

Alcohol dependence: Does the composition of the available beverages promote it?

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ABSTRACT

Affordability and availability of alcohol are factors that have been associated with alcohol dependence. Ethanol content in the alcoholic beverages is an important determinant in alcohol dependence. Quality control of alcoholic beverages available in the market is important in safeguarding the health of alcohol consumers. Few studies in Kenya have determined the chemical composition of alcohol used by the study participants. Objective: To determine the chemical composition of alcoholic beverages used by a group of alcohol dependent study participants. Design: The study was a clinical trial with pre and post measurements. Method: The CIDI and WHO-ASSIST were administered to 188 alcohol-dependent persons at intake and after six months. A researcher-designed socio demographic questionnaire was also administered at intake. Alcohol beverages were randomly collected from the location of the study area and their chemical composition analyzed using gas chromatography. Results: The mean AUDIT score of the participant was 28.6 for male and 26.6 for females. Three of the alcohol samples collected was illicit brews collected while 11 were licit. Four out of the eleven licit brews had ethanol levels that did not comply with the set government standards. Conclusion: Illicit brews with high ethanol content are available in the Kenyan market, while some of the manufacturers of the licit brew do not comply with government set content recommendations.

Keywords: Alcoholic Beverages; Ethanol; Composition; Illicit; Licit

1. INTRODUCTION

The control of composition of alcohol standard is done by the Kenya bureau of standards (KEBS). The Kenya Bureau of Standards recommends spirits, gin whisky and brandy to contain a minimum 37.5% of alcohol by vo-

lume, while beer should have 4% - 8%, fruit wine 8% - 14% fortified wine 13% - 34% alcohol by volume.

There is an overwhelming proliferation of illicit alcoholic brews both in the urban and rural parts of Kenya. This prompted the law makers to enact the new Alcohol Control Law. According to the newly passed law better control of alcohol quality and enforcement of the laws has been proposed. National Agency for the Campaign Against Drug Abuse (the government body responsible for dealing with substance abuse) acknowledges that abuse and misuse of alcohol and other drugs in Kenya has now reached magnitudes that may lead to a national disaster if timely measures are not put in place [1].

The Kenya Alcoholic Drinks Control Act, (2010) defines alcohol as “the product known as ethyl alcohol obtained by fermentation and distillation of any fermented alcoholic product”. “Alcoholic drink includes spirits, wine, beer, traditional alcoholic drink and any one or more such varieties containing one-half of one percent or more of alcohol by volume” [2]. Worldwide three types of alcoholic beverages namely, beer, wine and spirits. Beer and wine have lower alcohol content as compared to spirits.

Ideally the definition of alcohol should be at an ethanol content level low enough to include most of the alcoholic beverages consumed in the country. Such definition takes into consideration the alcohol by volume content of the drink [3]. Amounts of alcohol consumed by a person depend partly on the ethanol content. Estimates of both mean volume of alcohol consumption and heavy drinking amounts are influenced by variation in alcohol concentration and quantity [4]. People from poor communities prefer cheap and potent alcohol.

The use and abuse of alcohol in Africa involves both local and industrialized types of alcohol [5] with as much as half of the consumption being unrecorded alcohol [6]. Traditional drinks including homemade brews and distilled beverages accounts for 74% of the total alcohol consumption in Kenya [7]. The use of the local traditional brews poses a danger to the society for a number

of reasons. Firstly, the manufacture of the traditional brews is usually unhygienic and at times the brews have been laced with methanol resulting to deaths blindness and disabilities [8]. Secondly, most of the brews are manufactured illegally without control on the ethanol content. Thirdly, the cost of the brews is relatively lower than that of the legal brews and therefore the majority of the alcohol users can afford it. Kenya has currently passed a law to legalize traditional and illicit brews so as to regulate production, sale and consumption of alcoholic drinks [1].

Kenyans have a hazardous drinking pattern of alcohol which can cause social and medical harm [7,9] with an increasingly use by underage and young persons [10]. These coupled with a reported increase in lifetime drinking among young, black African; and use of drugs by females as a way to cope with current or past life stressors [11,12] demands that quality control of alcoholic brews be instituted and enforced.

Anecdotal reports indicate that consuming killer substances bottled in filthy backyards and cleverly labeled as fortified wine, gin, opaque beer, vodka, brandy or rum are currently sold in the Kenyan market. According to anecdotal reports the suspect drinks, said to control 80 per cent of the wines and spirits market, contravene all the mandatory requirements for manufacture as well as trade in alcoholic beverages—tax obligation, quality certification, wholesomeness and packaging. Cheap alcohol package in small quantities (250 milliliter) which have in the past being available in the Kenyan market has currently being prohibited by the new Alcoholic Drinks Control Act, 2010.

In Kenya, alcohol consumption is highest in poor communities where potent home brewed alcohol is cheap and readily available. Quality control is weak; meaning ethanol content can at times be dangerously high. Examples of such home made brews include, “muratina”, “mnazi”, “changaa”, “mbangari”, “busaa”, and “kumikumi”. These are the illicit brews that the newly passed law (Alcohol Drinks Control Act) intends to make licit and industrialize the production in attempt to protect the alcohol users from harmful effects of contaminated illicit brews (Kenya Gazette supplement, 2010). Since cost and availability of alcohol are factors that influence alcohol use an increase in available licit types of alcohol in market may result to more people drinking alcohol.

Illicit drug use has spread from urban and advantaged groups to rural and disadvantaged (poor) communities where youth associate alcohol use with enjoyment, fun and survival [13]. This is true for Kenya where use of illicit alcohol has become common among rural and informal settlement communities where dealing with the alcohol dependence problem is further complicated by

the scarce resources in such communities.

In spite of the high health and social economic costs associated with alcohol use disorders most African governments depend heavily on alcohol industries for revenue received through taxation. These coupled with employment opportunities for people gives the alcohol industries a bargaining power when it comes to introduction, implementation and enforcement of alcohol policies in Africa.

2. METHOD

Ethical approval for the study was obtained from the Kenyatta National Hospital/University of Nairobi ethical review board. Permission to collect the illicit alcohol brew samples was obtained from the Ministry of Public Health and all ethical considerations were adhered to. One hundred and eighty eight participants of a community based detoxification and rehabilitation programme were asked to indicate the types of alcohol beverages they were using in order of prevalence irrespective of whether the brews were licit or illicit. Fourteen most commonly used brews were randomly purchased from the twelve villages located within the study area.

The purchased alcohol beverages were given a serial number and taken to the Government Chemist for chemical, analysis principal investigator and a public health officer.

The chemical composition of the alcohol samples was determined through gas chromatography.

3. RESULTS

A total of 188 participants underwent community-based detoxification but only 156 were followed up for the six months. Majority (91.5%) was male and 8.5% were female. Majority (60.5%) of the participants had begun drinking alcohol before the age of 18 years, with the mean AUDIT score being 28.6 for males and 26.6 for females. The mean age of the group was 31.9 years, with majority (84%) of the participants aged below 40 years. The majority (53.3%) of the participants earned an income of less than 143 United States dollars per month. The majority (51.1%) were married, while 38.9% were single. The remaining participants were either separated or divorced.

Fourteen samples of alcoholic beverage were collected from the study area and labeled F517 - F527 for the licit brews and F480 - F482 for the illicit brews. Two of the illicit brews were within the beer range of alcoholic brews while the third one was within the spirit range. The results are shown in **Table 1**.

Four out of the eleven licit brews had not complied with the recommended Kenya Bureau of Standards

Table 1. Ethanol content of illicit alcohol beverages.

Sample No.	Sample description	Ethanol content % (v/v)
F480/07-08	Chang'aa	33.54
F481/07-08	Muratina	4.84
F482/07-08	Busaa	6.03

ethanol levels. Samples in report F523 and F525 had lower than recommended ethanol levels. Sample F518 was labelled as an herbal brew but was found to have a high content of ethanol (8.9% v/v), qualifying it to be a stronger than beer and in the range of fruit wines (8% - 14% v/v ethanol content). The manufacturer labeled sample F519 as a traditional brew but the ethanol content (31.5% v/v) which qualified it to be a spirit. The results are shown in **Table 2**.

4. DISCUSSION

Published data on chemical composition of alcoholic beverages used by alcohol dependent persons is scarce in Africa. There is a wide range of alcoholic brews sold in Kenya and although the majority of these brews are licit, a good number of them are illicit and are prepared, sold in secret and is therefore unrecorded. There is no recommended ethanol content in the illicit alcoholic brews since they are manufactured illegally. This poses danger of dependence to the consumers since some of the alcohol brews may be potent. The manufacture of illicit brews is common in informal settlements like the current study area. The law enforcers are unable to penetrate the densely populated settlements. The current study did not

find any methanol or impurities in the alcoholic brews. In the past deaths and blindness has been reported after use of illicit brews laced with methanol and toxic substances [8]. In spite of the reported dangers people continue to drink the brews because they are cheaper and sometimes more potent than the licit brews. Maintaining the recommended alcohol standards is difficult in informal settlements where law and order is mostly not observed and law enforcers may not be able to penetrate the area due to unplanned and congested residential and business premises. Furthermore, adequate social or health facilities are unavailable to assist the dependent persons, majority of whom cannot afford the cost of treatment.

There was a discrepancy between the actual and the recommended ethanol content in the licit brews. Since taxation of alcoholic brews depends on the ethanol content such discrepancies are likely to benefit the alcohol manufacturers. According to [4] variation in alcohol concentration is one of the factors that determine volume consumed. The finding that some brews marketed as herbal drinks had a high ethanol content indicates that non suspecting Kenyans are using alcohol unknowingly. Herbal beverages are used by many people as health drinks. Such users of "herbal" drinks that have high ethanol content are likely to become alcohol dependent due to the regular and heavy use, and eventually damage their health.

Though industrialized types of alcohol are used in Kenya, there is currently a heavy use of traditional beverages which are cheaper and more potent with a high unrecorded consumption of 5 litres per capita [3,14]. The

Table 2. Analytic report of illicit alcohol beverages.

Sample identity Number	Sample description	Ethyl alcohol content % v/v	KEBS recommended levels of ethanol	Methanol levels (PPM)	Total dissolved solids (m/v)%	Max. recommended dissolved solids	KEBS Compliant/ Non-compliant
F517	Tiger brandy	39.16	37.5 (min)	Nil	0.045	2.0	Yes
F518*	Miti ni dawa	8.90	Nil	Nil	Nil	Not indicted	No
F519	Kienyenji African brew	32.21	Nil	Nil	0.0029	0.0284	No
F520*	Stega traditional brew	3.97	<4	Nil	Nil	Not indicated	Yes
F521	Kenya king gin	41.92	37.5 (min)	Nil	0.0047	1.5 (max)	Yes
F522	Hardyman gin extra	38.84	37.5 (min)	Nil	0.0168	0.5 (max)	Yes
F523	Free gin	32.21	37.5 (min)	Nil	0.0029		No
F524	Raaz brandy	38.07	37.5 (min)	Nil	0.0352	2.0 (max)	Yes
F525	Lakers extra golden spirits	33.58	37.5 (min)	Nil	0.0029	1.5 (max)	No
F526	Kana extra golden label	39.29	37.5 (min)	Nil	0.0252	Not indicated	Yes
F527	Safari ice berg liquor	11.45		Nil	Nil	Not indicated	Yes

*Traditional alcohol brew; KEBS: Kenya Bureau of Standard; PPM: Parts Per Million; m/v: Milligram Per Volume; v/v: Volume by Volume.

current study confirms that some of the traditional beverages are highly potent with the ethanol contents in the range of spirits. This coupled with a hazardous drinking pattern of Kenyans endangers the health of the users.

A new alcohol law has been instituted to regulate the sale of alcohol to reduce the complications associated with their use. The challenge is law enforcement especially in the informal settlements. Maintaining standard control of composition of alcoholic brews may help reduce the prevalence and severity of alcohol dependence.

5. CONCLUSIONS

The findings of the current study indicates not only discrepancies in the expected and real ethanol content in the Kenyan alcoholic brews but also high ethanol containing illicit brews alcohol beverages.

Curbing of manufacture of illicit alcohol beverages and enforcing quality control on alcohol available in the market is important. Law enforcers should ensure that all alcoholic drinks in the market are licit and complies with set standards.

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