4
	Strongly disagree	5

45 Do you agree or disagree with the following statement: if my relative with HIV became sick I would be willing to take care of him or her in my own household.	Strongly agree	1
	Agree	2
	Neutral	3
	Disagree	4
	Strongly disagree	5

46 Do you agree or disagree with the following statement: People with HIV should be ashamed of themselves.	Strongly agree	1
	Agree	2
	Neutral	3

	Disagree	4
	Strongly disagree	5
47	Do you agree or disagree with the following statement: people with HIV should be ashamed for bringing the virus to the community.	
	Strongly agree	1
	Agree	2
	Neutral	3
	Disagree	4
	Strongly disagree	5

**Appendix 2**

**Consent Explanation**

Hello. My name is Peter M Munyua. I am a student at the University of Nairobi conducting research in Nyeri Municipality on a study titled **Barriers to HIV Testing and Counseling uptake among young people aged 18-24 years in Nyeri Municipality**. This study will obtain information touching on HIV/AIDS and HIV testing from young people age 18-24 years both male and female through a questionnaire.

There are no direct benefits to the participants. The study will benefit the community by providing information on ways to improve testing and counseling services to young people leading to strengthening of HIV prevention, care and treatment.

There are no major risks involved but some questions are a bit personal. No specimen will be taken and no medical examination will be performed. The interview will take about 30 minutes.

Participation is absolutely voluntary and a participant can discontinue at any stage. Information obtained will be treated with utmost confidentiality and will only be used for academic purposes.

Your name will not appear anywhere on the questionnaire.

Ask me any question you may have.

For any information on this study feel free to contact me on mobile number 0722 67 65 18 or The Chair, Kenyatta National Hospital/University of Nairobi Ethics and Research Committee, P.O. Box 20723, Nairobi or [Tel:726300-9](tel:726300-9).

## **Consent Form**

I have been explained the purpose of the study, the risks and benefits, and the confidentiality of information. I hereby agree/ don't agree to participate in the study.

Participant Signature ..... Date .....

Interviewer Signature ..... Date .....

**Appendix 3**

**Sampling Frame**

Sublocation	Number of households	Cummulative households	Clusters
Chorong'i	1446	1446	1,2
Gachika	680	2126	
Gatitu	650	2776	3
Gitathi-ini	706	3482	
Githiru	640	4122	4
Kamakwa	4886	9008	5,6,7,8
Karia	912	9920	9
Kiganjo	924	10844	
Kihatha	483	11327	10
Kihuyo	558	11885	
Kinunga	370	12255	11
Kirichu	1329	13584	12
Majengo	8168	21752	13,14,15,16,17,18
Marua	610	22362	19
Mathari	2094	24456	20,21
Mununga-ini	776	25232	
Muruguru	725	25957	22
Muthua-ini	939	26896	23
Nyaribo	985	27881	
Riamukurwe	894	28775	24
Ruring'u	4875	33650	25,26,27,28
Thunguma	2852	36502	29,30

## Appendix 4

### List of Clusters

<b>Cluster Name</b>	<b>Cluster Number</b>
Chorong'i	
• Chorong'i	1
• Munyi	2
Gatitu	3
Githiru	4
Kamakwa	
• Chania-Kamuyu	5
• Gitathi-ini	6
• Kamakwa	7
• Kamuyu	8
Karia	9
Kihatha	10
Kinunga	11
Kirichu	12
Majengo	
• Blue Valley	13
• Chania	14
• Chania-MOW	15
• Kiawara	16
• Majengo	17
• Witemere	18
Marua	19
Mathari	
• Mwenji	20
• Witemere(Mathari)	21
Muruguru	22

Muthua-ini	23
Riamukurwe	24
Ruring'u	
• Muslim Mjini	25
• Ruring'u (Meeting Point)	26
• Skuta	27
• Waka	28
Thunguma	
• Kagayu	29
• Ndunyu	30



