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## ACKNOWLEDGEMENTS

With the publication of additional papers on substance use, risky sexual behaviours and HIV, this issue of the journal continues with the theme of papers published in Volume 5(2). Like the two previous issues of Volume 5, this first issue of Volume 6 is published with the financial contribution of the IOGT-NTO, Sweden, through a collaborative arrangement with the journal, Nordic Studies on Alcohol and Drugs (NAT). The Editorial Board of the African Journal of Drug and Alcohol Studies and the Centre for Research and Information on Substance Abuse (CRISA), publisher of the journal, remain grateful to the IOGT for its continued support of our work of publishing the results of addiction research in Africa.

We are also grateful to the following individuals who have recently served as peers reviewers for the journal:

Dr Victor Adesola Makanjuola, Department of Psychiatry, University College Hospital, Ibadan, Nigeria

Prof. Charles C. Parry, Medical Research Council, Cape Town, South Africa

Prof. E.A. Bamgboye, Department of Epidemiology, Medical Statistics & Environmental Health, College of Medicine, University of Ibadan, Ibadan, Nigeria

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Andreas Pluddemann, Medical Research Council, Cape Town, South Africa

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**THE RELATIONSHIP BETWEEN SEXUALITY-RELATED ALCOHOL  
EXPECTANCIES AND DRINKING ACROSS CULTURES**

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**ABSTRACT**

This study examines the link between positive expectancies about the effects of drinking on sexual feelings, on the one hand, and drinking, on the other, across countries. The study uses representative surveys conducted between 1995 and 2004 in 11 countries participating in the GENACIS project (Gender, Alcohol and Culture: an International Study), analyzed by cross-country comparisons of frequencies of reporting three expectancy-items and exploratory multiple regression analyses of the relationship between expectancies about the effect of drinking on sexual feelings and annual volume of alcohol consumed. Both the cross-country comparisons and the multiple regression analyses show varying patterns across countries. In most countries where gender differences were found, it was more common among men than among women to expect drinking to be positively related to sexual feelings. This finding has potential implications for the prevention of gender-based sexual violence.

**KEY WORDS:** drinking, sexual expectancies, cross-cultural, gender

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**INTRODUCTION**

In international alcohol research, sexuality has been a fairly regularly recurring topic. George and Stoner (2000) point out that the research literature in this field is extensive. Along with several other authors (e.g. Crowe & George, 1989; Reinerman & Leigh, 1988),

George and Stoner (2000) also note that culture, or everyday life, is pervaded by images in which alcohol and sexuality are linked together. Studies aiming to examine the relationship between alcohol use and sexuality have relied on varying methodologies, most commonly survey or experimental (balanced placebo design (BPD)). Given the earlier precedence of medical models in explaining this

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link, BPD studies are often applied in order for the researcher to be able to distinguish psychological or social psychological (i.e. placebo) effects, from pharmacological or physiological effects of ethanol intake (for recently published examples, see George et al., 2000; Friedman et al., 2005). George and Stoner (2000) summarize the advantages of this approach, as compared to survey studies, as related to the establishment of causality.

However, because the experimental setting has an artificial character about it, questions regarding external validity arise (Reinarman & Leigh, 1988; Weinberg, 2002). The link between drinking and sexual feelings and behaviours may vary across situations and settings, as well as across different groups in a population (the BPD studies often involve only men, and often only North American college student men; see also Room, 2001). Furthermore, because most earlier studies have concentrated on studying this link in Europe and North America, we do not know as much about the existence of it outside the Western world.

The purpose of this study is to examine the link between positive expectancies about the effects of drinking on sexual feelings and drinking across countries. More specifically, we are interested in studying whether people who expect drinking to have positive effects on their sexual life drink more and whether this varies across countries. Because previous research in this area has underlined the importance of gender (Wilsnack, 1984; Wilsnack & Wilsnack, 1997), similarities and differences between women and men also receive special attention. The focus on positive sexual expectancies implies that studies on general expectancies – both positive and negative – have generally been excluded from consideration in this paper (for research on general expectancies, see e.g. Lee, Greely & Oei, 1999; Rauch & Bryant, 2000). Studies on alcohol use and its relation to negative sexually related consequences such as sexual violence and aggression or sexual risk-taking (Abbey, 2002; Leigh, 1999; Poulin & Graham, 2001; Ullman,

Karabatsos & Koss, 1999) have also been excluded. Because this study is part of the larger GENACIS project, some of these areas are covered by other studies using the same data set.

The present study adds to previous research on the relationship between alcohol and sexual expectancies by comparing data on this link from many different countries, including countries outside the West. This comparison may be thought of as a first, exploratory step in studying alcohol's degree of association with sexuality across cultures, in an attempt to understand more about the cultural position of drinking (Room & Mäkelä, 2000).

## **Background**

### *Gender and drinking*

Differences between women and men as concerns the consumption of alcohol – that women drink less than men and that more women than men are abstainers – is a general pattern noted in many studies (Wilsnack et al., 2000; and see Holmila & Raitasalo, 2005, for a summary). Several different kinds of explanations for the persistence of such differences have been proposed, from biological to psychological and social. Wilsnack et al. (2000) suggest that biological differences are important but because of some limitations of the biological mechanisms proposed, are not sufficient to explain gender differences. They note, for example, that biological differences (e.g. women generally have smaller volumes of body water compared to men) cannot account for the variation in differences between women's and men's drinking behaviour across societies and subcultures. The present study focuses on such social and cultural aspects of gender and drinking in terms of culturally formed expectancies about alcohol's effects on sexual feelings.

### *Expectancies about alcohol's effects on sexual feelings and behaviours*

George and Stoner (2000) conclude that findings from surveys show that people “generally view alcohol as enhancing and disinhibiting sexual feelings and behaviours” (2000:

93). This applies to both women and men (see also Abbey & Harnish, 1995; and compare Corcoran & Thomas, 1991; Abbey, Zawacki & McAuslan, 2000). For example, Wilsnack et al. (1997) conclude that U.S. men were as likely as U.S. women to report positive effects of drinking on sexuality and intimacy. Further, findings from surveys indicate that people who believe in alcohol's effects on sexual feelings are more likely to drink before a sexual experience. Likewise, experimental evidence has shown that the belief that one has consumed alcohol (whether or not one actually has) strongly influences at least men's actions (George & Stoner, 2000). If participants think they have consumed alcohol they become more sexually aroused and more interested in sexually provocative material. The few experimental studies that have used women participants have not found the same influence on women's "postdrinking behaviour" (George & Stoner, 2000).

#### *Gender and expectancies*

Abbey et al. (1999) conclude that in their study, men were rated as feeling significantly more aggressive and as experiencing significantly higher sex drive when drinking, compared to women. Women, on the other hand, were rated as experiencing more sexual affect and vulnerability to sexual coercion when drinking, compared to men. Hence, study participants in general held "gender role stereotypic" beliefs about alcohol's effects on others (Abbey et al., 1999: 181; and compare Corcoran & Thomas', 1991, results).

As Leigh and Aramburu (1996) point out, men have traditionally been expected to initiate sexual activity and women to limit it. They also acknowledge that while traditional gender roles seem to be changing, this change is "neither quick nor extensive" (1996: 21). Haavio-Mannila et al. (1990) and Wilsnack and Wilsnack (1997; see also Klassen & Wilsnack, 1986) have noted that women's sexual activity is more strictly regulated or suppressed socially and that drinking alcohol therefore may enable

women to act more liberally vis-à-vis a restrictive ideal. Haavio-Mannila et al. (1990) conclude that in their study, alcohol use was related to liberal attitudes toward sexuality among women but not among men, indicating an emancipation script, while Leigh and Aramburu (1996) conclude that in initiating sexual activity, their results show gender differences, but alcohol effects were weak. They discuss this as possibly related to study design, but also possibly related to the fact that their sample consisted of college students.

In the present study, the fact that people "generally view alcohol as enhancing and disinhibiting sexual feelings and behaviours" (George & Stoner, 2000: 93) is understood as indicating an expectancy: if people hold this view of alcohol as disinhibiting sexual feelings, it is reasonable to think that they will also expect alcohol to have these effects. Because people in general see alcohol as a sexual disinhibitor, a woman's as well as a man's positive expectancies about alcohol's effect on sexual feelings can be expected to be related to that woman and man drinking more. In line with Haavio-Mannila (1990) et al.'s emancipation script and Wilsnack and Wilsnack's (1997) conclusion that drinking alcohol may enable women to act more liberally vis-à-vis a restrictive ideal, one can expect women's positive expectancies to be more important for their drinking than men's. We also suggest that alcohol may be used by women as a means to enable them to act in a more sexually liberal way. However, Wilsnack et al. (1997) point out that with increased drinking levels, U.S. men in their sample, contrary to expectations, showed a significantly greater increase than women in the prevalence of perceived positive effects of alcohol on sexual pleasure.

#### *Theoretical model: expectancies and drinking*

As a first step, the theoretical model that is explored in this study is specified as: expectancies about alcohol's effects on sexual acts and sexual feelings influence drinking (compare

e.g. Leigh, 1990)<sup>2</sup>. Expectancies about alcohol's effect may be formed without any prior experiences of drinking, which is why expectancies seem to come first in a more fundamental sense (Leigh & Stacy, 2004). After one has had experiences of drinking alcohol, these experiences may influence one's expectancies about alcohol's effects. This suggests a spiral-shaped model in which expectancies and experiences influence each other. Therefore, Leigh and Stacy (2004) argue that age should be introduced into such studies. In the present study, this means that the role that gender and age play in the relationship between expectancies and drinking will also be examined.<sup>3</sup>

## METHOD

### *The GENACIS project*

The present study is part of the GENACIS project (Gender, Alcohol and Culture: An International Study),<sup>4</sup> a cross-national collaborative study developed through the work of the International Research Group on Gender and

Alcohol (IRGGA; see Wilsnack & Wilsnack, 2002). The GENACIS database consists of standardized data sets from national and regional surveys in countries in Europe, North America, South America, Africa, Asia and Oceania. In 2005, there were 36 data sets in the database. All surveys asked questions about drinking behaviour, drinking contexts and drinking consequences. For this study, data from 11 countries (Table 1) that asked questions about drinking expectancies were used.

Nationally representative surveys were carried out in six countries and regional samples were used in five countries. In Sri Lanka, 8 of 24 districts were excluded due to security (the Tamil separatist war), but in the other countries reasons for regional samples were of a more practical nature (limited availability of funding or interviewers). In Nigeria and Uganda sub-regions were selected in order to represent differing drinking cultures in the countries. In Spain, a regional sample of Galicia, Cantabria and Valencia was selected. Nine of the countries conducted face-to-face interviews, one survey used postal questionnaires (Japan) and one conducted telephone interviews (Sweden). The general pattern for Table 1 is that a larger proportion of the men in each country are current consumers and that the proportion of women who are consumers is generally lower but not very different from the male group (except in India and Sri Lanka, where very few women are drinkers).

### *Variables*

The theoretical model is explored using cross-tabulation with chi-square tests for differences and multiple regression analysis with separate models for each country. Expectancies about alcohol's effect on sexual feelings were measured by three items in the common GENACIS questionnaire, chosen to represent three different dimensions of the relation between sex-expectancies and drinking. These were: How true is it that when you drink...1. you feel less inhibited about sex?, 2. sexual activity is more pleasurable for you?, and 3. you feel more sexually attractive? Respondents chose between *usually true*, *sometimes true* and *never*

<sup>2</sup>This theoretical model is similar to the model Leigh has used in her studies, although her dependent variable in the 1990 study is closer to 'drinking in sexual situations' (i.e., not drinking in general). In the literature on expectancies, one typically finds this theoretical model or an inversion of it: drinking influences sexual acts, sexual feelings and/or expectancies about alcohol's sexual effects. Sometimes, 'sexual' in the inverse version of the model refers to sexual experiences when drinking, rather than expectancies about alcohol's effects (cf. Mäkelä & Mustonen, 2000).

<sup>3</sup>Of course, cultural factors such as religion/religiosity (Nigeria, Uganda, Sri Lanka and India are all countries with a substantial proportion/minority of Muslim citizens), degree of industrialization or modernization and other such factors might be relevant to explaining this. However, we haven't included such factors for the following reasons: 1. Controlling for all those factors would take away all the variation between countries; such variation in general cultural climate (e.g., the degree to which individualism is a cultural ideal), degree of religiosity, political climate and so on, is now included in the model (although not specified as control variables). 2. Controlling for, e.g., religion would result in too few cases to analyze (because of several different options/subcategories in countries where many religious orientations coexist).

<sup>4</sup>See <http://www.genacis.org> and <http://www.med.und.nodak.edu/depts/irgga>.

**Table 1.** Survey data sets included in the analysis

Region	Country / national or regional survey	Data collection mode and year	n	Response rate	Ages included	Consumers %; women/men	Mean annual volume <sup>a</sup> women/men	Heavy episodic drinking <sup>b</sup> women/men
Africa	Nigeria/ regional	Ftf 2003	2070	No info	18+	22.3 / 42.1	9843.3 / 11613.9	40.4 / 52.2
	Uganda / reg	Ftf 2003	1479	83.6%	18+	39.5 / 51.2	4861.5 / 15790.8	16.7 / 44.1
	India/ reg	Ftf 2003	2979	No info	16+	5.9 / 33.3	6374.6 / 12608.5	43.0 / 55.6
Asia	Sri Lanka/ reg	Ftf 2002	1201	No info	18+	6.4 / 53.6	365.2 / 7981.9	0.0 / 13.1
	Japan/ national	Post 2001	2254	75.1%	20-69	77.0 / 91.1	1913.6 / 6749.3	10.8 / 37.4
Europe	Czech Republic/ nat	Ftf 2002	2526	72.6%	18-64	79.9 / 90.4	3270.5 / 10624.5	10.0 / 28.9
	Spain/ reg	Ftf 2002	1850	No info	18+	43.8 / 67.1	2980.4 / 7119.3	- / -
	Sweden /nat	Tel 2002	5472	67.8%	17+	79.1 / 88.4	1203.6 / 2399.7	4.2 / 18.0
	United States/ nat <sup>c</sup>	Ftf 2001	1126	80.0%	21+	73.4 / -	1492.1 / -	23.5 / -
Central America	Costa Rica/ nat	Ftf 2003	1273	96.0%	18+	42.4 / 67.3	1180.1 / 3928.7	8.1 / 21.7
South America	Uruguay/ nat	Ftf 2004	1000	No info	18-65	60.3 / 81.1	1883.3 / 6688.1	3.7 / 23.6

Ftf – Face-to-face interviews, Tel – Telephone interviews, Post – postal questionnaire. <sup>a</sup> Drinkers only. <sup>b</sup> Monthly or more frequent heavy episodic drinking, drinkers only. <sup>c</sup> The sample consisted of only women.

*true*. All countries in this study, except Sweden, used the common questionnaire for these questions. For Sweden, question 2 (sexual activity is more pleasurable for you) was replaced by question 2b: drinking makes you enjoy sex more? We considered these sufficiently similar to include Sweden among the countries in the study.<sup>5</sup> In analyzing the data, the alternatives *usually true* and *sometimes true* were combined into the alternative *ever true*, resulting in three variables with binary response alternatives. The expectancy questions were analyzed for current drinkers only.

Drinking was measured using variables for annual volume of alcohol consumed (in grams of pure alcohol) during the past 12 months. To avoid problems with skewness and non-linearity in the multiple regression analyses, we transformed the dependent variable using the natural logarithm (ln) function.

## RESULTS

When looking at each country, we see both gender differences and gender similarities as concerns the sex-expectancy questions (see Table 2). In Sweden, the Czech Republic, Spain, Nigeria, Uganda, Sri Lanka, Costa Rica and

Uruguay there are no significant gender differences in expecting to feel less inhibited about sex when drinking. In India and Japan, however, there are statistically significant differences. 38.1% of men drinkers from India expect to feel less inhibited about sex when drinking, as compared to 18.6% of the women, and 35.6% of the Japanese men drinkers expect to feel less inhibited about sex while 25.9% of the Japanese women expect this to be the case. Women and men in the Czech Republic, Spain, Nigeria, Sri Lanka, Costa Rica and Uruguay do not differ in expecting sexual activity to be more pleasurable when drinking. In Sweden, significantly more women (29.2%) than men (24.3%) say that they sometimes or usually expect sexual activity to be more pleasurable when drinking. In Uganda, India and Japan, significantly more men than women say that they sometimes or usually expect sexual activity to be more pleasurable when drinking. For the last expectancy question, pertaining to whether one expects to feel more sexually attractive when drinking, significant gender differences are found only for Sweden – where more women (34.9%) than men (29.6%) say they sometimes or usually expect this – and India – where more men (39.1%) than women (19.8%) say they sometimes or usually expect this.

In the overall, levels of reporting the expectancies, 61.5% of women and men drinkers in the Czech Republic say that they sometimes or usually feel less inhibited about sex when drinking. The Czech Republic is the country with the highest level of reporting this expectancy-item. Closest to the Czech Republic in the expectancy to feel less inhibited are Uganda (46.4%) and Costa Rica (38.2%). Nigeria, Uganda and the Czech Republic are the countries with the highest levels of reporting the expectancies of experiencing more sexual pleasure and feeling more sexually attractive when drinking. In Uruguay, only 9.3%, 6.3% and 3.4%, respectively, report having ever had one of these three expectancies; this makes Uruguay the country with the lowest levels of reporting all three expectancies. Sri Lanka and Spain likewise show quite low frequencies of

<sup>5</sup>The three sex-expectancy items are not combined into an index because they are intended to measure different things. The first item (1) is more general (about whether the respondent feels less inhibited about sex in general), while the second (2) is more specific since it refers to whether sex is experienced as pleasurable or not, and the third (3) refers to whether the respondent feels more sexually attractive (hence specifying an experience – the feeling of sexual attractiveness – but not necessarily referring to sexual activity in itself). Wilsnack et al. (1997) have also noted that among American women, the first item (1) was most important in relation to women's drinking. Controlling for multicollinearity revealed a complicated pattern between countries, with correlations between the three expectancy items ranging from 0.35 to 0.9. The variance inflation factor (VIF) was 1 and 2 for all countries except India, with a VIF value of 5 (still quite far from the limit of 10, however). Although this reveals a risk for multicollinearity, this risk appears to be largest for India. For further discussion about India, see the Multiple regression analysis section, below.

**Table 2.** Cross-tabulations of expectancies by gender and country (current drinkers only)

	Country																
	Sweden		Czech Republic		Spain		USA		Nigeria		Uganda						
	Gender	Total	Gender	Total	Gender	Total	Gender	Total	Gender	Total	Gender	Total					
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men					
<b>Feel less inhibited about sex</b>	Ever true	220 (33.4%)	223 (31.1%)	443 (32.2%)	604 (59.4%)	705 (63.3%)	1309 (61.5%)	77 (19.6%)	108 (18.9%)	185 (19.2%)	391 (53.1%)	391 (33.5%)	174 (38.2%)	242 (36.7%)	131 (46.1%)	169 (46.7%)	300 (46.4%)
	Total	659	718	1377	1016	1114	2130	392	572	964	736	736	203	456	284	362	646
<b>Sex more pleasurable</b>	Ever true	186 (29.2%)	169 (24.3%)	355 (26.6%)	475 (46.6%)	546 (49.1%)	1021 (47.9%)	55 (14.3%)	74 (13.1%)	129 (13.6%)	331 (45.1%)	331 (47.1%)	252 (55.1%)	348 (52.6%)	133 (47.0%)	201 (55.1%)	334 (51.5%)
	Total	638	696	1334	1019	1111	2130	384	566	950	734	734	204	457	283	365	648
<b>Feel more sex. attr.</b>	Ever true	228 (34.9%)	210 (29.6%)	438 (32.1%)	455 (44.7%)	514 (46.1%)	969 (45.5%)	46 (11.9%)	56 (10.0%)	102 (10.8%)	271 (36.8%)	271 (39.7%)	214 (47.1%)	295 (44.8%)	136 (48.1%)	203 (55.5%)	339 (52.2%)
	Total	654	710	1364	1018	1114	2132	387	560	947	737	737	204	454	283	366	649

**a** The sample for USA consists of only women. \*\* Differences (chi-square tests) significant at 1% level (or lower) \* Differences (chi-square tests) significant at 5% level  
**n.s** Differences (chi-square tests) non- significant

Table 2. Continued

	Country														
	Sri Lanka			India			Japan			Costa Rica			Uruguay		
	Gender		Total	Gender		Total	Gender		Total	Gender		Total	Gender		Total
	Women	Men	Women	Men	Total	Women	Men	Total	Women	Men	Total	Women	Men	Total	
<b>Feel less inhibited about sex</b>	6 <b>n.s</b>	31	37	16 **	191	207	211 **	350	561	94 <b>n.s</b>	171	265	29 <b>n.s</b>	34	63
Ever true	(16.2%)	(9.8%)	(10.5%)	(18.6%)	(38.1%)	(35.3%)	(25.9%)	(35.6%)	(31.2%)	(34.7%)	(40.4%)	(38.2%)	(7.7%)	(11.1%)	(9.3%)
Total	37	316	353	86	501	587	814	982	1796	271	423	694	376	305	681
<b>Sex more pleasurable</b>	6 <b>n.s</b>	37	43	17 **	200	217	205 **	328	533	83 <b>n.s</b>	154	237	22 <b>n.s</b>	21	43
Ever true	(16.2%)	(11.8%)	(12.3%)	(19.8%)	(39.9%)	(37.0%)	(25.2%)	(33.4%)	(29.7%)	(31.2%)	(36.5%)	(34.4%)	(5.9%)	(6.9%)	(6.3%)
Total	37	314	351	86	501	587	814	982	1796	266	422	688	376	305	681
<b>Feel more sex. attr.</b>	7 <b>n.s</b>	39	46	17 **	196	213	165 <b>n.s</b>	219	384	49 <b>n.s</b>	78	127	15 <b>n.s</b>	8	23
Ever true	(18.9%)	(12.5%)	(13.1%)	(19.8%)	(39.1%)	(36.3%)	(20.2%)	(22.3%)	(21.3%)	(18.1%)	(18.4%)	(18.3%)	(4.0%)	(2.6%)	(3.4%)
Total	37	313	350	86	501	587	815	984	1799	271	423	694	376	305	681

\*\* Differences (chi-square tests) between women and men significant at 1% level (or lower) \* Differences between women and men significant at 5% level

**n.s** Differences between women and men non-significant

reporting having ever had one of these three expectancies. From a culturally comparative perspective, these findings indicate that some countries in the West might have more in common with countries outside the West than the traditional division of the world into the West, on the one hand, and the developing countries, on the other, would seem to indicate.

### Multiple regression analysis

As a first exploratory step in testing if the expectancies are linked to drinking, we ran multiple regression analyses. The multiple regression analyses were run in a step-by-step fashion, with the first step including only the expectancy items as regressors and the second and third steps including gender and age, respectively, as controls. Before discussing these results, it is important to keep in mind that in Sri Lanka and India, there are very few women drinkers (see Table 1). This study includes only current drinkers. Therefore, due to the small percentages of women drinkers in Sri Lanka and India, special caution should be taken when generalizing the results for these countries. Furthermore, the coefficients for the factors included in the models for each country are not exactly comparable to one another, due to some differences in sampling and data collection procedures. However, we argue that the data permit comparisons of directions of associations, hence giving a broad picture of the relationships between variables in different countries. The results from the multiple regression analyses are presented in Table 3 and Table 4.

When looking at the explained variance for Step 1 (including only the expectancy items as regressors; see Table 3), we see that it varies from a high of 15% in the model for Costa Rica, to a low of 0.8% in the model for Sri Lanka. When gender is introduced as a control (not shown), the explained variance increases for all countries. For some countries, it increases considerably. When introducing age as a control in a third step (Table 4), the changes in explained variance are small, compared to Step 2.

For the expectancy variables (Table 3), there are different patterns in different countries. In Sweden, the Czech Republic, Spain, Nigeria, Japan, Costa Rica and Uruguay those who expect to feel less inhibited about sex when drinking, drink more than those who do not. For Uganda, Sri Lanka and India, the coefficient for feeling less inhibited about sex is non-significant, indicating that there are no significant differences in (the logarithm of) annual volume consumed between those who expect to feel less inhibited and those who do not.

In the Czech Republic, Uganda and Costa Rica, those who expect sex to be more pleasurable when drinking, drink more than those who do not, while in the other countries there are no significant differences in (the logarithm of) annual volume consumed between those who expect sex to be more pleasurable and those who do not.

Finally, in Sweden, the Czech Republic, India and Costa Rica, people who expect to feel more sexually attractive when drinking, drink more than those who do not. For Spain, Nigeria, Uganda, Sri Lanka, Japan and Uruguay, there are no significant differences in (the logarithm of) annual volume consumed between people who expect to feel more sexually attractive when drinking and people who do not.

In conclusion, these results indicate that in two of the countries surveyed, all of the three sex-expectancy questions are significantly related to (the logarithm of) annual volume consumed, namely in the Czech Republic and Costa Rica. In one of the countries surveyed – Sri Lanka – none of the three sex-expectancy questions are significantly related to (the logarithm of) annual volume consumed. Sweden shows positive associations between drinking and two of the sex-expectancies while the remaining countries – Spain, Nigeria, Uganda, India, Japan and Uruguay – show a positive association of drinking with only one sex-expectancy.

When looking at Table 4, we see that in all countries, men drink more than women, when controlling for the other factors in the model. The differences in explained variance between the regression model that includes only the

Table 3. Multiple regression models, 10 countries (with the three expectancies as regressors)

Coefficients for B (standard errors in parentheses)	Country									
	Sweden	Czech Republic	Spain	Nigeria	Uganda	Sri Lanka	India	Japan	Costa Rica	Uruguay
<b>Constant</b>	6.600** (0.046)	7.204** (0.062)	7.533** (0.062)	7.739** (0.121)	7.478** (0.142)	6.784** (0.142)	7.673** (0.105)	6.408** (0.064)	5.785** (0.092)	6.647** (0.081)
<b>Feel less inhibited</b>	0.246* (0.101)	0.415** (0.104)	0.471* (0.230)	0.370* (0.184)	0.108 <sup>n.s.</sup> (0.181)	-0.326 <sup>n.s.</sup> (0.500)	0.009 <sup>n.s.</sup> (0.277)	0.989** (0.207)	0.568** (0.184)	0.926** (0.317)
<b>Sex more pleasurable</b>	0.203 <sup>n.s.</sup> (0.105)	0.274** (0.104)	0.476 <sup>n.s.</sup> (0.277)	0.270 <sup>n.s.</sup> (0.206)	0.518* (0.249)	-0.090 <sup>n.s.</sup> (0.583)	0.107 <sup>n.s.</sup> (0.392)	0.218 <sup>n.s.</sup> (0.216)	1.005** (0.192)	0.314 <sup>n.s.</sup> (0.377)
<b>Feel more sexually attractive</b>	0.210* (0.092)	0.351** (0.099)	-0.160 <sup>n.s.</sup> (0.265)	0.332 <sup>n.s.</sup> (0.204)	0.203 <sup>n.s.</sup> (0.245)	0.783 <sup>n.s.</sup> (0.589)	0.823* (0.382)	0.105 <sup>n.s.</sup> (0.176)	0.439* (0.201)	0.386 <sup>n.s.</sup> (0.471)
<b>R2</b>	0.035	0.060	0.026	0.037	0.027	0.008	0.049	0.063	0.150	0.030
<b>R2 (adj)</b>	0.033	0.058	0.023	0.033	0.023	-0.001	0.044	0.061	0.147	0.026
<b>N</b>	1311	2112	924	619	614	349	582	1789	688	680

n.s. Coefficient statistically non-significant \* Coefficient statistically significant at 5%-level \*\* Coefficient statistically significant at 1%-level

Table 4. Multiple regression models, 10 countries (including gender and age as controls)

Coefficients for B (standard errors in parentheses)	Country									
	Sweden	Czech Republic	Spain	Nigeria	Uganda	Sri Lanka	India	Japan	Costa Rica	Uruguay
<b>Constant</b>	6.410** (0.118)	6.327** (0.128)	6.435** (0.166)	6.294** (0.301)	5.973** (0.289)	2.584** (0.489)	6.488** (0.328)	4.856** (0.182)	5.329** (0.212)	6.159** (0.227)
<b>Male</b>	0.664** (0.071)	1.501** (0.069)	1.170** (0.107)	476** (0.168)	1.597** (0.162)	3.560** (0.373)	0.799** (0.231)	1.633** (0.098)	1.188** (0.137)	1.478** (0.143)
<b>Feel less inhibited</b>	0.230* (0.098)	0.362** (0.094)	0.460* (0.216)	0.368* (0.180)	0.151 <sup>n.s.</sup> (0.166)	-0.083 <sup>n.s.</sup> (0.441)	-0.045 <sup>n.s.</sup> (0.274)	0.835** (0.193)	0.476** (0.177)	0.690* (0.297)
<b>Sex more pleasurable</b>	0.245* (0.102)	0.267** (0.094)	0.552* (0.260)	0.216 n.s. (0.202)	0.424 <sup>n.s.</sup> (0.229)	-0.145 <sup>n.s.</sup> (0.513)	0.010 <sup>n.s.</sup> (0.388)	0.141 <sup>n.s.</sup> (0.200)	0.959** (0.182)	0.281 <sup>n.s.</sup> (0.352)
<b>Feel more sexually attractive</b>	0.207* (0.092)	0.382** (0.090)	-0.041 <sup>n.s.</sup> (0.249)	0.374 <sup>n.s.</sup> (0.200)	0.199 <sup>n.s.</sup> (0.226)	0.973 <sup>n.s.</sup> (0.518)	0.861* (0.378)	0.281 <sup>n.s.</sup> (0.163)	0.477* (0.191)	0.674 <sup>n.s.</sup> (0.439)
<b>Age</b>	-0.004 <sup>n.s.</sup> (0.002)	0.003 <sup>n.s.</sup> (0.003)	0.009** (0.003)	0.028** (0.007)	0.018* (0.007)	0.024** (0.009)	0.016* (0.007)	0.016** (0.004)	-0.006 <sup>n.s.</sup> (0.005)	-0.004 <sup>n.s.</sup> (0.005)
<b>R2</b>	0.097	0.236	0.145	0.081	0.180	0.237	0.075	0.198	0.236	0.164
<b>R2 (adj)</b>	0.093	0.234	0.141	0.074	0.173	0.226	0.067	0.196	0.230	0.158
<b>N</b>	1311	2112	924	619	614	349	582	1789	688	680

n.s. Coefficient statistically non-significant; \* Coefficient statistically significant at 5%-level; \*\* Coefficient statistically significant at 1%-level

expectancy items and, above all, the model that includes gender as a control (not shown) and the model that includes gender and age as controls, indicate that gender is more important than the expectancy items for understanding the volume of alcohol consumed. Furthermore, a first exploratory test of interaction effects between gender and the sex-expectancy items (not shown) in eight of the countries included in the multiple regression analysis (excluding India and Sri Lanka because of the small number of women drinkers), showed no significant effects, implying that if there are interactions between variables, they are more complicated than the two-way interactions tested.

## DISCUSSION

As noted by Wilsnack et al. (2000) and Holmila and Raitasalo (2005), differences between women and men as concerns their consumption of alcohol – women drink less than men and more women than men are abstainers – form a general pattern across countries. When studying the GENACIS-countries included in this study, we find a similar pattern. However, the results from the chi-square tests for differences between women and men on the sex-expectancy questions indicate a quite complicated pattern. In some countries we find no significant gender differences on any of the expectancy questions (the Czech Republic, Spain, Nigeria, Sri Lanka, Costa Rica and Uruguay), and in some countries we find gender differences for some of the expectancies (Sweden, Uganda and Japan) and in India, finally, we find significant gender differences on all expectancies.

About Japanese drinking culture, Hendry argues that drinking is accepted among both men and women; “the Japanese public is rather tolerant” as regards it (1994: 184). She further says that social drunkenness, or “deliberate violations of conventional manners” (Hendry, 1994: 187), are allowed for both women and men, but that it appears more common to problematize women’s drinking. On the other hand,

Ikuesan argues that in Nigerian society “alcohol is seen as a social drink and alcoholic intoxication is pardoned only as a masculine feature” (Ikuesan, 1994: 942). This would give us an indication that the drinking culture of Nigeria differs from that of Japan. If the percentage of women consumers gives us any clues as to the public acceptance of women’s drinking, Sweden and Japan have the second and third place (after the Czech Republic), in descending order, of percentage women consumers. Hence, one could conclude that women’s drinking in these countries is relatively accepted.

Relating this to the suggestion by Haavio-Mannila et al. (1990) and Wilsnack and Wilsnack (1997) that drinking alcohol may enable women to act more liberally vis-à-vis a restrictive sexual ideal, our next step would be to argue that in countries where women’s drinking is relatively accepted, alcohol may be used by women as a means to enable them to act in a more sexually liberal way. However, this pattern only seems to make sense for Sweden, where more women than men say they do sometimes or usually expect sex to be more pleasurable and expect to feel more sexually attractive when drinking. In Japan, more men than women say they sometimes or usually expect to feel less inhibited about sex and expect sex to be more pleasurable when drinking. The same is true for Uganda, where more men than women expect sex to be more pleasurable when drinking. Uganda further does not fit the proposed general pattern at all, with only 39.5% women consumers (as compared to 77.0% in Japan and 79.1% in Sweden). In the Czech Republic, we find the largest percentage of women consumers (79.9%), but no significant gender differences in expectancies. It must also be noted that the differences found, though statistically significant, are rather small. We expected women’s positive expectancies to be more important for their drinking than men’s (Haavio-Mannila et al. 1990; Wilsnack & Wilsnack 1997). We also suggested that women might use alcohol as a means that enables them to act in a more sexually liberal way. As argued

above, links between positive sexual expectancies, drinking and gender seem to present a more complicated pattern than this across the nations surveyed in the present study. The results from the multiple regression analyses suggest that the sex-expectancy variables do seem to be of some importance in some countries, but in others they are non-significant. Hence, our theoretical model does not receive overwhelming empirical support. This does not necessarily mean that it should be discarded.

A study by Wolff et al. (2006) may suggest a way forward on this topic. Wolff et al. (2006) argue that in Ugandan society, it is acceptable for both men and women to drink together, but that there are clear differences in the social meaning ascribed to women's and men's drinking. To understand more about the differences and similarities indicated in our study, more detailed research on the cultural position of sexuality in all the included countries is needed, and, in particular, more research is needed on the cultural connections between sexuality and drinking. For example, we might hypothesize that ideas about equality between the genders with respect to the expression of sexual feelings, and whether such ideas are dominant in a society or not, are relevant factors that have to be taken into account. Another factor could be the extent to which women in a given culture are afraid that their drinking will, or can be used as an "excuse" for male sexual aggression against them.

Importantly, the results from the present study point to some countries that would be specifically interesting or important for case studies. This is true for all the non-Western countries, where Sri Lanka and India are especially interesting because of the very small proportions of women drinkers in these countries. It is reasonable to think that women drinkers in these countries constitute a special group, compared to women who do not drink, as well as compared to women drinkers in other countries. Our analyses further indicate that Uganda and Nigeria differ somewhat from each other. Although both are on the African continent, these countries are geographically quite distant from one another. The geographical distance

and the indication that they differ with regard to the relationship between sexual expectancies and annual volume of alcohol consumed would make for interesting cultural comparisons between them. Finally, a European country that deserves attention is the Czech Republic. In addition to having the highest percentage of women who are drinkers of any country in the study, the results from the cross-tabulation indicate that a majority of both women and men in the Czech Republic say that they sometimes or usually expect to feel less inhibited about sex when drinking, and all three sexuality expectancies are significantly related to volume of alcohol consumed.

As noted earlier, limitations of this study include some differences in sampling frames (regional vs. national) and data collection modes (face-to-face vs. postal vs. telephone surveys) in the countries studied. An additional limitation was the small proportion of women drinkers in several of the countries, in particular, India and Sri Lanka. Despite these limitations, the study also has a number of strengths. The drinking measures and the sex-expectancy measures were identical or nearly identical across all participating countries, a degree of comparability quite unusual in multinational alcohol research. And the diversity of cultures represented in the present study is considerably greater than in many international studies, where European and North American countries typically predominate. We believe that these strengths make the descriptive data on drinking and sexuality-related expectancies presented here valuable as a starting-point for further analyses of the complex relationships among gender roles, sexuality, and alcohol use in diverse cultures.

The findings of our study imply that enhancement of one's feeling of sexual attractiveness might be an important reason why people drink alcohol. Thus, social drinking to many people has positive consequences related to the expression of sexual feelings. For those working with the prevention of alcohol problems, this knowledge highlights the need to address people's expectations that drinking will enhance their sexual experience. Our study

shows that in most countries where gender differences were found, it was more common among men than among women to expect drinking to be positively related to their sexual feelings. An expectation to feel less inhibited about sex when drinking, if combined with a belief that male sexuality is a biological force that has to have its outlet, can result in sexual violence against women. In prevention contexts, it is therefore important to be aware of gender differences with regard to sexual expectancies, for example, in working to prevent gender-based sexual violence.

### ACKNOWLEDGEMENTS

These data are part of the project Gender, Alcohol and Culture: An International Study (GENACIS). GENACIS is a collaborative international project affiliated with the Kettil Bruun Society for Social and Epidemiological Research on Alcohol and coordinated by GENACIS partners from the University of North Dakota, the University of Southern Denmark, the Free University of Berlin, the World Health Organization, the Pan American Health Organization, and the Swiss Institute for the Prevention of Alcohol and Drug Problems. Support for aspects of the project comes from the U.S. National Institute on Alcohol Abuse and Alcoholism/National Institutes of Health (Grant Numbers R01AA004610 and R21AA012941, Sharon C. Wilsnack, principal investigator), the European Commission (Quality of Life and Management of Living Resources Programme, Contract QLG4-CT-2001-0196; Kim Bloomfield, coordinator), the World Health Organization (Isidore Obot, coordinator), the Pan American Health Organization (Maristela Monteiro, coordinator), the German Federal Ministry of Health, and Swiss national funds (BBW 01.0366). Support for individual country surveys was provided by government agencies and other national sources. For the present study, financing for the participation of A. Bogren was provided by the Alcohol Research Council of the Swedish Alcohol Retailing Monopoly. Data coordinator for the GENACIS

project is Gerhard Gmel, Swiss Institute for the Prevention of Alcohol and Drug Problems, Lausanne, Switzerland.

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**ADDICTION AND HIV IN KENYA:  
A DESCRIPTION OF TREATMENT SERVICES AND INTEGRATION**

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**ABSTRACT**

In Kenya, the potential impact of untreated substance abuse on the HIV pandemic in Africa is clear. To assess the extent to which substance abuse and HIV screening and treatment are integrated, we conducted a survey of screening and treatment services for patients with IDU and HIV in two regions of Kenya. Substances abused in these regions of Kenya include alcohol, marijuana, opioids, khat, glue, and cocaine. Addiction treatment in these areas is provided through residential facilities primarily to male patients who pay for this care. Staffing is primarily by non-physicians. Medications are provided for symptomatic treatment only. Counseling is eclectic and based on 12-step programs. There is essentially no aftercare. There are limited or no onsite HIV services for patients receiving addiction treatment. HIV care sites uniformly provide voluntary HIV counseling and testing. Staffing at hospital-based HIV care facilities includes physicians recently trained in the use of antiretrovirals. Measurement of HIV biologic parameters is generally limited to CD4 cell count. There is no drug or alcohol screening, treatment, or referral performed at the majority of HIV sites. The current level of addiction and HIV treatment services is inadequate for the needs of Kenya and integrated care does not exist. Failure to address these deficiencies will lead to continued and increased spread of HIV through untreated IDU.

**KEY WORDS:** Kenya; Substance Abuse; HIV; Acquired Immunodeficiency Syndrome.

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**INTRODUCTION**

The emergence of heroin use, particularly by injection, in Nairobi and the Coast Province towns of Mombasa, Malindi, and Lamu in Kenya creates a substantial additional risk for transmission of HIV. It also offers opportunities for effectively intervening to reduce the burdens of both HIV and drug dependence, in a country already facing severe problems

associated with HIV/AIDS. Of the approximately 42 million persons infected with HIV worldwide (UNAIDS, 2004), 25 million, roughly 70% of all those infected, live in sub-Saharan Africa. Kenya, a country of 31 million, has an estimated 2.5 million persons (13% of adults) infected with HIV. This places Kenya fourth behind South Africa, India, and Nigeria in terms of HIV seroprevalence. The impact of HIV/AIDS in Kenya is seen by the fact that there are currently one million AIDS orphans

and that over the past five years the estimated life expectancy in Kenya has dropped from 65 to 47 years (UNAIDS, 2004).

Internationally, the incidence of injection drug use (IDU) appears to be on the rise with an increase in the 80 countries reporting this practice in 1992 to 136 countries reporting IDU in 1998 (UNAIDS, 2001). Ninety-three of these 136 countries, or 68%, identified HIV infection related to IDU. In some regions of the world, reports indicate that 5% to 25% of HIV infections result from IDU. A recent study examining drug use in five urban areas in Kenya found one-day prevalence rates of IDU of 100% in Malindi, 87% in Mombasa, and 68% in Nairobi (Ndeti et al., 2006). The link between HIV and IDU in Kenya was highlighted in a recent United Nations Office on Drugs and Crime report (UNODC, 2004). Estimates place the prevalence of HIV/AIDS among IDUs in Nairobi and the Coast Province between 68% and 88% (UNODC, 2004). In a recent study in a cohort of 120 drug users, including IDUs, in Mombasa, 90% of whom were between the ages of 17 and 40 years, approximately 50% of these individuals were HIV antibody positive and 65% were infected with hepatitis C virus (HCV) (UNODC, 2004). In a World Health Organization (WHO) study comparing HIV and HCV seroprevalence rates in 146 IDUs versus 185 non-IDUs, the HIV and HCV prevalence among IDUs was 36% (53/146) and 42% (66/146) respectively, as compared to 14% (25/185) and 3% (6/185) respectively among non-IDUs (Odek-Ogunde, Okoth, & Lore, 2004). The prevalence of HIV and HCV in female IDUs is particularly distressing with reported rates of 80% (12/15) for HIV and 73% (11/15) for HCV. In 2001 a WHO study of 103 current and former heroin users in Nairobi, Mombasa, and Malindi, found high rates of specific risk factors for HIV including needle sharing (32%), reuse of needles/syringes and use of unsterile injection procedures (42%), multiple sex partners (58%), and lack of condom use (39%) (Odek-Ogunde, Lore, Owiti, Munywoki, & Moor, 2001).

To address the special risks posed by the twin problems of HIV and IDU, the Kenyan

proposal for funding from the United States' President's Emergency Fund for HIV/AIDS Relief (PEPFAR) included development of specialized services targeting heroin dependent individuals and IDUs. To inform development and implementation of these model services, the current descriptive study was initiated with background research and proposal development by the United States Department of State and the United Nations Office of Drugs and Crime (UNODC). This study was commissioned by the UNODC in conjunction with the United States Agency for International Development (USAID).

The purpose of this study was to describe the screening, diagnostic, and treatment services available for patients with addiction and HIV in Nairobi and Coast Province, Kenya and the extent to which treatment for these disorders is integrated. We consider the implications of this study on drug and HIV prevention policy in the associated action plan.

## METHOD

### *Literature Review*

In order to obtain background on the growing dual epidemics of HIV/AIDS and IDU in Kenya, we conducted a review of the scientific literature through a search of the Medline database using search terms including HIV/AIDS, IDU, and Kenya. Other literature was reviewed including the Guidelines to Antiretroviral Drugs Therapy in Kenya published by the Republic of Kenya Ministry of Health (Kenya Republic Ministry of Health, 2001). In addition, a review of Internet sources was undertaken focusing on websites maintained by the U.S. Centers for Disease Control and Prevention (CDC), UNODC, the WHO, Family Health International (FHI), Health Resources Services Administration (HRSA) of the U.S. Department of Health and Human Services, the U.S. National Institute on Drug Abuse (NIDA), Futures Group, Synergy, UNAIDS, the University of Nairobi, and the Kenya Medical Research Institute (KEMRI).

**Table 1.** Addiction Treatment Facilities and HIV Testing and/or Care Sites

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<b>Nairobi</b>	
Eastern Deanery St. Vincent's Health Care Center	
Special Treatment Centre (STC) Casino City Council VCT Services and Liverpool	
Mathare Psychiatric Hospital Drug Rehabilitation Unit (DRU)	
<b>Mombasa</b>	
Coast Province General Hospital (CPGH)Kisauni Health Centre Municipal Clinic	
Reach-Out Muslim Education Welfare Association (MEWA) Rehab and Resource Centre	

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*On-Site Surveys*

Four researchers and clinicians (LES, DAF, MCC, and BGL) with expertise in clinical epidemiology, HIV treatment, general internal medicine, psychology, psychiatry, and addiction treatment conducted on-site surveys focused on addiction and HIV care sites (Stimson et al., 2003). By design, the surveys targeted representative sites that provided services for patients with addictive disorders and/or HIV infection. These sites included programs designed to provide HIV Voluntary Counseling and Testing (VCT), HIV antiretroviral medications (ARVs), tuberculosis (TB) treatment, inpatient and outpatient general medical care, acute psychiatric services, and inpatient drug rehabilitation services (e.g. therapeutic community). The locations visited are listed in Table 1. In addition, Kenyatta General Hospital in Nairobi and the Omari Project in Malindi were discussed extensively with local representatives.

Following the outline of a structured interview guide, the interviewers conducted face-to-face interviews with a purposive sample of individuals who represented key informants. In addition, we conducted nine focus groups with selected individuals. Key informants and focus group participants included staff of the addiction and HIV treatment facilities including hospital administrators, medical superintendents, physicians, clinical officers, medical interns, nurse administrators, nurses, unit directors, counselors, and patients. In addition, meetings were held with experts from UNODC, the U.S. Department of State, CDC, FHI, KEMRI, National AIDS Control Programme (NAS COP), the University of Nairobi, the

London School of Hygiene and Tropical Medicine (LSHTM), and United States International University.

*Data Collection and Analyses*

Data were collected by the investigators on the addiction treatment facilities and the HIV testing and/or care sites. For the addiction treatment facilities, the variables collected include: location, patient gender, number of beds, type and amount of staffing, medications used, counseling provided, mean length of stay, referral/aftercare services, and testing and referral for HIV. For the HIV care sites, the variables collected include: location, number of HIV patients cared for, gender, if voluntary testing/counseling was offered, antenatal care provided, prevention of mother-to-child transmission, screening and treatment of skin conditions or sexually transmitted diseases, TB screening and treatment, viral hepatitis screening, access to CD4 count, HIV viral load or HIV genotyping assessments, provision of ARVs, provision of HIV prophylaxis medication to prevent the occurrence of opportunistic infections, and screening or referral for substance abuse. The descriptive data were collected through extensive note-taking and were analyzed manually by the investigators.

**RESULTS***Addiction Treatment Facilities*

A description of the five addiction treatment facilities is provided in Table 2. Two of the facilities are in Nairobi and three are in the

**Table 2.** Addiction Treatment Facilities

Facility	Mathare	Asumbe	Reachout	MEWA	Omari
Location	Nairobi	Nairobi	Coast Province	Coast Province	Coast Province
Gender Admitted	Men	Men/Women	Men	Men	Men/Women
Beds	15	20	20	8-10	20
Staffing	Nursing, occupational therapist, psychiatry	4 counselors	Staff members, volunteer counselors	3 counselors	2 counselors, addiction treatment specialists
Medication Treatment	Symptomatic	Symptomatic	Symptomatic	Symptomatic	Symptomatic
Counseling	Group	12-step	Therapeutic Community model/ counseling	Therapeutic Community model Group/ family/ individual counseling	Therapeutic Community model
Length of Stay	3 months	3-6 months	3 months	6 months	6 months
Referral/After Care	Rarely to Narcotics Anonymous/ Alcoholics Anonymous	Little or none	No	No	Follow up with individual counselor; or “drop-in” center
HIV Testing and Referral	No	No	HIV testing required; if +, referred to Coast Province General Hospital	HIV testing required; if +, referred to Coast Province General Hospital	HIV testing is offered, not required

Coast Province. These sites include the only Ministry of Health tertiary psychiatric hospital in the country, Mathare Psychiatric Hospital, in Nairobi. Although the five sites are diverse in their structure, they share a number of common features. The sites are all residential facilities, most similar to therapeutic communities,

and the majority of them admit only male patients. They have a limited capacity for admitting patients with approximately only 10 to 20 beds available. A wide variety of substances are abused by the patients receiving services with alcohol and marijuana being the most common drugs of choice. Other substances

abused include opioids, khat, glue, and cocaine. Most patients are polysubstance abusers and many have received drug treatment previously. Staffing is primarily by non-physicians including nurses and volunteers with little formal training in addiction medicine. When medications are provided, they are primarily used for short periods of time and for symptomatic treatment only. Counseling is generally provided in a group format and is eclectic with a basis in 12-step programs. Almost all patients pay for the services that they receive, approximately 400-500 Kenyan shillings (US\$5-6.5.) per day, an expense that is beyond the resources of most Kenyans. The length of stay ranges from weeks to 6 months. There is essentially no aftercare or ongoing outpatient services available to patients upon discharge. Limited or no onsite HIV services are available to patients in these facilities, although two facilities require screening for HIV with antibody testing and referral to treatment if the patient is identified as being HIV-positive.

#### *HIV Testing and/or Care Sites*

A description of the five HIV testing and/or care sites is provided in Table 3. Three of the facilities are in Nairobi and two are in the Coast Province. These sites include two of the three primary hospital-based HIV specialty care clinics in the country, Kenyatta Hospital and Coast Province General Hospital. These two sites, along with St. Vincent's, provide comprehensive HIV care, which only recently also includes ARVs. Two sites, Special Treatment Centre and Kisauni Health Centre Municipal Clinic, provide counseling, testing and related services and refer patients elsewhere for comprehensive treatment. Staffing of the non-hospital based facilities primarily consists of clinical officers, nurses, and trained lay personnel. Staffing at the hospital-based facilities includes physicians who have recently received training through national and international efforts in the use of ARVs and prophylactic medications for opportunistic infections. All sites admit both men and women. All sites provide voluntary counseling and testing for HIV infection. Three of the five sites provide antenatal

care and prevention of mother to child transmission services. In addition to HIV testing, most sites provide screening, diagnosis, and treatment for common infectious skin conditions, sexually transmitted diseases, and TB. None of the sites screen for the viral hepatitis.

Measurement of HIV biologic parameters in patients receiving ARVs is generally limited to measures that assess the strength of the immune system (CD4 cell count and anergy testing) with very limited access to measures of HIV genetic material (viral load) and no access to HIV genotyping that is used to evaluate resistance to ARVs. All ARVs used must be branded and a limited variety are available including two nucleoside reverse transcriptase inhibitors (NRTIs), two non-nucleoside reverse transcriptase inhibitors (NNRTI), and one protease inhibitor (PI). Because of the lack of access to testing for HIV biologic markers, practitioners typically use the WHO Staging System in order to decide when to start ARV treatment, with WHO Stage III or IV HIV disease as an indication for starting treatment. In locations where they have access to CD4 cell counts, a CD4 cell count of less than 200 to 250 in patients without TB, and 350 in patients with TB is used as a cut-off point for initiating ARV therapy. Programs such as the one at Coast Province General Hospital evaluate not only biologic criteria but social criteria as well. These criteria include the following: resident of the catchment area; disclosure to selected other person; documented adherence to opportunistic infection prophylaxis medication; completion of pre-treatment adherence counseling sessions; health worker or family member; ability to afford cost of drugs and investigations on a long-term basis; willingness to disclose physical addresses and contacts; and willingness to sign long-term ARV consent forms. Three of the five sites provide medications for opportunistic infection prophylaxis.

Despite the prevalence of substance abuse as a risk factor for HIV, there is no formal or informal drug or alcohol screening performed

**Table 3.** HIV Testing and/or Care Sites

<b>Site</b>	<b>Eastern Deanery St. Vincent's Health Care Center</b>	<b>Special Treatment Centre (STC) Casino City Council VCT Services and Liverpool</b>	<b>Kenyatta General Hospital</b>	<b>Coast Province General Hospital</b>	<b>Kisauni Health Centre Municipal Clinic</b>
Location	Nairobi	Nairobi	Nairobi	Coast Province	Coast Province
Approximate Number of HIV Positive Patients	1500-1700	15-16 visits per day	1000	1000	400 per month; 7-10 episodes per day
Gender Admitted	Both	Both	Both	Both	Both
VCT	Yes	Yes	Yes	Yes	Yes
Antenatal Care	Yes	No	No	Yes	Yes
Prevention of Mother to Child Transmission	Yes	No	No	Yes	Yes
Skin Conditions Treated	Yes	Yes	Yes	Yes	Yes
Sexually Transmitted Diseases (Screening and Treatment)	Yes (gynecological care)	Yes	Yes	Yes	Yes
TB Treatment	Yes	No	Yes	Yes	Yes
Hepatitis Screening	No	No	No	No	No
CD4 Cell Count	Yes—off-site	No	Yes	Yes	No
Viral Load	No	No	Yes	No	No
HIV Genotyping	No	No	No	No	No
ARVs	Yes	No	Yes	Yes	No

**Table 3. (Continued)**

Site	Eastern Deanery St. Vincent's Health Care Center	Special Treatment Centre (STC) Casino City Council VCT Services and Liverpool	Kenyatta General Hospital	Coast Province General Hospital	Kisauni Health Centre Municipal Clinic
Opportunistic Infection Prophylaxis	Yes	No	Yes	Yes	No
Substance Abuse Screening/Referral	AA	Refer to KADA (Kenya AIDS and Drug Alliance)	None	Screening for drug and/or alcohol performed. No referral system	Alcohol screening in antenatal clinic. No referral system

at the majority of these sites and the only addiction treatment referral is to a twelve-step meeting such as Alcoholics Anonymous or to KADA (Kenya AIDS and Drug Alliance).

## DISCUSSION

This study demonstrates that despite the high prevalence of HIV infection in Kenya, and the important contribution to this epidemic from substance abuse and injection drug use, there are limited treatment services for addiction and HIV in this country. Specifically, addiction treatment is almost exclusively provided through inpatient or residential facilities, is primarily restricted to male patients with resources to pay for these services, is mostly provided by non-physician counselors with limited training, does not incorporate pharmacotherapy and rarely includes aftercare. HIV-related services are currently undergoing a rapid change, given the recent introduction of ARV treatment. This effort has been bolstered by PEPFAR as Kenya is one of the 15 countries

targeted to receive funds to support the care of HIV positive patients. While an increasing number of patients are receiving ARVs, due to the limitations on this resource, strict eligibility criteria are used to target this treatment for those patients with a more advanced stage of the disease and who are most likely to adhere to these regimens. Our results reveal that access to voluntary counseling and testing for HIV is widespread and that more extensive treatment services for HIV and related disorders is concentrated primarily within hospital and community-based treatment sites. Finally, this study demonstrates that there is limited integration of the addiction and HIV treatment services, with minimal screening/treatment for HIV in addiction treatment facilities and minimal substance abuse screening/treatment in HIV care sites.

The literature on addiction services available in Kenya and Africa is lacking. Indeed, there is evidence that the services for addictive disorders have not kept up with the growing demand (Parry, 2005). Other studies in the published literature have examined HIV care services,

specifically with regards to HIV screening and testing, available in Kenya and other parts of Africa. A large-scale assessment survey of HIV services in Kenya found similar and differing results from our study (Muga et al., 2005). This assessment found that HIV testing was available in only 37% of facilities offering HIV/AIDS services and that testing was more likely to be found in Nairobi than in other parts of Kenya. Of the sites offering HIV/AIDS services, approximately half offered TB services, 95% offered services for STDs, but only 30% had access to ARVs or prevention of mother to child transmission services. There is data from other sources that support our findings of inadequate services for both substance abuse and HIV/AIDS, the lack of integration of services for both these problems (Ndeti, 2004; Parry, 2005), and the importance of linkage between addiction and HIV services (Shaffer, Njeri, Justice, Odero, & Tierney, 2004).

This study has several limitations. First, we conducted our interviews and collected data from only two regions of the country, both localized to eastern Kenya. Given that there appear to be differences in the availability of certain services based on geographic location, some of our data may not be generalizable to other parts of Kenya. Second, our data was collected by self-report which is limited by the participants' willingness to disclose sensitive data, particularly within a group setting. Finally, this information was collected at a time when ARV treatment was just beginning in Kenya and the results may change rapidly as the use of ARVs continues to increase.

The findings of this study have a number of implications for an action plan for Kenya and its policies regarding addiction and HIV care. With respect to the addiction treatment system, education of the existing treatment infrastructure regarding evidence-based best practices could have a profound effect on the way in which services are delivered. The priorities for this effort would include education regarding the neurobiologic basis of addiction, training in a variety of effective counseling strategies,

including HIV risk reduction counseling, discussion of the role of pharmacotherapy for alcohol and opioid dependence, and the importance of aftercare in preventing relapse. In addition, consideration of the needs of women and those who can not afford the existing treatment services will have to inform these efforts. With respect to the HIV screening and treatment system, the priority would be to continue to support and expand the existing prevention, screening and treatment efforts. Increased availability of ARVs and experience with their use will hopefully transform the treatment system and allow it to expand beyond the existing restricted access to care.

Given the high prevalence of HIV among patients receiving treatment for addiction, there are also implications of this work regarding the need to embrace policies that foster the development of integrated addiction and HIV services. A small number of targeted efforts could help transform the system. The basic format for these efforts would be to increase the level of HIV screening, intervention, and referral for HIV treatment in addiction treatment facilities and increase the level of addiction screening, intervention, and referral for addiction treatment in HIV care sites. To ensure that addictive disorders are recognized among patients who are being tested for HIV or receiving care for HIV, screening for substance use disorders should be a routine part of the counseling provided at VCTs. With their relatively strong medical infrastructure, HIV treatment sites may also be able to provide opioid agonist or antagonist maintenance treatment in an effort to improve treatment adherence and treatment response. Minimally, addiction treatment services should either be provided on-site or through referral to patients receiving treatment for HIV infection. To ensure that HIV-positive patients are recognized and treated at the time that they enter into addiction care, models that include on-site VCT and treatment by consultative services should be explored.

Kenya provides a dramatic example of the overlap between the epidemics of substance abuse and HIV on the African continent. Left

unaddressed, the lack of specialty addiction treatment services and adequate resources to provide care for those patients infected with HIV represents a major threat to the Kenyan health care system, the welfare of the Kenyan people, and the Kenyan economic infrastructure. The current level of addiction and HIV care is inadequate for the needs of the country. However, the existing services provide a template that can be targeted to assist in expanding necessary services. In short, the existing addiction treatment services are in need of expansion, additional training and manpower resources, and the development of a distributed model of care to meet patients at their multiple contacts with the healthcare system. Likewise, the HIV and general medical settings need to increase their sophistication with the recognition, assessment, treatment and/or referral of patients with addictive disorders. All of these efforts will benefit from targeted research efforts to allow for an evaluation in Kenya, with Kenyan leaders and collaborators. Failure to address cited deficiencies will result in continued spread of HIV from marginalized individuals to the greater Kenyan population, a pattern that has been seen in other countries in which untreated addiction plays a major role in the spread of HIV.

#### ACKNOWLEDGEMENTS

Dr. Sullivan is supported by the National Institute on Drug Abuse Physician Scientist Award (NIDA # K12 DA00167) and is a Robert Wood Johnson Foundation Physician Faculty Scholar; Dr. Fiellin was a Robert Wood Johnson Foundation Generalist Physician Faculty Scholar and was supported by NIDA grants DA09803 and DA09250 and NIDA contract N01DA-7-8074 during the conduct of this study; Dr. Schottenfeld is supported by a NIDA Mid-Career Mentoring in Clinical Research Award (NIDA #K24 DA000445-03).

This work was originally prepared as a report to the United Nations Office on Drugs and Crime and the United States Agency for

International Development and was presented at the Annual Meeting of the College on Problems of Drug Dependence, June, 18-22, 2005, Orlando, Florida.

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**SUBSTANCE USE AND SEXUAL BEHAVIOUR AMONG AFRICAN  
ADOLESCENTS IN THE NORTH WEST PROVINCE OF SOUTH AFRICA**

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**ABSTRACT**

The relationship between substance use and sexual behaviour is examined using a sample of African high school students in the North West Province of South Africa. Even though the rate of substance use was generally low compared to other groups that have been studied elsewhere in the country, male and older adolescents were much more likely than female and younger adolescents to use alcohol and marijuana. While alcohol and marijuana use were positively and strongly associated with lifetime sexual activity, only alcohol positively associated with condom use. Finally, even though parental employment status did not affect lifetime sexual activity, when a mother was employed, the adolescent child was more likely to use a condom, while perceived higher socioeconomic status is positively associated with lifetime sexual activity.

**KEY WORDS:** substance use, sexual behaviour, South Africa, adolescents

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**INTRODUCTION**

The growing body of research on substance abuse in Africa documents a widespread use and abuse of substances amongst the continent's youth. This situation poses serious social and public health problems similar to the situation in most Western societies (e.g. Anumonya, 1980; Eide & Acuda, 1995; Haworth, 1982; Meursing & Morojele, 1989; Palen et al., 2006). Youth substance use may occur for reasons varying from socio-cultural changes, entertainment, coping with stress, enhancing of school performance to reducing physical and emotional pain (e.g. Eide & Acuda, 1995). Even though such factors as early pubertal development, sexual abuse, poverty, lack of attentive and nurturing parents, peer, school,

community, and cultural influences are all associated with the sexual behaviour of adolescents, alcohol use has been found to be more closely linked to risky sexual behaviour, and especially, sexual violence such as rape, date rape and child molestation (Dailard, 2001; Derman et al., 1998). For instance, alcohol use by the victim or perpetrator or both is implicated in up to 75 per cent of date rapes among adolescent college students. Moreover, studies have found that teens who drink and use drugs are seven and five times respectively more likely to have sexual intercourse than those who do not (Saewyc et al., 2004).

Adolescents who use alcohol and drugs are more likely to have more sexual partners, more casual sex partners and higher rates of STDs and HIV/Aids (Liu et al., 2006; Santelli et al.,

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1998; Palen et al., 2006; Lowry, R et al., 1994). Among youth, the use of alcohol and other drugs has also been linked to unintentional injuries, physical fights, academic and occupational problems, and illegal as well as risky behaviours.

South Africa is in the grip of a devastating HIV epidemic in which the peak incidence occurs among adolescents in the age group of 15-24 years of age (10.2%), and 77% of HIV positive persons in this age group are young women (Pettifor et al., 2004). According to the South African Department of Health, the prevalence of HIV among adolescents has increased from 7% in 1994 to 15% in 2002 (Department of Health, 2007). While all these findings invariably show a high level of unprotected sex and risky sexual behaviour among young South Africans (Kaufman et al., 2004), other studies have found that adolescent sexual activity, linked to alcohol and drug use, increases the chance of infection with such sexually transmitted diseases as syphilis, gonorrhoea, chlamydia, and AIDS, and unintended pregnancies (e.g. Henry J. Kaiser Foundation, 1999). Among sexually experienced youth ages 15-19 years of age, 90% of the females and 73% of the males had sex in the past 12 months (Pettifor et al., 2004).

#### *The Present Study*

As the above review of the literature shows, the empirical evidence of the association between substance use and sexual behaviour of young people is incontrovertible. Even though the literature on the relationship between alcohol and sexual behaviours in the country is growing, a major gap which remains in the existing body of knowledge is that the bulk of the epidemiological studies that have looked at this relationship tend to be urban-based. It is against this background that we examine the association between youth substance use and their sexual behaviours in the North West Province. Specifically, we examine the association between alcohol and marijuana and various indicators related to sexual experiences (“ever had sex”, “sexual activity in past 12 months”,

“ever use condom” and “condom use in the past 12 months.”

## **METHOD**

### *Sampling*

Data for the present study came from 1697 Grade 9 and Grade 11 pupils in selected schools in the North-West Province of South Africa. The survey was conducted in July-August 2006 and employed a multi-stage stratified random sampling procedure for the selection of schools and the respondents. The first stage involved the selection of schools from a list of high schools in the province supplied by the provincial Department of Education. A total of 25 schools were randomly selected from rural and urban areas in four different regions of the province, namely, Bojanala, Bophirima, Central and Southern regions. The second stage of the sampling involved the selection of 50 per cent of Grade 9 and Grade 11 pupils from the selected schools by adopting Simple random sampling without replacement (SRSWOR) procedure. The sample included all major ethnic groups in the province (see the sample characteristics in Table 1). In the present study, the analysis is limited to the Africans in the sample given that they constituted more than 88% of the total sample.

### *Instruments*

The research instrument (questionnaire) was developed from an original version which had been developed for a similar study in Cape Town (see Amoateng, Barber and Eriksson, 2006) by revised and adapted it for the North West study.

### **Data analysis**

Besides the independent and dependent variables, we controlled for background characteristics such as age, gender, place of residence, religious affiliation, religiosity, family structure and the employment status of the parents. We employed univariate, bivariate and multivariate analysis using the Statistical Package

for the Social Sciences (SPSS) software. To answer the central research question of substance use and the background socioeconomic characteristics that are associated with adolescents' sexual behaviors, we employed the logistic regression analytic technique in the final phase of the analysis. For this part of the analysis, we focused on two of the sexual behavior variables, namely, "Ever had sex" and "Condom use in the past 12 months."

These indicator variables were defined to take on the value of 1 if the respondent answered "yes" and 0 if they answered "no." Treating sexual behavior as a dichotomous variable enabled us to use the logistic regression technique, which is a technique of choice for the multivariate modeling of categorical dependent variables. Because sexual behavior is a binary variable, the mean of the binary variable is the proportion of adolescents in the sample that answered "yes" to each of the two questions. The corresponding proportion of sexual behaviors in the population, denoted by  $\pi$ , can also be thought of as the probability that a randomly selected adolescent will engage in the outcome sexual behaviors.

In the present study, our focus is modeling the probability of lifetime sexual activity and condom use in the 12 months preceding the survey as a function of substance use and/or selected social and demographic characteristics. The mathematical advantage of the logit formulation is shown in the ability to express the probability of  $Y=1$  as a closed-form expression:

$$P(Y=1)=\pi=\frac{\exp(\alpha+\sum\beta_kX_k)}{1+\exp(\alpha+\sum\beta_kX_k)}$$

In that the exponential function (exp) always results in a number between 0 and infinity, the right-hand side of the equation is always bounded between 0 and 1 (e.g. DeMaris, 1995, p. 957; Hosmer & Lemeshow, 1989). A logit transformation on the probability  $\pi$  is used to write the right-hand side of the above equation as an additive function of the predictors. The logit transformation is  $\log[\pi/(1-\pi)]$ , where *log* refers to the natural logarithm. The term  $\pi/(1-\pi)$  is called the *odds*, and is a ratio of probabilities. The log odds can therefore be modeled

as a linear function of our predictor set. The logistic regression model therefore becomes:

$$\text{Log}(\pi/1-\pi|X_1,\dots,X_k)=\alpha+\beta_1X_1+\beta_2X_2+\dots+\beta_kX_k.$$

With this transformation the model now is analogous to the linear regression, except that the dependent variable is a log odds. The estimation of the model is done via maximum likelihood. Specifically, for the multivariate analysis, the logistic regression analytic technique to estimate the probability corresponding to a given set of covariate values by focusing on relative differences in probabilities for different factor levels through examining odds ratios (Hosmer & Lemeshow, 1989).

## RESULTS

Table 1 shows the background characteristics of the sample. North West province is predominantly rural and most of the schools selected for the study were also from rural areas (58%). As expected, almost equal numbers of boys and girls were included in the present study. Sixty-four% of the subjects were in Grade 9, while almost 80% of the respondents were in the age group of 13-17 years. About 56% of the respondents considered themselves to be very religious. Almost 70% of the fathers/guardians and 55% of the mothers/guardians of the respondents were working. Only a little more than two-fifths of the respondents were staying with their biological parents in the same household. Almost 55% of the respondents did not consider themselves poor compared to their neighbours.

### *Bivariate Analyses*

The results for the cross tabulations between the background characteristics and substance use are presented in Table 2. The table shows that adolescents in urban areas were more likely than their rural counterparts to use either alcohol or marijuana. For example, 44% of adolescents in urban areas were lifetime users of alcohol compared to 36% of those in rural areas. In the case of lifetime marijuana use, 12% of the adolescents in

Table 1: Socio-demographic characteristics of the sample

Characteristics		%	n
Place of residence	Urban	42.3	717
	Rural	57.7	980
Gender	Female	48.3	819
	Male	51.7	878
Grade	Grade 11	36.5	619
	Grade 9	63.5	1078
Age (in years)	13-17	78.0	1323
	18-24	22.0	373
Ethnicity	African	88.2	1496
	Coloured	5.0	85
	White	4.5	76
	Indian	1.3	22
Religious affiliation	Catholic	21.3	362
	Protestant	23.2	394
	ZCC	17.4	295
	Apostolic	19.7	334
	Others	18.4	312
Father's working status	Does not work	30.8	523
	Works	69.2	1174
Mother's working status	Does not work	45.5	772
	Works	54.5	925
Family structure	Intact	41.2	699
	Non-intact	58.8	998
Socio-economic situation	Not poor	54.2	919
	Poor	45.8	778
<b>Total</b>		<b>100.0</b>	<b>1697</b>

urban areas reported using the substance compared to only 6% of their rural counterparts. As far as gender goes, males were more likely than females to use substances as shown by the fact that whereas 33% of females were lifetime users of alcohol, the same is true of 45% of their male counterparts. For lifetime use of marijuana, 14% of the males reported lifetime marijuana use compared to only 2% of their female counterparts.

Young adults in the 18-24 year age group are more likely than their counterparts in the 13-17 year age group to use either alcohol or marijuana. Forty-three per cent and 11% of the young adults are lifetime users of alcohol and marijuana respectively compared to 37% and 7% for the 13-17 year-olds.

Table 2 also shows that neither parental employment status, family structure nor family's socioeconomic status was associated with either alcohol or marijuana use among the adolescents. Even though religious affiliation was not associated with either alcohol or marijuana use, adolescents who considered themselves religious were less likely to use substances. For example, slightly more than one in two (52%) adolescents who did not consider themselves to be religious were lifetime users of alcohol compared to less than one-third of those who considered themselves to be very religious. On the other hand, of those adolescents who considered themselves to be very religious only 7% were lifetime users of marijuana, while 14% of those who did not consider

**Table 2:** Relationship between background variables and lifetime alcohol and marijuana use

Variable		Alcohol	<i>p</i> -value	Marijuana	<i>p</i> -value	Total
Place of residence	Urban	43.6	0.002	11.6	0.000	551
	Rural	36.1		6.1		945
Gender	Female	32.5	0.000	2.3	0.000	726
	Male	44.8		13.6		770
Grade	Grade 11	46.1	0.000	9.4	0.153	551
	Grade 9	34.6		7.4		945
Age (in years)	13-17	37.4	0.044	7.2	0.035	1134
	18-24	43.4		11.0		362
Father working	Does not work	40.3	0.263	8.5	0.656	484
	Works	38.1		8.0		1012
Mother working	Does not work	38.0	0.368	8.2	0.702	695
	Works	39.6		8.1		801
Family structure	Intact	39.6	0.460	7.9	0.810	583
	Non-intact	38.3		8.3		913
Family's SES	Not poor	41.0	0.125	8.5	0.715	754
	Poor	36.7		7.8		742
Religious affiliation	Catholic	43.1	0.092	10.1	0.072	327
	Protestant	40.6		10.4		374
	ZCC	36.0		6.5		275
	Apostolic	34.8		5.3		302
	Others	38.5		7.3		218
Religiosity	Very religious	31.9	0.072	7.0	0.072	852
	Moderately religious	46.8		7.5		438
	Not religious	50.5		14.1		206
Total		38.8 (580)		8.2 (123)		1496

themselves to be religious were lifetime users of marijuana.

Table 3 shows the association between substance use as measured by 'ever use' of both alcohol and marijuana and five of the measures of sexual behaviours, namely, 'ever had sex', 'sexual activity in the last 12 months', 'number of sexual partners', 'received treatment for STDs' and 'felt risk reduction for HIV'. As the table shows, there is a strong association

between substance use and sexual behaviours among adolescents. Almost six out ten (58%) of adolescents who are lifetime alcohol users have had sexual intercourse at some point in their lives compared to only 35% of those who have never used alcohol. And, of the two substances measured in the study, adolescents who are lifetime marijuana users are more likely than lifetime alcohol users to have had sex; eight in ten (80%) lifetime users of marijuana

**Table 3:** Relationship between lifetime substance use and sexual behaviours (%)

Sexual behaviours		Alcohol		Marijuana	
		No	Yes	No	Yes
Ever had sex	No	65.0	42.5	59.3	22.1
	Yes	35.0	57.5	40.7	77.9
Had sex in past 12 months	No	74.6	51.8	69.0	29.5
	Yes	25.4	48.2	31.0	70.5
No. of sexual partners	None	77.7	54.2	71.7	33.6
	One	14.3	23.3	17.0	26.9
	More than one	8.0	22.4	11.4	39.5
Received STD treatment	No	76.0	74.7	75.9	70.5
	Yes	24.0	25.3	24.1	29.5
Felt risk for HIV	No	15.6	17.4	17.0	9.0
	Yes	84.4	82.6	83.0	91.0

indicated that they had had sex at some point in their lives. The positive association between substance use and adolescent sexual behaviour is further illustrated by examining sexual activity in the past 12 months. Almost half (48%) of lifetime alcohol users and 71% of lifetime marijuana users had had sex with someone in the 12 months preceding the survey; this compared with only one-fourth and less than one-third of their counterparts who reported non-use of the two substances respectively. Substance use is associated with the number of sexual partners. Forty-six per cent and 68% of lifetime users of alcohol and marijuana respectively had one or more sexual partners compared to 22% and 28% respectively of their counterparts who did not use any of the two substances.

Table 4 shows the association between adolescent substance use and sexual behaviours as measured by sexual activity and condom use in the 12 months preceding the survey. Adolescents who reported lifetime alcohol and marijuana use were less likely to engage in risky sexual behaviours than those who did not drink or smoke marijuana. For example, eighty-seven per cent of adolescents who reported lifetime alcohol use and who had sex in the

twelve months prior to the survey reported condom use with their sexual partners compared to 73% of those who had never drunk. This positive association between substance use and condom use is even more profound with marijuana where 95% of lifetime marijuana users who reported sexual activity in the past 12 months also reported condom use with their sexual partners compared to only 78% of those who had never smoked marijuana.

#### *Multivariate Analyses*

The results of the logistic regression analysis of “ever had sex” are shown in Table 5. Table 5 shows that socioeconomic characteristics such as age, gender, grade in school, and family’s socioeconomic status are all associated with lifetime sexual activity by adolescents. In fact, the most important predictor of lifetime sexual activity is age, followed by treatment for a sexually transmitted disease and gender in that order. Young adults aged 18 to 24 years are three times more likely than adolescents aged 13-17 years to have engaged in sexual activity, those who had ever had sex were more than two times more likely to have received treatment for STDs, while the adolescent’s felt risk to HIV increases the chance of having sex

**Table 4:** Relationship between substance use and condom use in past 12 months

Ever use Alcohol	Sexual Behavior	Condom use in past 12 months (%)		
		No	Yes	
No	Had sex in past 12 months	No	89.8	27.1
		Yes	10.2	72.9
Yes	Had sex in past 12 months	No	82.0	13.0
		Yes	18.0	87.0
<b>Ever use Marijuana</b>				
No	Had sex in past 12 months	No	88.8	22.2
		Yes	11.3	77.8
Yes	Had sex in past 12 months	No	65.6	5.0
		Yes	34.4	95.0

by 80%. Males are two times more likely than females to have ‘ever had sex’ while. Both alcohol and marijuana use increases the chance of lifetime sexual activity by 4% respectively, while coming from a well off family background increases the chance of ever having sex by 32%. Interestingly, adolescents in Grade 9 have about 43% more chance of lifetime sexual activity than those in Grade 11. Neither residence, employment status of parents, religious affiliation nor religiosity is associated with lifetime sexual activity.

Table 6 shows the results of the logistic regression analysis of condom use in the past 12 months. Expectedly, males are more likely than females to use a condom with their sexual partners (65%), while young adults aged 18 to 24 years have 86% more chance than their younger counterparts to use a condom with their sexual partners. However, surprisingly, adolescents in Grade 9 are less likely to have used a condom with their sexual partners perhaps because as is shown in Table 5, they are also likely to report lifetime sexual activity than their counterparts in Grade 11. As far as substance use is concerned, only alcohol use is positively associated with condom use, while treatment for a sexually-transmitted diseases increases the chance of condom use by more than two and a half times. Similarly, those who felt risk to HIV are 47% more likely than others to use a condom. Interestingly, adolescents

who are Catholics have almost 60% chance of using a condom than others. But, neither parental employment status, residence, nor family’s socioeconomic status is associated with adolescent condom use.

## DISCUSSION

South Africa is in the grip of a devastating HIV epidemic in which the peak incidence occurs among adolescents in the age group of 15-24 years, especially, young women. Several studies have found that adolescent sexual activity, linked to alcohol and drug use, increases the chances of infection with sexually transmitted diseases. In South Africa, drug use is characterized mainly by the use of alcohol, tobacco, marijuana, and the marijuana/methaqualone combination. To a lesser, but increasing, extent it also involves the use of crack and powdered cocaine, inhalants, and various other ‘rave’ drugs (e.g. speed, LSD, and ecstasy). Epidemiological surveillance system data that reflect trends in patterns of use of drugs for the general population have suggested a worsening of the overall drug situation in South Africa in recent years, with increases in the availability of various drugs, an upsurge in the demand for treatment for drug problems by younger people and more drug sales and trafficking in a country that has become a major transshipment route

**Table 5:** Logistic regression analysis showing association of predictors with “ever had sex”

Predictors	B (B.E)	Level of significance	Exp(B)
Place	.059 (.134)	0.658	1.061
Gender	.694 (.118)	0.000	2.001
Grade	-.572 (.144)	0.000	0.565
Age	1.131 (.152)	0.000	3.099
Father works	-.013 (.131)	0.921	0.987
Mother works	.158 (.124)	0.202	1.171
Family structure	.097 (.122)	0.427	1.102
Socio-economic status	.280 (.123)	0.023	1.323
Catholic	.127 (.200)	0.527	1.135
Protestant	.176 (.196)	0.367	1.193
ZCC	.107 (.209)	0.609	1.113
Apostolic	.186 (.204)	0.361	1.205
Very religious	-.274 (.176)	0.120	0.761
Moderately religious	-.128 (.190)	0.502	0.880
Alcohol	.034 (.009)	0.000	1.035
Marijuana	.043 (.022)	0.052	1.043
Received STD treatment	.850 (.139)	.000	2.340
Felt risk to HIV	.595 (.175)	.001	1.812
Constant	-1.620 (.324)	.000	0.198
-2 log likelihood	1745.360		
Nagelkerke R square	0.247		

for drug traffickers (Parry and Bhana, 1997). Substance use is considered to be a gradual progression from a lighter/less dangerous substance to dangerous ones, or using a combination of substances (Flisher et al., 2002), and the use of more than one substance is reported to be associated with greater risk behaviour than use of a single substance (Parks et al., 2007). As far as condom use goes, it has been reported that while condom use among young South Africans who reported having sex in past 12 months was found to be 56%, consistent condom use was reported by only one-third of the young people (Pettifor et al., 2004). Even though it has been found that substance users are more likely than non-users to engage in risky sexual behaviour and that they are less likely to rely on condoms (Sly, et al., 1997).

The present study sought to contribute to the existing knowledge on the linkage between

adolescent substance use and sexual behaviours by examining a sample of Black-African high school pupils in the North West Province of the country. Besides examining the association between alcohol and marijuana on the one hand, and sexual behaviours such as lifetime sexual activity, condom use and number of sexual partners, we also examined the effect of variables such as treatment for sexually-transmitted diseases, the adolescent's felt risk for HIV and such background socioeconomic characteristics as the respondents' age, gender, religious affiliation and religiosity, place of residence, family's socio-economic status, and family structure.

We found that substance use, as measured by lifetime alcohol and marijuana use, is strongly predictive of adolescent sexual behaviours even after controlling for the relevant social and economic background characteristics of

**Table 6:** Logistic regression analysis showing associations with condom use in past 12 months

Predictors	B (B.E)	Level of significance	Exp(B)
Place	.164 (.137)	0.231	1.179
Gender	.503 (.124)	0.000	1.654
Grade	-.899 (.148)	0.000	0.407
Age	.623 (.148)	0.000	1.865
Father works	.023 (.137)	0.869	1.023
Mother works	.232 (.129)	0.072	1.261
Family structure	-.017 (.127)	0.894	0.983
Socio-economic status	.130 (.129)	0.313	1.139
Catholic	.461 (.208)	0.026	1.586
Protestant	.157 (.208)	0.451	1.170
ZCC	.284 (.221)	0.198	1.328
Apostolic	.162 (.215)	0.451	1.176
Very religious	-.193 (.182)	0.288	0.824
Moderately religious	-.133 (.196)	0.496	0.875
Alcohol	.027 (.008)	0.001	1.028
Marijuana	.021 (.016)	0.194	1.022
Received STD treatment	.980 (.139)	0.000	2.664
Felt risk to HIV	.387 (.191)	0.043	1.473
Constant	-1.755 (.338)	0.000	0.173
-2 log likelihood	1635.444		
Nagelkerke R square	0.203		

the adolescents. In relative terms, smoking marijuana is a stronger predictor of lifetime sexual activity than lifetime alcohol use. While alcohol and marijuana use are positively and strongly associated with lifetime sexual activity, marijuana use is not associated with condom use; adolescents who drink are more likely to use a condom with their sexual partners. This finding is hardly surprising in the face of studies that have suggested that the low rate of HIV among young males may be due to the high rates of protected sex among them. Moreover, condom use in male youth has been found to be higher than in females of the same age group (Nelson Mandela/HSRC study of HIV/AIDS, 2002; Pettifor et al., 2004; Shisana, Rehle, Simbayi, et al., 2005). It has also been observed that the more sexual partners young males have the more likely they are to use condoms (Kaiser Family Foundation/SABC,

2007). Possibly, adolescents who drink, because of their active sexual life, are more conscious of the risks involved and therefore tend to use condoms than their relatively inexperienced counterparts.

Socioeconomic characteristics such as gender, grade level in school, age, and family's socioeconomic status are all associated with lifetime sexual activity by adolescents in the province. Age is the most important predictor of lifetime sexual activity, while treatment for a sexually-transmitted disease is the most important predictor of adolescent condom use. Higher condom use among adolescents who report treatment for a sexually-transmitted disease could be due to the counselling they received from the service provider and or parents, while those adolescents who feel that they are at the risk of HIV infection will naturally have the tendency for safer sex. Even though neither

religious affiliation nor religiosity is associated with lifetime sexual activity, adolescents who are Catholics are more likely than any other religious group to use a condom.

While parental employment status is not associated with lifetime sexual activity, when a mother is employed the adolescent child is more likely to use a condom. It is possible that working mothers use the limited time they spend with their teenage children to impart crucial life skills such as the need to have protected sex through the use of a condom. Neither residence nor family structure is associated with adolescent sexual behaviours.

What the present study has shown is the importance of substance use in efforts to address the problem of risky sexual behaviours such as unprotected sex among adolescents who are increasingly the target of policy and programme interventions with regard to arresting the spread of sexually transmitted diseases and other anti-social behaviours. However, while existing studies have attempted to approach the issue of adolescent anti-social behaviours from a strong theoretical base such as family interaction, the present study has highlighted the importance of crucial factors from other domains of the adolescent's and young adult's life such as demographic factors that can potentially affect his or her behaviour. Given the importance of age and grade level in school with regard to adolescent substance use and sexual behaviours, it might be beneficial to target children at younger ages and grades.

#### ACKNOWLEDGMENTS

We are indebted to all of the study's participants and the officials of the North West Department of Education. The study was supported by a grant from the National Research Foundation (NRF) of South Africa to North-West University. An earlier version of this paper was presented at the 13<sup>th</sup> Annual Meeting of the Sociological Association of Southern Africa, Potchefstroom, 25-28 June 2007.

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## ALCOHOL AND DRUG ABUSE IN ETHIOPIA: PAST, PRESENT AND FUTURE

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### ABSTRACT

Substance misuse is a growing problem in restructuring countries. In this review from Ethiopia we found widespread use of alcohol and *khat* in the general population. The use of illicit drugs was mostly limited to at-risk populations. The prevalence of hazardous drinking was about 3%, and that of alcohol dependence and cannabis abuse was each about 1.5%. The prevalence of *khat* use varied widely (0.3 to 64.7%). Abuse of *khat* and alcohol has been associated with physical illness, injury, under-nutrition, mental distress, sexually risky behaviour and poor work performance. We recommend future national studies, potentially incorporated into the five-yearly National Demographic and Health Survey. We also suggest a relevant policy response targeting populations at risk, particularly students, the young, the unemployed and the disadvantaged.

**KEY WORDS:** alcohol, *khat*, Cannabis, Ethiopia

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### INTRODUCTION

Substance misuse is a growing problem in Ethiopia, as in many developing countries. Ethiopia is the second most populous sub-Saharan African country with an estimated population of over 77 million (World Health Organization, 2006), the majority of whom (85%) reside in the rural countryside (Central Statistical Authority [Ethiopia] & ORC Marco, 2006). As one of the ancient nations of Africa, Ethiopia has a rich cultural heritage and is thought to be one of the earliest centres producing alcohol (Acuda, 1988). Ethiopia is also credited with being the original source of coffee and *khat* (*catha edulis forskia*) (Acuda, 1988).

The recent past of the country has been tumultuous, characterised by war, political unrest, mass-migration and famine, all factors

likely to increase the risk of mental distress and substance misuse within the population. Ethiopia is also one of the least developed countries, as defined by the UNDP Human Development Index and the Human Poverty Index (United Nations, 2006). A recent report from the Demographic and Health Survey 2005 (Central Statistical Authority [Ethiopia] & ORC Marco, 2006) indicates improvement in some of the indices of disadvantage, for example child mortality. However, the growing market economy and the recent momentous socio-political changes, often considered key elements of sustainable economic development, may also be major risk factors for the spread of substance misuse in the future. Likewise, increased freedom of expression, individual mobility and open national borders encourage the flow of ideas and habits, potentially extending to habits of substance use. Educational

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institutions, both governmental and private, have burgeoned without parallel expansion of the employment market, leading to a vulnerable and at-risk group of young adults with limited opportunities. The spirit of globalisation and liberalism makes the problem of substance use more immediate. Countries such as Ethiopia, which have been somewhat protected from the outside world by pride of national identity and through actions of repressive regimes, can no longer hide behind these masks. An explosion in substance misuse may be the next challenge to be faced.

Given this background, it is high time to review the known facts about substance misuse in Ethiopia. Thus, the main aim of this report is to provide an overview of substance use in Ethiopia and make recommendations for prevention and treatment.

## METHOD

The report is based on a review of both quantitative and qualitative studies. Published and unpublished data and indexed and non-indexed reports were reviewed. Non-indexed literature was searched through simple web search using the generic term of substance abuse and specific substances: khat, alcohol, opiates, heroin, solvents, glue sniffing, cigarette, tobacco, marijuana and cannabis joined with the term Ethiopia. Unpublished literature was identified from individual researchers. For indexed articles we used MEDLINE and PsycINFO searches for the years 1950-2007. We used the following subject headings: Ethiopia, substance abuse, substance-related disorder, dependence, addictive behaviour, addiction, alcohol, alcohol drinking, alcoholism, marijuana abuse, opioid-related disorder, heroin dependence and tobacco use disorder. Relevant publications of the Ministry of Health were also reviewed and experts consulted. Data were not summarised statistically because of the extreme heterogeneity in the methodology of the studies included.

In this report we initially provide a general outline of the substances of abuse followed by

estimates of the magnitude of abuse, its impact and efforts of control. Implications of the findings are discussed and specific recommendations are forwarded.

## SUBSTANCES OF ABUSE IN ETHIOPIA

Alcohol and khat are the most frequent substances of abuse, followed by cannabis and solvents. Hard drugs such as heroin and cocaine are rarely used.

### Alcohol

The production and consumption of alcohol pre-dates modern civilisation. It is claimed that the mountainous areas of Ethiopia were among the first seven centres in the world where plants were grown for alcohol production (Acuda, 1988). Home-brewed traditional alcoholic drinks, with their varied alcohol contents (Destta, 1977), are part of the cultural fabric in many regions of Ethiopia, drunk during holidays and the numerous church festivities. *Tella* is the most commonly home brewed alcoholic beverage, made from germinated barley and *gešo* (an evergreen shrub) leaves, and has an alcohol content of 2-4%. *Tej* is a traditional wine made from fermented honey and *gešo* and contains 7-11% alcohol. *Araki* is a spirit distilled from fermented cereals with an alcohol content of up to 45%. *Korefe*, *Shanti*, *Bor-edo* and *Katikala* are other traditional drinks made through similar processes. Although it is apparent that industrial production of alcoholic beverages has increased in recent years, the recorded per capita consumption of alcohol has shown little variation between 1961 and 2001, estimated at about 0.8 litre of pure alcohol (World Health Organization, 2004a).

### Khat

Khat (*Catha edulis*), a psychostimulant substance, is thought to be the second most widely used substance in Ethiopia. Khat is an evergreen plant that grows mainly in Ethiopia, Kenya, Yemen, and at high altitudes in South

Africa and Madagascar. Khat is most often chewed but the leaves can be infused as a tea or dried and smoked. In khat-growing countries, the chewing of khat leaves for social and psychological reasons has been practiced for many centuries. The use of khat has gradually expanded to neighbouring countries and beyond through commercial routes. Recently, increasing numbers of immigrants have spread the practice to Europe and the United States (Nencinin, Grassi, Botan, Asseyr, & Paoli, 1988).

The origin of khat is not clear, but is generally agreed to be native to Ethiopia (Getahun & Krikorian, 1983). Between the first and sixth century (AD), khat was introduced to Yemen where later the Danish botanist and physician, Forsskal (1736-1763), gave it the name *Catha edulis* (Getahun & Krikorian, 1983). Khat is thought to have medicinal properties, historically used to treat up to 501 different ailments among the Harar people of Ethiopia as well as in the alleviation of symptoms of melancholia and depression (Balint, Gebrekidan, & Balint, 1991). Modern users report that chewing khat gives increased energy levels and alertness, improves self esteem, creates a sensation of elation, enhances imaginative ability and the capacity to associate ideas, and improves the ability to communicate (Kalix, 1987). The psychostimulant effect of khat is due to the alkaloid chemical ingredients cathine and cathinone, present in the fresh leaves of the plant. The chemical structure of cathinone is similar to that of amphetamine.

#### **Cannabis and other substances**

Little is known of the introduction of cannabis into Ethiopia and its subsequent pattern of use. Historically, cannabis grew wild and its use was limited to monasteries. Religious students were said to use cannabis to assist their learning (Kassaye, Sherif, Fissehay, & Teklu, 1999b). Cannabis use may have spread to other parts of the country through tourists and guides who visited these monasteries or by Jamaicans who settled in Shashemene (south-central Ethiopia) and grew cannabis for their own consumption (Kassaye et al., 1999b). Cannabis is

used by drug traffickers, street children and adolescents in some parts of the country. It is reported that farmers in some parts of the country now produce cannabis for commercial purposes and that cannabis is trafficked across to Eritrea, Djibouti, Sudan and Egypt (Kassaye et al., 1999b). With increased trafficking, increased production and distribution of cannabis within Ethiopia are likely to occur.

Solvent misuse is also reported among street children, and delinquent youths. The use of hard drugs such as cocaine and heroin is limited to drug traffickers, commercial sex workers and those with the financial means and access. However, there are indications that the magnitude of the use of these substances may be larger than reported by studies and may also be on the increase (Kassaye et al., 1999b).

### **PREVALENCE OF SUBSTANCE USE**

The prevalence of substance use is presented in two separate sections; use among at-risk populations and that among the general population. Most of the studies reporting on prevalence have used simple self-administered questionnaires or instruments administered by lay interviewers. Most studies have also specified whether the use was life-time or current, and we have specified the findings accordingly wherever possible. The overall prevalence figures are summarised and presented in tables 1-3.

#### **Use in at-risk populations**

We identified several studies conducted among street children, youths and the unemployed focusing on the abuse of alcohol, cigarettes, khat, and solvents. Over 20 years ago, 17% of juvenile delinquents in a remand home were found to be regularly inhaling gasoline and benzene, and had been doing so for up to five years (Workneh, 1983). 'Alcoholism', glue-sniffing, and khat-chewing were also reported to be common amongst these adolescents.

**Table 1.** The prevalence of general alcohol use, hazardous use and dependence in different settings and population groups in Ethiopia, 2006

Author	Setting	Population	Nature of use	Prevalence (%)	Remark
Kassaye et al, 1999	Urban	Private high school	Lifetime	57.7	
Kassaye et al, 1999	Urban	Government high school	Lifetime	17.9	
Kassaye et al, 1999	Rural town	Government high school	Lifetime	18.2	
Bette et al, 1997	Urban	Adolescents (15-24 years of age), n=1436	Current	11.8 boys and 1.1 girls	Regular use
Kebede and Ketsela, 1993	Urban	Adolescents (n=519)	Current	9.2	Heavy use
Zein	Urban	University students (n=479)	Current	31.1	
Kebede et al, 2005	Predominantly Urban	Youth (15-24 years of age)	Current	19.3	Drinking at least on a weekly basis
Alem et al, 1999	Rural	Adults (15 years of age and above), n=10468	Current hazardous drinking	3.7	*CAGE score of 2 or more
Kebede et al, 1999	Urban	Adults (15 years of age and above)	Current hazardous drinking	2.7	CAGE score of 2 or more
Kebede et al, 1999	Urban	Adult	Lifetime, dependence	1	**CIDI diagnosis
Kebede et al, 2005	Rural	Adult (isolated island population), (n=1714)	Lifetime, dependence	1.5	CIDI diagnosis
Beyero et al, 2004	Rural	Adult (Semi-nomadic population), (n=1700)	Lifetime, dependence	1.6	CIDI diagnosis

\*CAGE=Cut-down, Annoyance, Guilt, Eye-opener

\*\*CIDI=Composite International Diagnostic Interview

We identified a number of more recent reports. In a sample of 248 high school students in south-western Ethiopia, the prevalence of khat-chewing was 64.9% (Adugna, Jira, & Molla, 1994). In a survey of three high schools, one private and one government school in Addis Ababa and one government school in Butajira, 57.7%, 17.9% and 18.2 % of the students respectively reported ever drinking alcohol (Kassaye, Sherif, Fissehaye, & Teklu, 1999a). Similarly khat-chewing was reported by 35.6%, 9.2%, and 31.0% respectively. For cannabis, the prevalence of lifetime use was 31.1% for the private school students while it was 1.0% for the Addis Ababa and 2.7% for Butajira government school students. In a city-wide random sample of 1436 youngsters aged 15-24 years from Addis Ababa, 34% drank alcohol regularly while 11.8% of boys and 1.1% of girls smoked cigarettes (Betre, Kebede, & Kassaye, 1997). A further study of 519 adolescents in Addis Ababa reported that 9.2% consumed alcohol heavily while 13.8% smoked cigarettes (D. Kebede & Kestela, 1993).

Students and staff at institutions of higher education are also considered to be at high risk of substance use. Among 479 students at a College of Medical Sciences in north-western Ethiopia, 31.1% reported current alcohol use, 22.3% current khat-chewing and 26.3% cigarette-smoking (Zein, 1988). More recently, in a sample of 181 college instructors from the same region of Ethiopia, the prevalence of current Khat use was 21.0%, and that of cigarette smoking was 13.3%. Lifetime use of either Khat or cigarettes or both was 42.0% (Y. Kebede, 2002). Similarly in south-western Ethiopia, 30.8% of university staff reported chewing khat currently (Gelaw & Haile-Amlak, 2004). Khat use was associated with being male, Muslim and younger (18 to 24 years).

In a notable study of 24, 434 youths aged 15-24 years, 58% of whom were out of school, 19.3% reported weekly alcohol use (D. Kebede, Alem et al., 2005). Drinking on a daily basis was present in 2.1%; 0.4% of those still in school vs. 2.8% of those out of school (Kebede et al, 2005). Khat use on a weekly basis was reported by 11% (5.8% in school and

13.3% out of school) and daily use was reported by 7.7% (1.7% in school and 10.3% out of school) youths. Other substances, including cannabis (hashish), solvents and cocaine or crack cocaine were identified in 3.8% of youths (0.7% in school and 3.8% out of school).

A Rapid Assessment Study with 3200 respondents, predominantly consisting of street children, commercial sex workers and street vendors from Addis Ababa and 24 other regional cities and towns found 32.9% had consumed alcohol and 30.5% had used khat (Selassie & Gebre, 1996). Cannabis use was reported by 11.2% and solvent use by 9.0%. Cocaine and heroin were less frequently used, with 0.2% reporting use of either substance. Polysubstance use was not uncommon in this study group: 14.9% reported using Khat, alcohol and diazepam and an equivalent number used both tobacco and cannabis resin. Concomitant use of khat and cannabis or cocaine and heroin were less commonly reported; 3.9% and 1.4% respectively.

#### **Substance use in the general population**

Most community surveys have reported on substance misuse as part of a general mental health survey. Thus as part of a study looking at the prevalence of mental distress, Alem et al. (Alem, Kebede, & Kullgren, 1999a) reported on the prevalence of hazardous alcohol use and khat chewing. They recruited 10,468 persons aged 15 and above from Butajira, a predominantly rural district. Twenty-three per cent of the respondents (36% male and 15% female) admitted that they currently drank alcohol. Among those who drank, 16% met the criterion for hazardous drinking (problem drinking) as defined by two or more positive responses to the CAGE (Ewing, 1984). However, the overall prevalence of problem drinking was 3.7%; 7.5% for men and 0.9% for women. Stratified analysis by sex and religion showed that Christian religion, male sex and smoking were strongly associated with problem drinking in both sexes. Marital status, mental distress and income were only associated with problem drinking in males. A similar study conducted in the capital, Addis Ababa,

found a lower prevalence of problem drinking at 2.7%; 5.8% in men and 0.2% in women (D. Kebede & Alem, 1999). The prevalence of alcohol dependence using the Composite International Diagnostic Interview (CIDI) was 1.0% and was exclusively found in men (D. Kebede & Alem, 1999).

Two studies were conducted among special population groups. A survey of Zeway islanders, an isolated ethnic minority in the rift valley, found the prevalence of alcohol and cigarette dependence to be 1.5% and 0.4% respectively (D. Kebede, Fekadu et al., 2005). In a survey of 1700 adults from a semi-nomadic population at the southern border of the country, CIDI interviews gave an estimated prevalence of substance abuse of 10.1%, most of whom were men (13.7% v 7.5%). Tobacco dependence was the commonest, with a prevalence of 3.6% and equally distributed among men and women. Alcohol dependence was identified in 1.6%, almost exclusively among men (Beyero et al., 2004).

With regard to khat-chewing, in Butajira where khat is grown and widely available, more than half of the study population (55.7%) reported lifetime use and 50% were current khat chewers (Alem, Kebede, & Kullgren, 1999b). Among current chewers, 17.4% reported taking khat on a daily basis; 16.1% of these were males and 3.4% were females. Muslim religion, smoking, higher educational level, being divorced and widowed showed strong associations with daily khat chewing. Another study using CIDI found the lifetime prevalence of khat dependence in Butajira to be 6.0% (Awais, Kebede, & Alem, 1999). Nearby in the rift valley, a population-based study of 1200 adults found the prevalence of current khat use to be 31.7% (Belew, Kebede, & Kassaye, 2000). In this study, Muslims, males and those between 15 and 24 years were more often habitual users. In contrast to these two studies conducted around the rift valley where khat is widely available, while in Addis Ababa where khat is not grown, only 7.4% of study sample reported chewing khat (D. Kebede & Alem, 1999).

The World Health Survey (2004) was a household survey of 4936 individuals; 86.4% of whom lived in rural areas (World Health Organization, 2004b). Lifetime use of alcohol was 38.5%. Abstainers (61.5%) were predominantly from the upper (fourth and fifth) quintiles of socioeconomic status. The prevalence of frequent heavy drinking, defined as daily use of three or more standardised drinks in the past seven days, was 0.8%; 1.6% among men but absent in women. This pattern of heavy alcohol consumption was predominantly found in the lowest socioeconomic group and was least common amongst those who were better off. The urban prevalence (0.9%) was greater than that found in rural areas (0.4%). In this study the prevalence of current daily smoking was 5.6% among men and 0.5% among women. Again the average number of cigarettes smoked daily (9.3) was highest among the poorest and lowest among the richest (6). Another population-based study in Addis Ababa found the prevalence of cannabis abuse among adults to be 1.7% (Rashid, Kebede, & Alem, 1996).

Most recently, Kebede et al. assessed the use of alcohol, khat and other substances (cannabis, benzene, cocaine, crack cocaine, 'shisha') in a sample of 28, 686 adults aged 15-49 across 10 occupational groups (Kebede et al, 2006, unpublished). Prevalence of use was determined for the four week period prior to interview for these substances and for the preceding 12 months for injectable drugs. Weekly and daily alcohol use was highest among female commercial sex workers (72%) and lowest among farmers and pastoralists (5-7%). Weekly and daily khat use was also highest among female sex workers (43%). Over 30% of long distance drivers also chewed khat weekly or daily. The overall prevalence of other substances was 3.9% and that of injectable drugs was 0.7%.

Studies of substance abuse among clinical populations are rare. A report on outpatient attendees to Amanuel Psychiatric hospital found that among 23, 507 attendees, over a period of a year-and-half, 9.3% were treated for substance related problems (Selassie & Gebre,

**Table 2.** The prevalence of khat use in different settings and population groups in Ethiopia based on selected studies, 2006

<b>Author</b>	<b>Setting</b>	<b>Population</b>	<b>Nature of use</b>	<b>Prevalence (%)</b>	<b>Remark</b>
Adugna et al, 1994	Semi-urban	High school students (n=248)	?	64.9	Khat widely available in region
Kassaye et al, 1999	Urban	Private high school students	Life time	35.6	
Kassaye et al, 1999	Urban	Government high school	Life time	9.2	
Kassaye et al, 1999	Rural town	Government high school	Life time	31.1	Khat widely available in region
Zein	Urban	University students (n=479)	Current	22.3	Over 700kms from khat growing regions
Gelaw et al, 2004	Urban	University staff (n=181)	Current	21	Over 600kms from khat growing regions
Kebede et al, 2005	Predominantly Urban	Youth (15-24 years of age), (n=24,434)	Current	11	Chewing at least on a weekly basis
Alem et al, 1999	Rural	Adult (15 years of age and above), (n=10468)	Current	50	Khat widely available in region
Belew et al, 2000	Semi-urban	Adult, (n=1200)	Current	31.7	Khat widely available in region
Kebede et al, 1999	Urban	Adult	Current	7.4	

**Table 3.** The prevalence of the use of other substances of abuse in different settings and population groups in Ethiopia, 2006

Author	Setting	Population	Substance abused	Nature of use	Prevalence (%)	Remark
Workneh, 1983	Urban	Juvenile delinquents	Solvents	Current	17	"Regular use" for 5 years leading up to study
Kassaye et al, 1999	Urban	Private high school students	Cannabis	Lifetime	31.1	
Kassaye et al, 1999	Urban	Government high school students	Cannabis	Lifetime	1.0	
Kassaye et al, 1999	Rural town	Government high school students	Cannabis	Lifetime	2.7	
Selassie & Gebre, 1996	Multi-regional	Predominantly young	Cannabis	?	11.2	Rapid Assessment Study; 25 cities
Selassie & Gebre, 1996	Multi-regional	Predominantly young	Solvents	?	9.0	Rapid Assessment Study; 25 cities
Selassie & Gebre, 1996	Multi-regional	Predominantly young	Cocaine	?	0.2	Rapid Assessment Study; 25 cities
Selassie & Gebre, 1996	Multi-regional	Predominantly young	Heroin	?	0.2	Rapid Assessment Study; 25 cities
Rashid et al, 1996	Urban	Adult	Cannabis	Lifetime	1.7	**CIDI
Kebede et al, 2006	Urban	Adults (ages 15-49 years of age), (n=28 686)	Cannabis, heroine, cocaine and solvents	Current	3.9	10 occupational groups
Fekadu et al, 2006	In-patient	Adult, (n=1564)	Heroin	Use prior to admission	1.6	

\*\*CIDI=Composite International Diagnostic Interview

1996). Among inpatients admitted to the same hospital over one year, 20.7% had used khat, 13% alcohol and 1.6% abused heroin (Fekadu et al, 2006, unpublished). Substance-induced psychosis was diagnosed in 2.3% of psychiatric admissions.

#### **Gender and substance abuse**

The differential pattern of substance abuse among men and women is presented in Table 4. Men predominate, particularly among those smoking tobacco and those who are dependent or heavy drug abusers.

#### **IMPACT OF SUBSTANCE ABUSE**

Few studies have assessed the impact of substance abuse on health and overall functioning. These studies have indicated that substance misuse is associated with psychological distress, suicide attempts, functional impairment, physical ill-health and risk-taking behaviour. In the previously-described Butajira study of over 10, 000 adults, a higher prevalence of mental distress and suicide attempts was found in those using alcohol and khat (Alem et al., 1999a). An increased prevalence of suicide attempts was also reported in adolescents in Addis Ababa who drank alcohol (D. Kebede & Kestela, 1993). Khat use has been associated with physical illness, injuries, undernutrition, mental distress, sleep disorders, problem drinking and heavy smoking (Belew et al., 2000), as well as recurrent brief psychotic episodes with associated violent behaviour (Alem & Shibre, 1997). In a case-control study, khat use has also been found to be a risk factor for HIV infection (Abebe et al., 2005).

In the study of over 20, 000 in-school and out-of-school youths, daily khat intake was also associated with unprotected sex. There was also a significant and linear association between alcohol intake and unprotected sex, with those using alcohol daily having a three-fold increased odds compared to those not using alcohol (D. Kebede, Alem et al., 2005). University staff who used khat were more

likely to go to work late, leave early and miss regular work (Gelaw & Haile-Amlak, 2004).

#### **DRUG CONTROL AND TREATMENT**

The potential consequences of substance abuse have been well-recognised by successive Ethiopian governments and necessary legislation has been adopted. Ethiopia is a signatory to the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol, the Convention on Psychotropic Substances of 1971 and the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988 (Selassie & Gebre, 1996). The government has a designated agency within the Ministry of Health for the control of drugs. A policy for the control and proper use of narcotic drugs and psychotropic substances was first adopted in 1993 and a more detailed policy was formulated in 2004 (Drug Administration and Control Authority, 2004). The penal code (1957) has legal provisions for the production, distribution, storing, importing, exporting and use of narcotic drugs and psychotropic substances (article 510 (1)) (Selassie & Gebre, 1996). However, current laws are perceived to lack rigour and law makers and law enforcement officers are said to lack awareness about the seriousness of substance abuse (Kassaye et al., 1999b; Selassie & Gebre, 1996).

Drug trafficking is the other major problem. Ethiopia has an efficient airline networking many parts of Africa, parts of Asia, USA and Europe and has been targeted by drug traffickers. The Bole International Airport is the main focus of control on drug trafficking. In a report that investigated police records, about 340 traffickers and users were apprehended between 1990 and 1994 (Selassie & Gebre, 1996). The seized substances included cannabis, heroin, morphine, cocaine, amphetamine, lysergic acid diethyl-amide (LSD) and Phenobarbital. Cannabis constituted the largest quantity seized, with 150, 559kg seized in 1993. In 1993, 24,

**Table 4.** Gender specific profile of substance abuse in Ethiopia

Substance	Prevalence (%)			Setting	Reference
	Male	Female	Male-Female ratio		
<b>Alcohol</b>					
Current use	32.7	26.8	1.2	Rural town	(Alem et al., 1999a)
Problem drinking	7.5	0.9	8.3		
Heavy episodic drinking	7.7	0.4	19.3		
Dependence					
Lifetime	1.9	0.1	19	Capital city	(D. Kebede & Alem, 1999)
Current	1.5	0.1	15		
<b>Khat</b>					
Current use	40.4	18.2	2.2	Urban tow	Belew et al., 2000)
Dependence					
Lifetime	5.0	1.3	3.8	}Rural town	} (Awass et al., 1999)
Current	3.5	1.2	2.9	}	}
<b>Tobacco</b>					
Ever smoked	15.4	0.2	77	Rural town	(Schoenmaker, Hermanides, & Davey, 2005)
Current	11.8	0.2	59		
Dependence	5.6	0.1	56	Capital city	(D. Kebede & Alem, 1999)

956kg of heroin was also seized. Between 1993 and 1997, 553 drug users and traffickers of Ethiopian nationality were apprehended (Kassaye et al., 1999b). The majority of these were for cannabis use or trafficking.

As part of the national effort for controlling substances of abuse, the Ministry of Health of the country has conducted seminars and conferences on the problem of substance misuse and trafficking (Selassie & Gebre, 1996). Education on substance misuse is also offered in some schools. There is also limited education available through mass media outlets. There are only two facilities for the treatment of patients who abuse substances, both opened recently within the capital city Addis Ababa. An inpatient detoxification unit operates at St Paul's hospital and an inpatient unit dedicated for the treatment of drug dependent patients was opened at Amanuel Hospital in 2005. An Alcoholics Anonymous group is also active in Addis Ababa.

## CONCLUSION

The studies presented on substance misuse in Ethiopia highlight the magnitude of the problem, particularly among the youth, its clinical and functional impact, and existing efforts at control. However, there is a clear paucity of systematic studies to establish the overall prevalence and geographic distribution of substance abuse in Ethiopia, and the trends in use over time. The studies reviewed have several limitations. Most focus on youths and other at-risk populations. This makes estimating the prevalence in the general population difficult. Community-based studies in the general adult population have assessed the prevalence and consequences of substance misuse only as part of broader studies of general mental disorders, thus limiting the level of detail available. Studies were also largely conducted within areas where the studied substances were widely available or acceptable. The data available on drug control and specific information regard-

ing nature and quantity of drugs seized anchored in time were very limited.

Comparison of findings from Ethiopia to studies from other East African countries is also difficult, as many of the latter studies were conducted among clinical rather than community samples. Additionally, the nature of available substances and socio-cultural differences make detailed comparison difficult and inappropriate.

However, several conclusions can be drawn from this review.

- 1) The commonly used substances in Ethiopia are alcohol and khat. Home-brewed alcohol and, to some extent khat, are part of the cultural fabric, widely available and acceptable. The prevalence of hazardous drinking (2.7%-3.7%) and alcohol dependence (1%-1.6%) in cities, selected rural sites and even special population groups suggests that alcohol abuse is a widespread and important problem. Khat use is predominantly found in the central and southern parts of the country. It is mainly used for religious reasons and among the youth. However, there is a clear concern that the use of khat is spreading across the country, outside of the usual cultural and religious context.
- 2) Tobacco smokers are almost exclusively men (Table 4). Similarly, dependent and heavy users of alcohol and khat are predominantly men. This is an anticipated finding that is influenced by culture and explains the low overall prevalence of substance abuse. Although the current status of abuse dictates efforts of treatment to be targeted on men, with increasing freedom of social expression, women may become more open to using substances. Thus preventive strategies that target both men and women need to be put in place.
- 3) Based on available studies, the overall burden of substance misuse appears substantial. It can be conservatively estimated that about three million people

have a problem with substance abuse in Ethiopia. The magnitude of alcohol use and problem drinking appears comparable to that of reports from Africa and other reports from the West (Blaney & Mackenzie, 1980; Gureje, Obikoya, & Ikuesan, 1992; Maru, Kathuku, & Ndeti, 2003; Odek-Ogunde & Pande-Leak, 1999).

- 4) The impact of substance misuse in Ethiopia has not been well-studied. However, the available data indicate the serious potential public health and socio-economic consequences of substance misuse, including poor physical health, undernutrition, mental distress and functional impairment as well as having implications for control of infectious diseases such as HIV, other sexually transmitted diseases and viral hepatitis.
- 5) The use of other substances such as cannabis, heroin and cocaine has not been substantial to date. However, there are indications that the use of heroin and cocaine might be higher than estimated in these studies (Kassaye et al., 1999b). This is partly because of the hidden nature of substance abuse in general, and the unique nature of the population in Ethiopia that is likely to access and use these substances. The use of the latter group of drugs has a potential to grow substantially with all the attendant problems.
- 6) The findings indicate that some consideration is being given to the control and treatment of substance misuse. However, this falls far short of what is required to prevent expansion of drug misuse and adequately deal with the existing problem. There are limited centres for the treatment of those with substance-related problems and there are no rehabilitation centres. There are virtually no informal services, and community involvement in the control of substance misuse is almost non-existent. Professionals involved in the control and treatment of substance misuse lack appropriate training.

#### Recommendations for Research and Policy

- 1) There is a clear gap in the knowledge we have about the magnitude of substance misuse in Ethiopia, its specific impact on health and functioning, and locally appropriate interventions. Data linking khat-use with health and social problems remain unconvincing. This is particularly important given the competing socio-cultural and economic interests for the use of khat. A well-designed cohort study would be a first step to inform further studies. Despite the difficulty in collecting data on hard drugs such as cocaine and heroin, attempts to better estimate the scale of the problem are crucial.
- 2) In countries like Ethiopia where the community plays a key role in the life of an individual and where some of the substances of abuse are culturally acceptable, community involvement will be crucial for any study and planned interventions. Existing informal community groups and structures offer many opportunities in this regard.
- 3) A pressing issue for the effective control of drug misuse in Ethiopia is the perceived leniency of penalties handed out to drug traffickers (Kassaye et al., 1999b). A governmental review of existing legislation is recommended.
- 4) Substance misuse is an issue with international dimensions and the efforts of local governments need to be co-ordinated with, and supported by, the international community. International input could include the sharing of expertise, information and equipment.
- 5) The problem of substance misuse is not confined to the domain of health. It is closely linked to societal and cultural issues and requires a multi-agency approach to prevention and control. Giving priority to increasing employment opportunities, reducing school drop-out and rehabilitating street children are examples of social interventions with the potential to impact on substance misuse.

- 6) Appropriate training of health professionals, law enforcement officers and law-makers should receive priority.
- 7) A comprehensive campaign to educate young children and adults about the harmful effects of substances is warranted. Its effectiveness is likely to be enhanced by incorporating sensitisation into the curriculum. Educating the public through media outlets, churches, mosques, and other formal and informal gatherings is needed.
- 8) There are only two treatment centres for patients with substance-related problems in the whole country and a dire shortage of appropriately trained personnel and facilities. There is an urgent need to expand drug treatment and rehabilitation programmes.

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**THE RELATIONSHIP BETWEEN SUBSTANCE ABUSE, NICOTINE USE AND  
POSITIVE AND NEGATIVE SYMPTOMS IN SCHIZOPHRENIC PATIENTS AT  
MATHARI HOSPITAL, NAIROBI, KENYA**

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**ABSTRACT**

Substance abuse in 224 Kenyan schizophrenic patients was assessed using the Scale for the Assessment of Negative Symptoms, the Scale for the Assessment of Positive Symptoms, the Alcohol Use Disorders Identification Test and the Fagerström Test for Nicotine Dependence in a cross-sectional study. The most commonly abused substances were tobacco, alcohol and *cannabis*. Higher rates of substance abuse were reported in males than in females. Abuse of other substances showed similar trends but at a lower level. The lifetime prevalence rates for tobacco use and dependence were 37.1% and 28.6%, respectively. No correlation was found between SAPS and SANS scores and substance abuse. Since psychoactive substances cause confusion and complicate recovery, adequate measures should be put in place to identify and manage the problems associated with substance abuse.

**KEY WORDS:** Nicotine use, schizophrenia, Kenya, substance abuse

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**INTRODUCTION**

Concomitant substance abuse in patients with psychiatric symptoms or illness is of concern to mental health service providers. It often complicates the picture, both diagnostically

and therapeutically. Several studies have documented that up to 50% of individuals with schizophrenia have either alcohol or illicit drug dependence, and up to 70% or more are nicotine-dependent (Shaner, Khalsa, Roberts, Wilkins, Anglin, & Hsieh, 1993; Ziedonis, Kosten, Glazer & Frances, 1994; Ziedonis & George,

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1997). The high comorbidity rates may therefore influence the clinical presentation of schizophrenia and possibly the outcome of treatment, by exacerbating or mitigating some of the symptoms as well as the side effects of medication.

Several studies have shown that nicotine use is common in individuals with psychiatric disorders, particularly schizophrenia. When compared with the 25 to 30 percent of the general population in the United States (US) who are regular smokers, psychiatric patients are three times more likely to develop and maintain nicotine addiction (Hughes, Hatsukami, Mitchell, & Dahlgren, 1986; Ziedonis et al., 1994). Smoking rates ranged from between approximately 40 and 50% in patients with depression and anxiety disorders to between 70 and 90% in patients with chronic schizophrenia (Brady & Sinha, 2005; Ziedonis et al., 1994).

Self-medication has been hypothesised as a reason for drug abuse among patients with schizophrenia. Even though it may acutely ameliorate some of the negative and positive symptoms, chronic use/abuse is detrimental to the psychological well-being of the patient users (Khantzian, 1985). This effect may simply be the consequence of non-compliance with anti-psychotic agents but could also reflect the direct neuro-chemical effects of stimulants, hallucinogens or alcohol in precipitating psychotic symptoms (Thomas & Douglas, 1997).

The prevalence of schizophrenia in substance abusers is substantially lower and not significantly greater than the one percent prevalence rate found in the community. However, at 50%, the rate of substance abuse in schizophrenics is significantly high (Rounsaville, Weissman, Kleber, & Wilber, 1982). Substance abuse has been reported less frequently in female schizophrenic patients than in patients with affective disorders (Kovaszny, Bromet, Schwartz, Ram, Lavelle, & Brandon, 1993).

Alcohol abuse has been associated with more hospital admissions, greater severity of positive symptoms, increased rates of tardive dyskinesia (Olivera, Kiefer, & Manley, 1990)

and relative neuroleptic refractoriness (Bowers, Mazure, Nelson, & Jatlow, 1990). Schizophrenic patients who abuse alcohol are also disruptive and disinhibited but not necessarily more acutely psychotic (Drake, Osher, Noordsy, Hurlbut, Teague, & Beaudett, 1990). Cannabis has been associated with exacerbation of psychotic symptoms, increased hospital admissions and an increase in occurrence of tardive dyskinesia (Safer, 1987; Linszen, Dingemans, & Lenior, 1994). However, Mueser, Yarnold, Levinson, Singh, Bellack, Kee, Morrison, and Yadalam (1990) reported that patients with schizophrenia who also abuse cannabis had fewer hospital admissions. They also found that recent cannabis use was not associated with increased psychotic symptoms. Cocaine has emerged as a problem particularly in the US, where it has been found to be associated with increased risk of depression, less severe negative symptoms and increased hospital readmission (Brady, Antora, Ballengur, Lydiard, Adinoff, & Selander, 1990; Lysaker, Bell, Beam-Goulet, & Milstein, 1994; Weiss, Mirin, Griffin, & Michael, 1988). However, in a large inpatient study, Mueser et al. (1990) found stimulant abuse had no effects on psychotic symptoms or other clinical variables.

Most studies on patients with schizophrenia have shown that negative symptoms are often associated with nicotine dependence while positive symptoms are not significantly associated with smoking. In a study involving 87 inpatients with schizophrenia, Patkar, Gopalakrishnan, Lundy, Leone, Certa and Weinstein (2002) found that nearly 76% of the patients were nicotine-dependent. Significant positive correlations were found between the Fagerström Test for Nicotine Dependence (FTND) (Heatherton, Kozlowski, Frecker, & Fagerström, 1991) scores and the total negative scores as well as scores on the negative subscales of blunted affect, social withdrawal and difficulty in abstract and stereotyped thinking. Significant positive correlations were also reported with impairment in attention, orientation, thinking and impulse control. The study concluded that a combination of negative symptoms, duration of illness and alcohol abuse

optimally predicted smoking among the patients studied.

Given its effects on modulating dopamine and glutamate, nicotine may have an impact on the negative and positive symptoms in schizophrenia. It is thought that some schizophrenic patients use nicotine to self-medicate against negative symptoms (Ziedonis & George, 1997). In smokers with schizophrenia, Ziedonis et al. (1994) found decreased negative symptom scores and increased positive symptom scores. Chronic distress has been cited as a common underlying factor in comorbidity with other psychiatric disorders (Brady & Sinha, 2005). In an inpatient setting, nicotine withdrawal symptoms may be confused with alcohol or other drug withdrawal symptoms, or even, an exacerbation of either positive or negative symptoms (Hughes, 1993). A search on PubMed did not yield any studies on substance abuse among patients with schizophrenia in the Eastern and Southern Africa region. No studies have been carried out locally to examine the variables associated with substance abuse and smoking in schizophrenic patients. This study therefore proposed to examine the patterns of substance use among Kenyan patients suffering from schizophrenia. The possibility that the occurrence of negative or positive symptoms could be associated with substance abuse is explored.

## METHOD

The study was approved and cleared by the Mathari hospital's ethical and research committee. All the patients admitted to the hospital between April and May 2004 were screened. In each ward, all the patients' files were studied and those suspected to have schizophrenic illness were recruited into the study. A more comprehensive assessment was then carried out using the Standard Psychiatric Interview (SPI) (Goldberg, Cooper, Eastwood, Kedarward, & Shepherd, 1970). All the patients who met the Diagnostic and Statistical Manual

Fourth Edition (DSM-IV-TR) (American Psychiatric Association [APA], 1994) criteria for schizophrenia were further assessed using the Adult Personal Data Inventory (APDI) (Guy, 1976), the Scale for the Assessment of Negative Symptoms (SANS) and the Scale for the Assessment of Positive Symptoms (SAPS) (Andreassen, 1989). Substance abuse was evaluated using a modified version of the Alcohol Use Disorders Identification Test (AUDIT) (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) and the FTND. Patients who refused to give consent were excluded from the study. Those who had gross difficulties in communication were too ill or lacked insight were assessed with the help of relatives.

The SPI is a semi-structured questionnaire designed for use by trained personnel (such as psychiatrists or psychologists). It has a set of mandatory questions and allows the interviewer the freedom to explore in detail any symptoms that may be elicited. The APDI consists of questions designed to record the patient's social and demographic characteristics, family history, past medical illness and details of previous illnesses. The symptom profiles in those patients who satisfied the diagnostic criteria for schizophrenia were further studied using the SANS and the SAPS. The SANS consists of twenty-five questions enquiring about the following negative symptoms: affective flattening or blunting, inappropriate affect, alogia, avolition-apathy, anhedonia-asociality and impaired attention. The responses were recorded as follows: 0 = none; 1 = questionable; 2 = mild; 3 = moderate; 4 = marked; and, 5 = severe. The maximum possible score is 125. The SAPS comprises 34 questions that assess hallucinations, delusions, bizarre behaviour and positive formal thought disorder. The scores range from 0 to 5 for each question and the maximum possible score is 170.

Nicotine use was assessed using the FTND in addition to other questions. The FTND has two questions each with three possible responses. The first question asks how soon after waking up the respondent smokes the first cigarette and the second enquires about the number of cigarettes smoked in a day. The patients

**Table 1:** Socio-demographic characteristics and substance abuse patterns among inpatients with schizophrenia at Mathari Hospital

<b>Variable</b>	<b>Male (n = 137) n (%)</b>	<b>Female (n = 87) n (%)</b>	<b>Total (N = 224) n (%)</b>
<b>Residence:</b>			
Urban	42 (31.8)	44 (52.4)	86 (38.4)
Sub-urban	22 (16.7)	0 (0)	22 (9.8)
Rural	68 (51.5)	40 (47.6)	108 (48.2)
Not specified	5 (3.6)	3 (3.4)	8 (3.6)
<b>Province of origin:</b>			
Central	65 (47.4)	41 (47.1)	106 (47.3)
Coast	2 (1.5)	1 (1.1)	3 (1.3)
Eastern	28 (20.4)	12 (13.8)	40 (17.9)
Nairobi	6 (4.4)	6 (6.9)	12 (5.4)
North-eastern	5 (3.6)	0 (0)	5 (2.2)
Nyanza	9 (6.6)	6 (6.9)	15 (6.7)
Rift valley	8 (5.8)	10 (11.5)	18 (8.0)
Western	9 (6.6)	5 (5.7)	14 (6.3)
Other countries	0 (0)	2 (2.3)	2 (0.9)
Not specified	5 (3.6)	4 (4.6)	9 (4)
<b>Age (years):</b>			
10-19	4 (2.9)	3 (3.4)	7 (3.1)
20-29	51 (37.2)	27 (31.0)	78 (38.4)
30-39	43 (31.4)	31 (35.6)	74 (33.0)
40-49	25 (18.2)	10 (11.5)	35 (15.6)
50-59	10 (7.3)	8 (9.2)	18 (8.0)
60-69	4 (2.9)	3 (3.4)	7 (3.1)
> 70	0 (0)	2 (2.3)	2 (0.8)
Not specified	0 (0)	3 (3.4)	3 (1.3)
<b>Religion:</b>			
Christian	123 (89.8)	77 (88.5)	200 (89.3)
Muslim	9 (6.6)	7 (8.0)	16 (7.1)
Other	5 (3.6)	3 (3.5)	8 (3.6)
<b>Previous psychiatric treatment:</b>			
Yes	95 (69.3)	66 (75.9)	161 (71.9)
No	23 (16.8)	12 (13.8)	35 (15.6)
Not specified	19 (13.9)	9 (10.3)	28 (12.5)
<b>Lifetime tobacco use:</b>			
Smoking	69 (50.4)	10 (11.5)	79 (35.3)
Sniffing	2 (1.5)	2 (2.3)	4 (1.8)
<b>Recent substance use:</b>			
Tobacco	56 (40.9)	8 (9.2)	65 (28.6)
Alcohol	29 (21.2)	14 (16.1)	43 (19.2)
Cannabis	32 (23.4)	4 (4.6)	36 (16.1)
Opiates	9 (6.6)	2 (2.3)	11 (4.9)
Sleeping pills or sedatives	4 (2.9)	1 (1.1)	5 (2.2)
Amphetamines/stimulants	4 (2.9)	1 (1.1)	5 (2.2)
Hallucinogens	1 (0.7)	0 (0)	1 (0.4)

**Table 2:** Mathari Patients' Scores on the Fagerström Test for Nicotine Dependence (N = 64)

Item	Tobacco use	Points	n (%)
<b>Q1.</b> How soon after waking up do you smoke the first cigarette?	< 5 minutes	3	23 (35.9)
	5 to 30 minutes	2	21 (32.8)
	31 to 60 minutes	1	20 (31.3)
<b>Q2.</b> How many cigarettes do you smoke per day?	> 30	3	5 (7.8)
	21 to 30	2	2 (3.1)
	11 to 20	1	40 (62.5)
	< 10	0	13 (20.3)
	Not specified	-	4 (6.3)
<b>Nicotine dependence</b>			
	Heavy	5-6	2 (3.1)
	Moderate	3-4	33 (51.6)
	Light	0-2	29 (45.3)

were asked to base their responses on a typical day in their lives prior to admission since the ward environment may have affected their habits. There is a prohibition on smoking in the hospital wards but this is not strictly enforced. For each question, points were awarded as shown in Table 2 (range 1 – 6 points) indicating heavy, moderate and light nicotine dependence.

The data were analysed using SPSS version 11.0. The following variables were analysed: the patient's socio-demographic characteristics, the use of tobacco and the occurrence and severity of negative and positive symptoms of schizophrenia. Tobacco dependence was correlated to the occurrence of either positive or negative symptoms.

## RESULTS

Two hundred and twenty four patients (137 male and 87 female) met the diagnostic criteria for schizophrenia and were included in the study. Majority of the patients had received psychiatric treatment before and 144 (64.2%) reported a previous hospitalisation. All the patients were on psychotropic medications at the time of the study but 35 (15.6%) had never

received any type of psychiatric treatment before the current admission. The patients' ages ranged from 16 to 75 years (mean = 34.62, s.d. = 11.5). Nearly half of the patients (47.3%) reported that they were originally from the central province and 17.9% were from the eastern province. Within the past 3 years, 38.4% of the patients were resident primarily in the urban areas, 9.8% in the sub-urban areas and close to half (48.2%) in the rural areas. The patients were predominantly Christians. Less than 10% (n = 16) recorded Islam as their religion. Seventy percent of the patients had only been briefly or never been employed during the previous three years.

The substance abuse patterns of the patients are presented in Table 1. Overall, tobacco, alcohol and cannabis, in that order, were the substances most commonly abused by the schizophrenic patients. Among females, abuse of alcohol was reported with the highest frequency, followed by tobacco and cannabis. Alcohol abuse among males was reported at slightly higher levels than those for females while tobacco use was reported more than four times more among male (40.9%) than among female patients (9.2%). Similarly, cannabis use among males was reported at nearly six times the frequency reported among females. A similar trend of a higher percentage of males than

**Table 3:** Recent tobacco use in relation to SAP and SAN scores

Test Scores	Tobacco use		Total	$\chi^2$	p
	Yes	No			
<b>SAP scores*</b>					
0 – 60	50	47	97	0.111	0.467
60 – 170	9	10	19		
<b>SAN scores*</b>					
0 – 60	46	53	99	0.333	0.356
60 – 125	13	19	32		

\*Cases with incomplete information on any of the symptoms are excluded

females was recorded in the use of opiates, amphetamines and sleeping pills or sedatives although it was at low levels.

A lifetime prevalence of tobacco use was reported in 37.1% (n = 224) of the patients of whom, 64 (28.6%) were dependent on nicotine. Smoking was recorded as the preferred method of taking nicotine in 95.2% of the patients. Only 4.8% of them sniffed tobacco. None of the patients chewed tobacco. The FTND classifies those dependent on nicotine into three categories: heavy, moderate and light smokers. Using the FTND scores, only 2 out of 64 (3.1%) of those patients who were dependent on nicotine were heavy smokers. Slightly more than half were moderately dependent (Table 2). While only 7 (10.9%) patients smoked more than one packet (20 sticks) of cigarettes in a day, a high proportion of them (nearly two thirds) smoked 11-20 cigarettes on a typical day. Fifty percent of the patients who had used tobacco indicated that they had picked the habit at the age of 17 years. It was not possible to relate the onset of schizophrenia, which is difficult to determine with precision, to the initiation of smoking. The reasons given for using tobacco use included relief from stress (73.5%) and peer influence (19.1%).

Among those who had used nicotine, 22.3% had unsuccessfully tried to discontinue the habit. Reasons given for failure to stop were predominantly psychological but also included the discomfort arising from physical symptoms associated with withdrawal. The mental symptoms included confusion, low

mood, feeling dull, uneasy and anxious and experiencing a craving. The physical symptoms included headaches, loss of energy and feeling cold and thirsty. At the time of the study, none of the patients were engaged in any programme to facilitate the discontinuation of the habit.

As the numbers were small, the patients were divided into two groups for analysis of the SANS and the SAP scores: those below or above 60. When total scores were considered, 99 (75.6% of those who completed the scale, n = 131) of the patients had SAN scores below 60, and 32 (24.4%) had SAN scores above 60. The two groups were not statistically different ( $\chi^2=0.333$ , d.f. = 1,  $p = 0.356$ ) when their rates of smoking were compared. When the negative symptoms were considered separately, avolition-apathy was found to be significantly associated with tobacco use ( $\chi^2=0.365$ , d.f. = 1,  $p = 0.040$ ). According to the SANS scale, 41 (18.3%) patients had mild avolition apathy, 43 (19.2%) had moderate, 26 (11.6%) had marked and 10 (4.5%) had severe avolition apathy. The difference in smoking rates between those who had SAP scores below 60 (83.6% of those who completed the scale, n = 116) and those who had SAP scores above 60 (16.4%) was not statistically significant.

When males and females were compared for alcohol use, a higher percentage was recorded among males. Using the AUDIT, 45.6% (n = 21) of the males and 28.6% (n = 4) of the females who admitted using alcohol met the criteria for alcohol abuse.

## DISCUSSION

One limitation of this study is that it was hospital-based and the sample of patients included those who were severely ill and probably those who had poor response to medication. Therefore generalisations can only be made with caution. Among those who reported tobacco use, nearly half had mild to moderate addiction according to the FTND scores. These rates are low compared to those from studies in Western countries that report smoking rates of between 70 and 90% among schizophrenic patients (Ziedonis et al., 1994), and dependence rates of 76% (Patkar et al., 2002). Nevertheless, nicotine use among Kenyan schizophrenic patients is high compared to an average prevalence rate of 32% for nicotine use among patients attending general outpatient clinics (Othieno, Kathuku, & Ndeti, 2000). The low cigarette use by the patients at Mathari Hospital could be due to the fact that most of them were unable to buy cigarettes as they wished, as they were unemployed and dependent on others for support. The patients reported that their smoking habit started early and that tobacco was used to relieve stress. The age of initiation into smoking corresponded to that of schizophrenia, which typically starts at between 15 to 25 years. Only one group of negative symptoms (avolition-apathy) was significantly associated with smoking. It would be interesting to accurately determine the age of onset of the disease and relate it to the onset of smoking in future studies. Nevertheless, since a number of patients indicated that they smoked to relieve stress and had unsuccessfully tried to stop the habit, attention should be paid to this underlying reason in any assistance programmes instituted.

There were more patients with SANS scores above 60 (24.4%) than those with SAPS scores above 60 (16.4%). Considering that all the patients had been on medication, this could either mean that the negative symptoms were less responsive to treatment or that patients with negative symptoms were more likely to be admitted to or to remain in hospital.

Use of alcohol was higher among the clinic patients (54-62%) compared to that among schizophrenia patients (26.8%) (Othieno et al., 2000). The rate of alcohol use of 19% among Kenyan patients with schizophrenia is low compared to that of other studies especially in western countries that record an average of 50% (Kovaszny et al., 1993; Thomas & Douglas, 1997). Most of the patients at Mathari hospital reported using alcohol to relieve social anxiety tension and to induce sleep, findings similar to those from previous studies (Olivera et al, 1990; Thomas & Douglas, 1997). Perhaps the small number of patients using alcohol at Mathari hospital could be due to the fact that most of them were unemployed and dependent and hence unable to buy alcohol as they wished. Alcohol is also not easy to obtain for this sample of patients while in hospital. The rate of alcohol use also included the period when they were out of hospital. No comprehensive community surveys have been carried out in the general Kenyan population, but Shaffer, Njeri, Justice, Odero, and Tierney (2004) reported that more than half (54%) of the patients attending rural and urban clinics in western Kenya reported hazardous drinking behaviour. These rates are higher than those recorded among patients with schizophrenia.

Cannabis use reported in this study is also high (16.1%) compared to rates of 3.6% to 10.6% among the general outpatients. However, this is quite low compared to rates of as high as 70% reported in western studies, making it the most likely substance to be used by schizophrenic patients there (Khantzian 1985; Kovaszny et al., 1993). While other studies have suggested that cannabis is associated with relief of negative symptoms (Drake et al., 1990), this study did not find any relationship between either scores of SANS or SAPS and use of cannabis.

The use of *khat* (*Catha edulis*: an amphetamine like substance) is more widespread among general outpatients (7.1-36.4%) (Othieno et al., 2000) than among the schizophrenic patients (2.2%). This could be due to the fact that most of the patients were from

predominantly rural set-ups where this substance is not readily available. Since *khat* use is not widespread in western countries, there are no comparable studies.

There was only one patient using hallucinogens in this study compared to rates of 20% reported in most western studies (Brady & Sinha, 2005; Chambers, Krystal, & Self, 2001). In addition, very few patients in this sample reported using amphetamines/stimulants while none reported cocaine use. These findings contrast sharply with those of other American studies in which the usage of these substances was reported as 10% and 20% respectively (Douglas et al., 1997; Mueser et al., 1990; Weiss et al., 1988). These substances are not readily available in Kenya and the patients may not be aware of the drugs and their effects. Misuse in form of self-medication may therefore not be an issue (Buhler, Hambrecht, Loffler, an der Heiden, & Hafner, 2002; Chambers et al., 2001; Khantzian, 1985; Lysaker et al., 1994; Shaner et al., 1993). However the use of these drugs may increase as they become more available and the patients become more knowledgeable about them.

The rates of use of opiates and sedatives in this study (4.9% and 2.2%) were comparable to those found in other studies (Rounsaville et al., 1982; Safer, 1987). This suggests availability and accessibility of these substances in the local set up is similar to western set ups, a situation which should be a cause of concern for mental health service providers.

### CONCLUSION

It is evident that a significant number of patients with schizophrenia in Kenya use psychoactive substances although cocaine and other psychostimulant use is low. In comparison, the use of hard drugs in the general Kenyan population is low. Negative symptoms of schizophrenia are more prevalent than positive symptoms among the Mathari inpatients and tobacco use is widespread although heavy smoking (use of more than 20 cigarettes a day)

is not common. Tobacco appears to be related to the presence of some negative symptoms but not positive symptoms of schizophrenia in this sample of inpatients. Since even light smoking is associated with adverse effects, measures to limit or help the patients stop smoking should be instituted. Though having similar symptom profiles, only 9.2% (n = 87) of the females smoked compared to 40.9% (n = 137) of the males in this study. They presumably have different coping mechanisms to deal with the stresses that lead male patients to nicotine use. Further local studies should be conducted to determine the rates and factors associated with tobacco use in other patients with mental disorders.

### ACKNOWLEDGEMENTS

We wish to thank the patients of Mathari Hospital and their relatives for agreeing to participate in the study, the members of staff at the hospital, particularly Dr Hitesh Maru, the Medical superintendent for facilitating the study and Jack Obaro Yongo of the African Mental Health Foundation (AMHF) for his help with the data analysis. We also thank Grace Mutevu and Patricia Wekulo of AMHF for assistance in preparation and editing of the paper.

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### INSTRUCTIONS TO CONTRIBUTORS

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Book chapter: Jemigan, D.H. (1999). Country profile on alcohol in Zimbabwe. In L. Riley, & M. Marshall (eds.), *Alcohol and Public Health in 8 Developing Countries*. Geneva: World Health Organization.

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