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## Substance abuse among university students. A look at predisposing factors

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### Abstract

**Background:** Most young people are exposed or involved in substance use at very early ages and this has become a subject of public concern worldwide partly because of its potential to contribute to unintentional and intentional bodily harm Problem. Despite the growing problems of global substance abuse, accurate information on the prevalence of substance abuse among university students in Kenya is still inadequate.

**Objective:** The study therefore evaluated the prevalence of substance use and factors influencing substance use among youth attending university in Kakamega Design. The study design was a cross-sectional analytical, that utilized quantitative methods *Setting*. The study was conducted in Kakamega County, located in Western Kenya.

**Sample:** Random sampling was utilized to select the study group Analysis. Data was analyzed using SPSS version 25.0. Both descriptive and inferential statistics were used. Data presentation was done using frequency tables, charts and in narratives. The alpha level for all the computations was considered significant at an  $\alpha < 0.05$ .

**Results:** Out of the 152 college students, 53.9% of them were female. The students mean age was 21.26 (SD 2.43) years with median of 21 years (range 18 to 25 years). Majority 46.7% of the youths were aged between 18 to 20 years. Most of them (88.2%) were single. Of the 152 university students in Kakamega, 42 (27.6%) of them were using different substances. Despite the use, majority 75.7% confirmed that substance use was against college regulations. Peer pressure 75%, poor parenting 19.1% and the ease of availability 15.1% were the commonly stated reasons for using substance. Married students (OR 0.12, 95% CI 0.02 to 0.8), students who believed that it was wrong to use substances (OR 0.4, 95% CI 0.12 to 0.7) were less likely to use substances. On the other hand, students who believed that substance boosted their emotion (OR 2.9, 95% CI 1.55 to 5.7) and those who stated that the substance affected their moods (OR 4.5, 95% CI 2.1 to 10.2) were more likely to use substances.

**Conclusion:** It was concluded that substance use among university students was high. Youthful factors such as demography, beliefs, and emotional needs greatly influenced substance use.

**Recommendation:** Based on the findings of this study, steps such as enforcement of substance use laws, youth skill empowerment for job creations, developments of rehabilitation facilities, integration of substance use and abuse in the education curriculum, and emphasis on guidance and counseling to control indiscipline in school are paramount in mitigating substance use.

**Keywords:** Substance abuse, University students, prevalence, predictors, health promotion, mental health, Kakamega, Kenya

### Introduction

**Background:** Substance use refers to the consumption of psychoactive substances, including alcohol and illicit drugs. The NIDA (2017) lists substances of use, including tobacco, alcohol, illicit and prescribed drugs, indicating their common and street names, how they are generally administered, and their potentially harmful health effects. The use of psychoactive substances among adolescents and young adults has become a subject of public concern worldwide partly because of its potential to contribute to unintentional and intentional injury (Atwoli, Mungla, Ndung'u, Kinoti, & Ogot, 2011) [4]. US national data indicate that almost one half of adolescents have smoked cigarettes in their lifetime. Among 12th grade students, about 42% have tried marijuana and almost three out of four consumed alcohol in their lifetime (Eaton, *et al.*, 2010) [16]. Factor analysis guiding the identification of clusters of behaviors among a large sample of adolescents indicates that adolescents engaging in risk-seeking behaviors, such as tobacco, alcohol and marijuana use have almost twice the odds ratio of unhealthy eating (Oreskovich, *et al.*, 2015) [38].

Substance use and poor dietary practices are prevalent among adolescents, (Eaton *et al.*, 2010)<sup>[16]</sup>.

A study by Krill, Johnson, and Albert (2016)<sup>[26]</sup>, examining substance use, physical activity and diet in a sample of 18-year-old male and female students found clustering of unhealthy behaviors; both males and females who smoked engaged in unsafe drinking and females had low levels of fiber whereas males had high fat intake. It has also been found that across cultures, among the European American, African American, and Chinese adolescents, drug use was highly associated with high sensation seeking and low authoritative parenting (Krill, Johnson, & Albert, 2016)<sup>[26]</sup>. Research shows that at-risk youth who use substances are more likely to be involved in violent behavior, drop out of school, truancy, and engage in multiple unhealthy behaviors (Atwoli *et al.*, 2011)<sup>[4]</sup>. Previous research suggests that friends are an important source of cigarettes, alcohol, and illicit drugs. The grave consequences of substance use reported were that there was prevalence of substance use disorders (SUDs) among adolescents who received services in public sectors of care in San Diego (Oreskovich *et al.*, 2015)<sup>[38]</sup>.

Kenya has not been spared the pestilence of drugs by nature of its transit point for hard drugs from Columbia to European capitals. This drug trafficking has led to drug consumption and dependence among secondary and college students. While opening the Narcotics Drugs and Psychotropic Substances Control Seminar, it was noted that 60 percent of drug users are youth less than 18 years of age and recommended that drug users should be made to realize the dangers of drug use and abuse (Vallath, *et al.*, 2017)<sup>[58]</sup>. A pilot survey carried out found that in most school compounds, there is a ready and wide variety of drugs. For instance, in Lugari District, it was confirmed from the school records that in the last five years, over 20 students were either suspended or expelled from Lumakanda Secondary School for having taken drugs in the same year (King'ori, Kithuka, & Maina, 2014)<sup>[25]</sup>. Between 2001 and 2002, NACADA commissioned the first ever national baseline survey on the abuse of alcohol and drugs in Kenya which targeted Kenyan youth aged between 10 and 24 years. This revealed that substances of use, both illicit and licit were forming a sub-culture amongst Kenyan youth. Contrary to common assumptions, the survey demonstrated that substance use was widespread and that it affected the youth mostly and cut across all social groups. The report concluded that substance use often begins at a very young age: for example, for students and nonstudents, it starts when they are in primary or secondary school (Changalwa, Ndurumo, Barasa, & Poipoi, 2012)<sup>[8]</sup>.

Another country wide survey conducted among students and school-leavers found that hard drugs like heroin, ecstasy, cocaine and mandrax were widely used in schools by children as young as ten years. The survey revealed that some legal substances such as alcohol, tobacco and khat were commonly abused leading to high incidence of violence in schools. Forty-three percent of students from Western Kenya confessed to alcohol abuse 41 percent in Nairobi, 27 percent in Nyanza, 26 percent in Central Province and 17 percent in Eastern province. Nairobi students led in cigarette smoking followed by Central, Coast, Eastern and Rift Valley provinces (Masese, Joseph, & Ngesu, 2012)<sup>[30]</sup>.

Risk factors are those that make substance use more likely. Research asserts that for individuals who begin using illicit substances at an early age, several risk factors may increase the likelihood of continued and problematic use in later ages, when substance related crime becomes much more likely

(Stone, Becker, Huber, & Catalano, 2012)<sup>[53]</sup>. A number of studies have suggested that there are risk factors which can lead the youth to use alcohol and other substances. They may turn to alcohol and illicit drugs to alleviate the stress associated with change, to fit in with peers, or they may be modeling the behavior of a family member. Whatever the cause of onset, it can lead to increased substance use and other delinquent activities. Knowledge of the risk factors that lead to adolescent substance use can foster greater understanding of the total problem (Sloboda, Glantz, & Tarter, 2012)<sup>[51]</sup>. There are three basic categories of risk factors: demographic, social and behavioral. Analysis of demographic risk factors suggests that age and gender can predict the course of substance use. Social risk factors involve the influence of the family, peers, and the environment. Many studies suggest that in families where the use of alcohol and other drugs is high, the youth is also more likely to become involved. Youth whose peer group is involved with alcohol and other drugs is also more likely to become involved (Wills, Knight, Williams, Pagano, & Sargent, 2015)<sup>[63]</sup>. Several environmental factors also have been implicated. Lack of appropriate law enforcement has been found to contribute to the prevalence of teenage drinking (Merikangas & McClair, 2012)<sup>[32]</sup>. Behavioral risk factors also can lead to adolescent substance use. Research has shown that the use of certain substances, such as alcohol and marijuana, can lead to increased use and as well the use of "harder" drugs (Walther, Morgenstern, & Hanewinkel, 2012)<sup>[60]</sup>. Clearly, there are many factors which may lead or make a youth to use mind-altering substances. Some of these factors are discussed individually below.

In Kenya, the most commonly used and even abused drugs are alcohol, tobacco, bhang (marijuana), glue, miraa (khat) and psychotropic drugs. From the foregoing, drug use is a reality among the youth and Kenya is not exceptional (Lai, Cleary, Sitharthan, & Hunt, 2015)<sup>[27]</sup>. According to Lai, Cleary, Sitharthan and Hunt (2015)<sup>[27]</sup>, if the rate at which young people have indulged in drug use is not curbed, then the future of the societies in Kenya is worrisome and a solution must be urgently formulated (Lai, Cleary, Sitharthan, & Hunt, 2015)<sup>[27]</sup>. The government has also put effort through the Alcoholic Drinks Control Act, 2010 to curb the vice (Whitesell, Bachand, Peel, & Brown, 2013)<sup>[61]</sup>. Despite all these associated problems and the government's effort to control it, the vice still seems to be increasingly witnessed in the society (Lai, Cleary, Sitharthan, & Hunt, 2015)<sup>[27]</sup>. More broad studies with organized approaches especially in third world countries are needed. In addition, more studies are needed to produce more conclusive results on substance abuse in university settings. Hence the study sought to determine the predictors of substance abuse among university students.

## Methods

### Study design

This study used a cross sectional research design since the data dealt with the effects of natural occurring phenomena (Tuchman, 1978). The design was also relevant since it entailed the collection of data on more than one case and at a single point in time in order to collect a body of data in connection with two or more variables which would then be examined to detect the patterns of association (Bryman, 2004). This study design was used since it allows two extensive data collection on a large population where direct observation by the researcher is not required.

### Participants and recruitment

The population of the study were undergraduate students in year 1, 2, 3 and 4, both resident and non-resident students. The study population comprises of diverse ethnic background, religion, programs and social economic status in Kakamega County. The exclusion criteria included post graduate students. Some post graduate students are lecturers while majority of others are working. Their time table was different to that of undergraduates hence the reason for not including them. The criterion for sample size estimation was based on the stated objectives and the prevalence of substance use which was 14.2%. This is the highest prevalence among the substances and therefore it catered for those with lower prevalence. The estimated degree of accuracy which was used in the study was 0.05 (i.e.,  $d=0.05$ ). Accordingly, at permissible error of 5% and substance use prevalence at 14.2% (Atwoli *et al.*, 2011) [4] using fisher's *et al* formula 1998, the sample size was;  $n=Z^2p(1-p)/d^2$ . The study sample was selected using stratified random sampling technique based on records of those students in session at the Registrar Academic Affairs office. Students who consented were stratified into year of their study then proportionately sampled them according to their gender.

### Procedures

Ethical approval was sought from institutional ethics committee and from other authorities in the institution. The researcher then organized to meet all the sampled students who met the criteria for the study to be briefed on the nature of the study. Those willing to participate completed the questionnaires which were self-administered. The researcher then collected the completed questionnaire. Collected data was coded, cleaned, and stored in a safe place before entry into computer for analysis. No further approval was needed since the project did not require access to patients or personal data. All participants were informed of the complete confidentiality of the data and were notified of the subsequent handling of the data following analysis.

### Data Analysis

Data collected was cleaned and stored in both soft and hard copies. Data were password protected, available only to the researcher. Data gathered was analyzed quantitatively using both descriptive and inferential statistics. Descriptive statistics namely frequencies, percentages was used to analyze the data. Frequency tables represent the most commonly used method in presenting data in descriptive research (Kathuri & Pals, 1993). Associations between selected variables were tested using Chi square. The test of significance was set at  $\alpha = 0.05$  significance level. The analysis was done using Statistical Package for Social Sciences (SPSS) version 25.

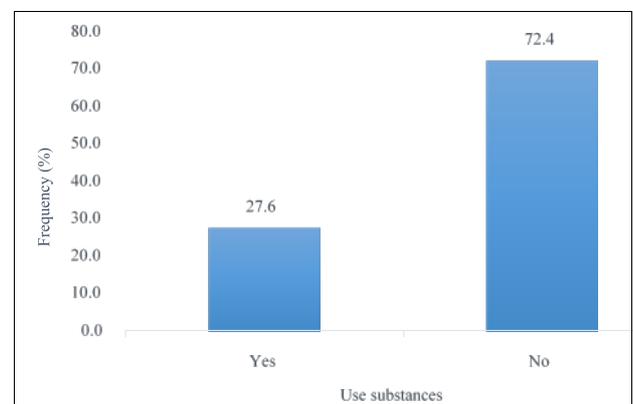
### Results

Out of the 189 enrolled youths, all the data were available for 152 youth (response rate of 80.4%) who were therefore included in the statistical analysis. There were nearly equal distributions in gender 53.9% female verses 46.1% male. The mean age of the participants was 21.26 (SD 2.43) years with median of 21 years (range 18 to 25 years). There were two age group peaks; 46.7% aged between 18 to 20 years and 27% aged 21 to 23 years. Majority (88.2%) of the participants were single, 10.5% were married and only 1.3% of them were either separated/divorced or widowed. Almost all of the participants (97.4%) were Christians, only 2.6% who were Muslims. Summary of findings is in Table 1.

**Table 1:** Socio demographic characteristics of study participants

Characteristics	Sample size	%
<b>Age Group</b>		
18-19	48	31.6
20-21	39	25.7
22-23	25	16.4
24-25	40	26.3
<b>Gender</b>		
Male	70	6.1
Female	82	53.9
<b>Marital status</b>		
Single	134	88.2
Married	16	10.5
Separated/Divorced/Widowed	2	1.3
<b>Religion</b>		
Christianity	148	97.4
Muslim	4	2.6

Out of the 152 participants, 42 (27.6%) of them stated using different types of substances while 110 (72.4%) were non-users of substance as shown in figure 1.



**Fig 1:** Prevalence of substance use

### Substance use and its reasons

Table 2 shows the associated reasons for substance use. Majority ( $n=99$ , 62.5%) of the participants stated that substance was not used within the institutions. Further 75.7% of them believed that substance use was against university regulations, with 65.1% of them believed that it was wrong to use substance. However, those who used substance, 75% stated that it was due to peer pressure, 19.1% stated that substance use was due to poor parenting, with 15.1% stating ease of availability. Only 6.6% of the participants blamed weak substance use policies verses 39.5% who attributed substance use due to stress.

**Table 2:** Substance use and its reasons

Characteristics	Sample size	%
<b>Substance use against college regulations</b>		
Yes	115	75.7
No	37	24.3
<b>Is it wrong to take substances</b>		
Yes	99	65.1
No	53	34.9
<b>Substance use due to peer influence</b>		
Yes	114	75.0
No	38	25.0
<b>Substance use due to poor parental</b>		
yes	29	19.1
no	123	80.9
<b>Substance use due to weak policies</b>		
yes	10	6.6
no	142	93.4

**Demographic factors associated with substance use**

Table 3 shows characteristics of the youth associated with substance use. In the bivariate analyses, participants who were currently married were less likely to use substances than those who were either separated divorced or widowed (OR 0.12, 95% CI 0.02 to 0.8). Participants who believed that it was wrong to use substances were actually less likely to use these substances than those who did not see anything wrong with the use of substance (OR 0.4, 95%CI 0.12 to 0.7). On the other hand, participants who believed that substance boosted their emotion were more likely to use substances than those who did not believe on the performance boost by substance

(OR 2.9, 95% CI 1.55 to 5.7). Further, participants who stated that the substance affected their emotions were more likely to use these substances than those who did not believe on emotional influence (OR 4.5, 95% CI 2.1 to 10.2). In multivariate analysis participants who stated that the substance affected their emotions remained more likely to use these substances than those who did not believe on emotional influence (OR 4.7, 95% CI 1.9 to 11.4). Other characteristics that were not associated with substance use in both bivariate and multivariate analysis included, gender, age, religion, and awareness of substance use.

**Table 3:** Demographic characteristics associated with substance use

Participant's characteristics	Sample size	Substance abuse		P value	Bivariate OR (95% CI)	Multivariate ORCI (95%)
		No	%			
<b>Gender</b>						
Male	70	25	35.7	0.084	0.5(0.3-1.07) Referent	NS
Female	82	17	20.7	Referent		
<b>Age Group</b>						
18-20	71	22	30.9	0.99	NS	NS
21-23	41	6	14.6	0.991	NS	
24-25	39	14	35.9	Referent	Referent	
<b>Marital status</b>						
Single	134	38	28.4	0.082	0.2(0.6-1.2)	NS
Married	16	2	12.5	0.038	0.12(0.02-0.8)	
Separated/Divorced/Widowed	2	2	100	Referent	Referent	
<b>Religion</b>						
Christianity	148	40	27.1	0.396	0.5(0.1-2.2)	NS
Muslim	4	2	50	Referent	Referent	
<b>Work performance boost</b>						
Yes	65	29	44.6	0.001	2.9(1.55-5.7)	NS
No	87	13	14.9	Referent	Referent	
<b>Why wrong to abuse substances</b>						
Affects health	80	16.0	20	0.852	1.1(0.49-2.4)	NS
Affects academic	7	0.0	0	ND	ND	
Affects economy	11	5.0	45.5	Referent	Referent	
Affects emotion	24	18.0	75	0.001	4.5(2.1-10.2)	

No - Number; % - Percentage; OR - Odds ratio; CI - confidence interval; ND-Not Done; NS - Not significant; P values in bold that are ≤ 0.05 indicates the relationship is significant

**Perception factors associated with substance use among youth in Kakamega**

Table 4 shows perception factors associated with substance use among youths attending university in Kakamega. In both bivariate and multivariate none of the factors such as (peer

influence, lack of parental guidance, ease of availability, weak drug use policies, stress, substance use in the institutions, substance use against regulation, types of substance used and punishment adduced to substance user) were not associated with substance user.

**Table 4:** Perception factors associated with substance use among university youth in Kakamega

Perceived contribution to substance use	Sample size	Substance use		P - value	Bivariate OR (95%CI)	Multivariate OR (95%CI)
		No	%			
<b>Substance abuse due peer influence</b>						
Yes	114	28.0	24.5	0.215	0.6(0.3-1.2)	NS
No	38	14.0	36.8	Referent	Referent	
<b>Substance abuse due to poor parental</b>						
Yes	29	8.0	27.5	0.996	0.9(0.46-2.2)	NS
No	123	34.0	27.6	Referent	Referent	
<b>Substance abuse due ease of availability</b>						
Yes	23	7.0	30.4	0.781	1.2(0.4-2.5)	NS
No	129	35.0	27.2	Referent	Referent	
<b>Substance abuse due weak policies</b>						
Yes	10	3.0	30	0.883	1.2(0.3-3.5)	NS
No	142	39.0	27.5	Referent	Referent	
<b>Substance abuse due stress</b>						
Yes	60	21.0	35	0.166	1.5(0.8-2.8)	NS
No	92	21.0	22.8	Referent	Referent	
<b>Substance abuse at institutions</b>						
Yes	57	20	35.1	0.179	1.5(0.8-2.8)	NS

No	95	22	23.2	Referent	Referent	
<b>Substance abuse against college regulation</b>						
Yes	114	35	30.7	0.217	1.7(0.7-3.7)	NS
No	38	7	18.4	Referent	Referent	
<b>Types of abused substance</b>						
Tobacco/Miraa/Alcohol/ Bhang/Hard drugs	16	5.0	31.3	0.124	1.9(0.8-4.6)	NS
Alcohol/Miraa/Bhang	24	5.0	20.8	0.207	2.1(0.7-6.1)	
Tobacco or Miraa/Alcohol	41	11.0	26.8	0.384	0.5(0.2-1.9)	
Miraa or Alcohol or Tobacco	55	19.0	34.5	Referent	Referent	
<b>Punishment for students abusing substance</b>						
Suspension/Expulsion/ counselling/Punishment	18	4	22.2	0.765	1.2(0.4-4.12)	NS
Suspension/Expulsion/Punishment	30	8	26.7	0.475	1.4(0.5-3.9)	
Suspension/Expulsion Suspension or Expulsion or	24	8	33.3	0.252	1.8(0.7-4.9)	
Counselling or punishment	42	15	35.7	Referent	Referent	

No - Number; % - Percentage; OR - Odds ratio; CI - confidence interval; ND-Not Done; NS - Not significant  
P values in bold that are  $\leq 0.05$  indicates the relationship is significant

## Discussion

The prevalence of substance use among college students in Kakamega stood at 27.6% which was significant in our view. Further, drug and substance use has been shown as a silent disaster in Kenya which has claims many lives every year. Strong correlation has been shown between drug use, violence and HIV/AIDS scourge (Brennan, *et al.*, 2012) <sup>[7]</sup>. The problem continues to escalate every year as manifested by the high rate of fatal road accidents, upsurge in the crime rate, violent disturbances, and uprisings in schools. The World Drug Report by UNDCP, (2001) <sup>[57]</sup> reports that there are about 141 million drug abusers globally, including 8 million heroin addicts, 30 million amphetamine users and 13 million cocaine users. The report shows that in the United States and Canada where 360,000 heroin abusers in 1991, and 600,000 in 2000. In the UK, Ireland, Denmark and Italy, 2 percent of 16 and 17-year-olds had used heroin. In America, 6% of young people including students had used cocaine, in the Bahamas 6.4%, and 4.5% in Kenya. Some 8.3% of all young people in the UK and 9% in Ireland had used amphetamine drugs (Degenhardt & Hall, 2012) <sup>[15]</sup>. Different studies have shown varying prevalence of drug use in Kenya and elsewhere among college students. In, Murang'a South District, Kenya about 33.8% of the students were shown to be abusing drugs (Kyalo, 2010). In Mbeere North District, 23.3% of the students indicated that they had abused drugs other than for medical purposes (Mutumi, 2013). In Kisumu Kenya, 57.9% of the respondents had consumed alcohol at least once in their lives (Otieno and Ofulla, 2009) <sup>[39]</sup>.

This study noted that for those youths who used substance, this was majorly due to peer pressure, poor parenting, ease of availability, weak substance use policies and due to stress. Nearly all of the participants (92.9%) experienced unique feeling in the body function after using these substances. Most of the participants 76.2% liked the feelings induced by substance use. Studies have shown that most students use drugs for the purposes of managing physical pain, to manage emotional/psychiatric distress, to manage stressful situations, to serve recreational purposes, and to avoid withdrawal symptoms (Merlo, Singhakant, Cummings, & Cottler, 2013) <sup>[33]</sup>. College students' drug using behavior is influenced by perceptions of peer consumption (Quinn & Fromme, 2011) <sup>[43]</sup>. Members of fraternities and sororities are more likely than non-members to experience symptoms of alcohol dependence, even during the first year of college owing partially to having greater access to drugs (Snipes & Benotsch, 2013) <sup>[52]</sup>. Some aspects of the family environment, such as parental monitoring and supervision, can exert a protective influence against drinking during high school thereby reducing the risk

for heavy drinking during university. Conversely, having a family history of alcoholism increases the risk for drug use and other alcohol-related consequences among college students (Elliott & Carey, 2012) <sup>[17]</sup>.

Youth are curious to discover the sensations and get unique profound feelings. This curiosity has partly been aroused by seductive advertisement on print and electronic media which make the youth falsely believe that it is sophisticated to take drugs for example alcohol and cigarettes. Behaviours exhibited by those who use substances are watering eyes and nose, unusually talkative hence noise making, unusual quietness, unpredictable temper, concentration lapse, and loss of interest in education, carelessness and neglect of one's personal hygiene, general irresponsibility, high irritability, and hostility to close friends, dirty and tattered clothes and normally being in one clothe for many days (Wallhed Finn, Bakshi, & Andréasson, 2014) <sup>[59]</sup>. Most students' use drugs to so that they can avoid life demands and problems as a defense mechanism. Those who are prone to aggression use drugs as an excuse or Justification for their aggressive behavior (Quinn and Fromme, 2011) <sup>[43]</sup>. In some cases, drugs are readily availability e.g., cigarettes in shops, cheap alcohol in wines and spirits shops, khat, marijuana etc. some students are used by dealers to peddle drugs and this increases accessibility of drugs to adolescents. Other factors cited include; family influence ranging from genetic predisposition to alcohol, parental use and acceptance of drugs to poor parenting, family conflicts and economic hardship. Low self-esteem has been associated with academic failure and lack of commitment to educational goals (Padhy, Das, Sahu, & Parida, 2014) <sup>[40]</sup>. Peer pressure in order to gain acceptance into peer group, adolescents are expected to conform and meet requirements of the peer group. Some of the requirements of such peer group may include use of drugs. Personality trait in one study, smokers in junior and senior schools were found to be more extroverted, happy-go-lucky and frank but less agreeable than non-smokers. Indiscipline and early and persistent behavior problems for example, aggressive behavior and delinquency is a way of adolescents asserting their independence and desire for adult status (Allen *et al.*, 2012) <sup>[2]</sup>.

In this study, substance use among the youths attending various colleges in Kakamega locality was associated participants believe values, those who believed that it was wrong to use substances were actually less likely to use them. Emotional boost, participants who believed that substance boosted their emotion were more likely to use substances. Emotional effect, participants who stated that the substance affected their emotions were more likely to use these substances. Recent studies have shown social factors play a

major role in college student drinking, and both school and worksites are social environments that may significantly influence young adult behavior. College students are more likely to engage in heavy episodic drinking than their counterparts who aren't in college, even controlling for age, race, gender, and genetic predisposition. This strongly implicates the college environment as a risk factor for heavy drinking, beyond demographic and lifestyle factors (Jackson, Denny, & Ameratunga, 2014) <sup>[21]</sup>. A study by Suerken *et al.*, (2014) <sup>[54]</sup> showed that having at least \$100 per month in spending money, attending church rarely or never; current use of cigarettes, alcohol, and hookah tobacco; lifetime use of other illicit drugs; and a higher propensity toward sensation seeking were associated with a higher likelihood of having used marijuana at least once at college entry. Hispanic ethnicity, living on campus, and current use of cigarettes and alcohol were associated with a higher likelihood of initiating marijuana use during freshman year (Suerken *et al.*, 2014) <sup>[54]</sup>. Other characteristics that were not associated with substance use among college youth in Kakamega in both bivariate and multivariate analyses included; gender, age, religion, and awareness of substance use. In both bivariate and multivariate none of the factors such as (peer influence, lack of parental guidance, ease of availability, weak drug use policies, stress, presence of substance use in the institution, substance use against regulation, types of substance used and punishment adduced to substance user) were not associated with substance users.

### Conclusions

The study was successful in addressing its objectives. Given the foregoing, the study arrived at the following conclusions: This study has shown that just like in any other sections of Kenya, the college youth in Kakamega are using drugs of various types at a high proportion (27.6%), varying frequency and quantity. The problem could be higher than believed because these study findings were based on participant's report. Among the factors that contributed to drug use as revealed by the study were social reasons such as peer pressure, socialization, role models, family members and close friends. Easy of availability of the substance, weak government policies and stress were among other stated reasons for drug use. This shows that majority of the students used drugs in order to be accepted among their peers. In this study, substance use among these youth was associated with marital status; those who were married were less likely to use substances compared to the separated divorced or widowed. Participants believe values where those who believed that it was wrong to use substances were actually less likely to use them. Emotional boost where participants who believed that substance use boosted their emotion were more likely to use substances. Emotional effect, participants who stated that the substance affected their emotions were more likely to use these substances.

### Recommendations

The following recommendations emanated from the analysis results of the study: Mitigating steps such as enforcement of substance abuse laws, youth skill empowerment for job creations, developments of rehabilitation facilities, and that the churches to play active role in the advocacy on substance abuse. Intervention programs by churches to inform Parents on how to prevent drug abuse among their children. Family and parenting has been cited as a major root cause of substance abuse. Intervention programmes should be designed

to build social skills and stop drug use among those who already use drugs and also amongst those who show early signs of behavior change that could lead to substance use such as depression and defiance. Behavior change strategies by government should be initiated by government. Wider and larger studies to be conducted combing wider area using other research designs including observational studies in order to identify the actual magnitude of substance use within this county.

### Acknowledgments

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### Ethical disclosures

#### Protection of human and animal subjects.

The authors declare that the procedures followed were in accordance with the regulations of the relevant research ethics committee and with those of the Code of Ethics of the Declaration of Helsinki.

### Confidentiality of data.

The authors declare that they have followed the protocols of the university on the publication of the data.

### Right to privacy and informed consent.

The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

### Competing interest

The authors declare that they have no competing interests.

### Authors & contributions

Micky Olutende Oloo and Martin Sisa Yauma conceived the paper, designed and performed the study. Prof Edwin Wamukoya conceived the paper and was the paper's peer reviewer. All authors read and approved the final manuscript.

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### Disclaimer

The findings and conclusions presented in this manuscript are those of the authors and do not necessarily reflect the official position of Masinde Muliro University of Science and Technology.

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