



ALCOHOL ABUSE AND HIV INFECTION IN NAIROBI SURVEY

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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ARV	Antiretroviral
AUDIT	Alcohol Use Disorder Identification Test
CD4	Cluster of Diffusion 4
CD8	Cluster of Diffusion 8
EQUINET	Regional Network for Equity in Health in East and Southern Africa
HIV	Human Immunodeficiency Virus
NACADA	National Agency Campaign Against Drug Abuse
NACADAA	National Campaign Against Drug Abuse Authority
SPSS	Statistical Package for Social Sciences
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infections
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

OPERATIONAL DEFINATION OF TERMS

Alcohol Abuser: The AUDIT tool classifies alcohol drinkers into two distinct categories based on the score of the AUDIT. Any person whose score is 8 or more points on the AUDIT scale of 0 – 40 is classified as having alcohol drinking problems.

Consensual Partner: Sexual intercourse involving two partners who have mutually agreed/consented to sex.

First generation alcoholic brands: Legal beer and spirit brands that are conventional, high priced and/or low alcohol content. *Examples:* Amarula, Viceroy, Sminorff, Richot, Tusker, Pilsner, Guinness, etc.

Non-Consensual Partner: Sexual intercourse involving two partners who have not mutually agreed to have sex or sex in which one partner has been forced.

Social Drinker: The AUDIT test classifies alcohol drinkers into two distinct categories based on the score of the AUDIT. Any person whose score is less than 8 points on the AUDIT scale of 0 – 40 is classified as a social drinker.

Second generation alcoholic brands: Refers to alcoholic beverages that have been lately introduced which are low priced and have high alcohol content. *Examples:* Senator Keg, Kenya Cane, Iceberg, Marry Cane, Konyagi, etc.

EXECUTIVE SUMMARY

The relationship between alcohol use and self control is widely recognized. Studies have shown that there is a link between alcohol abuse and, for example, loss of cognitive/self control. Together these studies imply that individuals who are also alcohol dependent are likely to have altered behaviour in their state of intoxication including engaging in high risk sexual behaviour. The relationship between alcohol and high risk sexual encounters has also been found among individuals who are HIV infected. Generally there is an increase in the likelihood and rate of unprotected sex. This implies that prevention efforts among this group are crucial.

This survey was conducted with a view to; (i) establish the perceived link between alcohol use and HIV infection and the health outcomes of the HIV-infected; (ii) the relationship between alcohol use and the number of sexual partners and in particular the difference between men and women; (iii) find out whether exposure to HIV drives individuals into alcohol abuse and how alcohol use influences health outcomes; (iv) alcohol use and decisions regarding condom use; and lastly (v) interventions that might be put in place to increase knowledge of the link between alcohol abuse and HIV infection.

Data was obtained using a survey questionnaire which was administered to respondents in four areas within Nairobi, namely; Ruai in Njiru district, Mukuru Kwa Njenga and Embakasi in Embakasi district, and Kahawa in Kasarani district. A total of 497 respondents (48.1% male; 51.9% female) responded to the questionnaire. The key findings are summarized below.

- One in every five of those surveyed reported that they were currently consuming alcohol. Three quarters of those identifying themselves as drinkers are harmful drinkers. These individuals scored more than 8 points on the AUDIT questionnaire.
- Alcohol is generally available and affordable in the communities surveyed. The number of outlets increase, starting from those that sell 1st generation alcohol, 2nd generation alcohol, traditional brews and *Chang'aa*.
- In general, those who reported that they were currently consuming alcohol appeared to report, in absolute figures, that they had been forced to have sex by someone who was drunk. However, on close scrutiny of the data between the two groups, the difference between those who currently consume alcohol and those who do not is not significant.
- Data shows that there is a general perception among respondents that alcohol consumption raises risk of exposure to potentially risky sexual behaviour. The perception of risk is higher among female than among male respondents. Those classified as abusers (> 8 points based on the AUDIT questionnaire) were less likely to perceive a higher risk compared to social drinkers (AUDIT score of less than 8 points).

This report points to a multiplicity of factors and actors in the control of alcohol, efforts to eliminate alcohol dependence and in the prevention of HIV transmission through the use of condoms, for example. In order to ensure that there is synergy in these efforts, there is need for multi-sectoral collaboration.

Establishment of support groups to provide a supportive environment for individuals who are vulnerable to alcohol and who are on ARV treatment is critical. However, the groups will require guidance to give adequate care and an environment that facilitates compliance among HIV positive alcohol users. The groups should be linked to already existing support centers. In relation to sexual performance, there is need for further studies to shed more light on the link between performance and alcohol abuse.

Lastly, due to a small number of people who identified themselves as being HIV-infected, the relationship between HIV infection and alcohol consumption is not conclusive. A survey focusing on people attending VCT centers and to Comprehensive Care Centers is likely to yield better results.

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1.0. BACKGROUND

The Government of Kenya recognizes the threat posed by alcohol and drug abuse. In response it has enacted a legal and institutional framework within which the problem of alcohol dependency and drug abuse can be addressed. In 2007, Parliament ratified the formation of the National Campaign Against Drug Abuse Authority (NACADAA), which replaced its precursor National Agency Campaign Against Drug Abuse (NACADA). The Authority has conducted various studies which focus on alcohol and substance abuse. The current study aims to contribute to our understanding of community perceptions regarding the relationship between alcohol abuse and HIV infection.

The relationship between alcohol use and self control is widely recognized. Studies have shown that there is a link between alcohol abuse and, for example, loss of cognitive/self control (see Eckardt *et al.*, 1995; Zinn *et al.*, 2004). Together these studies imply that individuals who are also alcohol dependent are likely to have altered behaviour in their state of intoxication including engaging in high risk sexual behaviour. The relationship between alcohol and high risk sexual encounters has also been found among individuals who are HIV infected. Among these people, there is an increase in the likelihood and rate of unprotected sex (Kiene *et al.*, 2008). This implies that prevention efforts among this group are crucial and it might, for instance, focus on reducing alcohol-involved unprotected sex among HIV-positive persons.

Alcohol use has been linked to physical violence, which is a proximate determinant of sexual abuse. In a recent study in northern Tanzania women who abused alcohol were likely to also be sexually and physically abused. Further, the women were more likely to report STI symptoms and multiple sexual partners (Ghebremichael *et al.*, 2009). In this study alcohol abuse was found to be indirectly associated with STIs through association with multiple sexual partners.

Whereas alcohol abuse/dependency is likely to encourage high risk sexual behaviour as a result of altered cognitive and self-control ability, HIV infection on the other hand can lead an individual into alcohol abuse and dependency (Reeves, Merrian and Courtenay 1999). In this case HIV positive individuals may fall into alcohol abuse and dependency as a way of escaping from the reality of their acquired status. Ultimately alcohol dependency affects treatment initiation, compliance and completion leading to adverse outcomes including early death.

1.1. Research Questions

The study aims to answer the following research questions:

- i. What is the perceived link between alcohol use and HIV infection and the health outcomes of the HIV infected?
- ii. What is the relationship between alcohol use and the number of sexual partners one has?
- iii. Are there differences between men and women who are alcohol dependent in the number of sexual partners that they have?
- iv. Does HIV infection drive individuals into alcohol abuse/dependency?
- v. How does alcohol use influence decisions to use protection during coitus?
- vi. What interventions might be done to increase the knowledge of the link between alcohol abuse and HIV infection?

2.0. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1. Literature Review

The review of the literature is divided into three parts. The first part focuses on the link between alcohol abuse and HIV infection. The second part deals with the link between alcohol consumption and risky sexual behavior while the last part addresses alcohol abuse and ARV treatment.

2.1.1. Alcohol Abuse and HIV

Alcohol abuse which is the most commonly abused substance (Ndetei *et al.*, 2006) together with HIV and AIDS are a major public health burden in many parts of the world. The use of alcohol increases the risk of exposure to HIV through its association with high risk sexual and substance abuse behaviors. Additionally, there is increasing evidence that the consumption of alcohol may play a role in susceptibility to infection and the progression of HIV disease.

The use of alcohol may influence adherence to medication and provider advice, provider and patient attitudes towards treatment as well as patient survival. Clinical findings have associated chronic alcohol consumption with reduced immune function, evidenced by lower levels of CD4 and CD8 activity. It depresses the immune system and causes alcohol-induced malnutrition, which can increase vulnerability to HIV infection.

Various studies point to alcohol as a significant risk factor for HIV (Assefa *et al.*, 2005; Bryant, 2006, Weiser *et al.*, 2006). Alcohol use has been linked to a higher risk of acquiring HIV because of its dis-inhibiting effect (Zablotska *et al.*, 2006) leading to multiple sexual partners. In a Kenya operations research study, 60% of individuals who consumed alcohol had multiple sexual partners (Mackenzie & Karusa, 2007). Thus, alcohol abuse may be seen to enhance sexual risk taking.

2.1.2. Alcohol Abuse and Sexual Risk Taking

In many societies, alcohol use is rooted in tradition. From a cultural standpoint, alcohol was used in ceremonies marking the passing of important occasions in the family or community. However, tradition has lost its grip, which has opened the way for alcohol abuse. Alcohol plays a role in promoting risky sexual behaviour, accelerating progression to disease, reducing efficacy of HIV treatment, and reducing adherence to drug regimens (Morris *et al.*, 2006).

The alcohol–sex linkage has serious implications for the health of populations due to advent of HIV infection. For example, where young people use alcohol before they engage in sex, unsafe sex often takes place. The use of alcohol should therefore be recognized as a risk factor in the transmission of HIV and other sexually transmitted infections.

Alcohol use is associated with certain types of sexual activity and it often plays a role in unprotected casual sex, group sex and anal sex when participants in these activities are under the influence of alcohol. Among the youth, alcohol and drug use may lead to early sexual debut, unprotected sexual intercourse, and multiple sexual partners as well as

putting young people at risk of contracting sexually transmitted infections (STIs), unintended pregnancy, and sexual violence (Kaiser Family Foundation, 2002).

In general, alcohol use and engagement in sexual risk behaviour are more common among males, adolescents, the mobile population (e.g. truck drivers and migrant workers), sex workers and prison inmates than among other groups. In a WHO (2005) study, it was noted that in Kenya, alcohol use was believed to reduce fears connected to sex and encouraged risky sex, and to provide extra power for sex while, in South Africa, it was noted that alcohol use and sex were a “match made in heaven” that is, they are inseparable. In Mexico, young people and homosexual men used alcohol to build courage to approach a possible sexual contact (WHO 2005). Therefore, alcohol abuse may actually be seen as a proximate determinant for HIV infection.

2.1.3. Alcohol Abuse and ARV Treatment

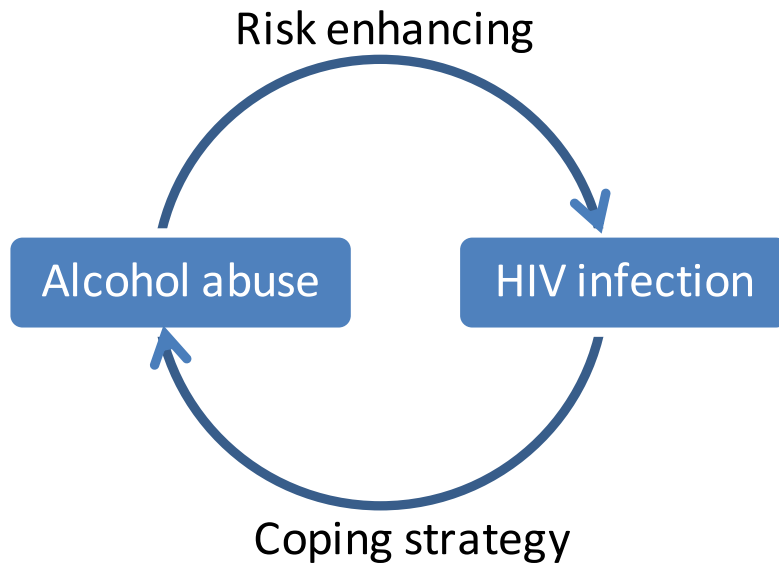
Several studies have demonstrated that alcohol consumption can reduce drug compliance and efficacy, harming the patient and breeding drug-resistant strains of HIV. Alcohol can further suppress the immune system of HIV-infected individuals, which might speed the onset or exacerbate the pathology of AIDS and related illnesses.

It is easy to understand that alcohol consumption may influence a person’s capacity to follow strict medication regimen. Intoxication, be it on single occasions or regularly, leads to reduced self control and difficulties to follow up routines and duties. Heavy drinking is often associated with a less regular life-style and problems to follow up your daily care, resulting in bad nutrition and poorer sanitation. These altered behaviors not only affect routine duties but also alter the ability to remain compliant.

Alcohol has been proven to interfere with liver functioning, affecting its ability to metabolize certain antiretroviral (ARV) drugs, particularly protease inhibitors, thus reducing their therapeutic efficacy and increasing the likelihood of drug resistance. Increased drug resistance on the other hand burdens the health care system as more expensive drugs are required to treat those who have developed resistance to the drugs already in use.

2.2. Conceptual Framework

Conceptually, alcohol dependence and HIV infection may have a “symbiotic” relationship. This relationship is represented in the conceptual diagram below. Alcohol abuse may be seen as a risk enhancing behavior while for a HIV infected person alcohol dependence could in effect be a coping strategy. Ultimately, alcohol abuse and HIV infection may co-influence each other. Irrespective of the direction of the arrows, when these two co-occur, treatment is affected in at least three ways all of which have negative outcomes. First, an individual may delay onset of treatment. Second, compliance with treatment becomes erratic and, third, for those already on treatment may be abandoned altogether.



Conceptual relation between alcohol abuse and HIV infection

One of the key objectives of the Authority is to undertake targeted research on various aspects of alcohol and drug abuse and chemical dependence in Kenya. In order to discharge this mandate, the Authority undertook this study on the relationship between alcohol abuse and HIV infection in Kenya with the following primary objective – to **“understand the nature of interaction between alcohol abuse and HIV infection.”**

3.0 METHODOLOGY

3.1 Introduction

Alcohol use, and, in particular use of traditional brews, among Kenyan communities is regarded as a cultural practice. These perceptions are likely to influence the manner in which messages against alcohol dependence are perceived and/or received. However, there are external forces which over a period of time have eroded these cultural perceptions. One of the most important forces is religion. Among the Muslims and Seventh Day Adventists, consumption of alcohol is expressly prohibited. Yet, in other circumstances, the time and place of consumption and who can consume alcohol is dictated by events, such as death, beyond human control. This notwithstanding, there is evidence which links alcohol consumption to negative health outcomes, including a higher risk of HIV infection. Similarly, the infection of an individual with HIV may drive a person into alcohol dependence.

There is therefore need for a comprehensive understanding of the culture of alcohol consumption and distil the negative implications of alcohol dependency none-the-least on its influence on HIV transmission dynamics. On the other hand, one might ask how does HIV infection modify an individual's behaviour including driving them into alcohol abuse?

3.2. Study site

The study was conducted in Nairobi Province. Data was collected from three of Nairobi's nine districts namely, Kasarani, Embakasi and Njiru leaving out the following six districts: Langata, Westlands, Kamukunji, Dagoreti, Starehe and Makadara in which NACADA Authority was already collecting data. Following further consultations criteria was developed to help in identifying the divisions and also taking into account anticipated comparisons that would be done. The areas from which data was obtained were classified into: (i) one high income area, (ii) one middle income area, (iii) one low income area, and (iv) one peri-urban area. Based on these criteria the following divisions were selected for data collection – Ruai in Njiru, Mukuru Kwa Njenga and Embakasi both in Embakasi, and Kahawa in Kasarani. These divisions represent peri-urban, low income, high income and middle income parts of Nairobi province.

3.3. Study Design and Sampling Techniques

A cross-sectional design was used and data from individual respondents were collected through a survey questionnaire. These individual respondents formed the unit of analysis. A multi-stage sampling technique was used to identify the sites from which data were gathered. In order to identify respondents, age was used as the criteria for inclusion and to determine the cutoff point. Persons aged at least 18 years were recruited into the study. Eighteen years is the legal age above which persons may be sold/served alcohol.

3.4. Data Collection: Survey questionnaire

A survey questionnaire was developed to capture basic demographic information on respondents and on various issues relating to alcohol abuse and HIV infection. It sought to elicit information on the existing interventions at the community level. In order to differentiate between those individuals who may be having the problem of alcohol

dependence, a set of questions using the standard “AUDIT Questionnaire” for screening alcohol-dependent individuals were included in the questionnaire. The goal of this screening tool was to identify problem drinkers (i.e. alcohol abusers). A total of 500 respondents were targeted for interviewing¹. This number was intentionally increased in order to allow for comparisons among sub-categories of interest. Bernard (2005) discusses sample sizes in great detail.

3.5. Data Management and Analysis

Data was entered into SPSS and cleaned before further analysis. Descriptive and predictive statistics were used in presenting data from this survey.

¹ According to Bernard (2005), a sample size of 386 is sufficient for this kind of study. However, this figure is marked up to account for non-responses and declines to participate in the interviews.

4.0. FINDINGS

4.1. Introduction

The study population was obtained from three districts—Kasarani, Embakasi, Njiru—within Nairobi Province. 497 respondents were interviewed distributed as follows: 201 (40.4%) from Mukuru, 101 (20.3%) from Embakasi, 85 (17.1%) from Njiru and 110 (22.12%) from Kahawa. The distribution of respondents is summarized in Figure 1.

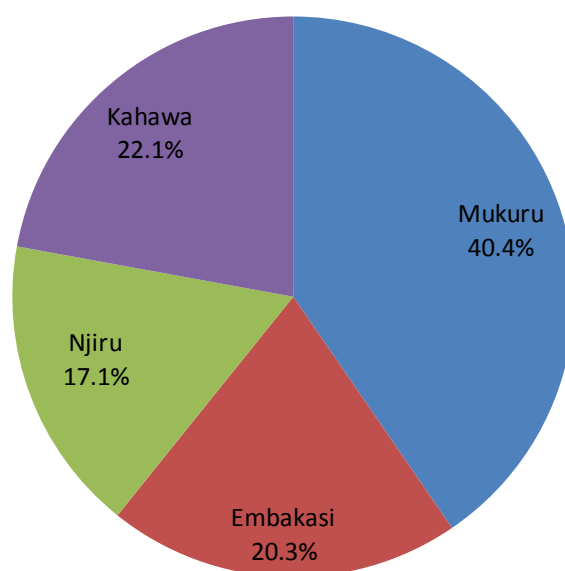


Figure: 1 *Distribution of Respondents*

4.2. Socio-demographic Characteristics

Sex and Age: The study population was almost evenly distributed with 48.1% representing male respondents and 51.9% female respondents. Their ages ranged from 18 years to 85 years, with most of the respondents belonging to the 20-24 years age range (Table 1). However, the average age is 33 years—mean of 33 years for male and 32 years for female—(sd 11.5 years). Overall, about 70% of the respondents were between aged 20 and 39 years.

Level of education: About a third (30.2%) of the respondents reported that they had completed secondary level of education while one fifth (22.3%) reported that they had completed primary level of education. The highest proportion of those reporting that they had completed secondary level of education was found in Embakasi (41.6%). 10% of the respondents reported post secondary level of education.

Table 1 Socio-demographic Characteristics of Respondents (N = 497)

Socio-demographic characteristics	Mukuru (40.4%)	Embakasi (20.3%)	Njiru (17.1%)	Kahawa (22.1%)	Combined
Sex					
Male	42.8	50.5	50.6	53.6	48.1
Female	57.2	49.5	49.5	46.4	51.9
<i>Total</i>					<i>100</i>
Age (years)					
18 – 19	5.1	7.1	5.9	7.5	6.1
20 – 24	17.3	29.3	25.9	24.3	22.7
25 – 29	15.2	20.2	18.8	12.1	16.2
30 – 34	19.8	14.1	16.5	15.9	17.2
35 – 39	16.8	11.1	14.1	11.2	13.9
40 – 44	12.2	3.0	7.1	7.5	8.4
45 – 49	7.6	7.1	4.7	5.6	6.6
50 – 54	1.5	5.1	2.4	1.9	2.5
55+	4.6	3.0	4.7	14.0	6.4
<i>Total</i>					<i>100</i>
Ethnicity					
Kikuyu	8.5	23.8	71.4	64.5	34.8
Luo	9.5	9.9	8.0	2.7	7.3
Meru	2.0	2.0	4.8	1.8	2.4
Kalenjin	1.5	4.0	0	0	1.4
Kisii	15.6	16.8	1.2	2.7	10.5
Miji Kenda	0	0	0	0.9	0.2
Kamba	44.7	23.8	6.0	14.5	27.1
Luhya	15.1	11.9	4.8	10.9	11.7
Other	2.5	7.9	7.1	1.8	4.3
No Response	0.5	0	0	0	0.2
<i>Total</i>					<i>100</i>
Highest level of education					
None	3.0	1.0	2.4	5.5	3.0
Primary not completed	19.9	13.9	10.6	22.7	17.7
Primary completed	24.4	22.8	22.4	18.2	22.3
Secondary not completed	17.9	9.9	22.4	15.5	16.5
Secondary completed	27.9	41.6	28.2	25.5	30.2
Post secondary	7.0	10.9	14.1	12.7	10.3
<i>Total</i>					<i>100</i>
Religious affiliation					
Christian	92.5	97.0	96.5	93.6	94.4
Muslim	5.0	0	2.4	2.7	3.0
Hindu/Buddhist	0	0	0	0.9	0.2
None	1.5	3.0	1.2	1.8	1.8
Other	1.0	0	0	0.9	0.6
<i>Total</i>					<i>100</i>
Occupation					

<i>Socio-demographic characteristics</i>	<i>Mukuru (40.4%)</i>	<i>Embakasi (20.3%)</i>	<i>Njiru (17.1%)</i>	<i>Kahawa (22.1%)</i>	<i>Combined</i>
Student	1.0	5.0	9.4	4.5	4.0
Formal employment	13.5	17.8	7.1	16.4	13.9
Self-employment	50.5	35.6	43.5	33.6	42.5
Home maker	15.0	5.0	12.9	11.8	11.9
Work in family business	0	3.0	0	0.9	0.8
Casual	11.5	12.9	16.5	18.2	14.1
None	8.5	19.8	10.6	14.5	12.5
Other	0	1.0	0	0	0.2
<i>Total</i>					<i>100</i>

Religious affiliation: As expected, the majority of those interviewed identified themselves as Christians (94.4%), with the Muslims accounting for 3.0%. Other religious categories reported include Hindu/Buddhist (0.2%) while 1.8% reported that they did not belong to any religious group.

Occupation: Most of the respondents (42.5%) reported that they are self-employed compared to those who are in formal employment (13.9%), casual labour market (14.1%) or who reported themselves as home makers (11.9%). About one in ten (12.5%) of the respondents did not report any occupation. The highest proportion of respondents (16.4%) who reported that they had formal employment is found in Embakasi (17.8%) perhaps as a result of its proximity to the Industrial area.

4.3. Household characteristics

A summary of the household characteristics is given in Table 2, which summarizes characteristics of respondents on the basis of source of cooking energy, lighting and domestic water, type of construction material used for the wall, roof and floor as well as the main method of human waste disposal. Kerosene is the main source of cooking energy and lighting. Charcoal was reported to be the main source of cooking energy in Mukuru, gas in Njiru while firewood as a source of cooking energy was reported in more households in Kahawa compared to other study areas.

Overall, Kerosene is used by more people (54.8%) as a source of lighting. Electricity was reported by more respondents in Njiru (50.6%) followed by Embakasi (48.5%), Njiru (43.1%) and Mukuru (30.8%) in that order. Half of the respondents (50.9%) reported that they rely on water from a public pipe with more respondents in Mukuru (61.7% of the total sample) reporting reliance on a public water pipe. The other sources of water include water vendors (20.1%), pipe (within the house or own compound which accounts for 15.7%), borehole/well (11.5%) while rain water and water from a stream/river accounting for less than 2%.

Table 2: Percent distribution of respondents by housing characteristics (N = 497)

Housing characteristic	Mukuru (40.4%)	Embakasi (20.3%)	Njiru (17.1%)	Kahawa (22.1%)	Combined
Source of cooking energy					
Kerosene	57.7	57.4	35.3	30.9	47.9
Charcoal	35.3	16.8	28.2	13.6	25.6
Gas	2.0	21.8	27.1	13.6	12.9
Firewood	3.0	3.0	3.5	39.1	11.1
Electricity	1.5	0	1.2	2.7	1.4
Other	0.5	1.0	4.7	0	1.2
<i>Total</i>					<i>100</i>
Source of lighting					
Kerosene	63.7	44.6	45.9	55.0	54.8
Electricity	30.8	48.5	50.6	43.1	40.5
Solar	2.0	1.0	1.2	0.9	1.4
Other	3.5	5.9	2.4	0.9	3.2
Missing					0.1
<i>Total</i>					<i>100</i>
Source of domestic water					
Public pipe	61.7	52.5	49.4	30.9	50.9
Water vendor	28.9	9.9	22.4	11.8	20.1
Pipe (in house/own compound)	2.5	25.7	18.8	28.2	15.7
Borehole/well	6.0	7.9	8.2	27.3	11.5
Rain water	0.5	1.0	1.2	1.8	1.0
Stream/river	0.5	3.0	0	0	0.8
<i>Total</i>					<i>100</i>
Material for walls					
Iron sheets	81.6	48.5	37.6	51.8	60.8
Stone	4.5	33.7	48.2	25.5	22.5
Mud	10.9	5.0	2.4	12.7	8.7
Timber	2.5	9.9	8.2	4.5	5.4
Bricks	0.5	2.0	3.5	5.5	2.4
Other	0	1.0	0	0	0.2
<i>Total</i>					<i>100</i>
Material for the roof					
Iron sheets	97.0	90.1	89.4	94.5	93.8
Tiles	2.5	2.0	5.9	2.7	3.0
Concrete	0.5	7.9	0	1.8	2.2
Asbestos	0	0	4.7	0.9	1.0
<i>Total</i>					<i>100</i>
Material for floor					
Cement	88.1	84.2	69.4	75.5	81.3
Earth	11.9	15.8	30.6	24.5	18.7
<i>Total</i>					<i>100</i>
Human waste disposal					
Pit latrine	88.1	56.4	62.4	89.1	77.5
Flush toilet	10.9	41.6	36.7	10.0	21.3
Other	1.0	2.0	1.2	0.9	1.2
<i>Total</i>					<i>100</i>

The building material most commonly used for the walls and roofs is the iron sheet (accounting for 60.8% and 93.8% respectively). One in five respondents (22.5%) reported that they lived in houses with a stone wall (Table 2). Floors in the study area are constructed using mainly cement (81.3%) and the remaining had an earthen floor (18.7%).

A majority of the respondents reported pit latrine as the main method of human waste disposal (Table 2). Pit latrines are used by 77.5% of the respondents while 21.3% of the respondents reported use of a flush toilet. In fact, the pit latrine accounts for 89.1% of waste disposal means in Kahawa and 88.1% in Mukuru.

Ownership of assets at household level is shown in Table 3. Majority of the respondents (73.4%) reported ownership of radio. However, this is not the case for other household assets such as the sofa set (47.6%) and television (44.9%) which is owned in less than half of the households. Other assets reported included bicycle (19.9%), fridge (11.7%), computer (10.3%) and others at less than 10%. The within area asset ownership varies from one division to the next. For example, considerably more people in Njiru and Kahawa reported owning a fridge compared to the other divisions while more people in Njiru (20%) reported ownership of a motor vehicle compared to respondents from other divisions within the study area.

Table 3: Ownership of Household Assets

	<i>Mukuru</i>		<i>Embakasi</i>		<i>Njiru</i>		<i>Kahawa</i>		<i>Combined</i>	
	<i>Freq.</i>	<i>%</i>	<i>Freq.</i>	<i>%</i>	<i>Freq.</i>	<i>%</i>	<i>Freq.</i>	<i>%</i>	<i>Freq.</i>	<i>%</i>
Radio	144	71.6	66	65.3	69	81.2	86	78.2	365	73.4
Sofa set	71	35.3	54	54.0	59	69.4	52	47.3	236	47.6
Television	59	29.4	47	46.5	59	69.4	58	52.7	223	44.9
Bicycle	24	11.9	20	19.8	24	28.2	31	28.2	99	19.9
Fridge	2	1.0	13	12.9	24	28.2	19	17.3	58	11.7
Computer	9	4.5	9	8.9	17	20.0	16	14.5	51	10.3
Motor vehicle	2	1.0	8	7.9	17	20.0	19	17.3	46	9.3
Satellite dish	3	1.5	4	4.0	7	8.3	4	3.6	18	3.6
Motorcycle	2	1.0	2	2.0	1.0	1.2	5	4.5	10	2

4.4. Availability and Affordability of Alcoholic Beverages

Availability, affordability and prevalence of selling points for alcoholic beverages were assessed in the four research sites. Alcoholic beverages were categorized into four, namely: first generation alcoholic beverages (which include legal beer and spirits. These are conventional and often are high priced with a low alcohol content, such as Amarula, Viceroy, Sminorff, Richot, Tusker, Pilsner and Guinness); second generation alcoholic beverages (which are brands that have been introduced lately into the market. These are low priced and often have a high alcohol content such as Senator Keg, Kenya Cane, Iceberg, Konyagi and Marry Cane); traditional liquor such as *Busaa* and *Muratina*; and *Chang'aa*. In terms of *Chang'aa*, the focus was on alcohol which is distilled to leave a very high alcohol content, which, excludes what respondents might refer to as *Chang'aa* but is in essence industrial alcohol.

Table 4 summarizes data on availability, affordability and preference of selling points for these different alcoholic beverages. Overall, most respondents reported that *Chang'aa* (65%) and *Busaa* (52.7%) were more readily available compared to the first (26.3%) and second (40.8%) generation brands. About half of the respondents (47.7%) felt that first generation alcoholic beverages were only moderately available. Similar feelings were expressed in respect of affordability of these alcoholic beverages with most respondents reporting that *Chang'aa* and *Busaa* were more affordable while most people were of the view that first and second generation alcoholic beverages were regarded as being moderately affordable. Unlike the pattern reported on availability and affordability, for the number of selling points, only traditional liquor and *Chang'aa* were reported to have many points of sale.

Table 4: Access to different types of alcoholic beverages

		<i>Type of alcohol/substance</i>			
		<i>First generation brands</i> <i>N (%)</i>	<i>Second generation brands</i> <i>N (%)</i>	<i>Traditional liquor - Busaa</i> <i>N (%)</i>	<i>Chang'aa</i> <i>N (%)</i>
<i>Availability of alcohol</i>	<i>Easily available</i>	130 (26.3)	202 (40.8)	262 (52.7)	323 (65)
	<i>Moderately available</i>	236 (47.7)	184 (37.2)	68 (13.7)	44 (8.9)
	<i>Not all available</i>	69 (13.9)	40 (8.1)	84 (16.9)	48 (9.7)
	<i>Don't know</i>	60 (12.1)	69 (13.9)	83 (16.7)	82 (16.5)
<i>Affordability of alcohol</i>	<i>Easily affordable</i>	53 (10.7)	161 (32.5)	273 (55.6)	330 (66.9)
	<i>Moderately affordable</i>	228 (46.1)	191 (38.6)	35 (7.1)	18 (3.7)
	<i>Not at all affordable</i>	108 (21.8)	37 (7.5)	39 (7.9)	22 (4.5)
	<i>Don't know</i>	106 (21.4)	106 (21.4)	144 (29.3)	123 (24.9)
<i>Number of alcohol selling points</i>	<i>Very many</i>	114 (23.1)	171 (34.5)	236 (47.9)	294(59.4)
	<i>Moderately many</i>	104 (21.1)	129 (26.1)	61 (12.4)	37 (7.5)
	<i>A few</i>	183 (37)	106 (21.4)	37 (7.5)	32 (6.5)
	<i>None</i>	30 (6.1)	20 (4)	63 (12.8)	44 (8.9)
	<i>Don't know</i>	63 (12.8)	69 (13.9)	96 (19.5)	88 (17.8)

Further analysis of the data shows an association between availability, affordability and the number of outlets for alcoholic beverages (Figure 2). First generation alcoholic beverages have the largest disparities in terms of availability, affordability and the number of outlets. While it is viewed as generally available (74%), only about half of the respondents regard it as affordable while fewer (44.2%) thought the outlets for the first generation drinks were moderate to many. On the other hand, second generation alcoholic beverages were thought as being generally available (78%) and affordable (71.1%) with close to 62% saying that there were many outlets. Traditional alcoholic beverages showed less variation in terms of availability, affordability and the number of

outlets available. Lastly, *chang'aa* also showed less variation along these three aspects namely availability, affordability and number of outlets.

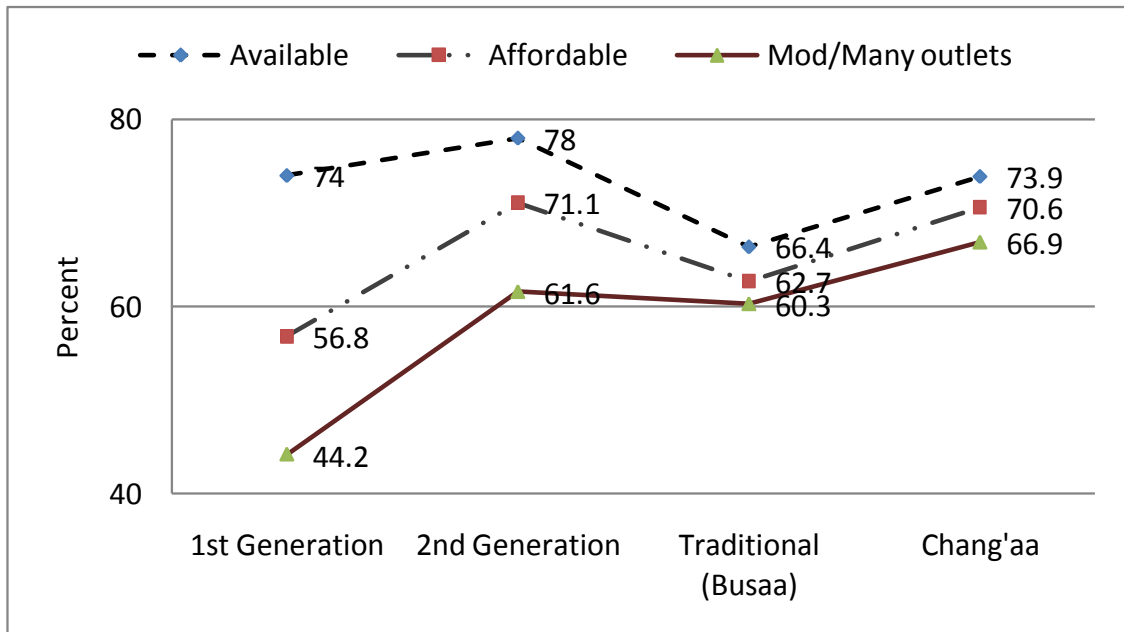


Figure 2: Access to alcoholic beverages

4.5. Alcohol consumption

Approximately one out of every five (i.e. 21.7%) of the respondents reported that they currently drink. Their drinking pattern is shown in Figure 3. Among those who reported use of alcohol, 79.8% (80% male, 78.9% female) reported that they had consumed alcohol within the previous seven days, 10.1% (8.8% male, 15.8% female) had consumed alcohol within the last 14 days (1 – 2 weeks), 6.1% (7.5% male, no female) had consumed alcohol within the last 30 days (2 weeks to one month), while 4% (3.8% male, 5.3% female) reported alcohol consumption more than a month before the survey. There are no discernable differences between male and female respondents in the reported alcohol consumption patterns.

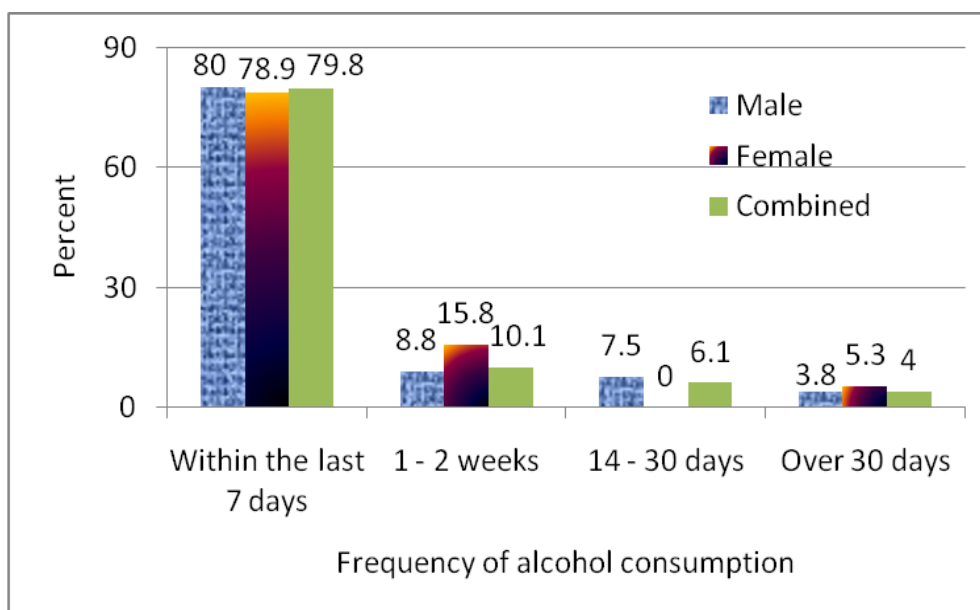


Figure 3: Alcohol consumption patterns

To determine whether this group of respondents reporting alcohol abuse were harmful drinkers or not, an Alcohol Use Disorders Identification Test (AUDIT²) was done. The AUDIT evaluates the respondents along a series of questions that gauge dependency on alcohol. Generally, a total score on the AUDIT indicators of 8 and above points to a harmful or hazardous drinking. Over three quarters of the respondents (78%) are classified as tending towards harmful or hazardous drinking based on the AUDIT scores (Table 5). In terms of comparisons between male and female respondents, 83.3% of the male respondents are categorized as harmful drinkers while only 55.6% of the women were categorized as harmful drinkers. Based on Fishers exact test, these differences are significant (Fishers exact test = 0.023).

Table 5: AUDIT report of respondents

AUDIT Score	Male		Female		Combined	
	Freq.	%	Freq.	%	Freq.	%
Social drinkers (0-7)	12	16.7	8	44.4	20	22
Harmful drinkers (8+)	60	83.3	10	55.6	71	78
Total	72	100	18	100	91	100

Alcohol dependency results in various effects which range from hangover³ to loss of jobs. In the current study three out of five respondents reported that they had experienced a hangover at least once in the past year while 23.4% had never experienced any hangover. Another 40% of the respondents had had a quarrel at least

² AUDIT – Alcohol Use Disorder Identification Test. The AUDIT is a 10-item self-report instrument includes questions on quantity and frequency of alcohol use. It is designed to identify individuals for whom use of alcohol places them at risk of developing drinking problems or who are experiencing alcohol-linked problems. The scores for an AUDIT range from 0 to 40, with score of 8 and above suggesting alcohol problems.

³ Hangover was defined as the feeling one gets after a session of heavy drinking which usually occurs in the morning and it may include feeling thirsty, nauseated and headache.

once in the past year. Others reported feeling nauseated (37.1%), having trouble with the law (28.9%), damaging property (23.2%) and losing a job during the past year (14.4%). These experiences are shown in Figure 4.4.

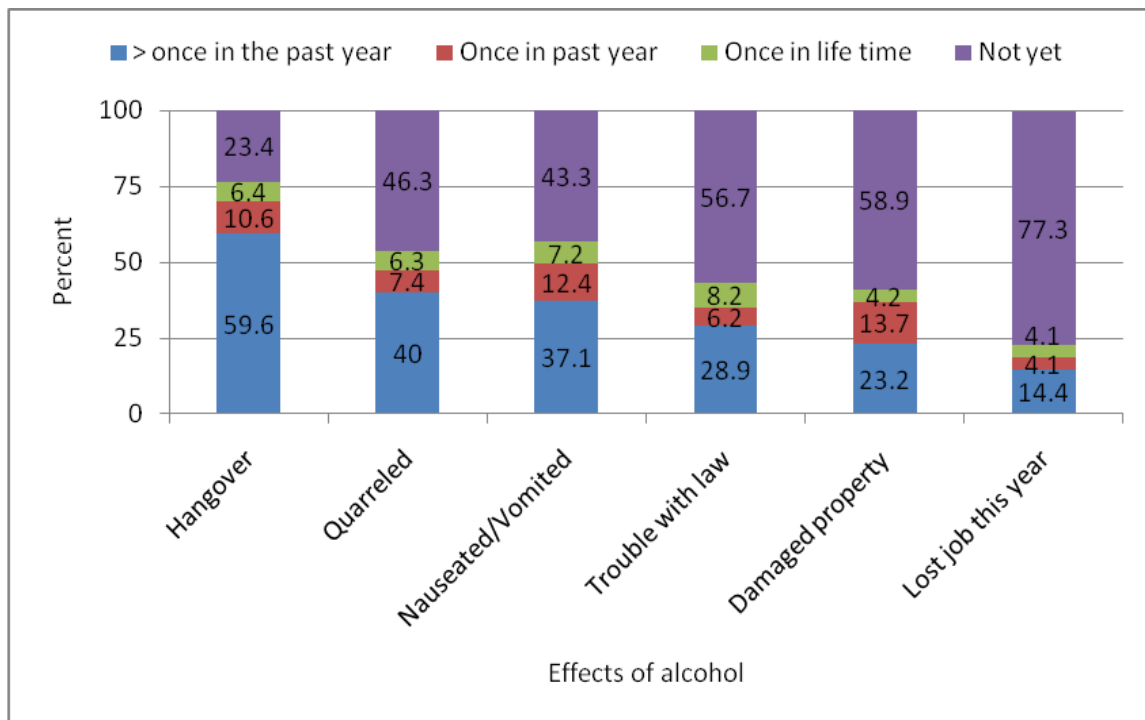


Figure 4: Effects of Alcohol Consumption

The differences between men and women are shown in Table 6. Close scrutiny of the data reveals that men have a higher chance of being affected due to drinking compared to women. For example, taking the past one year as a reference point, men are more likely to report hangover, to report nausea or vomiting, to damage property and more likely to lose a job. On the hand women are more likely to get into a quarrel and get into trouble with the law as a result of drinking.

Table 6: Male-Female Differences in Effects of Alcohol Consumption

	<i>More than once in the past year %</i>		<i>Once in the past year %</i>		<i>One or more times in my life but not during the past year %</i>		<i>Has not happened to me %</i>	
	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>
Number of times had hangover in the past year (N^a = 94)	64.0	38.9	10.7	11.1	6.7	5.6	18.7	44.4
Number of times got into quarrel due to drink in the past year (N^a = 95)	39.2	42.1	4.1	15.8	6.8	5.3	50.0	36.8
Number of times nauseated and vomited from drinking (N^a = 97)	38.2	26.3	13.2	10.5	7.9	5.3	40.8	57.9
Number of times had trouble with the law because of drinking in the past year (N^a = 97)	26.3	31.6	6.6	5.3	10.5	0	56.6	63.2
Number of times damaged property due to drinking in the past year (N^a = 95)	25.7	10.5	13.5	10.5	4.1	5.3	56.8	73.7
Number of times lost a job due to drinking in the past year (N^a = 97)	14.5	5.3	3.9	5.3	5.3	0	76.3	89.5
^a Those responding to this question								

4.6. Alcohol Abuse and Sexual Behavior

The survey assessed the link between alcohol consumption/abuse and sexual behavior. In general, those who reported that they were currently consuming alcohol appeared to report, in absolute figures, that they had been forced to have sex by someone who was drunk. However, on close scrutiny of the data between the two groups, the difference between those who currently consume alcohol and those who do not is not significant ($\chi^2 = 0.275$, $df = 1$). Among those who reported drinking alcohol, 17 respondents accounting for 17.2% had been forced or had forced someone to have sex while drunk. Of these 17 respondents, 8 (47.1%) reported that they had non-consensual sex once during the past three months while 4 respondents (23.5%) reported that they had non-consensual sex twice during the same period (see Figure 5).

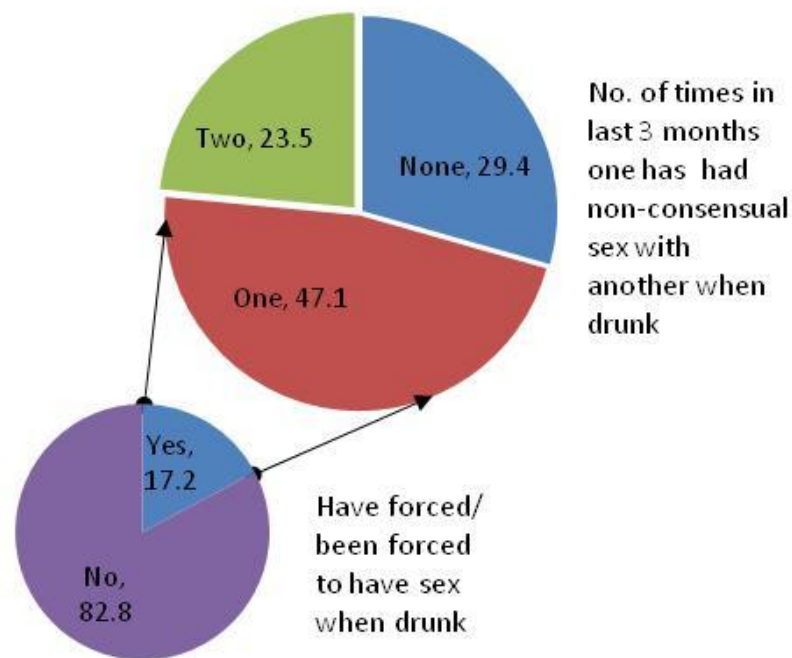


Figure 5: Alcohol Abuse and risky sexual behaviour

Fourteen respondents answered the question of whether they had used a condom during this non-consensual sex encounter. Of these, 11 reported that they used a condom while the remaining 3 reported that they did not use one.

In comparison to having non-consensual sex, those who reported that they had consensual sex with someone other than a regular partner had sex more times (ranging from 1 to 5 times) during the last three months. Those who had non-consensual sex had sex fewer times (1 to 2 times). Forty-six respondents (70.8%) reported that they did not have consensual sex with someone other than their regular partner, 18.5% of those responding reported that they had consensual sex once while the remaining had consensual sex between two and five times.

The trend over a 12-month period is shown in Figure 6. As expected over 12 months the proportion of respondents reporting zero consensual sexual partners other than their regular sexual partner drops. The proportion drops from around 70% (for one to three months) to about 48.3% (for one year). This implies that over a long period fewer and fewer people are likely not to have had consensual sex with a person other than a regular partner.

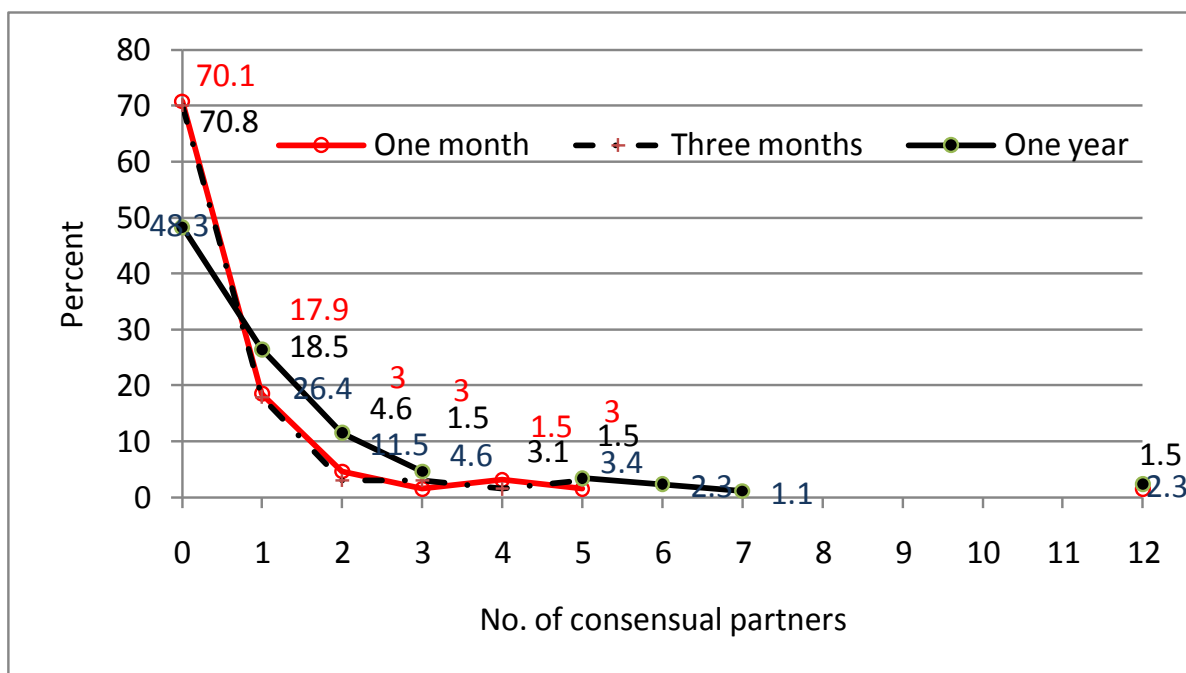


Figure 6: Number of consensual partners (one month, three months, one year period)

In relation to whether the respondents were currently taking alcohol or not, the results show that those who reported that they were currently taking alcohol were more likely to report more consensual partners (other than a regular partner) compared to those who reported non-use of alcohol. The results indicate that taking alcohol predisposes one to having more multiple sexual partners. Fewer people (74% compared to 94.3%) who currently take alcohol reported that they had no consensual partner with someone other than a regular partner. On the other hand, relatively a higher proportion of those currently taking alcohol reported having one to multiple consensual sexual partners other than a regular partner (Table 7). Among those who take alcohol, those identified as alcohol abusers reported more consensual partners (other than their regular partners) compared to those who were social drinkers.

Table 7: Alcohol use/non-use, type of drinker and consensual sexual partners

		Currently takes alcohol		Type of drinkers^a	
		Yes (N = 104)	No (N = 352)	Abusers	Social
No. of consensual partners during previous 3 months	None	77 (74.0%)	332 (94.3%)	45 (65.2%)	15 (83.3%)
	1	16 (15.4%)	13 (3.7%)	14 (20.3%)	2 (11.1%)
	2 – 3	7 (6.7%)	7 (2.0%)	7 (10.1%)	0 (0%)
	4 – 5	1 (1.0%)	0 (0%)	1 (1.4%)	0 (0%)
	> 5	3 (2.9%)	0 (0%)	2 (2.9)	1 (5.6%)

^a Some of the respondents who currently take alcohol did not respond to the AUDIT, hence N=87

From 14 individuals classified as alcohol abusers nine (9) reported that they had had non-consensual (compelled or forced) sex in the previous three months, with three of these nine reporting not having used a condom or some other protection. Clearly from

Table 8, alcohol abusers are more likely to report sexual acts with persons other than their regular partners during the previous three months and past one year. Similarly, alcohol abusers are more likely to report multiple sexual partners other than their regular partners. These findings point to a systematic tendency towards greater sexual risk for those individuals classified as being alcohol abusers.

Table 8: Alcohol abuse and sex acts/partners (Freq.)

		<i>Alcohol Abuser</i>		<i>Total</i>
		<i>No</i>	<i>Yes</i>	
<i>Number of times had consensual sex when drunk in past 3 months (n=60)</i>	0	13	28	41
	1	1	10	11
	2 - 3	0	4	4
	4 - 5	0	3	3
	>5	0	1	1
<i>Number of times had consensual sex when drunk in past one year (n=60)</i>	0	11	25	36
	1	3	4	7
	2 - 3	1	8	9
	4 - 5	0	3	3
	>5	0	5	5
<i>Number of Consensual partners over last one year (n=88)</i>	None	15	46	61
	1	2	14	16
	2 - 3	0	7	7
	4 - 5	0	1	1
	>5	1	2	3

Furthermore, there are clear gender differences in risky sexual behaviors. Among the 14 individuals who reported non-consensual or forced sex, more men (12) than female (2) reported acts of non-consensual sex in the three months, an indication of greater risk taking among men than among female respondents. In all aspects of interest, more men than women reported greater risk taking. The responses are summarized in Table 9. This greater sexual risk taking is not confined to these study communities. Studies have shown that males as compared to females tend to take greater sexual risks and are more likely to report those risks, a fact well documented in the data collected from the study sites.

Table 9: Gender differences in risky sexual behaviors (Freq.)

			Alcohol Abuser		Total
			No	Yes	
Ever (been) forced to have sex when drunk (n=82)	Male	Yes	0	10	10
		No	8	46	54
	Female	Yes	0	3	3
		No	8	7	15
Number of times had consensual sex when drunk in past 3 months (n=60)	Male	0	6	23	29
		1	1	10	11
		2-3	0	2	2
		4-5	0	2	2
		>5	0	1	1
	Female	0	7	5	12
		1	0	0	0
		2-3	0	2	2
		4-5	0	1	1
		>5	0	0	0
Number of times had consensual sex when drunk in past one year (n=60)	Male	0	5	20	25
		1	3	4	7
		2-3	0	7	7
		4-5	0	2	2
		>5	0	4	4
	Female	0	6	5	11
		1	0	0	0
		2-3	1	1	2
		4-5	0	1	1
		>5	0	1	1
Number of consensual partners over the last one year (n=88)	Male	0	7	42	49
		1	2	10	12
		2-3	0	6	6
		4-5	0	1	1
		>5	1	1	2
	Female	0	8	4	12
		1	0	4	4
		2-3	0	1	1
		4-5	0	0	0
		>5	0	1	1

4.7. General Sexual Behavior and condom use

About one in ten respondents (10.2%) reported that they had consensual sex partners during the previous three months (Table 10). The number of partners ranged from one to more than five. However, the majority of those reporting consensual sex partners had between one and three partners. More male than female respondents reported these consensual sex partners.

Table 10: General sexual behavior and condom use

	<i>Male</i>		<i>Female</i>		<i>Combined</i>	
	<i>Freq.</i>	<i>%</i>	<i>Freq.</i>	<i>%</i>	<i>Freq.</i>	<i>%</i>
<i>Consensual sex partners during past 3 months (N=462)</i>						
None	180	83.3	235	95.5	415	89.8
One	20	9.3	9	3.7	29	6.3
Two - three	13	6.0	1	0.4	14	3.0
Four - five	1	0.5	0	0	1	0.2
More than five	2	0.9	1	0.4	3	0.6
<i>Total</i>						<i>100</i>
<i>No. of times protection used (N=51)</i>						
All the time	26	65.0	3	27.3	29	56.9
Sometimes	9	22.5	4	36.4	13	25.5
Not at all	5	12.5	3	27.3	8	15.7
Can't remember	0	0	1	9.1	1	2.0
<i>Total</i>						<i>100</i>
<i>Why protection not used all the time (N = 42)</i>						
Condom not available	5	17.2	0	0	5	11.9
Did not remember	13	44.8	10	76.9	23	54.8
My partner refused	0	0	2	15.4	2	4.8
Was drunk at the time	3	10.3	0	0	3	7.1
Trusted my partner	8	27.6	1	7.7	9	21.4
<i>Total</i>						<i>100</i>
<i>Been forced to have sex with someone drunk (N=466)</i>						
Yes	26	12.3	26	10.2	52	11.2
No	185	87.7	229	89.8	414	88.8
<i>Total</i>						<i>100</i>

Not all those reporting consensual sexual partners used condoms⁴ all the time. In fact less than one in six (15.7%) reported that they did not use condoms, while about one quarter (25.5%) reported that they used condoms sometimes. However, a larger proportion (56.9%) of the respondents reported that they used a condom at all times with their consensual sex partners⁵. The reasons for not using protection during sex included inability to remember to use a condom (54.8%), trusting the sexual partner (21.4%), condoms not being available (11.9%), being drunk at the time (7.1%) and

⁴ The focus was male condoms, which are more affordable and readily available in the areas where the study was conducted.

⁵ The numbers are too small to allow for meaningful comparisons between alcohol users and non-users with regard to condom use.

partner refusal (4.8% - only female respondents reported that their partner had refused to use a condom). The summary of these findings are shown in Table 10.

4.8. Attitudes towards Alcohol Consumption

We determined individual attitudes towards alcohol consumption using a battery of questions (Table 11). The aim was to measure risky behaviour as a result of alcohol consumption. Generally, respondents were in agreement that alcohol consumption disproportionately raises the exposure risks for those who consume alcohol. For example, nearly in all the questions, the degree of agreement was more than 75%. Except for the ability of a drunken man to use a condom, the rest were clearly decided by a majority of respondents. The proportion of those agreeing and those disagreeing on whether a drunken man could use a condom was evenly distributed at 47.9% and 46.5% respectively.

Table 11: Attitudes towards Alcohol consumption

	<i>Agree</i>	<i>Disagree</i>	<i>Don't know</i>
Alcohol use/dependence leads to increased HIV infection in the community (<i>N = 487</i>)	416 (85.4%)	50 (10.3%)	21 (4.3%)
Alcohol use/dependence exposes people to multiple sexual partners (<i>N = 486</i>)	436 (89.7%)	37 (7.6%)	13 (2.7%)
Alcohol use/dependence lowers the chance that someone will use a condom with a person other than a regular partner (<i>N = 488</i>)	433 (88.7%)	40 (8.2%)	15 (3.1%)
Men who drink alcohol are more likely to have sexual relations with non-regular partners compared to women (who drink) (<i>N = 487</i>)	333 (68.4)	129 (26.5%)	25 (5.1%)
Young people (< 30 yrs) who drink are more likely than older people (> 30 yrs) to have multiple sexual partners (<i>N = 488</i>)	373 (76.4%)	91 (18.6%)	24 (4.9%)
A drunken man is more likely to use a condom with a non-regular partner compared to a drunken woman (<i>N = 480</i>)	230 (47.9%)	223 (46.5%)	27 (5.6%)
Alcohol use/dependence leads to early death (<i>N = 485</i>)	444 (91.5%)	30 (6.2%)	11 (2.3%)
Individuals who are alcohol dependent are also more likely to engage in drug abuse (<i>N = 484</i>)	415 (85.7%)	48 (9.9%)	21 (4.3%)
Alcohol use/dependence leads to increased STDs (other than AIDS) in the community (<i>N = 486</i>)	446 (91.8%)	29 (6%)	11 (2.3%)
Alcohol use/dependence leads to an increase in the number of unplanned pregnancies among women (<i>N = 487</i>)	453 (93%)	26 (5.3%)	8 (1.6%)
Sometimes I worry what the community where I live will be like in 10-15 years to come (<i>N = 466</i>)	414 (88.8%)	40 (8.6%)	12 (2.6%)

A comparison between men and women by type of drinker is shown in Figure 7. The data shows that respondents tended to agree on all the aspects of risk—that alcohol consumption has led to increased risks. However, there are clear differences between men and women and between those who are classified as abusers and social drinkers. Women were more likely to report higher risk perceptions compared to men, while those classified as abusers were less likely to report a higher risk perception.

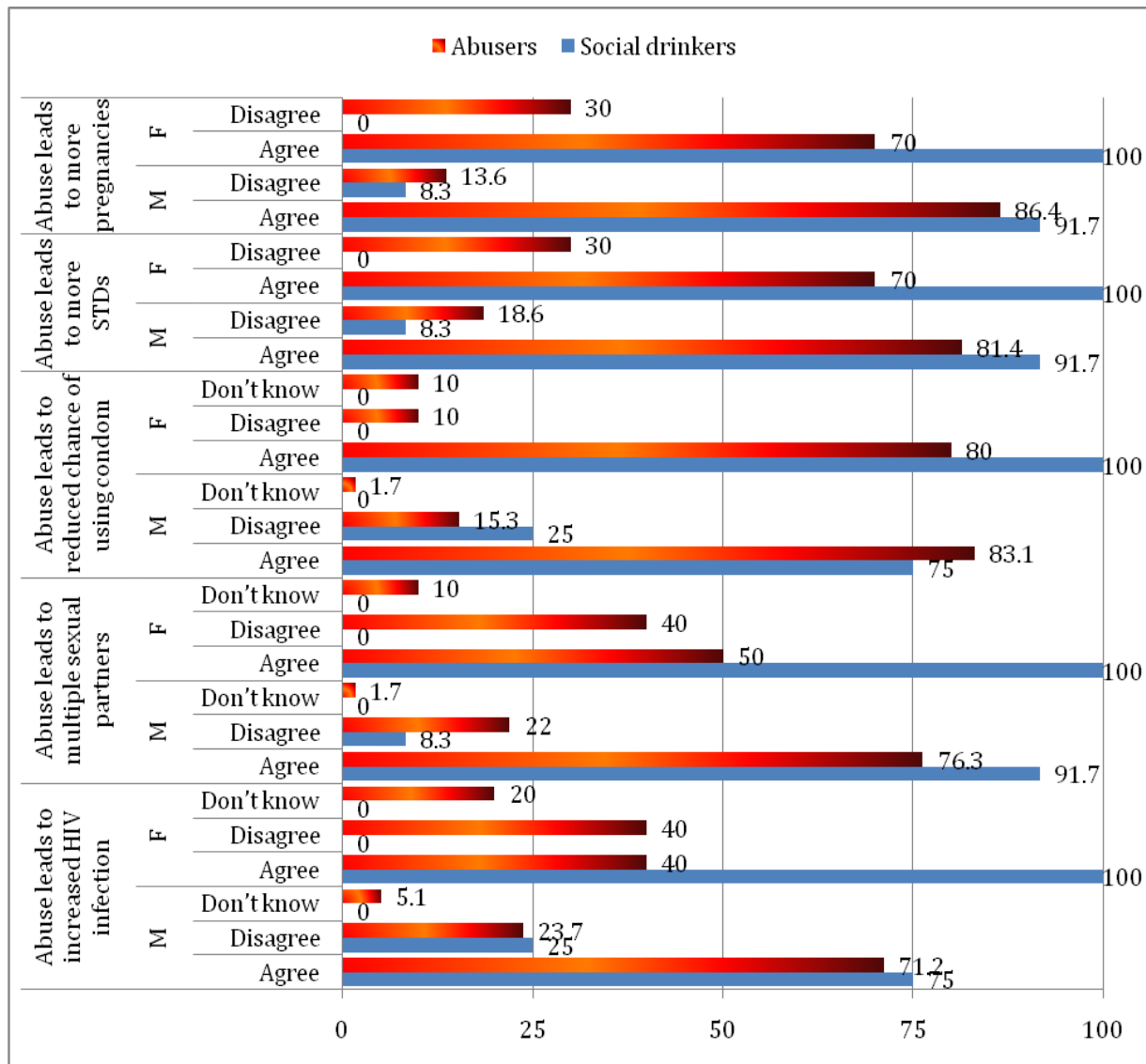


Figure 7: Comparison between men, women by type of drinker

4.9. Alcohol Consumption and HIV infection

Ten people from the sample of 497 self-reported themselves to be HIV positive. For ethical reasons only those who were willing to reveal their HIV status were interviewed. The questions asked focused on how long they had known that they were HIV infected, whether they were alcohol consumers at the time of diagnosis and whether they were currently taking alcohol. They were also asked to state what had happened in terms of alcohol consumption since the diagnosis, whether they were on any treatment for HIV and compliance with medication.

Of the ten people interviewed, they had lived with the knowledge of their HIV status for periods ranging between 1 and 14 years. Six of these people were alcohol consumers at the time of diagnosis. However, over time those who reported that they were drinkers at the time of diagnosis had stopped consuming alcohol. More specifically, those who reported that they were consuming alcohol reported that their consumption had increased (3 of 4 who responded to this question).

Eight of those interviewed reported that they were currently being treated for HIV. Six of these reported that they were taking their medication consistently while one indicated non-compliant behaviour by reporting that they sometimes missed to take medication at the right time. The delays are caused by various factors including lack of time, lack of funds (in spite of the fact that HIV medication is provided at government health care facilities at no extra cost), forgetfulness, lack of support and being too drunk to remember.

Four respondents reported that they had suffered from opportunistic infections, three of them reporting that this had happened once while one reported that this had happened 2 to 3 times. From self-reports, there are indications of delay in treatment. It took the patients up to a week before they got treatment. The delay was caused because the health facility was too far.

5.0. DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1. Discussion

Illicit and 'brewed-at-home alcohol', which is mainly consumed in the lower socio-economic strata of society has led to several deaths among the groups that consume this type of alcohol. In the informal settlements as in other areas, illicit brews have led to deaths and many people becoming blind due to alcohol-related poisoning. In Kenya, the best well known brews include *kumi kumi*, which is known by its various names. It is also known that alcohol tends to act as a dis-inhibitor, facilitating access to sex and creating new sexual networks. A study in Kenya showed that people believed that alcohol reduced fears connected to sex and encouraged risky sex, and that it provided extra power for sex (WHO 2005).

This survey was conducted with a view to (i) establish the perceived link between alcohol use and HIV infection and the health outcomes of the HIV-infected; (ii) the relationship between alcohol use and the number of sexual partners and in particular the difference between men and women; (iii) find out whether exposure to HIV drives individuals into alcohol abuse and how alcohol use influences health outcomes; (iv) alcohol use and decisions regarding condom use; and lastly (v) interventions that might be put in place to increase knowledge of the link between alcohol abuse and HIV infection.

5.1.1. Link between alcohol use and HIV infection

The link between alcohol abuse and sexually transmitted infections (including HIV infection) has been a subject of discussion in many studies (e.g. Kalichman *et al.*, 2009 in South Africa, Mmbaga *et al.*, 2007 in Tanzania and Kalichman *et al.*, 2007). What these studies have in common is that alcohol use predisposes individuals to greater risk of HIV infection. In this study, community's perceptions reflect this general understanding. In the South African study, Kalichman *et al.*, (2009) reports that study participants involved in sero-discordant unprotected sex also had a significantly higher alcohol and other drug use.

In the current study, it is clear from people's perceptions that alcohol use is linked to the possibility of HIV infection. Respondents reported that use of alcohol was likely to lead to an increase in HIV infection in the community, lower chances of using a condom and increased unplanned pregnancies and multiple sexual partners. All these are forces that fuel risky behaviour. They are further reinforced by easily available traditional liquor and *Chang'aa* which is also regarded as affordable and obtainable from many alcohol selling points dotted across the study site.

5.1.2. Alcohol abuse and sexual partners

It is reported in Section 4 that for individuals who reported taking alcohol, 17.2% had been forced or had forced someone to have sex while drunk. Close to 80% of these individuals reported that they had non-consensual sex at least once in the past three months. Further analysis of the data reveals that there are important differences between those who, on the basis of AUDIT test, are classified as alcohol abusers and those that are not. None of those who are classified as non-abusers reported being forced or forcing someone to have sex while drunk. The other 13 individuals (about

15.8%) reported that they had indeed forced or been forced to have sex while drunk. Importantly though is the fact that among those who had been forced to have sex while drunk, all (100%) were classified as alcohol abusers based on the AUDIT report.

5.1.3. HIV exposure and alcohol use and health outcomes

Conceptually alcohol use may both act as a risk enhancing or coping variable for HIV exposure. It is a risk enhancing factor in the sense that individuals take greater risks while drunk (see for example Mmbaga *et al.*, 2007 and Kalichman *et al.*, 2009) than those who are not and it is a coping factor because those infected by HIV take to alcohol abuse in order to make their situation bearable (see EQUINET, 2009). However, alcohol abuse may have the additional disadvantage of compromising the health of those already infected. This may come through several avenues including treatment non-compliance (see for example Hendershot *et al.*, 2009), lack of adequate nutrition or total lack of regard for self.

Data from the study sites reveals that among those who identified themselves as being HIV positive, the respondents who were currently using ARVs indicated that at times they skipped taking drugs because of their drunken state. Other reasons given include lack of time to take the drugs, lack of funds and forgetting to take drugs. Participants also noted that lack of support led them not to take drugs. In a 2009 special issue focusing on “Substance Abuse and HIV and AIDS in Sub-Saharan Africa” the *Africa Journal of Drug and Alcohol Studies*, identifies alcohol abuse as a main contributing factor to non-adherence of ARV treatment which leads to adverse treatment outcomes.

5.1.4. Alcohol use and condom use

From the data presented above, it is clear that respondents who reported alcohol abuse were also likely to report risky sexual behaviors. In this section, focus is given to alcohol use in relation to condom use. (56.9%); - over half of respondents reported regular condom use with consensual partners. One quarter (25.5%) used condoms sometimes while 15.7% reported that they never used condoms at all. The reasons for non-use of condoms ranged from unavailability of condoms, forgetfulness, partner refusal, being in a drunken state as well as trust of partner.

Gender-power differences appear to play out in the decision to use or not to use condoms. Overall, female respondents were less likely to have protected sex compared to men (65% of the men vs. 27.3% of the women reported use of condom during sex all the time). Female respondents (15.4%) reported that the partners refused to use condoms while a majority reported that they did not remember to use condoms with their consensual partners. One the other hand, male respondents reported that they did not use condoms because they did not remember (44.8%) or because they trusted their partner (27.6%) or because they were too drunk to remember to use a condom (10.3%). These results reflect those that have been reported elsewhere. For example, in a study among American college students women binge drinkers were significantly less likely than men to use protection (Hutton *et al.*, 2008).

5.1.5. Potential interventions to increase awareness

The communities in the study sites identified a number of avenues through which interventions might take place so as to increase awareness regarding the link between

alcohol abuse and HIV. These interventions include those targeting the youth, those which target religious groups, those that are directed to the community in general, and those directed to the government among others.

Respondents identified youth as an important target group for intervention. The interventions identified include creating opportunities for this group so that they can be engaged in useful activities instead of drinking alcohol. Also the youth should be trained so as to impart in them skills which they can use to exploit these opportunities. Awareness about the problem caused by alcohol and HIV should also be carried out in the communities targeting the youth.

Religious groups were also identified as potential partners in this awareness creation. Church-community partnerships were seen as one avenue through which awareness creation could be carried out. The church is particularly critical because it is the church which has closest links to communities. For example, in Mukuru the Catholic Church has established a community center which might be used for awareness creation programmes.

5.2. Conclusion

1. One in every five of those surveyed reported that they were currently consuming alcohol. Three quarters of those identifying themselves as drinkers are harmful drinkers. These individuals scored more than 8 points on the AUDIT questionnaire.
2. Alcohol is generally available and affordable in the communities surveyed. The number of outlets increase starting from those that sell 1st generation alcohol, 2nd generation alcohol, traditional brews and *Chang'aa*.
3. In general, those who reported that they were currently consuming alcohol appeared to report, in absolute figures, that they had been forced to have sex by someone who was drunk. However, on close scrutiny of the data between the two groups, the difference between those who currently consume alcohol and those who do not is not significant.
4. Data shows that there is a general perception among respondents that alcohol consumption raises risk of exposure to potentially risky sexual behaviour. The perception of risk is higher among female than among male respondents. Those classified as abusers (> 8 points based on the AUDIT questionnaire) were less likely to perceive a higher risk compared to social drinkers (AUDIT score of less than 8 points).
5. Due to a small number of respondents who identified themselves as being HIV positive, the relationship between alcohol consumption and HIV infection is not conclusive.

5.3. Recommendations

1. This report points to a multiplicity of factors and actors in the control of alcohol, efforts to eliminate alcohol dependence and in the prevention of HIV transmission through use of condoms, for example. In order to ensure that there is synergy in these efforts, there is need for multi-sectoral collaboration.
2. Establishment of support groups to provide a supportive environment for individuals who are vulnerable to alcohol and who are on ARV treatment. These support groups will require guidance in order to give adequate care and an environment that facilitates compliance among HIV positive alcoholic users. The

groups should be linked to already existing support centers such as the 24-hour NACADA helpline on telephone number 0800720033. NACADA has developed a useful guide for national standards in the management of persons with substance abuse disorders including HIV (NACADA 2010).

3. In relation to sexual performance, there is need for further studies to shed more light on the link between performance and alcohol abuse. These studies might adopt a cross-sectional design or be designed to allow for longitudinal data to be generated.
4. Lastly, this survey had a small number of people who identified themselves as being HIV-infected. Due to this limited number of respondents from a general population-based survey, a survey focusing those coming into the VCT centers and to Comprehensive Care Centers is likely to yield more respondents. A study focusing on those visiting VCT and Comprehensive Care Centers is recommended.

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