SUPPLY AND DEMAND DYNAMICS OF *MIRAA* IN SELECTED PRODUCTION AND CONSUMPTION REGIONS OF KENYA

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Abbreviations

ADA	Alcohol and Drug Abuse
FGD	Focus Group Discussion
NACADA	National Authority for the Campaign Against Alcohol and Drug Abuse

Executive Summary

This study focuses on a drug whose production, sale and consumption remains un-regulated, yet the health and social and economic impacts of the drug are biting. The study is about *miraa* and *muguka*, which are broadly referred to as *khat* in this study. Present campaigns on drugs and substances of abuse are largely focused on alcohol, tobacco products and narcotics. The knowledge terrain is also biased towards these other drugs and limited empirical literature exists on *khat*. This study aims at deepening understanding on *khat* with a focus on five counties in the country. The five counties are: Kwale, Isiolo, Marsabit and Kitui. Drawing from a randomly selected sample of 625 respondents, the study examines: (i) the trends in the production of miraa; (ii) the awareness, availability, use, affordability and accessibility parameters with regard to miraa consumption initiation; (iii) the perception of miraa producers and consumers in regard to its addiction; (iv) the socio-economic and health impacts of miraa consumption. The goal is to inform policy on the campaign against drugs abuse and specifically with a bias on *khat*.

Data shows that current usage of *khat* in the studied counties stands at 54% from a lifetime prevalence rate of 61%. In the case of *miraa* current use stands at 45% compared to *muguka's* 23%. A logistic regression model shows that the use of *khat* is highly correlated with being male, level of formal education, rural residence and occupation. That the mean age of initiation to use of *miraa* is 17.6 years. Friends were found to be key to a persons entry to use of *khat*, with 76% of the respondents alluding to the role of friends in their first encounter with *khat.*

Further, although around 70% of the respondents consider miraa to be a drug, more than 90% approve of its use. It is a drug with wide acceptability across all the counties studied. In addition, *Khat* users use multiple drugs. 72% of the current users of *khat* use other drugs and substances of abuse to attain their desired level of potency. *Khat* can therefore be regarded as an entry point for use of other drugs and substances of abuse. Among the drugs used include: various forms of alcohol, various tobacco products, bhang and heroin. The sector is highly unregulated.

The use of *khat* is associated with an array of health and socio-economic outcomes. Qualitatively, *khat* use is linked to lack of sleep, hallucinations, lack of appetite, stomach ulcers, teeth decay, low libido, effects to the unborn child if taken by a pregnant woman and loss of memory. In some cases, *khat* use is associated with loss of life as a result of related ailments. From a socio-economic point of view *khat* use breeds idleness, irresponsibility, crime, wastage of household resources and the problem of addiction.

On production, results show an upward surge over the last five years. Production has extended to non-traditional growing zones such as Imenti as well as the marginal areas of the traditional growing zones of Igembe and Ntonyiri. This increase in production has been largely fuelled by the commercialization of *miraa* production and the allure of the perceived profits that acrue from the *miraa* economy. This in turn has fuelled the spraying of *miraa*, a practice that traditionally was anathema in the miraa growing zone.

On the basis of the emerging findings, this study recommends some level of regulation and control in the *khat* industry akin to the regulatory regime in alcohol, tobacco and narcotics. Such a regulatory regime will clearly address issues of production practices, sale and consumption of the product with peoples health at the core. Besides, such a move will help the government get some revenue which can be ploughed back to the source areas to advance the campaign. Finally, given the finding that *khat* acts as an entry to use of other drugs and substances of abuse, it is critical that campaign strategies for *khat* production and destination zones focus their energies on this drug and thereby make it easier to achieve results even for the other drugs. This calls for a broadbased strategy where all key drugs used in an area are addressed not in isolation, but as drugs and substances of abuse in a localized context.

PART ONE

INTRODUCTION

1.1. Drug and Substance Abuse in Kenya

Drug abuse is a key social, economic and even political concern in the present day Kenya. There is a vast body of empirical literature on the socio-economic impacts of drug abuse (NACADA 2012, 2007; Carrier, 2008). In Kenya, NACADA has been leading the national campaign against alcohol and drug abuse. In both 2007 and 2012, the Authority carried out national rapid assessments on the situation of alcohol and drug abuse in the country. According to NACADA (2012) the most commonly abused drugs are alcohol, tobacco products and narcotics. The study reported a reduction in the proportion of persons who are currently using alcohol from 14.2% in 2007 to 13.6% in 2012. However, according to the same study, there was an increase in those reporting the use of chang'aa from 3.8% in 2007 to 4.2% in 2012. Similarly the NACADA (2012) study found out that there is a reduction in those reporting use of packaged or legal alcohol and traditional liquor.

The NACADA (2012) study further reveals a reduction in the proportion of those reporting use of tobacco products among respondents aged 15 – 65 years. For instance cigarette use dropped from 10% in 2007 to 8.6% in 2012; sniffed /piped tobacco from 1.5% in 2007 to 0.7% in 2012. The NACADA (2012) study also shows that reported current use of *miraa* has reduced from 5.5% in 2007 to 4.2% in 2012, while current use of narcotics compared to other substances of abuse is low. Further, the NACADA (2012) study also indicates that dependency on alcohol stands at 5.5%, tobacco at 4.5%, *miraa* at 1.5% while for bhang the estimate is 0.45.

The use of *khat*[1] varies with the region of residence as well as gender (NACADA, 2012). For instance, the use of *khat* was high among urban as well as male respondents as opposed to rural as well as female respondents. Further, in terms of regions, highest use is reported in North Eastern (28%), followed by Nairobi (7.2%), Coast (6.2%) and Eastern (5.4%), while lowest use was recorded in Western. In a region specific study, NACADA (2010) reveals that *miraa* use is picking up in Central province[2], although in the past, the use has been quite rare. Although the NACADA (2010) survey of *miraa* and *muguka* use in Central Kenya only focused on a small region of Kenya, its findings are indicative of the need to conduct a comprehensive

[1] There are two variants of *khat* in Kenya i.e. *miraa* and *muguka*, with the former being predominantly grown in Meru while the latter is cultivated in Embu and parts of Central Kenya.

[2] Province is a term that referred to an administrative unit comprising of several disctricts. Kenya was divided into eight administrative provinces. The passage of the Kenya Constitution 2010 redefined Kenya's administrative structure and provided for a national government and 47 counties. The Provinces were thus abolished.

study on *miraa* use, but putting into consideration both production and consumption variables.

A study conducted by NACADA (2007) reports a relationship between drug abuse and an array of social problems in Kenya. From the NACADA study, drug users are more likely to divert resources away from productive functions in the household to drug-related uses (e.g. buying drugs). The study found out that close to 90 per cent of all heroin or cocaine users reported that they had diverted resources in order to buy the drugs while 44 per cent of bhang users had done so in the 12 months preceding the survey (NACADA, 2007: 27). Crime is another effect of drug abuse that can be discerned from the NACADA (2007) study. For instance, alcohol, bhang and cocaine users were found to be more likely to be violent towards their family members compared to users of tobacco and *miraa.*

Further, taking bhang or hashish was found to increase the odds of being arrested or charged compared to the non-users of the two drugs (NACADA, 2007: 27). The most commonly abused drugs in Kenya include: alcohol, tobacco, bhang, *khat* (i.e. *miraa* and *muguka*) (NACADA, 2007). The reasons for drug abuse are varied as are the types of drugs. Some of these reasons include: easy availability; poverty; breakdown of traditional values and peer pressure. This study focuses on *miraa*, which is one of the varieties of *khat* with a view to examining the supply and demand dynamics.

1.2. *Khat*: The State of Knowledge

Khat is a plant predominantly cultivated in Meru and Embu counties in Kenya whose fresh leaves and soft twigs are chewed to release a juice that alters the mood of the user. Unlike, *miraa*, *muguka* is a relatively short shrub and is produced in Embu County while *miraa* is mostly grown in Meru County. A variant of the *khat* plant also grows naturally in parts of Rift Valley region of Kenya. *Khat* consumption induces mild euphoria and excitement, while individuals become talkative under the influence of the plant, and its effect can be compared to those produced by consumption of amphetamine.[3] Other effects associated with the use of *khat* include loss of appetite, negative impact on liver function, permanent tooth darkening, susceptibility to ulcers and diminished sex drive. [4] However, very little attention has been paid on the effect of *khat* production and especially its linkage with the socio-economic well-being of the household. Further, there still exist substantial knowledge gaps in terms of assessing the health effects of *khat* consumption (Warfa, *et al*., 2007).

Khat consumption elicits much debate in regard to its classification as a drug and its socio-economic and health effects to the consumer. In 1980, the World Health Organization classified *khat* as a drug of abuse that can produce mild to moderate

[3] See: http://en.wikipedia.org/wiki/Khat, accessed on June, 2013
[4] See: http://en.wikipedia.org/wiki/Khat, accessed on June, 2013

psychological dependence.[5] Carrier (2008) notes that perceptions of *khat* in Kenya differ with strong approval in the Nyambene Hills region where it is cultivated to the strong disapproval in various segments of the Kenyan society. The author also observes that the Kenyan *miraa* debate revolves around just how *miraa* should be categorized and to whether it can be labelled as a drug.

Overall, information about the effects of *khat* consumption on the quality of life is limited. Even scarcer are studies on the trends, socio-economic and health impacts of *khat* consumption in the country and therefore inadequate evidence based policy and programs towards production and consumption of *khat*. Further, *Khat* is not considered a drug in Kenya, thus making it very acceptable in the society.[6]

In a related study, Warfa *et al*., (2007) observe that the current use of *khat* among particular migrant communities in Europe and elsewhere has caused alarm among policy makers and health care professionals. For instance, in the United Kingdom the debate over the psychiatric and social implications of *khat* use has led to demand for stricter legal control including banning the drug from the UK market. Similar health and social concerns have informed the banning of *khat* to the Netherlands market.

In a study on the effects of *khat* consumption on reproductive functions, Mwenda *et al*. (2003) shows that *khat* chewing lowers libido in humans and may also lead to sexual impotence following long-term use. In pregnant women, consumption affects growth of foetus by inhibiting utero-placental blood flow and as a consequence impairs growth. *Khat* consumption affects the potency of male sexuality by affecting spermatogenesis and plasma testosterone concentration. However, the authors point out that the precise mechanisms by which *khat* may affect the male reproductive physiology have not been elucidated. Other medical studies have associated *khat* consumption with impairing both cognitive flexibility and the updating of information in working memory (Colzato *et al*., 2011).

In another study, long term *khat* use has been associated with insomnia, anorexia, gastric disorders, depression, liver damage and cardiac complications, hallucinations, paronia, manic delusional behavior, violence as well as *khat*-induced psychosis (Balint et al. 2009). Other studies that focus on the health effects of *khat* consumption include: Halboub *et al*., (2009); Yarom *et al*., (2010). Other medical studies have associated *khat* consumption with impairing both cognitive flexibility and the updating of information in working memory (Colzato *et al*., 2011).

According to the World Health Organization (2006) the main effects of *khat* are on the cardiovascular system; gastrointestinal system and the nervous system. A study

[5] For more details see: http://www.nacada.go.ke/drugs/khat/

[6] See: http://www.nacada.go.ke/wp-content/uploads/2011/06/national_drugs_research_conference-_report_final_web3.pdf

by Nut *et al*., (2007) shows that *khat* was ranked in the lowest of 20 of the most well known licit and illicit psychoactive substances in terms of physical harm, dependence and social harm, while Griffiths *et al*., (1997) in a study of *khat* use by Somali immigrants in the United Kingdom observe that medical problems associated with *khat* are rare.

While there is no consensus on the health effects of *khat* consumption, the social impacts are also less understood (Aden et al., 2006; Gebissa, 2008; ACMD, 2005 and Anderson *et al*., 2007). For instance, Anderson *et al*., (2007), reports that given the available evidence *khat* is ranked by consumers as a mild stimulant and not a hard drug and that there is no evidence to suggest that *khat* use can be linked to crime. According to Pennings *et al*., (2008), the abuse potential as well as dependence of *khat* is low. The authors further show that there is no strong evidence for a causal relationship between use of *khat* and psychiatric morbidity. In 2006, a report by the WHO Expert Committee on Drug Dependence (ECDD) indicated that the potential for *khat* abuse and dependence is low and hence not significant to warrant international control (WHO, 2006). Fitzgerald (2009) provides a summary of the documented effects of *khat* use. According to Fitzgerald, these affects include: effects on the cardiovascular system; respiratory system; gastro-intestinal; genito-urinary system as well as psychiatric effects (Box 1).

Box 1: Summary of the effects of *khat* use

System		**Adverse Effects**
Cardiovascular system	:	Tachycardia, palpitations, hypertension, arrhythmias, vasoconstriction, myocard infarction, cerebral hemorrhage, plmonary edema
Respiratory system	:	Tachypnoea, bronchitis
Gastro-intestinal system	:	Dry mouth, polydipsia, dental caries, periodental disease, chronic gastritis, constipation, hemorrhoids, paralytic ileus, weight loss, duodenal ulcer, upper gastro-intestinal malignancy
Hepatobility system	:	Fibrosis, cirrhosis
Genito-urinary system	:	Urinary retention, spermatorrhoea, spermatozoa malfunctions, impotence, libido change
Obstetric effects	:	Low birth weight, stillbirths, impaired lactation
Metalbolic and endocrine effects	:	Hyperthermia, perspiration, hyperglycaemia
Ocular effects	:	Blurred vision, mydriasis
Central nervous system	:	Dizziness, impaired cognitive functioning, fine tremor, insomnia, headaches
Psychiatric effects	:	Lethargy, irritability, anorexia, psychotic reactions, depressive reactions, hypnagogic hallucinations

Source: WHO, 2006; Cox and Rampes, 2003 – cited in Fitzgerald, 2009.

This study makes reference to drug and substance abuse cause and effect analytical framework (NACADA, 2007). The framework assumes that drug and substance abuse has a complex cause and effect relationship. From a demand point of view some of the causes could be direct (e.g. easy availability of the drug in question) or indirect causes. This study builds on the web of hypothesized cause and effects analytical framework. Further, in interpreting the effects of *khat* use, the study makes reference to the context of consumption framework. This theoretical approach assumes that the social context under which *khat* is used shapes the outcomes of use. For instance, Zinberg (1984) examines the relationship between the drug, the mindset of the user and the setting in which a drug is used.

1.3. The Regulatory Regime

The legal regime governing *khat* production and consumption in Kenya is open: i.e. there are no laws that have been put in place to restrict production or consumption of *khat*. While the plant was classified by the World Health Organization as a drug in 1980, the global health body does not consider *khat* to be seriously addictive.[7] In the Kenyan context, two of the major psychoative compounds that are found in *Khat* (i.e. cathinone and cathine) have been scheduled under the Narcotics Drugs and Psychotropic Substances (Control) Act, 1994.

In some countries it is controlled or illegal while in others sale and consumption of *khat* is legal.[8] In Africa, *khat* is legal in Ethiopia, Kenya, Djibouti and Somalia. However, the policy and legal environment governing other drugs and substances of abuse in Kenya has changed drastically over the last decade. For instance, for the tobacco industry there is the Tobacco Control Act 2007 that seeks to control the production, manufacture, sale, labeling, advertising, promotion and sponsorship of tobacco products. For alcohol, there is the Alcoholic Drinks Control Act, 2010 which controls and regulates the production, manufacture, sale, labeling, promotion, sponsorship and consumption of alcoholic drinks. For the *khat* industry, the operational environmental is largely unregulated.

1.4. Rationale and Objectives

In spite of the World Health Organization classification of *khat* as drug of abuse in 1980, and being regulated in many countries, its production and consumption has not been given adequate attention in Kenya. This study focuses on one of the variants of *khat*, (i.e. *miraa).* Commonly produced in the Meru region of Eastern Kenya, *miraa* is one of the drugs which the society struggles to strike a balance between the perceived benefits of production vis a vis the perceived adverse effects of consuming the substance. To the producers, the *miraa* plant is treated as a cash crop just like is tea, coffee or sugarcane. Unlike other drugs and substances (e.g.

[7] See: http://en.wikipedia.org/wiki/Khat, accessed in June, 2013
[8] See: http://en.wikipedia.org/wiki/Khat, accessed in June, 2013

alcohol and narcotics) for which there exists substantial literature, very little is known regarding policy relevant information with respect to *miraa*.

Furthermore, even where data exists, it is based on small-scale studies focusing on relatively small portions of a county (e.g. division or location). Lack of data limits the understanding of the trends, socio-economic and health impacts of *miraa* production and consumption in the country and therefore inadequate evidence based policy and programs towards production and consumption of *miraa*. Addressing this knowledge and policy gap is the essence of the proposed research enterprise. It is envisioned that the knowledge emanating from this research will be instrumental in the design of evidence backed policy measures in the campaign against drugs in Kenya. Specifically, the study sought to:

i. To examine trends in the production of *miraa*
ii. To examine the awareness, availability, use, affordability and accessibility parameters with regard to *miraa* consumption initiation
iii. To document the perception of *miraa* producers and consumers in regard to its addiction
iv. To investigate the socio-economic and health impacts of *miraa* consumption
v. To inform policy in the campaign against drugs abuse and more specifically *miraa* abuse

1.5. Methods

This study uses an exploratory design given the fluidity of the issues under investigation. On one hand, the supply side is highly predictable since the producers are well known: the *miraa* farms are overt farming activities just is maize, beans, coffee or tea farming. *Miraa* is cultivated without any fear of victimisation just like people cultivate maize or coffee. However, the demand equation can pose a challenge. It is possible that some of the people who use *miraa* do so in a clandestine manner: perhaps by school going children who fear reprisals from their parents or a religious devotee who consumes in secrecy for fear of being seen by their religious leaders. Thus an exploratory design provides both a sampling and analytical framework for examining the issues at hand from both production and consumption points of view.

Both quantitative and qualitative data were generated. The quantitative data was obtained from individual respondents because the survey was targeted at individual rather than group behaviour. Those interviewed were asked to respond to a survey questionnaire. Qualitative data was captured using focus group discussion guides and the open ended questions. This elicited rich qualitative data that aided the deeper understanding of the trends of substance abuse.

1.5.1. Coverage and Sampling

The choice of the study sites is informed by the twin issues of supply and demand with respect to the drug under investigation. From a supply point of view, the study focused on selected growing areas.[9] In the case of *miraa* production, the study focused on both traditional and non-traditional but increasingly expanding supply points within the Meru County. Traditionally, literature has focused on traditional *miraa* growing zones of Igembe and Ntonyiri constituencies where the bulk of *miraa* comes from. A number of studies have attempted to assess the socio-economic impact of miraa production in these two constituencies. The livelihoods in these two constituencies are constructed around the *miraa* economy. However, there are other production zones within the greater Meru region where *miraa* production has been on a small-scale but is increasingly getting commercialized. One such area is the greater Imenti region (especially North Imenti) and Tigania.

In the last decade, there is growing evidence that *miraa* production in the greater Imenti region is on the rise especially after the collapse of the coffee sector and perceived returns accruing from *miraa* production. Besides, the soils and the general agro-climatic zoning of the region make *miraa* production a viable farming venture. Besides, being an emerging production site, the Imenti region has also been traditionally a key consumption site for the *miraa* produced in Meru North. Within Meru County, the study was carried out in randomly selected enumeration areas covering: Igembe, Tigania, and Imenti.

With regard to consumption, emphasis was placed on the following regions: Coast and Eastern. In the Eastern region, focus was on Isiolo County, Kitui County, Marsabit County and Meru County while for the Coastal region, Kwale County was targeted. The choice of the five counties is informed by a number of considerations. First, in exploring the production aspect, Meru County is a natural choice given the dominance of *miraa* farming in the region. Besides, consumption is also high within the county. Secondly, a significant proportion of the *miraa* produced in Meru is consumed within the neighouring counties, hence the choice of Isiolo and Kitui coun ties. Inclusion of Marsabit and Kwale counties makes it possible to examine consumption in far flung counties. Furthermore, three of the counties (Isiolo, Meru and Kwale) are located in the Eastern region of Kenya, a region that recorded the one of the highest levels of consumption of *khat* according to the 2012 Alcohol and Drug Abuse Survey (NACADA, 2012). North Eastern region was left out given the fragile security situation in the area, although it recorded the highest level of *khat* consumption, according to NACADA, (2012).

A limited number of enumeration areas were sampled in each of the counties identified. A multistage sampling technique was used in selecting the specific

[9] For production, our focus is on *miraa* and not *muguka*, while the Jomo Kenyatta research team focused on *muguka* production. For consumption, each of the research teams focused on both given the overlap.

locations, sub-locations and enumeration areas where the production survey was carried out. In the enumeration areas, random sampling techniques were used to select the households as well as the specific respondents. Further, with the resources at hand, the study targeted at least 625 respondents (Table 1). The 625 individuals were aged fifteen years but not exceeding 65 years. Determination of this sample follows a formula for calculating sample sizes provided by Yamane (1967:886):

$$n = \frac{N}{1 + N(e)^2}$$

where n is the sample size, ***N*** is the population size and ***e*** is the level of precision. In this study, ***N*** represents the total number of households within the four counties under study. According to the 2009 National Population and Housing Census, this translates into 994,042 households. The study assumes a precision level of ±4%. To get to a higher precision level calls for a larger sample size and hence more resources to execute. For instance to get a precision level of ±3% would need a sample of 1,111 households, and this would be difficult to implement given the resource envelop.

Applying the formula we get:

$$n = \frac{847{,}389}{1 + 847{,}389(0.04)^2} = 625 \text{ households (hence 625 respondents)}$$[10]

Table 1: Sample size distribution per County

County	Number of Households	Sample Households
Kwale	122,047	90
Meru	319,616	236
Isiolo	143,294	106
Kitui	205,491	152
Marsabit	56,941	41
Total	**847,389**	**625**

To supplement data from individual interviews, the researchers undertake four focus group interviews. The group discussions were carried out in Meru, Kitui and Isiolo. In Isiolo, the group discussion targeted miraa traders, while in Kitui the group discussion targeted the youth. In Meru, one of the group discussions targeted female consumers while the other comprised of miraa farmers. Finally, the study also entailed expert interviews with local opinion leaders. Besides the primary data sources, the study benefited from a critical review of existing literature that is in tandem with the key research questions in this study. The data collected was analysed using a descriptive approach.

[10] In the analysis, one questionnaire has been ommited due to incomplete information hence bringing down the total number of respondents to 624.

1.5.2. Training and Fieldwork

The data collection team underwent one day training in Nairobi before embarking on fieldwork. The training focused on the survey instrument, cultivating a common understanding of the survey protocols and the general methodology applied in this study. The questionnaire was pre-tested and revised to cater for the observations made during the pre-test. Data collection took place in April, 2012.

1.5.3. Data Processing

Part of data management involved fieldwork editing by the research teams before actual data entry. This helped minimize inconsistencies such as skip patterns and coherence of the responses. Further, data cleaning was undertaken after data entry. All these consistency checks were aimed at ensuring that respondents answered only the questions they were supposed to and vice versa.

1.5.4. Structure of the Report

This report is organized as follows: Part One provides some background information necessary for the understanding of the subject matter as well as building a case for the study. Part Two focuses on selected background characteristics of the respondents. Part Three is a presentation of the key research findings and discussion. Finally Part Four draws the main lessons from this study and makes suggestions on the way forward.

PART TWO

CHARACTERISTICS OF THE RESPONDENTS

2.1. Introduction

Variations in the use of *khat* can partly be accounted for by individual characteristics. Such features include: gender, age, level of formal education, occupation, religious orientation, household socio-economic factors among others. This chapter presents the distribution of the sample by these individual-level characteristics.

2.2. Age and Gender

As Table 2 shows, 54% of the interviewees were male while 46% were female. Save for Kwale county, male respondents accounted for slightly over half of the sample across the other counties under investigation. However, this distribution deviates slightly from the national estimates on gender variations in population distribution. According to the 2009 National Population and Housing Survey, males account for half of the national population in relative terms. Strict application of random sampling techniques should produce a sample that mirrors this distribution in population. However, the resultant variation could partly be attributed to a slight concentration of the sample around urban centres in all the study counties. In the market centres and urban areas, there is a tendency for male clustering. This is especially so in rural urban centres.

In terms of age, the study targeted persons aged 15 years to 65 years. Such a strategy was deliberately adopted for comparative purposes with the national survey on drug and substance abuse in the country (NACADA 2007 and 2012) that targeted a similar age category in the case of adult population. Of importance, the study adopted four analytical categories: 15 – 17 years; 18 – 24 years; 25 – 35 years and finally those aged 36 years or more. Analytically, the age category 15 – 17 years represent a proportion of the population that is largely school going and legally not allowed to take drugs and other substances of abuse. The age category 18 – 24 represents another youthful category that is either in college or out of school. Distribution by age shows that the bulk of the respondents were those aged 36 years or more.

2.3. Education Status

The level of education is another proximate determinant of the use of drugs and other substances of abuse. The education variable was grouped into five categories: no formal education, primary schooling, secondary schooling, tertiary college but not university and finally university or post-graduate qualification. Overall, the respondents are clustered around primary and secondary level of education. This is replicated along the rural-urban continuum as well as across the counties. Marsabit County contributed substantially to the number of respondents without formal education (Table 2).

2.4. Occupation

This is another individual level variable that can help shed light on why some people use drugs while others opt not to. This study grouped occupational status into a number of categories. These are: student, unemployed, working in the informal sector, formal employment, casual worker, pensioner/retired, house wife/husband and finally self-employed. The assumption is that each of these occupations produces a differentiated outcome with respect to the study variable. Self employed respondents account for around 25% of the sample, while unemployed and casual workers account for 18% and 17% respectively. Casual worker in this case refers to those respondents who seek work on a daily basis and do not necessarily have a fixed employer. The level of unemployment among the respondents is higher for Isiolo and lowest for Marsabit (Table 2).

2.5. Economic Status

Like education, occupation, age and gender, a household's economic status can shed light on the use of drugs and other substances of abuse. To capture this aspect, the study tool contained a number of indicators that could be used to approximate the household's socio-economic well-being. This is done by pooling several of these indicators together and then generating a single index that can be used to gauge the relative economic standing of the household as compared with the rest in the sample. Seven household level indicators were used. These include:

i. Main source of cooking power: if the household uses gas or electricity for cooking power, the score is "1", "0" otherwise.

ii. Main source of lighting: if the household uses electricity the score is "1". "0" otherwise.

iii. Main source of domestic water: if the household has piped water in the house or compound the score is "1", "0" otherwise.

iv. Main material of the walls of the head's house: if the walls are bricks or stone, the score is "1", "0" otherwise.

Table 2: Characteristics of the sample

Indicator	Setting		County					Total
	Rural	Urban	Kwale	Isiolo	Marsabit	Kitui	Meru	
Gender								
Male	55.4	52.4	44.0	53.8	51.2	59.7	55.7	**54.3**
Female	44.6	47.6	56.0	46.2	48.8	40.3	44.3	**45.7**
Age Category								
15 – 17	4.5	2.6	5.3	2.4	0.0	1.4	6.4	**3.8**
18 – 24	7.2	9.3	14.0	3.6	17.5	6.3	7.4	**8.0**
25 – 35	25.3	36.3	42.1	31.3	32.5	28.9	24.6	**29.3**
36+	63.0	51.8	38.6	62.7	50.0	63.4	61.6	**58.9**
Marital Status								
Single/never married	33.7	30.7	32.0	33.3	27.0	28.7	35.9	**32.6**
Divorced/Widowed	4.5	6.0	2.7	4.4	13.5	3.7	5.5	**5.0**
Married / living with a partner	61.8	63.3	65.3	62.2	59.5	67.6	58.6	**62.4**
Religion								
Protestant	45.2	22.9	13.5	11.0	15.4	51.5	54.7	**36.5**
Catholic	33.2	14.5	3.4	2.0	20.5	36.2	43.2	**25.9**
Muslim	17.7	59.3	83.1	81.0	64.1	4.6	.0	**33.9**
SDA	2.4	3.3	.0	6.0	.0	4.6	1.6	**2.7**
Others	1.5	.0	.0	.0	.0	3.1	0.5	**0.9**
Level of Education								
No formal	2.5	10.9	12.1	7.6	21.4	1.3	1.3	**5.3**
Primary	44.3	25.9	27.5	34.9	26.2	45.6	39.6	**37.6**
Secondary	42.0	44.3	40.7	40.6	28.6	44.3	46.4	**42.9**
Tertiary College	6.6	11.4	11.0	7.5	11.9	7.4	7.7	**8.3**
University/ higher degree	4.6	8.3	8.8	9.4	11.9	1.3	5.1	**5.9**
Economic Status								
High	7.3	22.7	20.9	6.6	2.3	25.5	6.8	**13.0**
Middle	25.1	30.6	34.1	35.8	27.9	28.9	19.1	**27.1**
Low	30.4	24.4	14.3	31.1	41.9	29.5	28.9	**28.2**
Very low	37.2	22.3	30.8	26.4	27.9	16.1	45.1	**31.7**
Expenditure Quintile								
Bottom	29.0	15.5	2.4	5.0	25.9	29.3	38.8	**24.0**
Second	21.3	7.7	7.1	7.0	18.5	21.1	20.9	**16.2**
Third	23.9	21.7	20.0	12.0	18.5	31.3	24.5	**23.1**
Fourth	14.7	25.6	27.1	30.0	22.2	15.0	11.7	**18.7**
Fifth	11.2	29.5	43.5	46.0	14.8	3.4	4.1	**18.0**
Occupation								
Student	7.6	4.4	7.7	6.6	10.0	0.7	9.0	**6.5**
Unemployed	17.6	19.5	27.5	30.2	7.5	9.5	16.7	**18.3**
Informal employment	9.4	10.2	6.6	5.7	15.0	16.2	7.7	**9.7**
Formal employment	11.0	12.0	9.9	10.4	15.0	11.5	11.6	**11.3**
Casual worker	17.3	16.8	23.1	18.9	10.0	21.6	12.5	**17.1**
Pensioner/retired	0.5	0.4	.0	0.9	2.5	.0	0.4	**0.5**
House wife/husband	11.2	11.1	9.9	11.3	15.0	9.5	12.0	**11.3**
Self employed	24.5	24.8	14.3	16.0	20.0	31.1	29.2	**24.6**
Other	0.8	0.9	1.0	.0	5.0	.0	0.9	**0.8**
Total	**395**	**229**	**91**	**106**	**43**	**149**	**235**	**624**

i. Main material of the roof of the head's house: if the roof is made of materials other than grass, the score is "1" "0" otherwise.

ii. Main material of the floor of the head's house: if the floor is polished wood/vinyl/tiles/cement, the score is "1", "0" otherwise.

iii. Main method of human waste disposal by the household: if the method is toilet, the score is "1" "0" otherwise.

From the seven indicators a household can garner a maximum of 7 points which translates into 100% on the socio-economic status scale. Households with a cumulative score of 70 – 100 were ranked as "high", 50 – 69 % ranked as "middle", 30 – 49% "low" and those with a cumulative score of below 30% were raked as very low. The distribution is illustrated in Table 2.

2.6. Other Characteristics

Additional characteristics include marital status, religion and an aggregated indicator on household expenditure. Protestants compose 37% of the sample while Muslims account for 34%. These two religious groupings are followed by Catholics with 26%. Further, over 60% of the respondents reported being married or living with a partner (Table 2). On the basis of estimated typical monthly expenditure computed from food and non-food items, households were categorized according to expenditure quintiles.

PART THREE

FINDINGS AND DISCUSSION

3.1. Introduction

This section presents the study findings. Discussion is in-built on each thematic area. Data from the focus group discussions, key informant interviews and secondary sources are used to enrich the findings. The presentation and discussion flow from the study objectives.

3.2. Trends in Production

As pointed out in the literature, in Kenya, *khat* is mainly grown in Meru and Embu counties with *miraa* being predominant in Meru county while in Embu county, *muguka* dominates. These are the main counties in Kenya that account for the bulk of commercial *khat* in the country. From the production point of view, this study focused on Meru region, and hence a bias towards *miraa khat*. The findings show that out of the 235 households from Meru County that took part in this study, 53 grew *miraa*, while only two households grew *muguka*. Even within Meru County, production is clustered around a few constituencies, although increasingly gaining root in other parts of the county where the agro-climatic conditions are favourable. Traditionally, *miraa* for commercial purposes has originated from Ntonyiri and Igembe regions of the Meru County. In Tigania, miraa is grown in varying proportions but not on a large scale as is the case with Igembe and Ntonyiri. However, given the perceived profitable nature of *miraa* production, this activity has spread to parts of North Imenti with a commercial focus.

Further, land scarcity and population expansion has extended miraa production even in the traditional regions into more marginal zones where originally *miraa* production was not practiced. For instance, in both Igembe and Ntonyiri production has been extended to the rather marginal areas bordering the Meru National Park. Extending production to the marginal zones has created a new challenge that was hitherto non-existent in the *miraa* production value chain. Qualitative data reveals that unlike the more favourable agro-ecological zones where *miraa* has traditionally been grown, production in the marginal zones makes the plant highly susceptible to pests and hence the need for constant spraying. This again creates a challenge in terms of striking a balance between spraying practices and other basic farm sanitary requirements such as the period lapse from spraying to harvesting as is the case with other farm produce such as vegetables. Finally, the increasing desire to commercialize *miraa* production has fuelled the need for spraying *miraa* in an effort to maximize profits. This is an aspect that is causing disquiet even among the producers themselves as they are not quite sure of the impact of the chemicals used

to spray *miraa* on the consumers' health. It is even more critical should thieves strike and unknowingly harvest *miraa* that has just been sprayed.

Consistent with the observations from the focus group discussion, 59% of the respondents in Meru held the view that *miraa* production in the region has increased over the last five years. This is evidenced by the expansion of production into new areas within the Meru County and scaling up the acreage under *miraa*. In the traditional *miraa* growing regions of Igembe and Ntonyiri ownership of mature *miraa* plants is a mark of success and hence every adult man strives to have their own thus the expansion. Besides, it is the main source of livelihood for thousands of households in the region either through ownership of *miraa* plants; providing security services to the *miraa* farms; harvesting, processing and packaging for sale; transporting and actual sale of the produce. The crop also offers indirect employment to thousands of other people either through the sale of materials used to package *miraa*, (e.g. fresh banana leaves) or food to those involved in *miraa* processing. With production now turning to the marginal zones in the traditional growing areas, and new production frontiers such as the Imenti, it is indicative that production has been on an upward spiral.

Box 2: Trends in *miraa* production

	Indicator	Percentage (%)
1	How would you describe the trend in the production of *miraa* in this area over the last five years?	
	Increased	59.0
	Same	41.0
	Decreased	
2	Has the acreage in *miraa* production in your household increased, remained the same or decreased over the last five years?	
	Increased	60.0
	Same	36.0
	Decreased	4.0
3	Would you consider increasing the acreage of *miraa* in your farm?	
	Yes	67.0
	No	33.0

The amount of land that a household devotes to an activity could be an indicator of the relative importance that the household accords to that activity. In further assessing the trend of production of *miraa* in Meru County, data shows that households that reported growing *miraa* devote a significant proportion of the family land to the production of this crop. The average land size used in *miraa* production was estimated at 2.1 acres among *miraa* producing households, with the overall average land size among the interviewed households in Meru County being 3.0 acres. However, it should be noted that the *miraa* plant is usually intercropped with other crops in the farm such as maize, beans, bananas and coffee. 98% of the

households that are currently growing *miraa* grow other crops on their farms. Consistent with the reported increasing production of *miraa* in the area, data further reveals that 60% of the households that are currently producing *miraa,* have increased the area under production of the crop over the last five years. However, 4.4% of the households reported a decrease while 35.6% reported that the area under production has remained the same. Further, 66.7% of the households that are currently producing *miraa* indicated that they would consider increasing the acreage under *miraa* in the future.

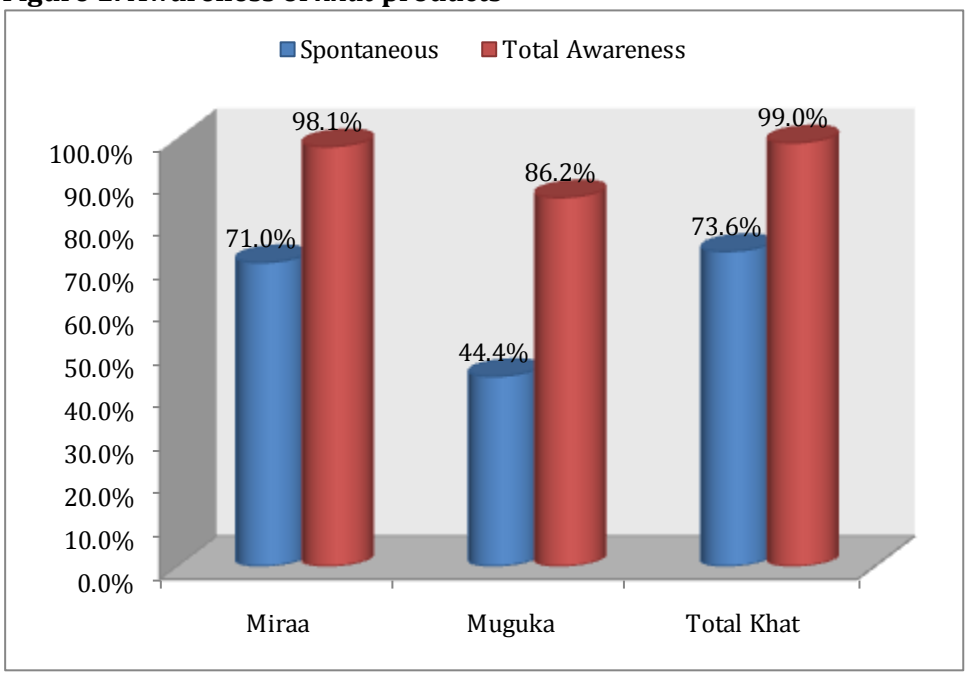
3.3.3. Awareness, Availability and Affordability of *Khat*

3.1.1. Awareness

In assessing the level of awareness of *khat*, the respondents were required to answer to two separate but interlinked questions. The first aimed at generating spontaneous knowledge on all the drugs and substances of abuse that they are aware of. The second question involved prompting the respondent on other drugs and substances of abuse that they may have not mentioned spontaneously. Put together, the score from the two questions constituted total awareness. The level of awareness may be indicative of the challenge posed by that drug or substance of abuse in the area. This could be in terms of awareness of negative effects of use of a drug or even availability in the locality. Knowledge of awareness is also a critical entry point in addressing the issue of drug and substance abuse at any level.

Spontaneous knowledge of *miraa* in the study areas ranked the highest with 71% in comparison to other drugs and substances of abuse. A similar figure was reported for bhang, while tobacco products followed with 66%. Figure 1 illustrates awareness levels for *khat*. However, spontaneous knowledge of *muguka* is lower and stands at 44%. The total awareness for *miraa* was estimated at 98%, *muguka* at 86% and total *khat* at 99%. These estimates are however higher in comparison to those by a national wide survey by NACADA (2012) on alcohol and drug abuse in Kenya that found out that total awareness for *miraa* stood at 85% and total for *khat* at 86%. However, for some regions (e.g. North Eastern, Coast, Eastern and Nairobi), total awareness for miraa stood at more than 90%. A possible explanation for the high levels of awareness of *khat* in the current study areas could be linked to the study design which laid emphasis on both production and destination sites for *khat*. This is unlike the NACADA (2012) survey whose focus was national in character and hence encompassing study sites with fairly limited knowledge of *khat*.

Figure 1: Awareness of *khat* products



The total awareness levels vary marginally with setting, gender, marital status and religion (Table 3). However, there are higher variations with respect to county, occupation, age category, level of education and economic status. There also are profound *intra-khat* total awareness differentials, with higher knowledge levels reported for *miraa* as compared to *muguka*. As one would have expected, total awareness for miraa among the respondents in the Meru County sub-sample is around 99%. For *muguka*, total awareness is low in the far flung Marsabit at 67% and highest in Kitui County which borders Mbeere region, which produces the bulk of *muguka*. The low knowledge of *muguka* in Meru County (76%) could be linked to the already dominance of *miraa* and hence limited desire to introduce this type of *khat* in the area for competition reasons.

Total awareness among students for *khat* stands at 100% and is lowest among respondents in informal employment (Table 3). An estimate of 100% is also reported for casual workers, retired persons and house wife/husband. For *muguka*, total awareness declines with declining economic status. For instance at the lowest economic cluster, total awareness of muguka stands at 74% down from a high of 94% in the first and second economic groupings. For both *miraa* and *muguka*, total awareness is lowest among respondents with no formal education.

Table 3: Total awareness and background characteristics

Indicator	Miraa	Muguka	Total *Khat*	Total Number of Respondents
Setting				
Rural	97.9	85.1	98.7	395
Urban	98.3	88.2	99.6	229
County				
Kwale	97.8	92.3	98.9	91
Isiolo	97.3	95.3	99.1	106
Marsabit	97.7	67.4	100	43
Kitui	97.3	96.6	98.7	149
Meru	99.2	76.6	99.2	235
Gender				
Male	98.5	87.3	98.8	**339**
Female	97.5	84.9	99.3	**285**
Age Category				
15 – 17	100	90.0	100	**20**
18 – 24	95.2	66.7	97.6	**42**
25 – 35	99.4	84.4	99.4	**154**
36+	97.4	88.4	99.0	**309**
Marital Status				
Single/never married	98.3	87.9	99.1	**182**
Divorced/Widowed	96.4	92.9	100	**28**
Married / living with a partner	98.3	85.3	99.1	**348**
Religion				
Protestant	99.5	90.0	100	**200**
Catholic	97.2	73.9	97.9	**142**
Muslim	100	93.3	100	**15**
SDA	96.8	90.3	98.9	**186**
Others	100	100	100	**5**
Level of Education				
No formal education	97.9	82.1	98.7	**33**
Primary	98.5	88.4	99.6	**234**
Secondary	98.3	89.2	97.3	**267**
Tertiary College	98.1	92.3	98.1	**37**
University/ higher degree	97.0	87.9	100	**52**
Economic Status				
High	100	93.8	100	**81**
Middle	97.6	94.1	99.4	**169**
Low	98.9	89.2	100	**176**
Very low	97.0	73.7	97.5	**198**
Occupation				
Student	100	87.5	100	**40**
Unemployed	98.2	89.4	99.1	**113**
Informal employment	96.7	75.0	96.7	**60**
Formal employment	98.6	91.4	98.6	**70**
Casual worker	99.1	95.3	100	**106**
Pensioner/retired	.0	100	100	**3**
House wife/husband	98.6	79.7	100	**69**
Self employed	97.4	85.3	99.3	**152**
Other	100	40	100	**5**
Total	**98.1**	**86.2**	**99.0**	**624**

3.1.2. Accessibility

In assessing accessibility, this study focused on two parameters: availability and affordability. Making a drug physically available breaks one barrier towards access. The issue of affordability breaks the other defining parameter for access since, if it is affordable then it means the users can access it. On the level of availability of *miraa*, 62% said it is easily available, while only 33% expressed the view that *muguka* is easily available (Table 4). Accessibility varies by county as well as by the type of *khat*. For *miraa,* Isiolo and Marsabit reported the highest levels of accessibility with each recording over 90%. One would have expected Meru County to register the highest levels of accessibility, but the region came third with a rate of 78%. This could be linked to choice of urban centres for Kwale, Isiolo and Marsabit as informed by the study design, areas that accounted for a substantial proportion of the study sample. Again these are key destination points for *khat* hence the high levels of perceived accessibility.

The relatively lower accessibility score for Meru could be attributed to choice of a number of administrative areas within the larger Meru where miraa is not available. For instance in parts of Imenti, *khat* is only available in the large market centres and people in the rural areas may report challenges with access. For Kitui, this could be perhaps linked with the limited use of *miraa* in the area which again is only clustered around large urban centres. For *muguka,* accessibility is high in Isiolo and Kitui (Table 4). It should be noted that Isiolo Township is a key destination of the two types of *khat* with focus group discussion data showing that *muguka* is increasingly eating out on *miraa's* market in the area. The high levels of *awareness for muguka in Kitui could be due to the county neighbouring the main muguka* production county of Embu and particularly Mbeere region.

Table 4: *Khat* accessibility by region (%)

	County	Easily Available (%)	Moderately Available (%)	Not at all available (%)	Don't Know (%)
Miraa	Kwale	58.4	40.5	.0	1.1
	Isiolo	96.2	3.8	.0	0
	Marsabit	93.0	4.7	.0	2.3
	Kitui	40.0	50.3	22.8	22.8
	Meru	78.7	15.7	0.1	4.5
	Total	**61.8**	**24.8**	**5.8**	**7.6**
Muguka	Kwale	21.2	45.9	14.1	18.8
	Isiolo	71.2	27.9	1.0	.0
	Marsabit	23.3	60.5	7.0	9.3
	Kitui	63.3	29.3	3.4	4.1
	Meru	3.1	40.6	42.8	13.5
	Total	**33.2**	**37.8**	**19.6**	**9.4**

Availability could also be a function of frequency of *khat* selling points. For *miraa*, 51% of the respondents felt that the selling points were "very many" in their locality; "moderately many" at 14%; "a few" at 25%; while 10% cited none (Table 5). For *muguka*, a substantial proportion of the respondents indicated that there was no *muguka* selling point in their locality. It is expected that where there are very many *khat* selling points, then accessibility should also be high since this addresses the challenge of physical distance.

Table 5: Frequency of *khat* selling points by region (%)

	County	Very Many (%)	Moderately Many (%)	A Few (%)	None (%)
Miraa	Kwale	57.0	30.2	12.8	0
	Isiolo	93.2	4.9	1.0	1.0
	Marsabit	87.2	10.3	.0	2.6
	Kitui	5.5	10.3	55.5	28.8
	Meru	52.5	16.1	24.2	7.2
	Total	**50.9**	**14.4**	**24.6**	**10.1**
Muguka	Kwale	20.2	20.2	33.3	26.2
	Isiolo	73.5	8.3	17.7	.0
	Marsabit	26.2	28.6	42.9	2.4
	Kitui	46.3	30.6	19.7	3.4
	Meru	8.1	7.2	40.5	44.1
	Total	**31.7**	**16.6**	**30.7**	**21.1**

A drug may be available, but the cost can also restrain access. Overall, 34% of the respondents held the view that *miraa* is very affordable while 44% held a similar stance for *muguka* (Table 6). The responses were clustered around "moderately affordable" across all the five study counties. In the case of *muguka* close to 90% of the respondents held the view that this type of *khat* is "very affordable". Data from the focus group discussions and key informant interviews show that *muguka* is cheaper compared to *miraa* across all the five counties. In comparative terms, the smallest bundle of *miraa* retails at an average of Kshs. 155 while that of *muguka* costs an average of Kshs. 67. Furthermore, a number of respondents cited the issue of cost in explaining preference for *muguka* over *miraa*.

Table 6: *Khat* affordability by region (%)

	County	Very Affordable (%)	Moderately Affordable (%)	Not at all Affordable (%)	Don't Know (%)
Miraa	Kwale	22.5	68.8	1.3	7.5
	Isiolo	41.8	53.1	.0	5.1
	Marsabit	50.0	42.5	.0	7.5
	Kitui	2.0	39.5	21.1	37.4
	Meru	51.8	19.5	11.1	17.7
	Total	**33.7**	**38.2**	**9.6**	**18.4**
Muguka	Kwale	38.3	19.8	3.7	38.3
	Isiolo	86.5	7.3	.0	6.3
	Marsabit	7.3	63.4	14.6	14.6
	Kitui	64.4	18.5	.0	17.1
	Meru	21.7	19.9	5.4	52.9
	Total	**44.3**	**20.5**	**3.6**	**31.6**

3.2. Tracking Use

Use of drugs and other substances of abuse can be contextualized through exploring lifetime use as well as the current use. An understanding of lifetime use provides useful pointers towards a better assessment of the history and isolating proximate factors accounting for current use. Such an analysis helps shed light on why some people are able to stop using a particular type of drug at a point in their life. This section examines lifetime prevalence as well as current use of *khat* in the study areas.

3.2.1. Ever Use of *Khat*

To explore lifetime prevalence all the respondents were required to answer a question on whether they have "ever, even once used *miraa*". A similar question was asked for *muguka*. The findings reveal that a higher proportion of the respondents have ever used *miraa* as compared to *muguka*. Table 7 shows that the lifetime prevalence for *miraa* is 55% *compared* to 31% for *muguka*. Taken together, 61% of the respondents have ever taken *khat*, at least once in their lifetime. Lifetime use varies with setting, gender, county, religious orientation, level of formal education as well as occupation. From a gender point of view, chewing *khat* seems to be a man's burden with a lifetime prevalence rate of 76%. A similar pattern can be discerned for the two types of *khat*, with a bias towards male consumption. Perhaps this could be linked to the local cultures in the five study sites in which there is some level of disapproval for females taking *khat*. For instance, among the Ameru of the Meru County, the community looks down upon a woman who chews *khat*, unlike the men. In Isiolo, Kwale and Marsabit religion was also cited as being a factor to the low lifetime use of *khat* by women.

Table 7: Ever use of *khat* by background characteristics

Indicator	Miraa	Muguka	Total *Khat*	Total Number of Respondents
Setting				
Rural	52.7	31.4	59.0	395
Urban	58.2	28.8	64.2	229
County				
Kwale	60.4	11.0	61.5	91
Isiolo	65.1	29.3	68.9	106
Marsabit	53.5	18.6	53.5	43
Kitui	36.9	47.0	53.5	149
Meru	59.6	30.2	63.0	235
Gender				
Male	69.2	40.1	76.4	**339**
Female	37.2	19.0	42.5	**285**
Age Category				
15 – 17	40.0	15.0	45.0	**20**
18 – 24	64.3	33.3	66.7	**42**
25 – 35	51.3	27.9	58.4	**154**
36+	55.7	35.9	62.1	**309**
Marital Status				
Single/never married	61.5	37.4	67.6	**182**
Divorced/Widowed	28.6	14.3	32.1	**28**
Married / living with a partner	53.7	28.7	60.1	**348**
Religion				
Protestant	43.5	26.0	51.0	**200**
Catholic	57.0	33.1	65.5	**142**
Muslim	61.8	23.1	64.0	**15**
SDA	20.0	33.3	40.0	**186**
Others	60.0	80.0	80.0	**5**
Level of Education				
No formal education	45.5	37.6	45.5	**33**
Primary	66.7	32.2	67.5	**234**
Secondary	53.6	18.9	62.6	**267**
Tertiary College	51.4	11.5	51.4	**37**
University/ higher degree	38.5	9.1	40.4	**52**
Economic Status				
High	51.9	32.1	58.0	**81**
Middle	53.9	43.8	63.9	**169**
Low	45.5	23.3	50.6	**176**
Very low	65.2	24.8	68.7	**198**
Employment Status				
Student	55.0	30.0	55.0	40
Unemployed	55.8	23.9	62.0	113
Informal employment	58.3	25.0	58.3	60
Formal employment	37.1	18.6	41.4	70
Casual worker	72.6	49.1	80.2	106
Pensioner/retired	33.3	33.3	66.7	3
House wife/husband	17.4	7.3	21.7	69
Self employed	65.8	39.5	75.7	152
Other	60.0	60.0	60.0	5
Total	**54.8**	**30.5**	**61.0**	**624**

Ever use of *khat* also varies with whether the context is rural or urban with higher levels of use reported for urban than rural setups (Table 7). Being market centres, the urban setups provide an opportunity for the *khat* producers to retail their produce hence creating a greater likelihood among the urban population to interact with *khat.* The urban centres also provide the advantage of mass populations hence an opportunity for trade in *khat*. This is unlike the rural contexts where, given their rural nature, if the area does not produce *khat* it is highly unlikely that some will find its way there in terms of a market outlet. Isiolo County tops the list with the highest lifetime prevalence rate at 69% compared to Meru County's 63%. Such a finding points at the diversity of reasons that account for *khat* use other than just being a producer region.

Other factors associated with ever use of *khat* include age, religion and education. The age category 18 – 24 years has the highest lifetime use at 67%. On religion, Catholics and Muslims account for the bulk of the consumers of *khat*, irrespective of the type. The findings also show that higher education seems to be an insurance against consumption of *miraa*. Ever use declines with rising education. This could be linked to a number of factors. For instance, chewing requires ample idle time, an asset most educated people will not have, given their work commitments. Furthermore, the kind of work done may also be incompatible with chewing of *khat*. Other educated people perceive chewing *miraa* as not "cool' or fashionable and hence does not commensurate with their status. Besides, ever use is also lowest among respondents reporting formal employment, of which a key pre-requisite is some level of post-secondary education. A combination of these and many other factors may account for the low use of *khat* with rising education status.

3.2.2. Current Use of *Khat*

In assessing current use, reference was made to whether a respondent had chewed *khat* within a period of one month preceding this survey. Current use of *khat* was estimated at 54% down from a lifetime prevalence of 61% (Table 8). This implies that some respondents have stopped the use of *khat* for varied reasons. For *miraa* current use stands at 45% while for *muguka* it is 23%. Like lifetime prevalence, current use is linked with gender, religion, setting, county, education and occupation. Current use is clustered around urban settings, being male, being a Muslim or a Catholic, casual workers, students, and the unemployed.

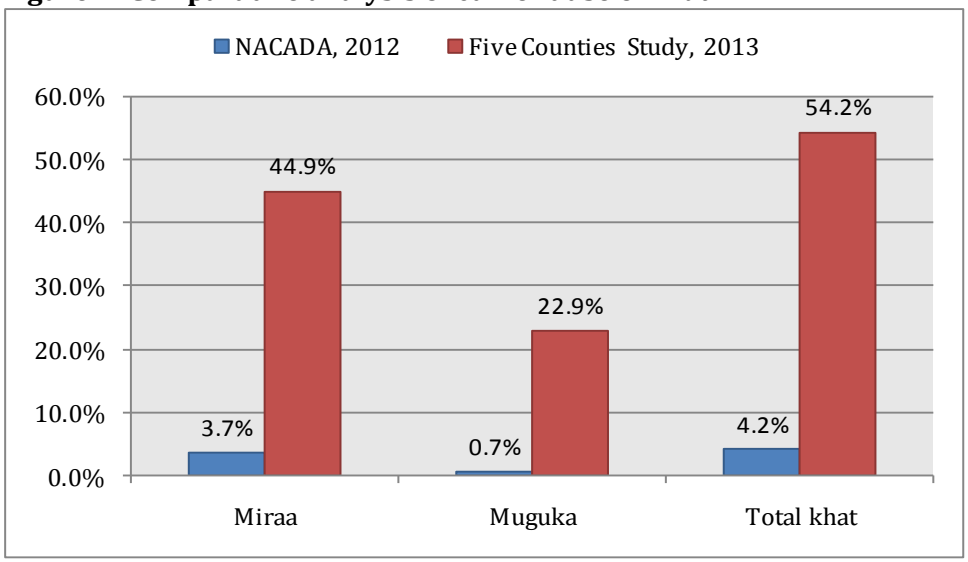
Isiolo and Marsabit registered high levels of current use at 67% and 58% respectively (Table 8). The high use level in Isiolo could perhaps be linked to a "culture" of acceptability of *khat* as part of people's lives especially within Isiolo Township. A casual observation of the activities within Isiolo Township reveals the place of *khat* in the life and economy of the town. Within Isiolo Township, there are designated points for selling *miraa.* These points are usually overcrowded at around noon when *miraa* arrives from Meru. The town is a key market destination for *miraa* produced in Meru.

Table 8: Current use of *khat* by background characteristics

Indicator	Miraa	Muguka	Total *Khat*	Total Number of Respondents
Setting				
Rural	42.5	23.0	50.1	395
Urban	48.9	22.7	61.1	229
County				
Kwale	52.8	6.6	53.9	91
Isiolo	52.8	26.4	67.0	106
Marsabit	53.5	4.7	58.1	43
Kitui	24.8	40.9	46.3	149
Meru	49.4	19.6	52.8	235
Gender				
Male	55.5	31.6	68.7	**339**
Female	32.3	12.6	36.8	**285**
Age Category				
15 – 17	30.0	10.0	30.0	**20**
18 – 24	64.3	16.7	66.7	**42**
25 – 35	42.2	18.2	50.7	**154**
36+	44.7	30.4	56.6	**309**
Marital Status				
Single/never married	53.3	30.8	63.2	**182**
Divorced/Widowed	28.6	3.6	28.6	**28**
Married / living with a partner	42.8	21.0	52.6	**348**
Religion				
Protestant	30.0	16.5	39.5	**200**
Catholic	47.9	26.1	58.5	**142**
Muslim	58.1	15.6	64.0	**15**
SDA	6.7	26.7	33.3	**186**
Others	60.0	80.0	80	**5**
Level of Education				
No formal education	26.9	5.8	28.9	**33**
Primary	62.0	6.1	69.7	**234**
Secondary	52.1	29.1	62.0	**267**
Tertiary College	40.1	25.1	52.1	**37**
University/ higher degree	40.5	8.1	43.2	**52**
Economic Status				
High	42.0	27.2	53.1	**81**
Middle	45.0	34.9	58.0	**169**
Low	31.0	15.3	38.1	**176**
Very low	58.1	17.7	65.6	**198**
Employment Status				
Student	55.0	30.0	60.0	40
Unemployed	49.6	15.9	57.5	113
Informal employment	45.0	21.7	48.3	60
Formal employment	22.9	2.9	25.7	70
Casual worker	58.5	42.5	74.5	106
Pensioner/retired	.0	33.3	33.3	3
House wife/husband	14.5	2.9	0	69
Self employed	53.3	32.2	67.6	152
Other	60.0	.0	60.0	5
Total	**44.9**	**22.9**	**54.2**	**624**

Current use of *khat* is higher in the studied counties in comparison to the results of the rapid situation assessment of the status of drug and substance abuse in Kenya by NACADA (2012). Nationally, 4.2% of the sampled respondents aged 15 – 65 years are currently using a *khat* product in Kenya (NACADA, 2012: 41 – 42) (Figure 2). Specifically, the national current use of *miraa* and *muguka* stands at 3.7% and 0.7% respectively among the 15 – 65 year olds. However, being a national-wide study, these estimates mask substantial regional variations. For instance, current use of any *khat* product in North Eastern region of Kenya is 28%, followed by Nairobi (7.2%); Coast (6.2%) and Eastern (5.4%) (NACADA, 2012: 42). Even within these geographically diverse regions, there are significant region-specific differentials in use. Thus, the relatively higher current use estimates in the studied counties should be interpreted in that context. As with the current study, the NACADA (2012) study found out that current use of *khat* varies with geographical region, rural-urban context as well as gender.

Figure 2: Comparative analysis of current use of *khat*



3.2.3. Initiation and Context of First Use

Understanding the context of first use of drugs and other substances of abuse presents an opportunity for isolating intervention entry points in helping persons address the challenge of alcohol and drug abuse. Such knowledge can provide useful insights on tailor-made interventions for varied audiences. Data reveals that the average age of first use of *miraa* is 17.6 years, with a range of 6 years to 40 years. From a legal point of view the average age of 17.6 years seems near the legal threshold of 18 years, the age at which an individual in the Kenyan context can take a drug such as alcohol, but masks a number of issues. The ages 6 years through 17 years accounts for 56% of those who have ever used *miraa*. By Kenyan legal standards, these are under-age persons. The ages that recorded the highest numbers of mention include: 17 years with 52 cases, 15 years with 20 cases, 10 years with 16 cases and 14 years with 12 cases. Beyond the legal threshold of 18

years, age 18 also seems a risky year with 26 cases, 20 years with 25 cases while 19 years has 18 cases. Hence, according to this analysis the introduction years for use of *miraa* seems anywhere between 10 years through age 20 years. Hence targeting this age category will create the necessary momentum in the campaign against use and abuse of *miraa*.

Unlike *miraa* where the introduction age is relatively lower, for *muguka*, the introduction age is higher with 20.5 years as the average and a range of between 13 years to 55 years. The most critical ages where persons get introduced to *muguka* are: 17 years, mentioned by 34 cases; 20 years with 13 cases; 25 years with 16 cases. However, the estimates from both *miraa* and *muguka* point at the need to target preventive interventions for lower ages and especially the ages between 10 years and 25 years.

Two indicators have been used to examine the context of the first time that the respondent chewed *khat*. The first is the question as to who the respondent was with the first time he or she took *khat* while the second question inquired on whom the respondent was living with the first time he or she took *khat*. The findings reveal that friends account for a substantial share of who the respondent was with the first time when he or she took *miraa* (Figure 3). Only a small proportion said they were either alone or with their parents. However, in the rural setting, around 17% of the current users were with their parents the first time that they took *miraa,* as compared to nil for parents in the urban setting. In the case of *muguka*, the proportion is even higher accounting for 92% of the total, alone (5.7%), parents (1.9%). This finding shows that like other drugs and substances of abuse, friends are a key entry point to use and abuse of drugs. Thus preventive as well as curative measures should as well target the user's friends so as to induce and sustain behaviour change.

Figure 3: Who were you living with the first time you took *miraa*?

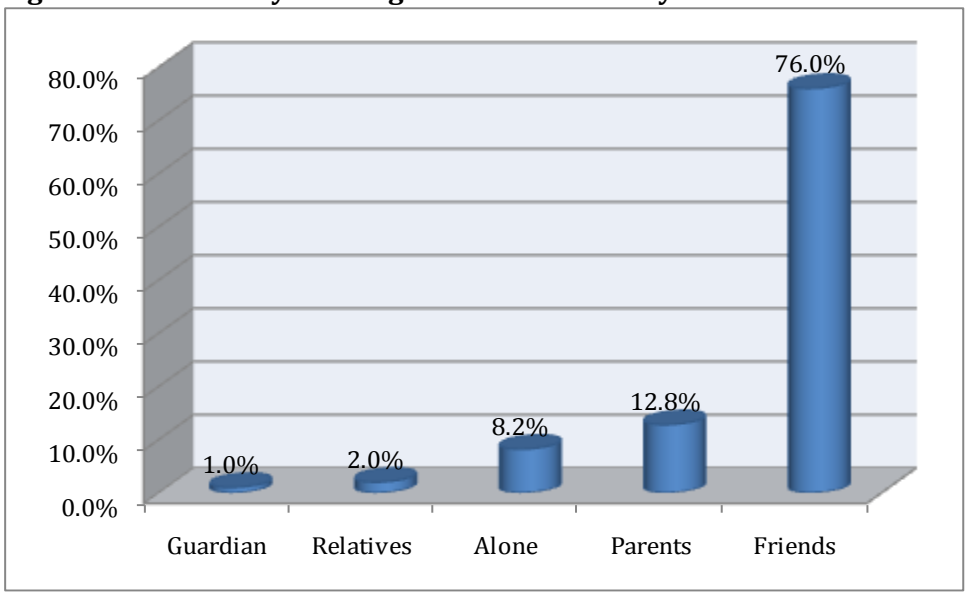
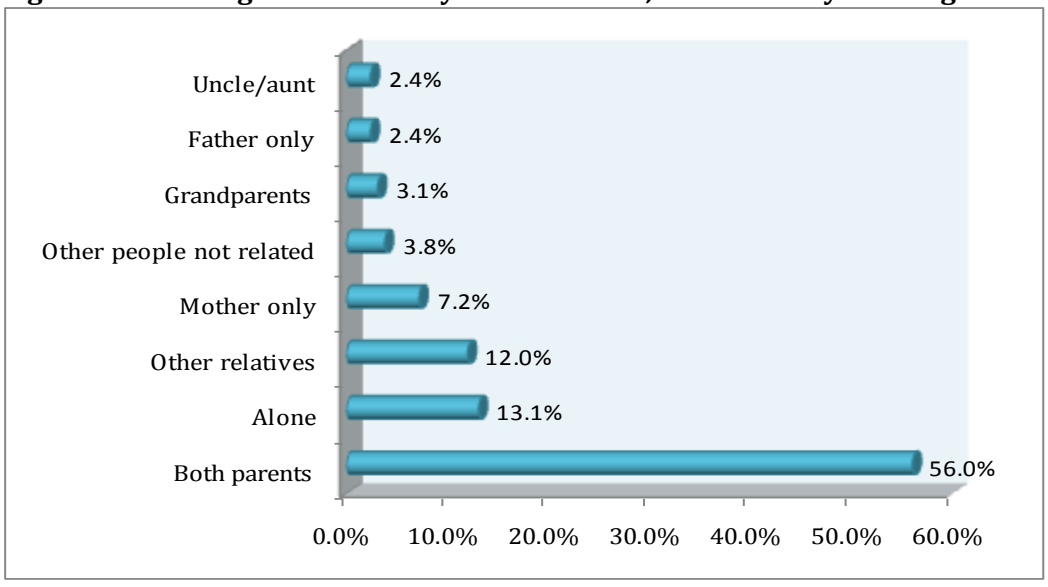


Table 9: Additional contextual factors and use of *miraa*

	Indicator	Percentage (%)
1	About how many of your friends were using *miraa*?	
	Most	61.3
	A few	33.8
	None	1.7
	Don't know	3.3
3	If was not living alone, was the person/persons he/she was living with taking *miraa*?	
	Yes	52.8
	No	47.2

The effect of friends on the use of *miraa* cuts across gender. However, when one is sorrounded by friends most of whom use *miraa,* this increases the likelihood of being introduced to the drug. Data shows that around 61% of those who have ever used miraa, had frieds who were using the substance. Hence, the quality of friends also does matter as an entry into drugs and substances of abuse. Another environmental factor with respect to first use of *khat* is whom the person was living with at that point in time. As figure 4 shows, most of the users were living with both parents in the case of *miraa*. This could perhaps be a pointer of some level of approval of their use of *miraa* by their parents. Further, this finding is indicative of the potential role of parents in addressing the challenge posed by *miraa* use and abuse. Finally, 52.8% of those who have ever used *miraa* indicated that they were living with a person who was taking *miraa*. This again points at the role of the value system of the significant others in influencing a persons decision to use or not use drugs and other substances of abuse.

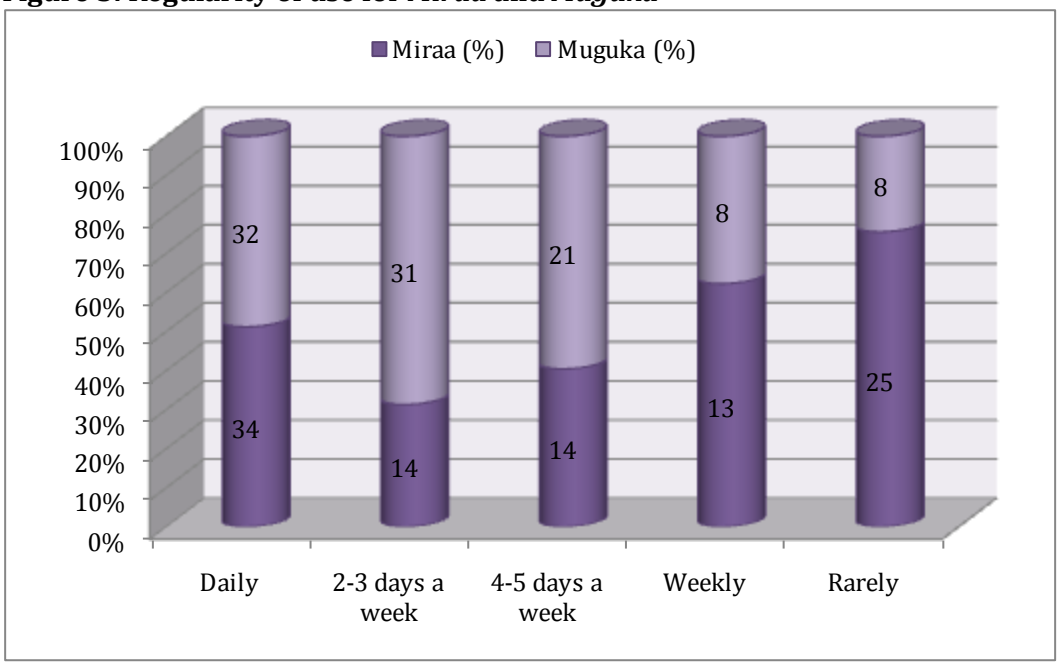
Figure 4: Recalling the first time you took *miraa*, whom were you living with?



3.2.4. Regularity of Use of *Khat*

A final yet critical important indicator in tracking use of *khat* is the regularity of use. An understanding of the regularity of use helps in dissecting the extent to which *khat* is problematic to the user as well as conferring other adverse effects to the community through the user. It is indicative that a big portion of the respondents use *khat* on a daily basis (Figure 5). Beginning with *miraa,* 32% indicated that they use the drug on a daily basis as compared to 34% for *muguka.* Further, 14% use *miraa* 4 – 5 days a week while 21% use *muguka* over the same time range. It is also important to note that 25% of the current users of *miraa*, indicated that they rarely use the drug.

Figure 5: Regularity of use for *Miraa* and *Muguka*



Regularity of use of *miraa* varies with gender, rural-urban context as well as the county. Contrary to expectations, 37% of female users reported that they use *miraa* on a daily basis as compared to 32% among male users. However, male usage is evenly spread across all the regularity categories. One possible explanation for reported higher daily use among female users could be linked to the cultural context, where women use of *miraa* is not often well appreciated by community members. Thus where a female has made a decision to use *miraa*, it is not uncommon to find such users doing so on a daily basis as compared to male users who are culturally not sanctioned against use and can use the substance as they wish. For counties, higher percentage of daily use is evident in Kwale and Isiolo with 43% in each (Table 10).

Table 10: Regularity of using *miraa* and selected background factors

Indicator	Daily	2 -3 days a week	4-5 days a week	Weekly	Rarely	N
Setting						
Rural	34.9	9.3	15.7	8.1	32.0	172
Urban	32.2	19.5	7.6	18.6	22.0	118
County						
Kwale	43.1	15.7	13.7	17.6	9.8	51
Isiolo	43.1	10.8	6.1	21.5	18.5	65
Marsabit	27.8	38.9	5.6	22.2	5.6	18
Kitui	15.6	6.7	6.7	11.1	60.0	45
Meru	32.4	12.6	18.9	3.6	32.4	111
Gender						
Male	32.3	15.4	12.9	12.4	26.9	201
Female	37.1	9.0	11.2	12.4	30.3	89
Age Category						
15 – 17	50.0	.0	33.3	16.7	.0	6
18 – 24	46.1	11.5	15.4	19.2	7.7	26
25 – 35	34.8	27.5	11.6	10.1	15.9	69
36+	25.3	6.3	14.8	9.9	43.7	142
Marital Status						
Single/never married	21.6	10.8	13.7	11.8	42.2	102
Divorced/Widowed	33.3	50.0	.0	16.7	.0	6
Married / living with a partner	42.8	13.8	11.8	10.5	21.0	152
Religion						
Protestant	28.8	23.7	22.0	10.2	15.2	59
Catholic	33.8	7.0	18.3	8.4	32.3	71
Muslim	42.2	13.8	9.2	21.1	13.8	109
SDA	33.3	.0	.0	.0	66.7	3
Others						
Level of Education						
No formal education	60.0	6.7	6.7	13.3	13.3	15
Primary	36.1	9.8	12.0	12.8	29.3	133
Secondary	28.6	16.1	10.7	12.5	32.1	112
Tertiary College	14.3	28.6	14.3	21.4	21.4	14
University/ higher degree	43.7	18.7	31.3	6.3	.0	16
Economic Status						
High	27.0	2.7	8.1	21.6	40.5	37
Middle	24.3	5.7	7.1	17.1	45.7	70
Low	40.0	25.0	8.3	6.7	20.0	60
Very low	38.2	15.4	18.7	9.8	17.9	123
Occupation						
Student	5.0	10.0	10.0	15.0	60.0	20
Unemployed	38.7	21.0	12.9	9.7	17.7	62
Informal employment	25.8	16.1	32.3	6.4	19.3	31
Formal employment	26.3	26.3	10.5	10.5	26.3	19
Casual worker	28.4	9.0	6.0	17.9	38.8	67
Pensioner/retired	.0	100	.0	.0	.0	1
House wife/husband	42.9	14.3	.0	14.3	28.6	7
Self employed	46.1	6.4	11.5	11.5	24.4	78
Other	50	5.0	.0		.0	2
Total						

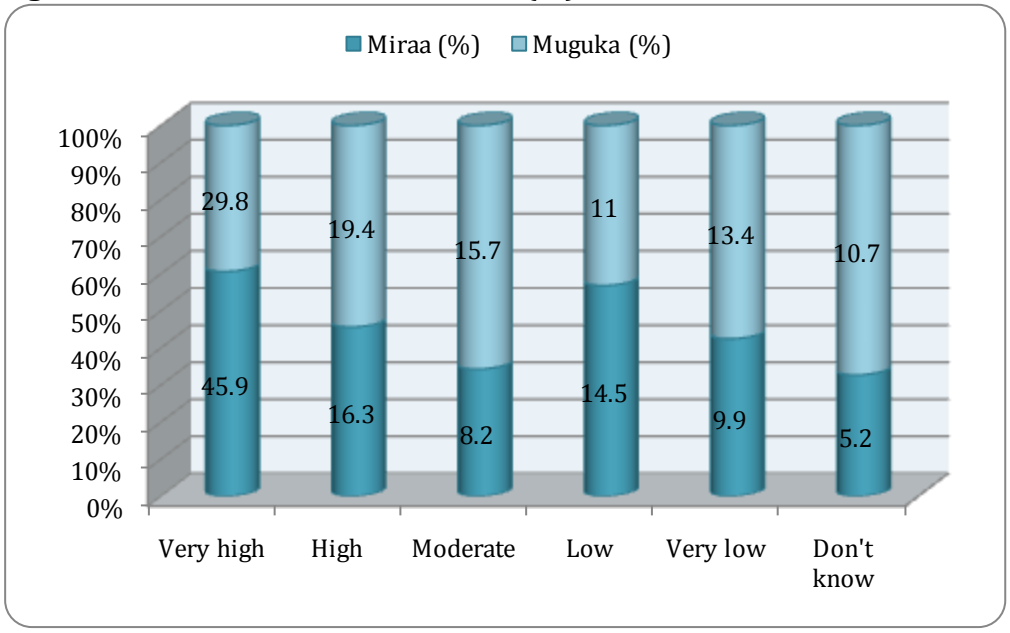
3.3. Perceptions With Regard to *Khat* Use

People have varied attitudes, perceptions and knowledge about the use of *khat*. Such perceptions include: their views on the extent of use of *khat* in the community, reasons why some people use *khat* while others don't, protective factors from using *khat*, their views on whether *khat* is a drug or not, issues of acceptability, the health and social impact of *khat* use and finally the linkage between use of *khat* and other drugs. This section explores each of these issues with the goal of furthering understanding of the *khat* question in Kenya.

3.3.1. Perceived Level of Use

The perceived level of use of *khat* varies with the type. Overall, 46% of the respondents held the view that the use of *miraa* was very high as compared to 30% for *muguka* (Figure 6). Most of those who cited very high and high were from the urban areas. The perception also varied with county with relatively higher perception levels for *miraa* for Isiolo and Marsabit at 87% and 85% respectively. In Meru county, the perception is 53% and is lowest for Kitui county at less than 10%. While the way the people perceive the level of consumption of *khat* in their area may not capture the exact position on the ground, it nevertheless provides a useful pointer on their view on the issue and possible existence of their concerns with regard to the drug. Out of the four counties, Isiolo, Marsabit, Meru and Kwale could be focal points in helping addressing potential adverse effects of use and abuse of *khat* given the high levels of perceived use as well as the estimated actual current use.

Figure 6: Perceived level of use of *khat* (%)



3.3.2. Reasons for using *khat*

People use *khat* for various reasons. These could be contextual or personal reasons. From a contextual perspective, some people may use *khat* due to peer pressure, being idle, work related stress, being unemployed, poverty or as a result of negative media influence. These factors hold irrespective of the type of *khat*. Data shows that 73% and 78% of respondents cited idleness as a factor that contributes to the use of *miraa* and *muguka* respectively. Peer pressure came second with 53% for *miraa* and 52% for *muguka*. Work related stress accounted for around 60% in the case of *muguka* and 36% for *miraa*, while unemployment was cited by 38% for *miraa* as well as *muguka*. Other factors include: poverty at 16% for *miraa* and 7% for *muguka*; media influence at 10% for *miraa* and 2% for *muguka*.

Reasons for current use of *khat* may also differ with the initial reason that made a person start using the drug. In the case of *miraa*, the bulk of those who have ever used the drug said 'they just wanted to try it' (67%). However, a substantial proportion also cited being cheated by friends (21.7%). Other reasons associated with the onset of use of *miraa* include: being given as food (6%); being given by parents (4.7%) and finally idleness. Half of the respondents who cited 'given as food' are in Marsabit County, followed by Meru County.

Besides the contextual or environmental factors, there are very specific reasons as to why some people use *khat*. Irrespective of the type of *khat,* a significant proportion of the users does so as way of relaxation (Table 11). Use of *khat* also helps the user have fun, feel good or happy, as cited over 60% in both types of *khat*. The third important factor is the ability of *khat* to help the user "kill time". This is consistent with the role of idleness in fuelling the use of *khat* as one of the predisposing contextual factors. Fourth, use of *khat* is associated with making the user stay awake for long hours and also alert. Among the perceived effects of use of *khat* is the ability of this drug to create insomnia to the user. Others use *khat* to enable them cope with stress as well as help them think smart. However, whether *khat* confers such benefits to the user remains a perception and requires the rigour of scientific analysis to ascertain the true position.

Table 11: Specific reasons why people use *khat*

Reason for using *Khat*	***Miraa* (%)**	***Muguka* (%)**
Makes me have fun / feel good or happy	63.5	65.5
Makes me interact or associate with others	38.7	51.8
Makes me feel important	14.8	27.3
Makes me relax	77.0	82.0
It has health benefits	13.5	7.2
It helps me 'kill time'	62.3	62.3
It helps me cope with stress	47.8	59.7
Makes me work and think smart	29.6	46.8
It helps me stay awake / alert	45.0	50.0

3.3.3. Protective Factors

While some people continue using *khat*, there are others who may have used at some point in their lifetime but managed to stop, yet others have never used *khat* in their lifetime. For instance, out of the 624 households visited we collected information on all household members aged 15 years and above and inquired on whether they use *miraa* or *muguka*. In the case of *miraa*, data shows that 1,536 household members do not use *miraa* against 744 household members who use *miraa*. Thus nearly 70% of the total household members do not use *miraa*. In addressing this question we look at some of the factors that can protect a person from using *khat* and hence can offer potential pathways to the campaign against *khat* use and abuse.

A critical protective factor against the use of *khat* is suppressed availability. As Table 12 shows almost 70% of the respondents attributed their non-use of *muguka* to the fact that 'it's not readily available'. The same reason was cited by close to 60% in the case of *miraa*. For instance, in areas like Meru and Marsabit counties where *muguka* is not common, use is also limited. Thus restraining physical availability of the drug makes it difficult for people to access and hence increase the likelihood of non-use. Another protective factor is the cost associated with buying *khat* and especially of the *miraa* type. Given the cost associated with purchase of a bundle of *khat*, to some people this may be a choice between buying food and buying *khat* and they thus logically choose the former.

There are also those who do not use *khat* due to medical reasons while others do not use because they are already aware of the negative effects of use. A number of respondents identified an array of adverse health outcomes associated with use of *khat*. For instance some associated *khat* use with stomach ulcers, tooth decay and loss of memory and suggested that in view of such outcomes, it is not worthy using. Religious values also were cited as a key factor for non-use of *khat.* To many religious groups use of drugs and other substances of abuse is prohibited as it is seen as contrary to their values. For some religious groupings use of a drug or other substances of abuse can make a person get ostracised and hence conferring enhanced possibility of keeping off the drug.

Parental restriction is yet another important protective factor against use of *khat.* Globally, this is a tested practice where parents play a crucial role in the socialization process of their children and may determine to a large extent whether the children engage in use of drugs or not. In case the parents are non-users of drugs the children may also strive to lead drug free lives like their parents. Parents also offer counsel to their children on positive values and acceptable societal norms, the net effect of which may help their children lead drug free lives.

Other protective factors include positive peer and pressure. When a person is surrounded by friends who do not use or abuse *khat*, this decreases the likelihood of their involvement in using or abusing the drug.

Besides friends, when most of the peers are not using *khat*, this contributes greatly in conferring some level of protection for indulgence in drugs. However, when friends and peers are using *khat*, this is likely to be viewed as fashionable and hence increase the risk of using *khat*. Being a key entry point for indulgence in drugs, positive peer influence is critical in the campaign against *khat* use and abuse. Other protective factors include fear of stigmatization especially the feeling that "one is not sure what others will say", as well as school or work related commitments (Table 12).

Table 12: Protective factors against use of *khat*

Reason for not using *khat*	***Miraa* (%)**	***Muguka* (%)**
It's not readily available	56.7	69.2
It's expensive for me	39.7	17.7
Personal decision to lead drug free life	16.4	0
Fear of stigmatization	11.4	23.5
Parental restrictions	30.0	23.5
Medical reasons	39.3	25.5
Awareness of negative effects of use	13.1	23.5
Positive peer pressure / friends do not use it	3.3	17.7
My past bad experience with the drug	1.6	0
Religious values	19.4	3.9
Personal principles	18.0	0
Work / school commitment	3.3	45.1

3.3.4. *Khat* as a Drug

Unlike alcohol, tobacco products and the narcotics, *khat* remains a relatively ambiguous drug in the Kenyan context. In the *khat* growing zones of Meru and Embu, the producers view the plant as a source of income as is coffee, tea or tobacco. In policy circles, there are mixed signals with some politicians calling for banning the production and sale of *khat* while others clamouring for the upscaling of production and marketing. In the Meru region and especially Meru North, the livelihoods of the bulk of the residents revolve around *miraa* and any adverse measures aimed at restricting the *miraa* economy is often met with resistance. It is not surprising that in both Igembe and Ntonyiri all the Presidential candidates, the Gubernatorial, Senatorial and other local level politicians campaigned on the platform of moving the *miraa* economy forward in order to win votes during the March 2013 elections. This was at the time when some European countries had legislated banning the produce from entering their countries.

How people perceive *miraa* in the drug and substance of abuse continuum remains varied across the country. Thus, given this operational context, this study sought to explore the perception of the citizens on whether they consider *khat* a drug. The findings show that around 70% of the respondents consider *miraa* a drug while 66% view *muguka* as a drug (Table 13). The perception varies across a continuum of respondent's background characteristics. In terms of potency, data shows virtual consensus that *muguka* is much more potent than *miraa.*

Table 13: Is *miraa* a drug?

Indicator	Yes (%)	No. (%)	Don't Know (%)
County			
Kwale	77.1	20.5	2.4
Isiolo	85.6	11.3	3.1
Marsabit	85.4	14.6	0
Kitui	63.5	27.6	9.0
Meru	60.1	32.3	6.7
Setting			
Rural	66.8	26.6	6.7
Urban	74.7	21.6	3.8
Gender			
Male	62.5	32.2	5.3
Female	78.2	15.8	6.0
Religion			
Catholic	68.2	27.1	4.7
Protestant	50.0	37.9	12.1
Muslim	81.3	16.3	2.3
Seventh Day Adventist	85.7	14.3	0
Other	40.0	60.0	0
Total	**69.6**	**24.8**	**5.6**

3.3.5. Acceptability of *Khat* in the Community

Tied to the issue of the community perception on whether *khat* is a drug, is the question of acceptability of *khat* in the community. Asked 'how acceptable it is for people to take *miraa* in the community' around 66% said it is totally acceptable, with less than 10% holding the view that it is totally unacceptable. In the case of *miraa,* 29% held the view that taking the drug is somewhat acceptable, while 25% held a similar view in the case of *muguka* (Table 14). The highest levels of acceptability are reported in Isiolo, Kwale and Marsabit, the three leading consumption areas for *khat.*

Within Meru County, *miraa* has a cultural significance hence the relatively high level of acceptability. Under local Meru customs and traditions, *miraa* was one of the commodities used in marriage. A specially packaged bunch of fresh *miraa* is given by the family of a young man as a way of seeking consent to marry from another family. This is the first public contact that seeks to bind the two families through marriage. When the girl's family receives the bunch of *miraa*, the girl is alerted and if she consents to the pending union, she is required to pick a *miraa* stick from that bunch, otherwise the bunch is returned untouched. Although this tradition is dying out through commercialization of the marriage institution, *miraa* still plays a pivotal role in the marriage institution among the Ameru. In parts of the same county, *miraa* is given as an offertory in some of the churches.

This again illustrates the acceptability context under which *miraa* operates and the campaign context within which this drug should be confronted.

Table 14: How acceptable is taking *khat* in this community

	Totally unacceptable	Somewhat acceptable	Totally acceptable
Indicator			
County			
Kwale	2.4	19.5	78.1
Isiolo	6.3	12.6	81.1
Marsabit	0	30.0	70.0
Kitui	7.2	43.9	48.9
Meru	6.4	29.4	64.2
Setting			
Rural	5.5	32.2	62.4
Urban	5.8	22.7	71.5
Gender			
Male	2.9	24.2	72.9
Female	3.0	30.3	66.7
Religion			
Catholic	1.6	36.1	62.3
Protestant	3.0	30.3	66.7
Muslim	3.6	18.9	77.5
Seventh Day Adventist	0	14.3	85.7
Other	0	20	80
Education			
No formal education	0	26.7	73.3
Primary	11.2	22.3	66.5
Secondary	1.6	32.1	66.3
Tertiary	6.1	33.3	60.6
University / higher	4.5	38.6	58.8
Overall			
Miraa	5.6	28.8	65.9
Muguka	9.0	25.2	65.8

Across the five counties *khat* is sold and consumed with minimal restrictions from law enforcement officers. This is unlike other drugs such as alcohol, tobacco and narcotics whose sale has some form of restrictions. In the case of alcohol, the regulatory framework flows from the Alcoholic Drinks Control Act, 2010 that controls and regulates the production, manufacture, sale, labelling, promotion, sponsorship and consumption of alcoholic drinks throughout the country. For tobacco products the regulatory regime stems from the Tobacco Control Act, 2007 that seeks to control production, manufacture, sale, labelling, promotion, sponsorship and consumption of alcoholic drinks throughout the country.

Such a regulatory regime is totally missing in the case of *khat* hence a free for all operational context. At the point of production, there is absolutely no regulation, even on the kind of chemicals used for spraying the *khat* plant. The period lapse between spraying and harvesting is not regulated. Driven by profiteering motives, a farmer can spray the crop today and harvest in two or so days contingent upon market availability. There are also no regulations on who can buy or sell *miraa* in terms of age, and this is often left to sellers own intuition that they should not sell to school children.

In the *miraa* production zone, some informal restrictions exist with regard to hiring child labour in the *miraa* farms but silent on who can consume *miraa* in terms of age. The provincial administration has been leading a campaign in the *miraa* growing zone to get school children to class and not into *miraa* farms. This is especially so for the boy child. On consumption there are isolated voices that advocate for some form of control in terms of consumption and especially sale to school children. Such voices can be discerned from local religious leaders, provincial administration and parents. There is no administrative vigour in terms of enforcing some form of regulation as is the case with alcohol, tobacco and narcotics. This could perhaps be attributed to the lack of a clear regulatory framework from the government as is the case with alcohol, narcotics or tobacco. So long as *khat* is classified in the class of drugs and substances of abuse, this regulatory void need be addressed.

3.3.6. *Khat* as a Group Drug

A common thread in the use of most drugs is the group effect, where users do not use in isolation but as a group. While chewing of *khat* seems to follow the same logic, it is unlike these other drugs: chewing *khat* is first and foremost a group affair. It is not common to find individuals chewing alone. Data shows that around 88% reported that when they chew *miraa*, they do so as part of a group and rarely as individuals (12%). From the qualitative data, users associate the group with making *khat* more potent as compared to when chewing alone. There is more fun when *khat* users do so as a team, perhaps two people or more friends. In Isiolo, the chewing friends also come in handy when negotiating the price for a bundle of *miraa* since they can buy one big bundle and then share amongst the team members.

With respect to gender, 92% of the male users do so as part of a group as compared to 77% of the female users. Further, 22% of the female users chew *khat* alone as individuals and not as part of a group as compared to 11% of the male users. Perhaps a possible explanation for the role of the group in use of *khat* is the fact that chewing is usually done over extended period of time so as to become potent. For instance in case of alcohol, a few beers taken over a short period of time can easily make somebody drunk. The same effect cannot be said of *khat.* It is also highly unlikely that a user would find fun seating alone chewing over an extended period of time. To break the monotony and create more fun, then the group comes in. Hence *khat* can be described as a group drug.

3.3.7. Perceived Health and Social Impact of *Khat* Use

This study further sought to examine the perceived health and social impacts of *khat* use. There is substantial empirical literature on the health effects of use of drugs and other substances of abuse. Such effects include positive correlation with an array of diseases; irresponsible sexual behaviour; disability as a result of drug abuse; death; mental disorders; loss of eyesight and other forms of incapacitation as a result of drug abuse. From a socio-economic point of view, drug abuse has been associated with diversion of household resources in order to buy the drug; crime; violent conduct and also domestic violence (NACADA, 2012). However, most of these effects are linked to use of alcohol and also narcotics. However, there is dearth of conclusive empirical literature on the health, social and economic impact of *khat* use. An understanding of this aspect can help in putting into context how policy makers respond to the challenge of *khat* as is the case with other drugs and substances of abuse. This section seeks to add, albeit in a small way, to the pool of knowledge aimed at shedding light on the health, social and economic impact of use of *khat*.

People have varied perceptions of the health impacts of *Khat use*. While some of the health effects of use of *khat* cut across the two types, others are peculiar to the type of *khat* i.e. either *miraa* or *muguka*. Among the shared health effects include lack of sleep and ability to keep a person alert for an extended period of time. The users argue that there are certain tasks or jobs that require a person to be awake (e.g. night guards, or long distance drivers), hence *khat* comes in handy to curtail sleep. From a health point of view, insomnia may not be a positive attribute for good health and affects individuals general physical and mental well-being. Again, the kind of alertness that accrues from the use of *khat* is largely induced and hence may be distorted alertness.

Chewing *miraa* is also associated with tooth decay and discolouration. The user's teeth turn yellowish or dark in colour. Continued use over many years often leads to eventual loss of teeth. From the users' point of view, teeth decay is worse among people who use sugary accompaniments with *khat*. Some of these include sugar, soda, coffee or tea which has been sweetened with sugar, and sweets such as PATCO.

Both types of *khat* are also linked with loss of appetite. If the person starts chewing before eating, it is highly unlikely that such a person will have an appetite for food once done with chewing. It is possibly due to loss of appetite that a number of the respondents and focused group discussion interviews linked *khat* use with loss of weight. However, loss of weight could also stem from lack of sleep as a result of chewing for long hours and thus failure to get sufficient rest. Both types of *khat* are also associated with negatively affecting the user's libido. Across the five counties, a number of respondents pointed at the adverse effect of the use of *khat* and aspects of sexual health. Other perceived health effects include loss of memory; hallucinations; constipation; ulcers of the mouth and stomach.

An emerging perceived fear among *khat* users is the issue of reddening lips among users. Some people associate this rising phenomenon to increased use of chemicals in spraying *khat* and especially harvesting before the chemical used to spray losses potency. A casual observation of the *khat* market in Meru town, Isiolo town and Maua reveals a number of persons with reddened mouth lips. This could be a pointer to a bigger health hazard linked to use of *khat* and requires further scrutiny especially detailed analysis of the composition of the *khat* that people are taking to determine any causal link. Others link the reddened lips to a deeper problem of combining *khat* with other drugs especially second generation alcohol. However, what is clearly worrying users is that this is a fairly recent phenomenon and requires some attention.

The other perceived health effect common to both types of *khat* is a feeling of general fatigue that follows chewing especially the morning after a chewing night. The fatigue could be as a result of lack of sleep. Finally, there are two perceived health effects that are only associated with *muguka* and not *miraa* users. Users of *muguka* reported body rashes in some cases as well as eyes turning red. This again is an area that requires further scientific inquiry.

In Table 15, we tabulate some of the generic perceived health effects of the use of *khat* in the community. Although the figures presented seem marginal, in absolute terms they mask a bigger picture that should call for action. For instance, 9% of those interviewed, reported knowledge of a person in their locality who has an ailment that can be attributed to the use of *khat.* Some 5% of the respondents also reported knowledge of a person in their locality who has succumbed to an ailment that can be attributed to the use of *khat*. Further analysis reveals that these people are concentrated in Isiolo, Meru and Marsabit; the three counties with equally high levels of *khat* consumers.

Table 15: Perceived health impact of *khat* use

	Issue	%
1	Has any of your household members experienced an ailment that can be attributed to the consumption of *khat*?	2.2
2	Do you know any other person in this area who has an ailment that can be attributed to the use of *khat*?	9.0
3	Do you know a person in this area who has succumbed to an ailment that can be attributed to the use of *khat*?	5.0

Besides the perceived health effects, like other drugs and substances of abuse, use of *khat* has certain social and economic impacts to the user, their households and the community. First, use of *khat* demands availability of financial resources to buy the drug. Considering only *miraa*, users spend an average of Kshs. 2,921 in a typical month on the drug with a range of a low of Kshs. 100 to Kshs. 24,000 in a typical month as reported by 143 miraa users. This translates to a cumulative figure of Kshs. 417,800 in a typical month (Table 16).

Table 16: *Miraa* expenditure in a typical month by expenditure quintile

Expenditure Quintile	*Miraa* Cost (Kshs.)	Cost Range (Kshs.)	No. of Cases	Average Cost Per User (Kshs.)
Bottom	61,600	200 - 18,000	41	1502
Second	14,100	400 - 9,000	7	2014
Third	51,950	250 - 6000	24	2165
Fourth	128,550	250 - 7000	33	3895
Fifth	161,600	100 - 24,000	38	4253
-	**417,800**	**-**	**143**	**-**

Further examination of expenses on *miraa* in a typical month illustrates the possible strain that households in the bottom two expenditure quintiles undergo as they fund expenditure on *miraa*. It is perhaps due to this reason that a number of respondents associated use of *khat* with waste of money. It should also be noted that *khat* is a largely addictive drug. Continued use creates a sense of craving for the drug which is only quenched with continued use. Long-time users argued that they cannot imagine a day passing without using *khat*. They only 'relax' when they get hold of some *khat*.

Given the expensive nature of *khat* and especially of the *miraa* type, users have to make difficult choices so as to get the drug to satisfy the craving. For instance, in Isiolo, data shows that users would prioritise money for *miraa* as compared to their other needs. For instance, faced with financial constraints, other than buy lunch, one opts for *miraa*. As a person gets hooked to *khat*, household finances increasingly get used to finance their drug use habit at the expense of other productive household functions such as buying food, paying school fees, among others. Given this wastage and noting that it is higher among households in the lower expenditure quintiles, continued *khat* use becomes a risk factor towards entrenching poverty in the community. Finally, once addicted the craving for *khat* may force the user to even sell household items so as to get money to buy *khat* (Table 17). Others are forced to borrow and get indebted in order to satisfy the craving.

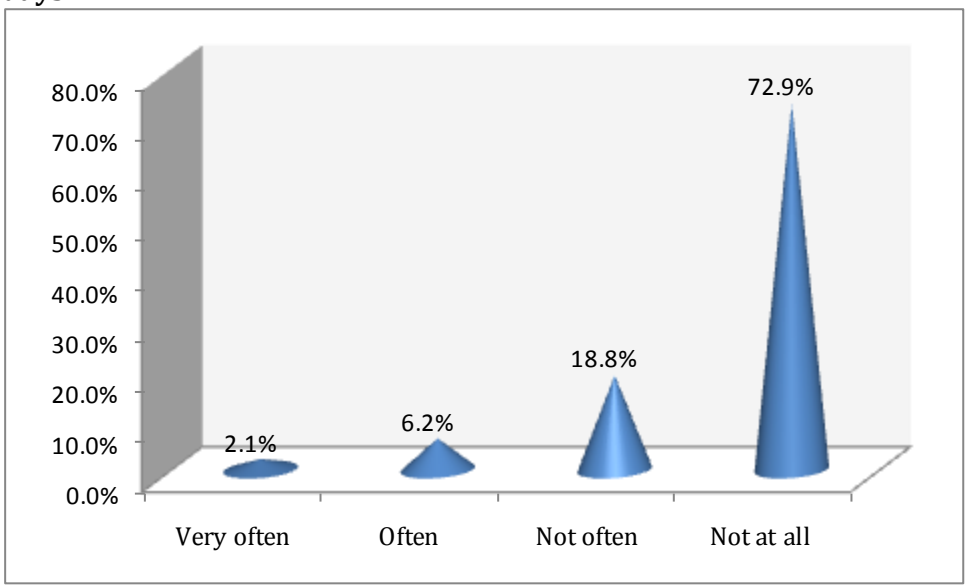
Table 17: Perceived socio-economic impact of *khat* use

	Issue	%
1	Would you say that there are times when you have had to forgo basic necessities so as to use the available finances to buy *khat* for personal use?	13.3
2	Have you ever borrowed money for the single purpose of buying *khat* for personal use?	36.7
3	Have you ever resulted to selling household items so as to get money to buy *khat* for personal use?	2.7
4	Has any of your household members complained about your use of *khat*?	18.4

A second socio-economic effect of use of *khat* is waste of time. *Khat* is one of the drugs which require substantial amount of time on the part of the consumer. *khat* is a time consuming drug. Since the use of *khat* requires constant use of hand effort as one chews the twigs, it also implies that substantial amount of productive time is lost especially when *khat* is consumed during working hours. For maximum fun, *khat* chewers' usually sit in groups as they pass time chewing the *khat* twigs. The time consuming nature of *khat* partly explains the gendered use of the drug. For instance, while women perform household tasks such as cooking or taking care of the children, men may have the time to chew *khat*. This is a luxury that most women do not have.

Thirdly, *khat* has an adverse effect on education especially in the production areas. *Khat* production, processing, marketing and actual sale provides a livelihood opportunity for thousands of people. However, the relationship between *khat* production and basic education in the production zones is an element that requires critical consideration. On one hand, the financial resources that accrue from *khat* are a key source of revenue for keeping thousands of children in school in the production areas. However, there are school-going children whose schooling is negatively affected by one of the important sections of the *khat* value chain i.e. production stage. In the production areas, it is common to find school going children working in the *khat* farms either picking or processing *khat* for sale. Although the local provincial administration has been at the forefront in campaigning against this practice, the problem still persists. The situation is more pronounced especially for the boy child. Besides, the remuneration package that is associated with picking and processing *khat* is relatively attractive to keep school-going children out of school. This is a pervasive problem especially in Igembe and Ntonyiri regions of Meru County.

Figure 7: How often do school going children work in *miraa* farms during school days?



Further the pathways through which *khat,* especially the production component, adversely affects education is quite complex and not just skipping school. Qualitative data shows that most of the persons who pick *miraa* are young adults, the bulk of whom have primary school going children. Picking and processing of *miraa* is a laborious and time consuming activity. It requires the workers to wake up early, sometimes as early as 5 a.m. to walk to the *miraa* farms. Participants in the discussion groups in Meru pointed out that the situation is worse especially where the mother works in *miraa* processing. Hence in some instances, the young mother leaves her children unattended to go and process *miraa*. This places a burden on the husband to take care of the children and prepare them for school in the absence of the mother. However, this is not always the case. More often than not, when the husband wakes up, he also goes to attend to *miraa* business. Thus the children are left to prepare themselves for school in the morning with limited parental support. Further, the time consumed in picking and processing *miraa* eats on any extra time to offer support to school going children and engage them on matters of their education. Hence the children are largely left on their own. This practice although not widespread, tends to undermine basic education. The linkage between education and *miraa* production is best illustrated by this quote from one of the focus group discussions in Meru:

> *Every morning my wife wakes at around 5 a.m. to go and process miraa following a knock on the door by a potential employer. More often than not, she leaves without notifying me. Some of our children attend the local primary school. When she leaves, I know, if my children are to go to school, I have to prepare their breakfast and ensure that they attend school. I know of instances where when the wife leaves in the morning to go and process miraa, the children are left on their own. The situation is bad for households that do not have an older child, who can prepare the other children for school. It does not end there. Picking and processing miraa this early (5 a.m.) is also fuelling the spread of HIV/AIDS in this area. It is also causing marital breakages. This further adds to the misery of the young children, who are often left to fend for themselves. It would be pretence to say that miraa does not have a negative effect on education in this area. Although miraa has enormous benefits to this community, this is an element that we need to address if the community has to move forward. (Miraa Farmers Focus Group Discussion, Meru County)*

Besides waste of money and time, use of *khat* is also associated with an array of other socio-economic phenomena. These include: idleness; problems that come with addiction; fuelling crime and general irresponsibility. Some of the *khat* users also pollute the environment by spitting the chewed *khat* without due consideration of good hygiene practices. The banana leaves used to package *khat* are also a key pollutant in the areas where *khat* use is high. In the case of the urban areas, this kind of pollution burdens an already overstretched urban collection service. Table 17 summarizes the socio-economic effects of using *khat*.

As with other drugs and substances of abuse, there are persons who abuse *khat*. Around 58.8% of the respondents held the view that there are persons who abuse

khat. Abuse of *khat* takes various forms. Abuse can be in the form of taking larger quantities beyond what may be necessary and hence creating enhanced potency and associated health risks. Other forms of abuse include chewing for extended periods to the extent of negatively affecting productive activities in the community. Thus when use of *khat* promotes idleness and laziness, this is a form of abuse. Another constant form of abuse is when a *khat* user mixes with other drugs. Data shows that experienced users rarely use *khat* alone, but will mix with a variety of other drugs and substances of abuse to gain potency. Such a combination makes it difficult to isolate the health effects to the user due to the multiplicity of drugs and substances of abuse a person uses. Ordinarily *khat* accompaniments like soft drinks may not be as harmful as hard drugs like bhang, cocaine, or heroin. Some users of *khat* tend to forget their responsibilities as well as remain unkempt. Finally, it is also a form of abuse when *khat* is consumed by people under the age of 18 years and especially school going children.

3.3.8. *Khat* Factor and Use of Other Drugs and Substances

Perhaps a key concern for the policy makers in the area of drugs and substance abuse, is the linkage between *khat* and use of other drugs and substances of abuse. While this study is not conclusive on the direction of causality, it is however clear that *khat* is a key entry point for an array of other drugs and substances of abuse. Data shows that 72% of the current users of *khat* use other drugs and substances of abuse to attain their desired level of potency. Among the drugs used are: various forms of alcohol, various tobacco products, bhang and heroin. A key denominator among most of the *khat* users is the attribute of use of more than one drug besides *khat*. For instance most *khat* users also user alcohol and tobacco products.

Table 18: Use of various drugs by *khat* users and non-users

Drug or Substance	Currently Using *Miraa* (%)	Currently Using *Muguka* (%)	Currently Not Using *Khat* (%)
Traditional liquor	17.4	32.3	27.7
Legal alcohol	28.6	51.2	25.2
Second generation alcohol	11.5	11.5	8.4
Chang'aa	12	4.1	6.5
Cigarettes	52	71.3	35.1
Snuff/chewed /piped tobacco	1	0	0
Bhang/marijuana	10.6	11.5	4
Heroin	0.5	0	0
Cocaine	0	0	0
Shisha	6.1	7.1	6.7
Kuber	4.6	6.2	4.7
None	16.3	6.2	35.0

Bhang is also increasingly becoming a drug of choice among *khat* users. Such a combination makes it difficult to discern whether the resultant negative effects of use are solely attributable to *khat* use or to other extraneous drugs and substances of abuse. Given the diversity of the drugs and substances of abuses used by *khat* users, it is evident that addressing *khat* use can go a long way in equally addressing the challenge posed by these other drugs and substances of abuse. It is perhaps because of the unregulated nature of *khat* use that is fuelling this alliance between use of *khat* and other drugs.

3.4. Determinants of *Khat* Use

In another section, this paper documents perceived reasons as to why people use *khat*. Beneath these reasons are certain attributes that can only be discerned and isolated through some rigorous cross-examination of the adduced evidence. To address this concern we use a logistic regression model and isolate those attributes that the model confers the highest explanatory power for the use of *khat*: whether *miraa* or *muguka*. In constructing the model, several explanatory variables were used. These include: age, gender, setting, county, economic status, occupation, religion, education and marital status. The results of the model are presented in Table 19, with the reference category in parenthesis.

Beginning with age, the findings show that compared with the 15 – 17 year olds, respondents aged 18 – 24 years have more than seven times higher odds for using *khat.* In addition, those aged 25 – 35 years old as well as those aged more than 35 years have higher odds of using *khat* as compared to the reference category. However, relative to those aged 15-17 years, respondents aged 36 years or higher demonstrate greater likelihood of using *khat*.

The cross-tabulation results indicated that gender is highly correlated with use of *khat* with a bias towards male use. Consistent with the cross-tabulated results, the regression results show that being male is positively correlated with current use of *khat*. The model shows that males have more than four times higher likelihood of using *khat* compared with women when all other factors are held constant, and these differences are statistically significant at 99 percent confidence level. As indicated earlier, male use could be linked to some local cultures that are silent on male use of drugs and other substances while at the same time admonishing female use. For miraa, the scenario is even worse for women as they run the risk of being labelled social misfits should they chew *khat*. Of course this is not to say that women do not chew, but rather their numbers are limited and part of the reason is how the society perceives chewing vis a vis women. Further, chewing requires ample time, a luxury that most women lack. The very essence of chewing requires largely setting aside what else a person is doing so as to chew and experience the "relaxing effect". However, besides their mainstream work, women are mainly busy with additional domestic chores, a domain that men rarely interact with. For instance, at home as a woman prepares supper, or takes care of the children, the man has the extra time to chew as he waits for food. This is a luxury that most women do not have.

Further, citing some of the tasks that are performed by men and those that require being alert most of the time explains partly why being male is highly correlated with use of *khat*. For instance, qualitative data shows that tasks like being a watchman and driving require some level of alertness which can be assured through consumption of *khat*. Incidentally, most of these and other related tasks are male dominated in the areas under study. Besides and in keeping with tradition, men have largely been associated with use and even abuse of other drugs and substances.

The model further shows that living in an urban setting is associated with 50% lower likelihood for using *khat*. In addition, using Meru County as the reference category, Kwale County exhibits a statistically significant difference in terms of lower odds of using *khat*. Respondents from Kwale County have 68% lower odds of using *Khat*, compared to Meru County.

From the model, it is evident that there is a statistically significant association between use of *khat* and the respondents' socio-economic status. Compared to the poorest category, respondents from "low" socio-economic status have 86% lower odds for using *khat* while those from the middle have about 55% lower odds of using *khat*. There is no statistically significant difference between the poorest and the richest with respect to *khat* use. This finding is surprising since the general perception is that *khat* is a low class drug and often not viewed as fashionable to members of the high economic profiles.

However, a closer scrutiny of data reveals that *khat* is not an entirely cheap drug. The average cost of *miraa* is Kshs. 155 for the smallest bundle and taken in the context of household survival and meagre incomes, it calls for sacrifice to commit household resources to buy *miraa*. In comparative terms, it is cheaper to access bhang, alcohol (any type), and tobacco products than is the case with *miraa*. Muguka is relatively cheaper with the smallest bundle going for Kshs. 50, but again even this is expensive in relative terms. Thus from a cost point of view it is possible that households with a low economic profiling will not have *khat* in their priority list.

Participation in informal employment as well as self-employment shows a promotional effect for *khat* consumption. As alluded earlier, there are some activities that require a person to be awake for long hours and most of these are form the bulk of informal employment. Self-employment in the context of study areas may include running retail shops, vending items in the local market, offering services (e.g. shoe shining, repair), auto repairs, hawking, and even farming. A number of workers in such activities take *khat* as a way of 'enhancing concentration' as well as staying awake. Thus the relationship could be interpreted in this light. Finally, higher education decreases the odds of using *khat*. For instance, relative to the respondents with post-secondary education, respondents with primary or no education have 3.5 times higher odds of using *khat* after controlling for the confounding effects of all other factors.

Table 19: A logistic regression model explaining use of *khat*

Indicator		Beta coefficient	Standard errors	P. Values	Odds ratios
Age	**(15-17)**				
	18-24	2.037	0.741	0.006	7.668
	25-35	1.618	0.625	0.010	5.041
	36 and older	1.654	0.604	0.006	5.227
Gender	**(Female)**				
	Male	1.497	0.267	0.000	4.468
Setting	**(Rural)**				
	Urban	-0.698	0.321	0.030	0.498
County	**(Meru)**				
	Kwale	-1.136	0.6	0.058	0.3210
	Isiolo	-0.093	0.572	0.871	0.9120
	Marsabit	-0.301	0.686	0.661	0.7400
	Kitui	-0.755	0.33	0.022	0.4700
Economic status	**(Very low)**				
	Low	-1.939	0.324	0.000	0.144
	Middle	-0.787	0.341	0.021	0.455
	High	-0.705	0.474	0.137	0.494
Occupation	**(Formal employment)**				
	Student	0.813	0.663	0.220	2.255
	Unemployed	0.645	0.533	0.226	1.906
	Informal/casual employment	0.856	0.496	0.084	2.354
	Retired/househusband /wife	-0.981	0.654	0.134	0.375
	Self employed	1.196	0.497	0.016	3.308
Education	**(Post secondary)**				
	Primary/no education	1.253	0.457	0.006	3.5
	Secondary	0.724	0.457	0.085	2.063
Religion	**(Roman Catholic)**				
	Protestant	-0.996	0.318	0.002	0.369
	Muslim	0.841	0.525	0.109	2.319
	Others	0.091	0.443	0.837	1.095
Marital status	**(Divorced/separated)**				
	Single	-0.575	0.311	0.064	0.563
	Married/living with a parner	-1.737	0.756	0.022	0.176
	Constant	**-0.479**	**0.737**	**0.516**	**0.619**

3.5. Producing for Who? The *Khat* Question in Kenya

From a producer's point of view, *khat* is a source of livelihood just as is the case with other economic activities. In Meru county, substantial amount of household land is devoted for the production of *miraa*. In parts of Igembe and Ntonyiri of Meru North, most households have *miraa* as one of the key economic activities. Over the years, *miraa* production has undergone transformation from a purely cultural plant to a commercially cultivated plant. Thus farm practices such as spraying *miraa* plants that were hitherto limited, is the common practice among *khat* farmers in the region. To the farmer, the net effect is more and more profit. However, to the end user, only time will reveal the cumulative effect of this emerging practice of spraying *miraa* plants. Increased population pressure on land, population increase and commercialization of *miraa* production has made it difficult to control. It is also worrying that there are a number of farmers who produce *miraa* which they rarely chew, and if they do, it is from selected plants that they have left without spraying for their own use. Thus begs the question: whom are such farmers producing for?

Use of *khat* (irrespective of type) is also associated with an array of health effects. The perceived effects range from insomnia, loss of appetite, hallucinations, ulcers, teeth decay, loss of memory, ailments and deaths linked to use and finally mental impairment in some cases. Further, there are several socio-economic effects especially those stemming from *khat* addiction. Given the un-checked production practices and the associated user effects, the question of some form of regulation comes into play. Balancing producers and consumers interests is critical. On the basis of data generated, some form of regulation in the industry is critical. For most other drugs and substances of abuse in the country, there are legislations that control and regulate the production, sale, labelling, promotion and sponsorship as well as consumption throughout the country.

While *khat* is drug of a different nature compared to for instance tobacco, which is largely regulated at the manufactures level, for *khat* it is the fresh raw leaves that are consumed. Further, given the fact that it is the mainstay of the economy of a section of Meru County and a plant whose production and sale has gone un-regulated in the country for many years, seeking some form of regulation may be a gigantic task and perhaps with political undercurrents. However, given the emerging farming practices for *khat*, increasing effects of use and linkage with use of other drugs, some form of regulation is important. Such a regulatory framework could also help in streamlining the *khat* industry including introduction of some form of direct taxation. This way the government may be able to raise some revenue which can be used in addressing the challenge of *khat* and other drugs use in the production and key destination markets.

Given the perceived health and socio-economic effects of the use of *khat*, nearly 60% of the respondents held the view that there is need address the issue of *khat* consumption in their locality. The sentiments varied with county which could possibly be linked to the evidence of negative effects of use of the drug to the individual and community. For instance, voices for action are higher in Isiolo (68%),

Marsabit (65%) and Kwale (64%). In Meru county 56% of the respondents held the view that there is need to address consumption of *khat* in the region. In the rural-urban mix, 59% of the urban respondents reacted in the affirmative while 56% held the same view within the rural sub-sample. This evidence is further supported by data from the key informant interviews and the focus group discussions.

Table 20: Respondent's view of the need to regulate *khat* consumption

Indicator	Yes	No	No Response
County			
Kwale	64.1	28.2	7.7
Isiolo	67.8	32.2	0
Marsabit	65.0	35.0	0
Kitui	46.0	41.7	12.2
Meru	55.8	29.6	14.6
Setting			
Rural	56.1	32.4	11.5
Urban	59.0	35.0	6.0
Total	**57.1**	**33.3**	**9.5**

While there is some consensus on the need to regulate the production, sale and consumption of *khat* in the counties under review, strategies suggested are diverse. First, data points at the need to evolve some form of policy framework to guide the production, sale and consumption of *khat*. As it is now, it is free for all: unregulated production and especially the issue of use of chemicals in the production process. In the case of sale and consumption, even under-age persons can access *khat* if they choose to. Such a policy framework should be explicit with respect to sale and use to persons under eighteen years and the need to treat *khat* like other drugs and substances of abuse. The second strategy is enhanced awareness on the negative effects of *khat* consumption. Unlike alcohol and other drugs and substances of abuse where there are concerted efforts to educate the public on the effects, in the case of *khat*, there is very little in that respect. Yet, *khat* consumption has a number of negative health and socio-economic effects that if left unchecked could have devastating effects to the individual and the community.

The third strategy in addressing the challenge posed by *khat* is ban of production, sale and consumption of the drug. This suggestion was however not as pronounced as were awareness creation as well as regulation. Already *khat* sale and consumption has been banned in a number of European countries. In the East Africa region, sale and consumption of *khat* in Tanzania is illegal. In the European context, banning *khat* is easier since that context is only faced with the challenge of sale and consumption. However, in the Kenyan context, advocating for ban of *khat* will be in no doubt a daunting undertaking. A total ban may mean loss of a means of livelihood for thousands of people who directly or indirectly depend on *khat* for survival. In

both Igembe and Ntonyiri regions, virtually all the people there will need to be re-socialized into other forms of earning a livelihood. Thus the choice of this strategy demands a rigorous audit of the *khat* balance sheet in a way that strikes a balance between individual, community and national interests. Such a choice should also be backed with solid scientific evidence that reasonably positions *khat* in the same cluster as are other banned substances of abuse such as narcotics.

PART FOUR

CONCLUSIONS AND RECOMMENDATIONS

4.1. Conclusions

This survey focuses on *khat* with an emphasis on: (i) the trends in the production of *miraa*; (ii) the awareness, availability, use, affordability and accessibility parameters; (iii) the perception of *miraa* producers and consumers with regard to its addiction; (iv) the socio-economic and health impacts of *khat* consumption; and informing policy on the campaign against drugs abuse and specifically with a bias on *miraa*. The conclusions and recommendations on the way forward stem from these objectives.

(i) The results indicate that *miraa* production in the Meru region has been on the increase over the last five years. Production has extended to non-traditional growing zones such as Imenti as well as the marginal areas of the traditional growing zones of Igembe and Ntonyiri. This increased production has been fuelled by the commercialization of *miraa* production and the allure of the perceived profits that acrue from the *miraa* economy. In turn, this has fuelled the spraying of *miraa*, a practice that traditionally was anathema in the *miraa* growing zone. Such a practice if not well regulated is likely to have an adverse effect on the consumers heath.

(ii) The results indicate varying levels of awareness, access and use of *khat* by rural – urban dichotomy, county, gender, religious orientation, education and occupation. For instance, slightly higher awareness levels were reported among male respondents as well as those in urban residences. A substantial proportion of the respondents (62%) hold the view that *miraa* is easily available, while for muguka only 33% held the view that it is easily available. Accessibility varies with the type of *khat* (i.e. whether *miraa* or *muguka*) as well as by county. Isiolo and Marsabit reported the highest accessibility levels as compared to Kwale, Kitui and Meru. Finally, there is a widespread perception that *muguka* is relatively cheaper than *miraa* and hence more accessible in terms of cost.

(iii) That current use of *khat* was estimated at 54% from a lifetime prevalence of 61%. For *miraa* current use stands at 45% compared to *muguka's* 23%. Current use varies with gender, rural-urban mix, being male, being a Muslim or a Catholic, being a casual worker, students and being unemployed. High level of use was reported among these groups. At the county level, both Isiolo and Marsabit registered the highest levels of current use at 67% and 585

respectively. In testing the robustness of the cross-tabulated results, a simple OLS regression model shows that the use of *khat* is highly correlated with being male, being in informal employment, rural residence, level of education and county of residence.

(iv) That the mean age of initiation to use of *miraa* was estimated at 17.6 years. Friends were found to be key to a persons entry into the use of *khat*, with 76% of the respondents alluding to the role of friends in their first encounter with *khat*.

(v) The reasons for using *khat* vary and are both contextual and individual. Some of the contextual factors include being idle, peer pressure, being unemployed, negative media influence or even stress. Desire to relax, having fun, 'killing time' top the list of very specific reasons cited for using *khat.* Users also result to *khat* due to its ability to keep the user awake.

(vi) There are also a number of factors that were associated with offering some level of protection from induging in *khat* use. Some of the factors include: cost or lack of money to buy the drug, the drug not being readiy available, awareness of the negative effects, being sorrounded by friends who do not use *khat,* parental restrictions, religious values as well as personal principles to lead a drug free life.

(vii) Although around 70% of the respondents consider *khat* a drug, more than 90% approve of its use. It is a drug with wide acceptability across all the counties studied. This is perhaps a paradox that requires further inquiry.

(viii) *Khat* use is associated with an array of health and socio-economic effects. Qualitatively, *khat* use is associated with lack of sleep, hallucinations, lack of appetite, stomach ulcers, tooth decay, low libido, effects to the unborn child if taken by a pregnant woman and loss of memory. In some cases, *khat* use was associated with loss of life as a result of related ailments. From a socio-economic point of view *khat* use breeds idleness, irresponsibility, crime, wastage of household resources and the problem of addiction.

(ix) *Khat* users abuse multiple drugs. 72% of the current users of *khat* use other drugs and substances of abuse to attain their desired level of potency. *Khat* can therefore be regarded as an entry point for use of other drugs and substances of abuse. Among the drugs used are: various forms of alcohol, various tobacco products, bhang and heroin.

4.2. Recommendations

From the findings of this study, a number of recommendations suffice:

a. This study found out that production, sale and consumption of *khat* is an overtly highly unregulated sector. This is despite the perceived health and socio-economic impacts. With practices such as unregulated spraying of *khat* during production; sale and consumption and especially with respect to the ability of *khat* to induce use of multiple drugs, continued lack of regulation may help mitigate some of these negative aspects. Some regulation of the industry could also generate some revenue part of which can be used by NACADA in the campaign against *khat* abuse. This is however not to say that regulation will be a panacea to the challenge posed by *khat,* but evidently it is the right step to undertake. Evolution of a functional regulatory framework for *khat*, will involve a diversity of stakeholders including: National Assembly, Senate, Ministry of Health, Ministry of Agriculture, relevant county governments, Ministry of Interior as well as relevant specialized government agencies.

b. Secondly, the survey demonstrates the linkage between *khat* and use of other drugs and substances of abuse. Alcohol, tobacco and consumption of bhang is widepsread among users of *khat.* Hence in regions where *khat* consumption is prevalent in the country (e.g. Isiolo, Marsabit, Meru and Kwale) campaigns should focus on localized drugs such as *khat* and through such a strategy the war against other drugs and substances of abuse is likely to be won.

c. In the past, NACADA has laid emphasis on alcohol, tobacco and the fight against narcotics. The challenge possed by *khat* is real and require concerted effort as is the case with the current campaign against alcohol and other drugs. On the ground, there appears to be some level of silence on *khat*. By talking about the need to address the challenge possed by *khat* to individuals and communities, the Authority will help communities to rethink and start confronting this challenge more pro-actively. Of importance is the need for enhanced public education on the negative effects of use of *khat*.

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Annex 1: Sampling Points

County	District	Division	Location	Sub-location	No. of Interviews
Kwale	Msambweni	Diani	Diani	Ukunda	43
		Lunga Lunga	Dzombo	Malamba	26
	Kinango	Kasemeni	Kasemeni	Mazeras	7
	Kwale	Matuga	Tiwi	Simkumbe	8
		Matuga	Waa	Matuga	7
	Sub-total Kwale County				**90**
Isiolo	Isiolo	Central	Central	Bullapesa	48
		Central	Central	Odha	10
		Central	West	Burat	13
		Central	West	Isiolo West	8
		East	East	Wabera	23
		East	East	Kiwanjani	5
	Sub-total Isiolo County				**106**
Kitui	Kitui	Central	Itoleka	Itoleka	14
		Central	Kyangwithia East	Mulundi	15
		Central	Mulango	Wikililye	18
		Yatta	Kwa Vonza	Mukuyuni	29
		Ikanga	Ikanga	Kathungu	12
	Mwingi	Central	Mwingi	Mwingi	42
	Kyuso	Kyuso	Kyuso	Gai	22
	Sub-Total Kitui County				**152**
Meru	Imenti Central	Kibirichia	Kibirichia	Kimbo	9
		Abothuguchi Central	Kariene	Kariene	9
	Imenti North	Nkuene	Mikumbune	Mikumbune	19
		Abogeta	Kanyakine	Kanyakine	15
		Buuri	Kiirua	Kiirua	12
		Mirigamieru East	Chugu	Kithoka	16
		Mirigamieru West	Igoki	Gachanka	19
		Timau	Kisima	Buuri	19
	Tigania	Muthara	Muthara	Kitharene	11
		Karama	Karama	Mbaranga	12
		Tigania Central	Kiguchwa	Kiguchwa	11
	Igembe	Igembe North	Kangeta	Kangeta	15
		Igembe Central	Maua	Kaibu	31
		Mutuati	Naathu	Nkandone	26
		Laare	Ntunene	Ntunene	13

County	District	Division	Location	Sub-location	No. of Interviews
	Sub-total Meru County				**236**
Marsabit	Marsabit	Central	Mountain	Township	8
		Central	Mountain	Wabera	16
		Central	Nagayo	Majengo	18
	Sub-total Marsabit County				**41**
	TOTAL SAMPLE				**625**

Annex 2: List of Focus Group Discussion

	Target	County
1	Miraa traders and Users	Isiolo
2	Miraa producers (Men)	Meru
3	Women FGD	Meru
4	Youth FGD	Kitui