PREVENTING CHRONIC DISEASE

PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY

ORIGINAL RESEARCH

Association of Smoking and Khat (*Catha edulis* Forsk) Use With High Blood Pressure Among Adults in Addis Ababa, Ethiopia, 2006

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PEER REVIEWED

Abstract

Introduction

We assessed the prevalence of substance use and its association with high blood pressure among adults in Addis Ababa, Ethiopia.

Methods

We employed a cross-sectional descriptive study design. The World Health Organization instrument for stepwise surveillance of risk factors for chronic diseases was applied on a probabilistic sample of 4001 men and women aged 25 to 64 years in Addis Ababa. We determined the prevalence of cigarette smoking, alcohol drinking, and khat (*Catha edulis* Forsk) chewing. We measured blood pressure by using a digital device and determined mean levels of systolic and diastolic blood pressure.

Results

Smoking cigarettes, drinking alcohol, and chewing khat were widely prevalent among men. Among men, the prevalence of current daily smoking was 11.0% (95% confidence interval [CI], 9.5%–12.5%). Binge drinking of alcohol was reported by 10.4% (95% CI, 9.0%–11.9%) of men. Similarly, 15.9% (95% CI, 14.1%–17.6%) of men regularly chewed khat. Consequently, 26.6% of men and 2.4% of women reported practicing one or more of the behaviors. Current daily smoking and regular khat chewing were significantly associated with elevated mean diastolic blood pressure (ß = 2.1, *P* = .03 and ß = 1.9, *P* = .02, respectively).

Conclusion

Cigarette smoking and khat chewing among men in Addis Ababa were associated with high blood pressure, an established risk factor for cardiovascular disease. Health promotion interventions should aim to prevent proliferation of such behaviors among young people and adoption by women. Surveillance for risk factors for cardiovascular disease should be implemented nationwide to provide information for policy decisions and to guide prevention and control programs.

Introduction

The use or misuse of addictive substances, such as cigarettes, alcohol, and khat (*Catha edulis* Forsk) is increasingly prevalent in Ethiopia (1-4). However, the lack of consistency in the methods and instruments used in different studies limits the ability to compare population groups and to monitor changes over time. A few studies have addressed the health effects of using substances such as cigarettes and khat in Ethiopia, focusing on psychiatric morbidity and psychosocial problems and their association

with unsafe sexual behavior (2-4). In contrast, the contribution of substance use to the risk for high blood pressure (BP) and other cardiovascular diseases (CVDs) has not been emphasized.

The prevalence of CVDs and other chronic diseases is growing worldwide but more rapidly in developing countries, where people are affected at much younger ages than in developed countries (5). Globally, tobacco use and alcohol consumption have increased in recent decades, particularly among men in developing countries, contributing to the increasing prevalence of chronic diseases and cancers (6,7). A few risk factors account for a large proportion of chronic diseases (8,9). Smoking, high BP, and high cholesterol cause approximately 75% of heart attacks and strokes (10).

Primary prevention is the most cost-effective, affordable, and sustainable strategy to contain the emerging epidemic of chronic diseases (11-13). Data on selected major risk factors are essential for planning primary prevention programs and for predicting the future burden of chronic diseases. The long lag time between exposure to risk factors and occurrence of chronic diseases suggests that risk factors should be primary targets for public health interventions (14).

In Ethiopia, national surveillance for chronic disease risk factors has not been conducted. Likewise, no national policy or strategy is relevant to the prevention and control of CVD or its risk factors. We implemented a project employing the World Health Organization (WHO) Stepwise Surveillance (STEPS) instrument (14) on a populationwide sample in Addis Ababa, the capital and largest urban center of Ethiopia. The project aimed to describe the epidemiology of risk factors for chronic diseases and to lay the foundation for subsequent surveillance initiatives in the country. Here we address selected behavioral risk factors and examine their association with BP.

Methods

The population of Addis Ababa in 2006 was an estimated 3 million, approximately 25% of all urban residents in the country (15). The city is organized into 10 subcities, each of which is divided further into 9 or 10 administrative units (*kebeles*), for a total of 99 kebeles.

The study had a cross-sectional descriptive design. We applied a multistage sampling procedure comprising random and cluster sampling methods. We randomly selected 10 of the 99 kebeles, then identified and listed for further random selection smaller geographic units within the kebeles (known as zones or villages). We randomly selected 4 zones from each kebele, then randomly selected the first household from each zone. Thereafter, subsequent households were selected on the basis of proximity to the first and the preceding household.

The total sample size of 4001 was distributed among the 10 kebeles so that approximately 400 adults, equally divided between men and women, were included from each kebele. Adults aged 25 to 64 years who were permanent residents and available in the selected households at the time of the visit were eligible to participate. We used a pretested and standardized survey instrument — the WHO STEPS instrument (14) — to collect data on selected sociodemographic characteristics, lifestyle behaviors (e.g., cigarette smoking, alcohol consumption, khat chewing), physical measurements (e.g., weight, height, waist and hip circumference), and BP. The questionnaire and physical measurement sections of the STEPS instrument previously have been validated and subsequently applied in predominantly rural settings in developing countries, including Ethiopia (16,17).

The survey team was trained on appropriate methods of selecting households and study participants and on basic skills of interviewing and physical measurements. BP was measured by using a digital measuring device (Omron *M4-I*, Omron Healthcare, Inc, Bannockburn, Illinois) with the participant sitting after resting for at least 5 minutes. BP was measured 3 times, with at least 3 minutes between consecutive measurements. We determined mean systolic and diastolic BP from the second and third measurements.

We calculated percentages and means with corresponding 95% confidence intervals (CIs) for descriptive findings and used multiple linear regression analysis to estimate the change in BP from substance use. For data that might not be normally distributed in the population, such as age at start of smoking or khat chewing, medians instead of means were calculated with the corresponding range. An aggregate score of the use of 1 or more of the 3 substances under study was constructed from "current daily cigarette smoking," "regular khat chewing (1 or more days per

week),” and “binge drinking.” We also employed logistic regression analysis to control or adjust for the effect of confounding and identify factors significantly associated with the use of substances.

The Faculty Research and Publication Committee of the Faculty of Medicine, Addis Ababa University, provided ethical clearance for the study. We obtained informed and written (signed) consent from study participants to undertake the interview and physical measurements. Ethical conduct was maintained throughout the research process.

Results

A total of 4075 eligible people were approached, of whom 74 (1.8%) refused to participate and were excluded from the study. The remaining 4001 eligible people consented to participate. Of these, 93% gave both verbal consent and signature, and the remaining 7% gave verbal consent but could not sign because of lack of literacy.

Approximately 59% of participants were women, and 58% of participants were aged 25 to 44 years. Mean age was 41.7 (SD, 11.5) years. Most were Orthodox Christian (93.4%) and from the Amhara (53.1%) or Oromo (20.0%) ethnic groups. Approximately 25% had no formal education; the remainder had a mean of 9 years of schooling (SD, 3.9). Forty-four percent of participants were engaged in some income-generating work through employment or self-employment (Table 1).

Thirteen percent of men and less than 1% of women reported current cigarette smoking (Table 2). Among men, 11% were current daily smokers. Median age at start of (daily) smoking was 20 years (range, 7–40 years). Approximately 8% of men who were not current smokers reported having smoked in the past (data not shown). Tobacco manufactured in a factory was the only type reported to be used in Addis Ababa.

Eighteen percent of men and 2% of women reported current khat chewing. Approximately 16% of the men chewed khat 1 or more days every week; 5% chewed khat daily (Table 2). Median age at start of chewing was 22 years (range, 12–42 years) among current chewers. Among participants who did not currently chew, 12% of men and 2% of women reported having chewed khat in the past.

Sixty-nine percent of men and 57% of women reported current alcohol consumption (drinking within the preceding 12 months). A lower proportion (8.6% of men) reported daily alcohol use; most reported drinking less frequently. Most women (96%) reported drinking alcohol less than once per week. The average number of alcoholic drinks consumed on a typical occasion was 4 for men and 2 for women (Table 3).

Infrequent heavy alcohol intake (consumption of 5 or more standard units of alcohol per day on 1 or 2 days during the week before interview) was estimated at 8.0%; frequent heavy alcohol intake (consumption of 5 or more standard units of alcohol per day on 3 or more days during the preceding week) was 2.4% among men (Table 3). Overall prevalence of “binge drinking” (consumption of 5 or more units of alcohol [men] and 4 or more units of alcohol [women] in 1 day during the past week) was 10% among men and 1% among women. A “standard unit” is the amount of ethanol contained in standard glasses of beer, wine, fortified wine (such as sherry), and spirits. Depending on the country and the type of drink, these amounts vary from 8 to 13 g ethanol (14).

Mean systolic BP was 129.9 (95% CI, 128.9–130.9) mm Hg for men and 126.7 (95% CI, 125.8–127.7) mm Hg for women. A regression analysis revealed that increasing age and male sex were significantly associated with increased mean systolic and diastolic BP. Furthermore, daily current smoking (β = 2.11, P = .03) and regular khat chewing (β = 1.92, P = .02) significantly increased mean diastolic BP (Table 4).

Twenty-seven percent of men and 2% of women practiced at least 1 of the 3 behaviors — current daily smoking, regular khat chewing, or binge drinking. Mean diastolic BP increased by 1.85 mm Hg for every additional score or behavior (β = 1.85; 95% CI, 1.05–2.65). The association between substance use score and systolic BP was not significant.

The use of 1 or more substances was markedly higher among men than women (odds ratio [OR], 14.7; 95% CI, 10.7–20.1). This behavior was most common among younger adults and decreased with age. Substance use and level of education or participation in income-generating work were not significantly associated with the use of 1 or more substances (Table 5).

The intersection between current smoking and khat chewing (8.0%) was higher than that between khat chewing and binge drinking (4.2%) or between current smoking and binge drinking (3.6%) (Figure). The proportion of participants indulging in 2 or more of the 3 behaviors (13.4%) was much higher than would be expected if behaviors were chosen independently.

For men, bivariate analysis revealed significant associations between use of the 3 substances, such that the likelihood of use of a second substance increased significantly among those who used either substance. Thus, 61% of men who were current smokers reported khat chewing (OR, 26.4%; 95% CI, 19.5%–35.8%). Likewise, 40.5% of men who reported regular khat chewing also reported current smoking (OR, 23.6%; 95% CI, 17.4%–31.9%), and 21% of them reported binge drinking (OR, 7.4%; 95% CI, 5.3%–10.2%).

Discussion

We measured the prevalence of 3 lifestyle behaviors in the adult population of Addis Ababa and examined their association with BP. Cigarette smoking, alcohol consumption, and khat chewing were widely prevalent among men in Addis Ababa. Current daily smoking of cigarettes and regular khat chewing were associated with increased mean diastolic BP, which is an important determinant of CVD. Estimates of population-attributable risk generated in the INTERHEART study (18,19) demonstrate significance of cigarette smoking and alcohol consumption, in the context of CVD, in different geographic areas and populations, including those in Africa.

The prevalence of current daily smoking among men in Addis Ababa (11%) is higher than the prevalence usually reported in the country. In Butajira (16), current daily smoking prevalence was 7.7% among men aged 25 to 64 years sampled from both rural and urban areas of the district. The World Health Survey reported 7% prevalence of current tobacco smoking among men 18 years or older in urban areas of the country (20). Another study reported a prevalence of 4.7% in adults 15 years or older in the town of Jimma (21), which is closely comparable to our finding of 4.6% for men and women combined. The studies cited above used different age groups and slightly variable indicators: "current smoking" or "current daily smoking." In agreement with previous reports (22), the median age at
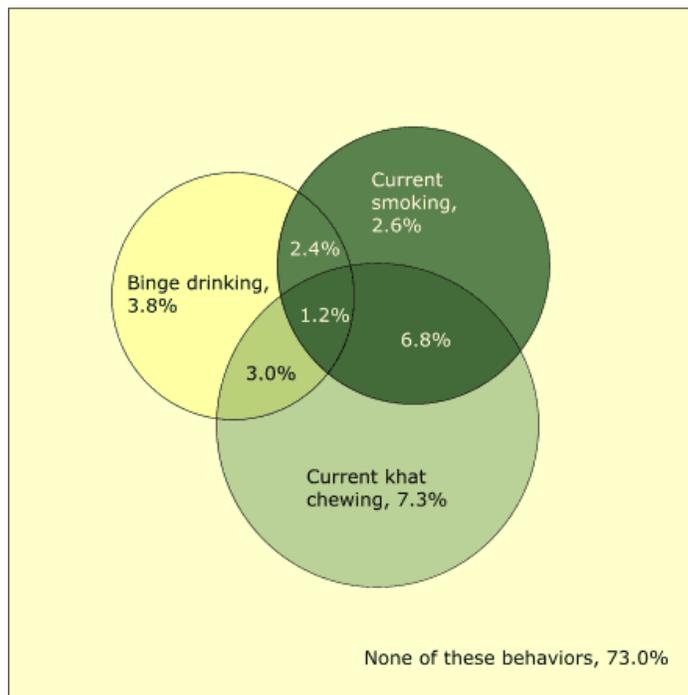
Figure. Intersection of risk factors among men surveyed in Addis Ababa, Ethiopia, December 2006. Relative area of the circles is proportional to the prevalence of the corresponding behavior and the total area of the square, which represents 100% of men.

start of daily smoking in our study sample was 20 years.

Approximately 11.8% of young men and 1.1% of women (15–24 years) were reported to be smoking in 1994 in Addis Ababa (23). The reported prevalence of current cigarette smoking among university instructors in northwestern Ethiopia was 13.3% (24). Another study reported a lifetime smoking prevalence of 15.8% (1).

The studies cited above indicate that the prevalence of smoking among women in Ethiopia is negligible. A higher prevalence of smoking in men than in women has been reported in low- and middle-income countries, in contrast with the similarity between rates in men and women in high-income countries (6). The gap between the sexes may be narrowing in many developed countries because of an increase in smoking among women and a decline among men (25).

Worldwide, tobacco use is one of the most important risk factors for acute myocardial infarction (AMI), especially in men. Even low levels of exposure to tobacco, including

secondhand tobacco smoke, increase the risk for AMI (6). The risk is greater in young than in old people, and the magnitude of risk is related linearly to the number of cigarettes smoked. According to the INTERHEART study, current smokers were at greater risk for nonfatal AMI than were people who had never smoked, and the risk increased by 5.6% for every additional cigarette smoked per day (18,19).

Although Ethiopia signed the WHO Framework Convention on Tobacco Control in 2004, it has not ratified the convention (26). Consequently, there is no restriction on tobacco advertising or ban on sales of tobacco to minors (22).

Heavy alcohol intake is a common behavior among adults in Addis Ababa, with approximately 10% of men consuming 5 or more standard units of alcohol on 1 or more days during a week. The World Health Survey reported a prevalence of approximately 7.6% among men and less than 1% among women (20). The prevalence of daily alcohol consumption among adults in Addis Ababa is much higher than the nationwide estimate of 2.1% for in-school and out-of-school youth (2). Approximately 34% of adolescents drank alcohol beverages regularly (23).

A number of studies have established a close association between alcohol consumption and increased BP, a risk factor for CVD. Intake of more than 30 g alcohol (more than 2 drinks) per day is associated with an increased risk for hypertension (27,28). Some studies also suggest an association between moderate alcohol consumption and decreased risk for AMI (12,29), CVD, and all-cause mortality (30,31). However, this finding is not consistent among populations. The Atherosclerosis Risk in Communities (ARIC) Study determined that the effect of alcohol consumption in increasing BP is more pronounced among men of African ancestry, such that the consumption of alcohol even in small amounts was a risk factor in black men (27,32,33).

Khat chewing, traditionally confined to the Muslim population and associated with prayers or other religious ceremonies, is now spreading rapidly and crosses many sociodemographic barriers (1). In a nationwide survey, 18.7% of youth reported consuming khat regularly (1 or more days per week), with a prevalence of daily consumption of 7.7%. More out-of-school (23.6%) than in-school youth (7.5%) reported regular consumption (2). In Butajira district, 50% of adults 15 years or older reported current khat chewing, of whom 16.1% of males and 3.4% of females chewed daily (4).

Fresh leaves of khat and its twigs are consumed for its pleasurable effects. However, frequent consumption of khat is associated with a number of undesirable effects ranging from medical to psychosocial (34-36). The leaves of the khat plant, which contain amphetamine-like compounds (cathinone and cathine), are implicated as having undesired effects on BP and heart rate (35,36). Cathinone increases BP and heart rate through noradrenaline (norepinephrine) release from peripheral neurons similar to amphetamine (37-39).

In areas where large amounts of khat are consumed frequently, such as Yemen, significant and independent association have been reported between khat chewing and risk for AMI, in a strong dose-response manner (40). The authors of the above study argued that in addition to adoption of "Western lifestyle," khat chewing was responsible for the rise in AMI in Yemen. High prevalence of AMI in people younger than 45 years was also reported in a similar study in Yemen (41).

Our analysis revealed an intersection of substance use that was more pronounced between current smoking and khat chewing. The intersection of these behaviors suggests the possible influence of adoption of one behavior on adoption of the other or, conversely, the potential benefit of preventing one behavior on preventing the other. Considering the median age at start of current daily smoking (20 years) and khat chewing (22 years) in our sample, smoking can be assumed to begin earlier in life than khat chewing. Likewise, part of the overlap between smoking and khat chewing might be because smoking can be an entry to substance use, which may predispose smokers to the use of khat. Our finding also suggests that the use of multiple substances could more dramatically affect BP, especially diastolic BP.

The use of 1 or more of the 3 substances addressed in this study was significantly more common among men than among women, indicating a large sex-based dichotomy in substance use, particularly khat and cigarettes, that favors women. However, sociocultural changes that accompany the rapidly increasing enrollment of women in higher education and improving access to employment may predispose women to these and other high-risk

behaviors. Identifying and monitoring the demographic and sociocultural determinants of such behaviors will be valuable to guide effective targeting of health promotion interventions.

Our study overrepresented women and unemployed people because participants were recruited through a house-to-house visit. We attempted to minimize the possibility of selection bias by working through evening hours and weekends when most people were thought to be available at home. Overrepresentation of women will affect interpretation of our findings only minimally because the main findings were stratified by sex, and multiple regression analyses were employed to control for confounding by sex while examining the association between substance use and BP. Similarly, income-generating status will have little effect because it was not significantly associated with use of one or more substances or with BP.

Information is limited and scattered about the distribution of chronic disease risk factors at the population level that does not serve surveillance in the country. Consequently, information is insufficient to guide policy and planning in the prevention and control of chronic diseases and their risk factors. A system of surveillance is needed that generates the required data within the limits of resources. The STEPS approach to surveillance is suited to the Ethiopian setting and should be implemented on representative samples of urban and rural populations of the country.

Substance use such as cigarette smoking, binge drinking, and khat chewing could increase risk for CVD among adults in Addis Ababa because of their widespread prevalence among adult men and their significant association with increased diastolic BP. The young (median) age at onset of substance use suggests the need to target health promotion interventions to young people both in and out of school.

The 3 behaviors are interrelated and potentially modifiable. Thus, public health interventions aimed at preventing and controling chronic diseases in Ethiopia would benefit from prevention of these behaviors and promotion of healthy lifestyles. Surveillance efforts should track any shifts in the distribution of substance use for sex and other sociodemographic factors that may signal subsequent shifts in the epidemiology of chronic diseases.

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Tables

Table 1. Characteristics of Study Participants (N = 4001), Addis Ababa, Ethiopia, December 2006

Characteristic	No. Participants (%)
Sex	
Male	1648 (41.2)
Female	2353 (58.8)
Age group, y[a]	
25–34	1180 (29.5)
35–44	1123 (28.1)
45–54	960 (24.0)
55–64	735 (18.4)
Religion	
Christian	3737 (93.4)
Muslim	264 (6.6)
Ethnic group	
Amhara	2125 (53.1)
Oromo	800 (20.0)
Guraghe	452 (11.3)
Tigre	333 (8.3)
Other	291 (7.3)
Education level	
No formal education	985 (24.6)
Primary (grades 1–6)	898 (22.4)
Secondary (grades 7–12)	1648 (41.2)
Post-secondary	470 (11.7)
Paid work (income generating)	
Yes	1771 (44.3)
No	2230 (55.7)

[a] For this group, N = 3998 because data were missing for 3 participants.

Table 2. Distribution of Cigarette Smoking and Khat Chewing Among Adults Surveyed in Addis Ababa, Ethiopia, December 2006

Health Risk Behavior	No. Participants (%)	(95% CI)
Current smoking		
Men	217 (13.2)	(11.5–14.8)
Women	6 (0.3)	(0.0–0.5)
Current daily smoking, men, by age group, y		
25–34	67 (11.3)	(8.8–13.9)
35–44	55 (12.0)	(9.0–15.0)
45–54	41 (13.1)	(9.4–16.8)
55–64	19 (6.6)	(3.7–9.5)
Current khat chewing		
Men	302 (18.3)	(16.4–20.2)
Women	45 (1.9)	(1.4–2.5)
Current daily khat chewing		
Men (n = 1569)	79 (4.8)	(3.7–5.8)
Women (n = 2353)	3 (0.1)	NA
Current khat chewing, ≥1 days per week		
Men (n = 1648)	262 (15.9)	(14.1%–17.7%)
Women (n = 2353)	32 (1.4)	(0.9%–1.9%)

CI indicates confidence interval; NA, not applicable (because of low prevalence).

Table 3. Distribution of Alcohol Consumption Among Adults Surveyed in Addis Ababa, Ethiopia, December 2006

Health Risk Behavior	No. Participants (%)	95% CI
Current alcohol consumption in past 12 months		
Men	1137 (69.0)	(66.8–71.2)
Women	1329 (56.5)	(54.5–58.5)
Current alcohol consumption, men (n = 1137)		
7 days per week (daily)	97 (8.6)	(7.0–10.2)
1–6 days per week	754 (66.3)	(63.6–69.1)
<1 day per week	286 (25.2)	(22.7–27.7)
Current alcohol consumption, women (n = 1329)		
7 days per week (daily)	7 (0.5)	(0.1–0.9)

CI indicates confidence interval.
[a] A unit is the amount of ethanol contained in standard glasses of beer, wine, fortified wine (such as sherry), and spirits (8-13 g ethanol).
[b] Prevalence of heavy drinking among women was low (1%) and is not shown in the table.

Table 3. (continued) Distribution of Alcohol Consumption Among Adults Surveyed in Addis Ababa, Ethiopia, December 2006

Health Risk Behavior	No. Participants (%)	95% CI
1–6 days per week	53 (4.0)	(3.0–5.1)
<1 day per week	1269 (95.5)	(94.4–96.6)
Mean quantity (unit[a]) of alcohol consumed in a typical day		
Men (n = 1132)	40 (3.5)	(3.4–3.6)
Women (n = 1323)	25 (1.9)	(1.9–2.0)
Heavy drinking (≥5 standard units[a]), men (n = 1648)[b]		
Infrequent (1–2 days in past week)	132 (8.0)	(6.7–9.3)
Frequent (≥3 days in past week)	39 (2.4)	(1.7–3.2)
Both (infrequent or frequent)	171 (10.4)	(9.0–11.9)

CI indicates confidence interval.
[a] A unit is the amount of ethanol contained in standard glasses of beer, wine, fortified wine (such as sherry), and spirits (8-13 g ethanol).
[b] Prevalence of heavy drinking among women was low (1%) and is not shown in the table.

Table 4. Multiple Linear Regression Analysis[a] for Determinants of Changes in Mean Systolic and Diastolic Blood Pressure Among Adults Surveyed in Addis Ababa, Ethiopia, December 2006

Variable[b]	Mean Systolic Blood Pressure			Mean Diastolic Blood Pressure		
	β Coefficient	SE	*P* Value	β Coefficient	SE	*P* Value
Sex (male)	-7.4	0.8	<.001	-2.2	0.5	<.001
Age, y	0.6	<0.1	<.001	0.1	<0.1	<.001
Religion (Christian)	3.1	1.3	.02	0.4	0.8	.58
Education (years of schooling)	-0.5	0.1	<.001	<-0.1	0.5	.46
Current daily smoker	1.3	1.7	.45	2.1	1.0	.03
Regular khat chewer	1.6	1.4	.25	1.9	0.8	.02
Binge drinker[c]	-0.3	1.4	.87	1.5	0.9	.11

[a] Analysis adjusted for body mass index, waist-hip ratio, level of physical activity, participation in income-generating work, and extra salt intake (adding salt on the plate after cooking).
[b] For categorical variables, reference groups are indicated in parentheses.
[c] Defined as consumption of 5 or more units of alcohol by men or 4 or more units of alcohol by women on any 1 day during the past 7 days. A unit is the amount of ethanol contained in standard glasses of beer, wine, fortified wine (such as sherry), and spirits (8-13 g ethanol).

Table 5. Logistic Regression Analysis for Determinants of Use of One or More Substances[a] Among Adults Surveyed in Addis Ababa, Ethiopia, December 2006

Variable	No. (%)	Adjusted OR[b]	(95% CI)
Sex			
Men	439 (26.6)	14.7	(10.7–20.1)
Women	56 (2.4)	1.0	
Age group, y			
25–34	206 (17.5)	2.4	(1.7–3.5)
35–44	153 (13.6)	2.2	(1.5–3.2)
45–54	90 (9.4)	1.7	(1.2–2.6)
55–64	46 (6.3)	1.0	
Religion			
Christian	420 (11.2)	1.0	
Muslim	75 (28.4)	2.7	(1.9–3.9)
Ethnic group			
Amhara	234 (11.0)	1.0	
Guraghe	93 (20.6)	1.6	(1.1–2.2)
Oromo	91 (11.4)	1.1	(0.9–1.5)
Other	77 (12.3)	0.9	(0.9–1.2)
Education level			
No formal education	49 (5.0)	0.9	(0.6–1.4)
Primary school (grades 1-6)	94 (10.5)	1.1	(0.8–1.6)
Secondary school (grades 7-12)	275 (16.7)	1.3	(2.0–1.7)
Post-secondary	77 (16.4)	1.0	
Income-generating work			
Yes	322 (18.2)	1.0	(0.8–1.2)
No	173 (7.8)	1.0	

OR indicates odds ratio; CI, confidence interval.
[a] Defined as any of the following: 1) current daily smoking, 2) binge drinking during the past week (≥5 drinks per day for men and ≥4 drinks per day for women), 3) regular khat chewing (on ≥1 days per week).
[b] Adjusted OR was calculated by adjusting for all sociodemographic variables included in the table.