CO-OCCURRENCE OF ALCOHOL, TOBACCO AND OTHER DRUGS AMONG SECONDARY SCHOOL STUDENTS IN KIAMBU AND NAIROBI COUNTIES KENYA

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ABSTRACT

Secondary school students engage in behaviors like use of alcohol, tobacco and other drugs   that compromise their health and future potentials. However, these behaviors are preventable. The current study was designed to establish the prevalence of single and concurrent use of these drugs among students of Kiambu and Nairobi Counties of Kenya. Multi-stage, stratified proportionate, systematic and simple random sampling and purposive methods were used to select participating counties (n=2), district (n=8) schools (n=71) and students (n=1389). However 1088 students were included at analysis as some were eliminated due to inconsistent responses and non responses. Self

administered questionnaire was used to collect data on demographics and alcohol, tobacco and other drug behaviors. Frequency, percentages, Chi Square and logistic regression were used to analyze data. Alcohol was the most used drug (23.5%) followed by khat, cigarette, smokeless tobacco and bhang in that order. Of the current alcohol drinkers, 47.6, 33.1, 28.7 and 26.6% had also used khat, bhang, smokeless tobacco and cigarettes respectively. From logic regressions analyses, alcohol drinkers than abstainers were 6.198 times (95% C.I: 4.146-9.266) more likely to be khat users whereas cigarette smokers than non-smokers were 15.264 times (95% C.I: 8.170-28.519) more likely to use smokeless tobacco. These results provide empirical evidences for a comprehensive prevention and intervention programs that target multiple risk behaviors to promote global health among secondary school students.

Key words: *co-occurrence, ever use, current use and smokeless tobacco*

INTRODUCTION

Students participate in preventable health behaviors such as Alcohol, Tobacco and Other Drug (ATOD) use that contribute to their morbidity, social problems and even mortality experienced in adolescence and early adulthood (USA Preventative Task Force, 1996; Sells & Blum, 1996; Turagabeci, Nakamura & Takano, 2008; Grunbaum *et al*., 2004). Research has shown that those who engage in these risk behaviors often participate in multiple types of behaviors which increase the harm associated with each other separately (Jessor, 1991; Lindberg, Boggers & Williams, 2000; Halpern-Felsher, Millstein & Ellen, 1996; WHO, 2005). In addition to monitoring participation in specific behaviors, it is important to focus on the co-occurrence of risk-taking among students which raised the curiosity for this study.

1.1 Prevalence of Alcohol, Tobacco and Other Drugs

According to the world Health Organization there are about 2 billion (33%) people aged 15-65 worldwide who consume alcohol beverages and 76.3   million have been diagnosized with alcohol use disorder (WHO, 2004). In USA, 71% of students indicated to have used alcohol. When all the students of 8th, 10th and 12th grades were combined, 26.8 had used alcohol (Johnston, O'Malley, Bachman and Schulenberg, 2011).

Tobacco use is one of biggest health threats the world has ever faced (Tobacco Free Initiative, 2008). According to the source, there were more than one billion smokers in the world and most of them were in developing countries. The vast majority of smokers began using their tobacco products before the age of 18. Statistics reveal that use of any form of tobacco by 13-15 years were greater than 10%. In addition, almost one in four students (13-15 years) old who ever smoked cigarettes smoked their first cigarette before the age of 10 (Tobacco Free Initiative, 2008). In USA, 42% of the students had tried cigarette by 12th grade and 19% were current smokers. Even as earlier as 8th grade, 21% had used cigarettes and of these 7% were current users (Johnston, O'Malley, Bachman and Schulenberg, 2011). In West Africa; Nigeria, the overall smoking prevalence was

18.1% with 23.9 and 17.0% male and female students reported to have used cigarettes respectively (Global Youth Tobacco Survey (GYTS, 2002). In South Africa, the youths who reported that they ever smoked cigarettes were 46.7% and of these 23% were current smokers. Those who had smoked the cigarette before age 10 were 18.5% and 18.2% had used smokeless tobacco (Swart, Reddy, Pitt & Panday, 2001).

The researchers used the phrase 'other drugs' to refer to bhang and khat. Bhang was selected because is most used illicit drug whereas khat is second most used drug after alcohol in Kenya (NACADA, 2007; NACADA, 2009). In 2010 in USA, past year use of bhang by students in all grades was 24.5% while the current use was 14.8% (Johnston, O'Malley & Bachman, 2011).

In Kenya, people aged 15 years and above had consumed 1.74 litres of pure alcohol annually (WHO, 2004). Rapid situation assessment survey indicated that current usage of alcohol by people aged 15-24 was 14.3% with male consumption being 22.9%, compared to female being 5.9% nationally. Nairobi (18.6%) and Central (18.1%) provinces reported the highest consumption. Those living in urban areas reported 17.7% as compared to 13% living in rural areas (NACADA, 2007). It is worthy to note that alcohol consumption for both Nairobi and Central provinces were higher than national alcohol rates. A survey done by NACADA (2009) in Nairobi province in public schools indicate that alcohol was most abused drug with 36.3, 18.5 and 10.5% of students reported lifetime (at least once in life time), six months and one month usage respectively. A Study done by Waweru, Kamau & Matogo in schools of Kiambu and Nairobi in 2011 has shown that a significant number of respondents (48.9%) indicated past consumption of alcohol, with 18.5% maintaining usage. In same study, respondents from private schools had the highest proportion of current alcohol consumers at 22.9%.

Records of smoking in Kenya indicate that 9.0% of people aged 15-24 were smokers of which 20.9 and 1.3% were male and female respectively. Central province had the highest cigarette smokers (16.9%) and Nairobi had 15.9% of people aged 15-64 who were smokers. People living in the urban centers, 13.4% were cigarette smokers as compared to 9.9% who were living in the rural areas (NACADA, 2007). According to the GSHS (2003), the age at which smoking starts is 7 years and below. NACADA (2009), survey done public schools in Nairobi indicate that cigarette is third most used drug among students with lifetime, six months and one month prevalence of 20.2, 8.2 and 5.8% respectively.

In Kenya, lifetime use of bhang among people age 15-24 was 7.6 with majority living in Coast province (11.6%). Nairobi and Central province had 8.0 and 9.9% users of marijuana. Majority of marijuana users were male (11.9%) than female (1.4%).Urban dwellers used marijuana more than rural counterparts (NACADA, 2007). Eastern province was leading consumer of khat with 13.9 % people aged 15-64 indicating that they were   currently using the drug. In Nairobi 7.2% were using Khat, compared with 2.3% in Central province. Majority of khat users were male (9.4%) than female (1.7%). Those living in urban centers (7.7%) use khat more than rural dwellers (4.7%)

(NACADA, 2007). Khat has overtaken cigarette smoking to be second most drug after alcohol among students in public school in Nairobi provinces (lifetime=31.5%, six months = 15.7% and one month=11.2%) (NACADA, 2009).

1.2 Co-Occurrence of Alcohol, Tobacco and Other Drugs

Past Efforts to reduce adolescent health risks have primarily focused on specific behaviors. However, there is growing recognition that health compromising behaviors tend to co-occur, indicating that prevention efforts need to address the interrelationships among multiple behaviors (Zweig, Duberstein & McGinley, 2001; Harpen-Felsher, Millstein & Ellen, 1996; Willoughby, Chalmers, Busseri, 2004). The Co-occurrence of these health compromising behaviors has potential to increase harm associated with each separately (WHO, 2005)). Lindberg, Boggers and Williams (2000) using Add Health Survey found that co-occurrence tend to be highest among school substance abuse behaviors. Their findings indicated that 45% of regular cigarette smokers used marijuana while 35% of marijuana users also were regular cigarette smokers.

1.3 Secondary School Students

Most of secondary school students are in adolescence stage which characterized by experimentation and acquisition of behaviors that carry high risks of morbidity and mortality (Turagabeci, Nakamura & Takano, 2008). Alcohol, tobacco and other drug use often is part of a larger pattern of adolescent behaviour (Ensminger, 1987). Adolescence being in a period of transition; in which they are no longer children but not yet adults; public health responses to their needs are often conflicting and confused (Mann & Tarantola, 1996). At the same time, social norms and expectations, along with peer opinion, powerfully affect young people's behavior, often in ways that increase their health risks. Although most adolescents navigate through this stage to become healthy and productive adults, some fail to do so. Some students of public and private secondary schools from Kiambu and Nairobi Counties, Kenya were not exceptional to these challenges.

1.4 Theoretical Framework

Problem Behavior Theory (PBT) guided the study. PBT conceptualizes that there are three explanatory systems that account for proneness to problem behaviors: perceived environment, personality and behavior (Jessor, 1991). The perceived social environment that is common with adolescents constitute of family, peers, school and neighborhood. The risk factors in these social contexts account for significant variation in the involvement in problem behaviors. Personality system includes patterned and interrelated set of relatively enduring socio-cognitive variables that reflect social learning and developmental experiences. The concept that constitute behavior system postulates that involvement in one problem behavior increases the likelihood on involvement in other problem behaviors due to their linkages in social ecology of the adolescents.

The problem behaviour theory was relevant to current survey in several ways. Co-occurrence of health risk behaviours exist and it is thought to be due to how behaviours develop as a result of the interaction between the person and their social environment. Learned risk behaviours, related to these interactions, along with the normative expectations placed among adolescents by their social environment (family, friends, peers, schools, community) create a similar function between the behaviours, ultimately increasing the likelihood of multiple behaviours being performed

simultaneously (Jessor, 1991). Although a majority of adolescents navigate through challenges of the adolescence period, some of them engage in health risk behaviours, which can include the co-occurrence of multiple health risk behaviours (Brener & Collins, 1998). This is a concern for health professionals as the physical, mental, and social development, as well as the future opportunities of the adolescents may be jeopardized by the participation in health risk behaviours (Jessor, 1991). It is this conviction that aroused the curiosity for this study The theory supports the assertion that an intervention program that targets holistically health compromising behaviours tend to be more feasible and effective as involvement in one problem behaviour increase the likelihood of involvement in other health risk behaviours.

1.5 Objectives of Study

The following are the objectives that guided the study

i.   To determine the prevalence of single and concurrent alcohol, tobacco and other drugs behaviors
ii. To establish whether there is any significant relationship in the patterns of co-occurrence of alcohol, tobacco and other drug use
iii. To find out extent to which involvement in one ATOD behavior predict engagement in other behaviors

1.6 Research Questions of Study

i.   What is prevalence of alcohol, tobacco and other drug use?
ii. What are patterns of co-occurrence of alcohol, tobacco and other drug use

1.7 Hypothesis of the Study

H01: Statistically, alcohol, tobacco and other drug use are independent of each other

RESEARCH METHODOLOGY

2.1 Study Design

Descriptive cross sectional survey design was used because the study aimed to establish single and concurrent use of alcohol, tobacco and other drugs without explaining the reason for such co-occurrence. The design was cross sectional because data was collected once.

2.2 Setting and Population

The study focused on randomly selected districts (n=8) of Nairobi and Kiambu Counties of Kenya. The Nairobi and Kiambu are two of 47 counties of Kenya. The counties consist of 18, 28 and 48 districts, divisions and zones respectively. The Counties were purposively chosen based on high reported prevalence of Alcohol and cigarettes (NACADA, 2007).

The study was based on eight districts of Nairobi and Kiambu Counties which consist of 383 secondary schools of which majority were private (N=283), day (N=283) and mixed (N=300). The accessible population was 4665 form three students of the randomly selected 71 schools of the Kiambu (N=1861) and Nairobi counties (N=2804); the male students were 56.5% of the accessible population.

2.3 Sample Size and Sampling Procedure

The sample sizes for 8 and 71 districts and schools respectively were determined by formula recommended by Nassiuma (2000). The study focused on form three students because being at adolescence; stage characterized by experimentation and risk taking (Turagabeci, Nakamura & Takano, 2008). Sample size of 1398 which was 30% of the population of form three students of the randomly selected schools was calculated. The thirty percent threshold has been recommended by Mugenda and Mugenda (1999) as adequate representation of the accessible population. However, 1088 were included in analysis as other participants were eliminated due to non-response and inconsistent responses.

Multi-stage cluster, stratified, simple and systematic random sampling methods were used to select participating districts, schools and students. In multi-stage cluster six steps were involved: selecting districts, divisions, zones, schools, streams and students. The schools were stratified based on criteria of school gender category (mixed, boys only and girls only), school accommodation (boarding only, day only and boarding-day) and school ownership status (public versus private). The sample sizes for each stratum were determined proportionately to school strata population. From the established strata, the schools from each district were picked using simple random sampling. Systematic random sampling was used to select every 3rd student based on the sitting arrangement in class. The 3rd position which was a sampling interval was arrived at by dividing the population (N=4665) with the required sample size (n=1398).

2.5 Instrumentation

The study used questionnaire to collect data from the students. The items for the questionnaire were constructed using questions drawn from several sources, including the Global School based Health Survey (GSHS, 2003) and Youth Risk Behavior Surveillance System.

2.5.1 Validity of Instruments

Items of questionnaire were constructed in consideration of the requirement of each objective of the study. Peers and supervisors examined the contents of the instruments to ensure that they measured the variables they intended to measure. Then, the researcher incorporated peers and supervisors' recommendations in the final instrument. The study was guided by problem which informed the formulation of objectives, research question and hypothesis to ensure construct validity.

2.5.2 Reliability of the Instrument

To ensure consistency, the pilot data was subjected to reliability tests using the split half method to determine the internal consistency and reliability of research instrument. The instrument was conceptualized as consisting of two parts; odd numbered items and even numbered items. The split half procedure involved scoring two halves (odd items versus even items) of the instrument for each respondent and then a correlation coefficient for the two sets of scores was calculated. The correlation coefficient indicated the degree to which the two halves of the instrument provided the same results and hence described the internal consistency (reliability for half test) of the instrument. The reliability coefficient was calculated using the *Spearman- Brown prophecy formula* (Fraenkel & Wallen, 2006).The instrument was adopted because reliability co-efficient for the instrument was 0.798 which rounds to 0.8 as recommended by Mugenda and Mugenda (1999). This method was

convenient for this instrument because it eliminated chance errors that could been caused by different test conditions if test-retest method was used and it allowed for the determination of inter-item consistency (Raiken, 1994).

2.6 Data Collection Procedures

The researcher used introduction letter from Kabarak University to apply and process for research permit from Ministry of Science and Technology. The letter and permit were presented to District Education Officers and principals of sampled districts and schools respectively to be allowed to collect data. Trained research assistants were used to collect data. The questionnaires were administered on voluntary and anonymous basis in absence of the teachers. The respondents were given time 35 minutes to complete answering the items of the instrument and were asked to drop questionnaires in a box placed at entrance of the class. The procedure was appropriate as high response rate was expected (Fraenkel & Wallen, 2006).

2.7 Statistical Analysis and Measures

Alcohol, cigarette, smokeless tobacco, bhang and khat use were measured as dichotomous variables (1= Presence; 0= Absence). From the analysis, four categories of ATOD behaviors were established as follows: abstainers versus users, ever used versus current users, earlier versus late onset users, single versus multiple users. Frequency and percentages were used. Ten patterns of co-occurrence of ATOD current use behaviors were established using cross tabulation and Chi-Square was used to establish the independence of these behaviors at $p \leq 0.05$. Five logic regression models were run to determine to what extent did involvement in one ATOD behavior increased the likelihood in engaging in another one.

2.8 Ethical Considerations

Kenyatta University Ethics Review Committee reviewed and approved the study on basis of subject protection. The researcher or trained research assistants explained the purpose of the study to participants in order for them to make informed decision on whether to participate in the study or not. The respondents were informed that data would be used for intended research purpose only. To ensure anonymity, the participants were not required to write their names on the questionnaires. The identities of schools were concealed and study findings were not reported on the basis of individual schools. Only the subjects who signed informed consent form were eligible to participate in the study.

RESULTS ANALYSIS AND PRESENTATION

3.1 Prevalence of Specific and Multiple ATOD Behaviors

The respondents who had ever used alcohol were 41.9% followed by khat (30.9%), cigarette (21.9%), smokeless tobacco (21.9%), bhang (17.2%) users in that order. Earlier onset users of alcohol, cigarette, smokeless tobacco and khat were more than 10% using 'ever used measure' as shown in Table 1. Of the earlier onset alcohol, cigarette, bhang and khat users; 10.9, 17.2, 6.4, 9.8% respectively began using them before or at age 8.

Alcohol was leading drug in current use (23.5%) followed by khat (16.6%), bhang (16.5%), smokeless tobacco (9.5%) and cigarette (8%). However, bhang is the leading in high current use with 4.1%, followed by smokeless tobacco (1.7%), alcohol (1.5%), khat (1.3%) and cigarette (.6%). In term of single versus multiple ATOD users, 14.8% (161) were single users as compared to 17.6% (190) who were multiple users (two to five behaviors). Majority of multiple ATOD users were engaged in two behaviors (7.3%) whereas those who engaged all five behaviors were 2.4% (26).

3.2 ATOD behaviors are independent of each other.

From the cross tabulations, for each specific ATOD behavior, there were students who were involved in it also who engaged in other ATOD behaviors and others who were abstainers of same behaviors. Of the current alcohol drinkers, 47.6, 33.1, 28.7 and 26.6% had used khat, bhang, smokeless tobacco and cigarettes respectively as shown in Table 3. More than half of students who reported current use of cigarette indicated that they also used smokeless tobacco (69.9%), khat (62.1%) and bhang (59.8%).

From the findings, statistically significant relationships were established in all the ten patterns of ATOD Behavior hence rejecting the hypothesis that ATOD behaviors are independent of each other (alcohol versus cigarette users (χ^2 =139.425, df=1 p<0.05); alcohol versus smokeless tobacco users (χ^2 =143.612 df=1 p<0.05);; alcohol versus bhang users(χ^2 =174.694, df=1 p<0.05); alcohol versus khat users(χ^2 =229.637, df=1 p<0.05);; cigarette versus smokeless tobacco users(χ^2 =390.582, df=1 p<0.05);; cigarette versus bhang users(χ^2 =249.419, df=1 p<0.05); cigarette versus khat users(χ^2 =140.734, df=1 p<0.05); smokeless tobacco versus bhang users(χ^2 =249.900 df=1 p<0.05);; smokeless versus khat users(χ^2 =177.158, df=1 p<0.05) and bhang versus khat users (χ^2 =200.660 df=1 p<0.05).

3.3 Prediction of Co-occurrence of ATOD Behavior

The omnibus tests of all models coefficients were statistically significant at p0.05 (model 1(χ^2 =273.503, df=4 p<0.05); model 2 (χ^2 =271.590, df=4 p<0.05); model 3(χ^2 =292.972, df=4 p<0.05); model 4 (χ^2 =264.146, df=4 p<0.05) and model 5(χ^2 =275.661, df=4 p<0.05). Alcohol drinkers than abstainers were 6.198 times (95% C.I: 4.146-9.266) more likely to be khat users whereas cigarette smokers than non-smokers were 15.264 times (95% C.I: 8.170-28.519) more likely to use smokeless tobacco as indicated in Table 4. Bhang users than abstainers were 3.878 times (95% C.I: 1.991-7.553) more likely to become cigarette smokers.

DISCUSSION

The finding that alcohol was the most used drug concurred and was comparable with other past studies((Johnston, O'Malley, Bachman and Schulenberg, 2011; Global Youth Tobacco Survey, 2002; Swart, Reddy, Pitt & Panday, 2001; NACADA, 2007; NACADA, 2009b; Waweru, Kamau & Matogo, 2011). It was found that some students used ATOD before age 13 which supported other

studies that postulated that age of drug debut was lowering and that onset was both the cause and consequence   of ATOD behaviors and related problems (Keyes, Lacono & McGue, 2007; White, Godley & Dennis, 2003; John, Donald and Emeritus, 2006).The results found that ATOD behaviors were not independent of each and some students who engaged in any of the specific behavior had a likelihood of engaging in another one. This supports the problem behavior theory and past studies postulates that involvement in any one problem behavior increases the likelihood of involvement in other problem behaviors (Lindberg, Boggers and Williams, 2000; Jessor, 1991).

CONCLUSION AND IMPLICATION FOR INTERVENTION

The findings that there were students who used alcohol, cigarette, smokeless tobacco, bhang and khat before age 13 is indicator that earlier intervention is needed to prevent progression to regular and concurrent use of other drugs. Secondary school students who engaged in any of ATOD behaviors had likelihood in involving in another ATOD behavior. The findings concur that ATOD behaviors do not occur in isolation and therefore interventions should target multiple risk taking than specific behaviors. More than half of respondents were ATOD abstainers; therefore they should be used as agents of change in prevention and intervention program as students feel more relaxed and free to peers than significant adult others (teachers and parents).

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Table 1:

Prevalence of Single ATOD Behaviors

Behaviors	Alcohol		Cigarette		Smokeless Tobacco		Bhang		Khat	
	Freq.	%	Freq.	%	Freq.	%	Freq	%	Freq.	%
Ever used, Earlier and late onset of ATOD Behaviors										
Abstainers	632	58.1	850	78.1	850	78.1	901	82.8	754	69.3
Earlier onset use	145	13.3	116	10.7	116	10.7	38	3.5	111	10.2
Late onset use	311	28.6	122	11.2	122	11.2	149	13.7	223	20.5
Ever used the drug	456	41.9	238	21.9	238	21.9	187	17.2	334	30.7
Current ATOD Behaviors										
Abstainers	833	76.6	1001	92	985	90.5	908	83.5	907	83.6
Low current use	212	19.5	73	6.7	75	6.9	127	11.7	124	11.4
Moderate current use	27	2.5	8	.7	10	.9	8	.8	42	3.9
High Current use	16	1.5	6	.6	18	1.7	45	4.1	15	1.3
Total current users	**255**	**23.5**	**87**	**8**	**103**	**9.5**	**180**	**16.5**	**181**	**16.6**

Table 2:

Prevalence of Multiple ATOD Behaviors

Number of ATOD Behavior	Frequency	Percent
Nil	737	67.7
1	161	14.8
2	79	7.3
3	48	4.4
4	37	3.4
5	26	2.4
Multiple ATOD Users	190	17.5

Table 3:

Pattern of Co-occurrence of ATOD Behavior

Behavior	Alcohol use		Cigarette use		Smokeless tobacco use		Bhang use		Khat use	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Alcohol use	-	-	65	26.6	73	28.7	84	33.1	121	47.6
Cigarette use	65	26.6	-	-	60	68.9	52	59.8	54	62.1
Smokeless tobacco use	73	28.7	60	68.9	-	-	58	56.3	65	63.1
Bhang use	84	33.1	52	59.8	58	56.3	-	-	73	62.9
Khat use	121	47.6	54	62.1	65	63.1	73	62.9	-	-
Total users	**n=254**		**n=87**		**n=103**		**n=116**		**n=181**	

Table 4:

Prediction of ATOD Behaviors

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for Exp(B)	
Likelihood of alcohol drinkers being Cigarette, smokeless tobacco, bhang and khat users								
Cigarette	1.066	.352	9.190	1	.002	2.905	1.458	5.788
Smokeless tobacco	.693	.320	4.690	1	.030	1.999	1.068	3.742
Bhang	1.277	.276	21.402	1	.000	3.586	2.088	6.160
Khat	1.824	.205	79.069	1	.000	6.198	4.146	9.266
Constant	-1.961	.101	373.725	1	.000	.141		
χ^2 =273.503, df=4 p<0.05					Nagelkerke R=.335			
Likelihood of cigarette smokers being alcohol smokeless tobacco, bhang and khat users								
Alcohol	1.153	.341	11.415	1	.001	3.169	1.623	6.186
Smokeless tobacco	2.726	.319	73.039	1	.000	15.264	8.170	28.519
Bhang	1.402	.328	18.324	1	.000	4.065	2.139	7.726
Khat	.560	.342	2.685	1	.101	1.751	.896	3.420
Constant	-4.302	.267	258.922	1	.000	.014		
χ^2 =271.590, df=4 p<0.05					Nagelkerke R=.517			
Likelihood of smokeless tobacco users being alcohol drinkers, cigarette smokers, bhang and khat users								
Alcohol	.883	.316	7.786	1	.005	2.418	1.301	4.496
Cigarette	2.724	.322	71.444	1	.000	15.244	8.105	28.672
Bhang	1.342	.322	17.354	1	.000	3.825	2.035	7.191
Khat	1.159	.315	13.514	1	.000	3.188	1.718	7.191
Constant	-3.913	.229	293.198	1	.000	.020		
χ^2 =292.972, df=4 p<0.05					Nagelkerke R=.507			

Likelihood of bhang users being alcohol drinkers, cigarette smokers, smokeless tobacco and khat users

Alcohol	1.363	.272	25.065	1	.000	3.909	2.292	6.666
Cigarette	1.355	.340	15.884	1	.000	3.878	1.991	7.553
Smokeless tobacco	1.324	.325	16.573	1	.000	3.757	1.986	7.104
Khat	1.351	.271	24.831	1	.000	3.863	2.270	6.572
Constant	-3.654	.204	321.969	1	.000	.026		

$\chi^2 = 264.146$, df=4　p<0.05　　　　　Nagelkerke R=.437

Likelihood of Khat users being alcohol drinkers, cigarette smokers, smokeless tobacco and bhang users

Alcohol	1.840	.204	81.158	1	.000	6.296	4.219	9.395
Cigarette	.395	.345	1.312	1	.005	1.484	1.255	2.916
Smokeless tobacco	1.135	.316	12.910	1	.000	3.111	1.675	5.778
Bhang	1.323	.270	24.070	1	.000	3.754	2.213	6.367
Constant	-2.759	.142	377.168	1	.000	.063		

$\chi^2 = 275.661$, df=4　p<0.05　　　　　Nagelkerke R=.337

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