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CONTENTS

Perceived effects of alcohol use on sexual encounters among adults in South Africa.....	1
<i>Neo K. Morojele, Millicent A. Kachieng'a, Matsobane A. Nkoko, Kgaogelo M. Moshia, Evodia Mokoko, Charles D. H. Parry, A. Mwansa Nkowane, &amp; Shekhar Saxena</i>	
Oral fructose-induced disposition of blood ethanol and associated changes in plasma urate.....	21
<i>Innocent Onyesom &amp; Emmanuel O. Anosike</i>	
The nature and extent of heroin use in Cape Town: A qualitative study.....	31
<i>Andreas Plüddemann &amp; Charles D. H. Parry</i>	
Does alcohol use take away condom use? Qualitative evidence from Selibe Phikwe and Mahalapye town districts, Botswana.....	53
<i>Joseph M. N. Pitso</i>	
<i>Book review</i>	
<i>The E in Rave: A profile of young ecstasy users and its implications for educators</i> .....	74
By Fanitsa Servogiannis	
<i>Reviewed by Nandi Siegfried</i>	
INSTRUCTIONS TO CONTRIBUTORS.....	76
ISSN 1531-4065	

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Editor-in-Chief

## **PERCEIVED EFFECTS OF ALCOHOL USE ON SEXUAL ENCOUNTERS AMONG ADULTS IN SOUTH AFRICA**

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### **Abstract**

As part of the World Health Organization's multi-site rapid assessment project on alcohol use-related sexual risk behaviour, this study focused on the effects of alcohol use on sexual behaviour among adults in South Africa. The objectives of the study were to determine: (a) the associations between alcohol use and sexual risk behaviour; (b) the nature and dimensions of adults' perceptions about alcohol's effects on sexual encounters; and (c) the association between dimensions of perceived effects of alcohol use on sexual encounters and demographic factors, alcohol use and sexual risk behaviour. A cross-sectional design was employed. The participants comprised 160 males (N=65) and females (N=95), aged from 25 to 44 years, who were randomly selected

**KEY WORDS:** alcohol, sex, South Africa, HIV/AIDS

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from households in a multi-stage cluster sample of census areas in an "African" township in Gauteng province. The participants completed questionnaire measures on socio-demographic characteristics, alcohol use (quantity, frequency and problem drinking), sexual risk behaviours (number of sexual partners, regretted intercourse and inconsistent condom use) and perceived effects of drinking on sexual encounters. Alcohol use frequency, quantities consumed and problem use were significantly associated with number of sexual partners and engagement in regretted sex, but not significantly related to inconsistent condom use. Principal components analysis revealed two main dimensions of perceived effects of drinking on sexual encounters: 'enhanced sexual appeal' and 'reduced sexual control'. Enhanced sexual appeal was negatively associated with age, being married and positively associated with being employed, drinking quantity, problem drinking, number of sexual partners, and frequency of engagement in regretted sex. Inconsistent condom use was the only significant correlate of the reduced sexual control component. Alcohol consumption seems to be related to sexual risk behaviour in different ways. Reducing heavy rather than frequent alcohol intake would seem to be an appropriate goal of sexual risk reduction interventions for alcohol users.

### **Introduction**

Alcohol abuse and sexual risk behaviour are both considered to be risk factors for major health and social problems among adults in the developing world. Rates of problem drinking in South Africa have been shown to be high (Department of Health, 2001-2002). South Africa has one of the highest HIV prevalence rates in the world (UNAIDS, 2004). In 2002, 26.5% of pregnant women attending antenatal clinics nationally were HIV positive (Department of Health, 2003). A national survey conducted in the same year revealed an HIV prevalence rate of 11.4% (Shisana & Simbayi, 2002).

The misuse of alcohol is increasingly being recognized as a key determinant of sexual risk behaviour, and consequently, an indirect

## ALCOHOL USE AND SEXUAL ENCOUNTERS

contributor to HIV transmission in sub-Saharan countries (e.g. Fritz et al., 2002). Numerous cross-sectional investigations conducted among adults in this region have shown consistently that alcohol use is associated with HIV infection (Campbell, Williams, & Gilgen, 2002; Clift et al., 2003; Fritz et al., 2002; Hargreaves et al., 2002; Mbulaiteye et al., 2000; Mnyika et al., 1996), and other sexually transmitted infections and diseases (e.g. Gwati, Guli, & Todd, 1995; Morrison, Sunkutu, Musaba, & Glover, 1997), as well as with sexual risk behaviours, such as having multiple sexual partners (Mnyika, Klepp, Kvale, & Ole-Kingori, 1997; Trigg, Peterson, & Meekers, 1997). However, the relationship between alcohol consumption and unprotected sex is equivocal. Some studies (e.g. Fritz et al., 2002; Mnyika et al., 1997) have found a significant relationship between alcohol consumption and unprotected sex, whereas others (e.g. Mataure et al., 2002) have not.

Despite this body of research, there is a paucity of studies that have been conducted in Africa to uncover people's perceptions of how their drinking impacts on their sexual behaviour or the reasons why alcohol use may be related to sexual risk behaviour. Only a few investigators (e.g. Fritz et al., 2002, among male attendees of beer halls; Mataure et al., 2002, among youth) have examined closely, the reasons why alcohol consumption may be linked to sexual risk behaviour among adults in African contexts. Given an apparently consistent link between alcohol use and HIV infection, an understanding of the factors underlying this link is crucial for informing the development of effective interventions to reduce HIV risk among those who engage in heavy drinking. In a country such as South Africa there is a particularly urgent need to explore all potentially valuable avenues for reducing the risk of contracting HIV.

Three different but related types of explanations are usually proposed to account for the relationship between alcohol use and sexual risk behaviour. One type of explanation is that alcohol consumption may represent other behavioural, lifestyle, contextual and/or personality factors which are associated with engagement in high risk sexual behaviour (e.g. Hargreaves et al., 2002; Plant, 1990). For example, in certain instances, male alcohol consumers go to drinking venues which are also frequented by sex workers, and while in those venues they end up having casual and sometimes 'higher-risk' sexual encounters with those sex workers.

A second main explanation involves a more direct link. According to this explanation, the drug ethanol acts on the central nervous system, reduces inhibitions, and consequently, increases people's likelihood of engaging in risky sexual and other behaviours (Plant, 1990). In their study of Zimbabwean youth, Mataure et al. (2002) indicated that alcohol had a disinhibition effect, particularly among males, and also a reduced control effect, among females in particular. However, the extent to which these results for youth would hold true for adults, who are more experienced with respect to sexual intercourse and alcohol consumption, is not clear.

A third explanation pre-supposes that in addition to alcohol's 'real' effects on behaviour, people's alcohol expectancies (i.e. their expectations about how alcohol will influence their behaviour), can also influence their actual behaviour (Brown, Christiansen, & Goldman, 1987). There is indeed much evidence to show that people's perceptions about alcohol's effects on their sexual behaviour affects their actual behaviour (e.g. Leigh, 1990). LaBrie, Schiffman, and Earleywine (2002) found that alcohol expectancies regarding condom use were strong predictors of actual condom use in a sample of college students in the United States. However, we do not know of any published research examining alcohol expectancies and sexual behaviour among people in sub-Saharan Africa.

A rapid assessment project was initiated by the World Health Organization and conducted in eight countries from four continents (Belarus, India, Mexico, Kenya, Romania, the Russian Federation, South Africa and Zambia). The overall aim was to develop a methodology for studying alcohol use-related sexual risk behaviour in diverse populations, using various qualitative methods and a quantitative research approach. The use of these varied methods permits triangulation of information from numerous sources and maximises the chances of obtaining a full understanding of the nature of particular phenomena under investigation. The present report describes the quantitative component of the rapid assessment project conducted in South Africa. The target group for the study was adults between the ages of 25 and 44 years, because those between these ages have been found to have the highest levels of weekend 'risky drinking' in South Africa (Department of Health, 2001-2002). Weekend 'risky drinking' was defined as the consumption of at least five, or at least three, alcoholic drinks per day during the weekends for males and females, respectively, and was based on the definition of "hazardous/harmful"



## ALCOHOL USE AND SEXUAL ENCOUNTERS

drinking of the Australian National Health and Medical Research Council (1992).

The overall rapid assessment study was conducted in Gauteng province which is the economic centre of South Africa, and one of the country's most populous and urbanised provinces that includes the metropolitan areas of Johannesburg and Pretoria (Statistics South Africa, 2003). This province had the second highest HIV prevalence rate among women in 2002 of 31.6% (95% C.I. = 29.7 – 33.6). The highest rate of 36.5% (95% C.I. = 33.8 – 39.2%) was recorded for kwa-Zulu Natal province. The first stage of the rapid assessment (reported elsewhere, see Morojele et al., 2004) entailed conducting qualitative assessments among alcohol users and their sexual partners in a township and city site in Gauteng. One of its main aims was to explore people's perceptions of the various ways in which alcohol use can affect their sexual encounters. A key advantage of the qualitative assessment was that it enabled direct investigation of people who drank alcohol and their sexual partners. By involving alcohol users and their partners we were able to get a sense of how alcohol is perceived to impact on sexual behaviour for both parties involved.

The key findings of the study pointed to a strong link between alcohol use and sexual risk behaviour, and suggested that those who drink heavily are most likely to be vulnerable to such sexual practises. Alcohol consumption was perceived to have varied effects on behaviour and attitudes to sexual intercourse before and during the occurrence of sexual acts. Its main effects before sexual intercourse seemed to be to enhance the appeal of sexual intercourse and to reduce the individual's conscious consideration of possible negative consequences of such sexual encounters. In terms of the actual sexual encounters, alcohol consumption was reported to increase the level of pleasure of episodes of sexual intercourse and decrease the likelihood that the resultant sexual intercourse that took place would be responsible or protected.

The qualitative assessments provided useful insights into potential ways in which alcohol consumption affects adult consumers' thoughts and feelings, and their eventual sexual encounters. However, they failed to indicate how widespread such effects can be and some of the socio-demographic factors associated with alcohol use-related sexual risk behaviour; hence the need for a quantitative survey involving a general population sample of adults which is described in this paper.

This quantitative study entailed conducting a mini-survey among a general population sample of adults aged between 25 and 44 years in a township comprising approximately 200,000 inhabitants in

Gauteng province. The primary objectives of the quantitative assessment were to examine (a) the associations between alcohol use and sexual risk behaviour; (b) the nature and dimensions of adults' perceptions of alcohol use's effects on their sexual encounters; and (c) the association between dimensions of adults' perceived effects of alcohol use on sexual encounters and socio-demographic factors, alcohol use and sexual risk behaviour.

## Method

*Participants.* One hundred and sixty adults participated in the study. They comprised 56, 55 and 49 residents of areas classified as low-income, medium-income and high-income communities, respectively. They consisted of 95 (59%) females and 65 (41%) males who were aged between 24 and 44 years ( $M = 33.84$  years,  $SD = 5.75$ ). Approximately half (53%) of the participants had never been married, while only 27% were legally married. Ninety-nine (62%) of the participants reported having completed high school.

*Questionnaire.* A structured questionnaire was developed after the qualitative investigations (see Morojele et al., 2004) had been completed and had determined the nature of the psycho-social factors that are potential predictors of alcohol-related sexual risk behaviour. The questionnaire consisted of 76 items, and those of present concern assessed (a) demographic factors (age, gender, and marital, employment and socio-economic status); (b) alcohol use (past month frequency, typical quantity and problem drinking); (c) sexual risk behaviour (number of sexual partners, frequency of engagement in regretted sex, and inconsistent condom use); and (d) perceptions of alcohol's effects on sexual behaviour. The questionnaire was translated into seTswana/sePedi - the main local language of the areas visited - by group translators who also conducted the interviews in this study. Most of these fieldworkers were members of the communities in which the research took place.

*Sampling and procedures.* Using employment data from the 1996 population census, all the census enumerator areas (EAs) within the boundaries of the township were categorised as 'low income', 'medium income', or 'high income'. The proportion of employed persons between 15 and 65 years of age in an EA was used as a proxy measure of the income level of the areas. The highest third, middle third, and

## ALCOHOL USE AND SEXUAL ENCOUNTERS

lowest third of all the suburbs in terms of employment rate, were categorised as high, medium and low income EAs, respectively. Seven EAs were then randomly selected from each of the low income, medium income and high income sets of EAs, with 21 EAs being selected in total.

The aim was to recruit adults from 12 households per EA. Within each EA, a starting point was selected at random, and then households were selected at intervals of five households until 12 households had been identified. Interviews were conducted at each target household if one or more eligible adult (i.e. those between the ages of 25 and 44 years, inclusive) resided within that household. Where more than one eligible adult resided at a particular household, one was selected randomly for participation in the study.

The identified adult was informed about the study. Those who consented to participate completed and signed two copies of the informed consent form, one of which remained with the participants, and the second of which was returned to the researchers. The participants were then interviewed in private, with responses scored by the interviewers. The interviews lasted for between 30 and 45 minutes. On completing the interviews the participants were given a list of contact details of local self-help and counselling or treatment services for alcohol and/or drug problems, and for HIV testing and counselling. The research was approved by the Ethics Committee of the Faculty of Health Sciences at the University of Pretoria.

*Statistical analyses.* Pearson's correlational analyses were conducted to examine the relationship between the alcohol use and sexual risk behaviour measures, and the dimensions of perceived effects of alcohol use on sexual behaviour and the socio-demographic, alcohol use and sexual behaviour variables. Principal components analysis was conducted to determine the factor structure of the variables assessing perceived effects of alcohol use on sexual behaviour.

## Results

Table 1 shows the socio-demographic characteristics of the males, females and the total sample. The females (43%) were slightly more likely than the males (35%) to report being married or to be living with a partner. There were no significant gender differences in the respondents' educational level, socio-economic status, or age. The mean

age of the males and females was 33.42 years ( $SD = 5.81$ ) and 34.13 years ( $SD = 5.72$ ), respectively. The overall employment rate was 64%, and the males were significantly more likely than the females to be employed ( $p < .01$ ).

Table 1. Socio-demographic characteristics of the participants

		Female (N=95) n (%)	Male (N=65) n (%)	Total (N=160) n (%)	$\chi^2$
<b>Socio-demographic factors</b>	Married/cohabiting	41 (43)	23 (35)	64 (40)	.92
	Employed	51 (54)	51 (79)	102 (64)	10.25**
	Low socio-economic status	33 (35)	21 (32)	54 (34)	.10
	Completed high school	58 (61)	41 (63)	99 (62)	.06

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Table 2 shows the alcohol use-related characteristics of the participants. The rates of reported lifetime and past month alcohol consumption for the sample were 55% and 48%, respectively. The males (74%) were significantly more likely than the females (42%) to report having consumed alcohol in their lifetime ( $p < .001$ ).

The males had consumed alcohol significantly more often (an average of 3.45 days;  $SD = 5.50$ ) during the previous month, than the females (who had consumed alcohol on an average of 1.55 days;  $SD = 4.15$ ;  $p < .05$ ). The males drank a significantly greater quantity of alcohol per drinking occasion than the females. Among those who drank alcohol (i.e. 48 males and 40 females), 85% of the males and 70% of the females reported drinking more than two drinks, and 56% of the males and 35% of the females reported drinking more than four drinks on a typical occasion on which they would be drinking. Defining risky drinking as the consumption, on one occasion, of at least five drinks for males and at least three drinks for females, it emerged that 63% of the drinkers were classifiable as 'risky drinkers'. Female 'drinkers' (70%) were slightly more likely than their male counterparts (56%) to be classifiable as such. In all, 43% of the male 'drinkers', and 29% of the female 'drinkers' are classifiable as problem drinkers in having been told that they drink too much.

The females were most likely to drink cider (39%), wine (34%), or beer (29%), while most of the males (77%) reported usually drinking beer. Spirits were only consumed by 6% of the respondents, and only two men reported ever drinking homebrew. Most respondents

## ALCOHOL USE AND SEXUAL ENCOUNTERS

indicated that they would usually drink alcohol at parties (83%), friends' homes (75%), and at home (70%). There were no significant differences in the percentage of males and females reporting that they would usually drink alcohol at parties (83% each), and at friends' homes (75%). However, the males were more likely than the females to report drinking in public places such as in shebeens (44% versus 18%), taverns (35% versus 23%), and bars (25% versus 18%); with the only significant difference being observed with respect to consuming alcohol in shebeens ( $p < .05$ ).

Table 2. Alcohol-use related characteristics of the participants

		Female (N=95) n (%)	Male (N=65) n (%)	Total (N=160) n (%)	$\chi^2$
Alcohol use frequency	Life time alcohol use	40 (42)	48 (74)	88 (55)	15.71***
	Past-month alcohol use	33 (35)	43 (66)	76 (48)	15.28***
	Risky drinker <sup>a</sup> (drinkers)	28 (70)	27 (56)	55 (63)	1.76
	Problem-use <sup>b</sup> (drinkers)	12 (29)	21 (43)	33 (37)	1.76
	Consume more than 2 drinks per occasion	28 (70)	41 (85)	69 (78)	3.06
	Consume more than 4 drinks per occasion	14 (35)	27 (56)	41 (47)	3.96*
Beverages consumed	Beer	12 (29)	37 (77)	49 (55)	4.24*
	Cider	16 (39)	7 (15)	23 (26)	7.30*
	Wine	14 (34)	4 ( 8)	18 (20)	9.54**
	Coolers	3 ( 7)	2 ( 4)	5 ( 6)	<sup>c</sup> $p=.41$
	Spirits	2 ( 5)	3 ( 6)	5 ( 6)	<sup>c</sup> $p=.51$
Typical drinking venue	Party	33 (83)	40 (83)	73 (83)	.01
	Home of friend(s)	30 (75)	36 (75)	66 (75)	.00
	Own home	26 (65)	36 (75)	62 (70)	1.05
	Park(s)	17 (43)	22 (46)	39 (81)	.10
	Festivals/concerts	16 (40)	23 (48)	39 (81)	.55
	Shebeen	7 (18)	21 (44)	28 (32)	6.93*
	Restaurant	14 (35)	13 (27)	27 (31)	.64
	Tavern	9 (23)	17 (35)	26 (30)	1.75
	Bar	7 (18)	12 (25)	19 (22)	.72
Typical drinking company	Friend(s)	31 (78)	42 (88)	73 (83)	1.54
	Partner	6 (15)	1 ( 2)	7 ( 8)	<sup>c</sup> $p=.03^*$
	Alone	2 ( 5)	4 ( 8)	6 ( 7)	<sup>c</sup> $p=.39$
	Other	1 ( 3)	1 ( 2)	2 ( 2)	.02

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

<sup>a</sup>Usual consumption of 5 or more (males) or 3 or more (females) drinks per occasion.

<sup>b</sup>Having been told that one drinks too much.

<sup>c</sup>Result of Fisher's exact test.

Most participants reported that they would drink alcohol with friends (78% for females and 88% for males), while few of them reported drinking alone (5% of the females and 8% of the males). The

females were significantly more likely than the males to report that they would drink with their partners (15% versus 2%;  $p < .05$ ).

Table 3 shows the perceived HIV vulnerability, sexual partnerships and condom use behaviours of the participants. Most of the respondents (88%) reported having a regular sexual partner while just under one third (31%) reported having a casual sexual partner. The males were more likely than the females to report having a regular partner (92% versus 85%) and significantly more likely to report having a casual sexual partner (48% versus 20%,  $p < .001$ ).

Table 3. Perceived HIV vulnerability, sexual partnerships and condom use behaviours of participants.

		Female (N=95) n (%)	Male (N=65) n (%)	Total (N=160) n (%)	$\chi^2$
<b>Sex under the influence of alcohol</b>	Past 3 months (total sample)	19 (20)	25 (38)	44 (28)	6.60*
	Past 3 months (drinkers)	19 (48)	25 (52)	44 (50)	.18
<b>HIV vulnerability</b>	Self	28 (29)	23 (35)	51 (35)	.62
	Regular partner	20 (25)	14 (23)	34 (21)	.03
	Casual partner	6 (40)	10 (32)	16 (35)	.02
<b>Sexual partnerships</b>	Regular partner	81 (85)	60 (92)	141 (88)	1.83
	Casual partner	19 (20)	31 (48)	50 (31)	13.78***
	More than one partner in past 3 months	4 (4)	13 (20)	17 (11)	10.13**
	More than 5 life time partners	25 (26)	23 (38)	50 (31)	2.65
<b>Condom use</b>	Past-year condom use	48 (51)	47 (72)	95 (59)	7.59**
	Past 3-month condom use with regular partner	37 (46)	37 (63)	74 (52)	3.53
	Past 3-month condom use with casual partner	8 (42)	22 (71)	30 (60)	4.05*

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

The males were more likely than the females to consider themselves to be vulnerable to HIV infection (35% versus 29%), but

## ALCOHOL USE AND SEXUAL ENCOUNTERS

less likely than the females to consider their regular partners (23% versus 25%) and casual partners to be HIV positive (32% versus 40%).

About 11% of the respondents indicated having had more than one sexual partner during the preceding three-month period, and 31% reported having had more than five sexual partners in their lifetime. The males were significantly more likely than the females to report having had more than one sexual partner in the past three months (20% versus 4%,  $p < .05$ ), and non-significantly more likely to report having had more than five sexual partners in their lifetime (38% versus 26%).

Males (72%) were also significantly ( $p < .01$ ) more likely than females (51%) to report past year condom use, and past three-month condom use with casual partners (71% versus 42%,  $p < .05$ ), but not significantly more likely than females to report past 3-month condom use with regular partners (63% versus 46%).

Overall, 28% of the sample, and 50% of those who drank alcohol reported having engaged in sexual intercourse under the influence of alcohol during the past three months. The males (38%) were significantly more likely than the females (20%,  $p < .05$ ) to report having engaged in sex under the influence of alcohol. However, among the drinkers there was no significant difference in the proportion of males (52%) and females (48%) reporting having had sex under the influence of alcohol during the preceding three-month period.

### *Relationship between alcohol use and sexual risk behaviour.*

Table 4 shows that for the total sample there were significant positive correlations between each of the alcohol use variables (past month alcohol use frequency, typical quantity of alcohol consumed and problem alcohol use) and two of the three sexual risk behaviour variables: number of sexual partners and engagement in sexual intercourse that was regretted. However, condom use frequency was not significantly related to any of the three alcohol use variables.

The right hand side of Table 4 shows that for drinkers, however, frequency of past month alcohol use was not significantly associated with any of the sexual risk behaviour variables, whereas typical quantity consumed correlated significantly with number of sexual partners and regretted sex. Problem drinking was significantly related to number of sexual partners but not to regretted sex. Again, inconsistent condom use was not significantly related to any of the alcohol use variables.

Table 4. Correlations between alcohol use and sexual risk behaviour

		Drinkers					
T o t a l		Past month freq.	Typical quantity	Problem drinking	No. of sexual partners	Regretted sex	Incons- istent condom use
	Past month freq.	-	-	-	.16	.11	-.11
	Typical quantity	-	-	-	.25*	.32**	-.22
	Problem drinking	-	-	-	.25*	.12	-.15
	Number of sexual partners	.19*	.24**	.27**	-	-	-
	Regretted sex	.19*	.36***	.20	-	-	-
	Inconsistent condom use	-.09	-.12	-.12	-	-	-

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ *Perceptions of alcohol's effects on sexual risk behaviour.*

Table 5 shows the means and standard deviations of scores of the males and females on each of the eight variables assessing the respondents' perceptions about the effects of alcohol use on their sexual behaviour. The males' scores were significantly different from those of the females on two out of the eight variables: The males were significantly more likely than the females to indicate that drinking increased their desire to have sex with a casual sexual partner and to report that drinking worsened their ability to resist unwanted sexual advances.

*Dimensions of perceptions of alcohol's effects on sexual risk behaviour.*

Principal Components Analysis with varimax rotation was conducted on the eight different measures assessing perceptions about alcohol's effects on sexual encounters. It revealed three components which explained 69% of the variance (32%, 24% and 14%, respectively). These components were labelled 'enhanced sexual appeal', 'reduced sexual control', and 'regretted sex'. The loadings of each of the variables on each component are shown in Table 6.

Two new scales, corresponding to the first two components, were created by summing scores on the variables with loadings above .4 on the first and second component, respectively. The 'enhanced sexual



## ALCOHOL USE AND SEXUAL ENCOUNTERS

appeal' and 'reduced sexual control' scales had Cronbach alpha coefficients of .77 and .64, respectively.

Table 5. Means and standard deviations on the variables assessing perceptions about the effects of alcohol use on sexual behaviour

Item	Total (SD) Mean	Females (SD) Mean	Males (SD) Mean	t
When you drink your desire to have sex with a spouse or regular sexual partner increases	3.4 (1.1)	3.3 (1.3)	3.5 (.1)	-.71
When you drink your desire to have sex with a casual partner increases	2.9 (1.3)	2.5 (1.2)	3.2 (1.3)	-.27**
When you drink the pleasure of sexual intercourse increases	3.4 (1.2)	3.5 (1.4)	3.4 (1.0)	.19
When you drink your sexual performance improves	3.4 (1.1)	3.4 (1.1)	3.3 (1.0)	.59
When you drink your ability to insist on condoms with your sexual partner worsens	2.8 (1.0)	2.6 (1.1)	1.9 (.9)	-.13
When you drink your ability to resist (or say no to) unwanted sexual advances worsens	2.5 (1.2)	2.2 (1.1)	2.8 (1.1)	-.26*
Drinking alcohol before having sex makes you completely forget about using condoms at all	2.7 (1.1)	2.8 (1.0)	2.6 (1.2)	.54
Drinking alcohol before having sex makes you very much more likely to have sex that you will regret	3.1 (.9)	3.1 (.8)	3.2 (.9)	-.28

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Note: Scales range from 1 to 5

### *Correlations between dimensions of perceptions of alcohol's effects on sexual behaviour and socio-demographic factors, alcohol use and sexual behaviour.*

Table 7 shows that enhanced sexual appeal (Component 1) was negatively associated with age and being married, and positively associated with being employed, drinking quantity, problem drinking, number of sexual partners, and frequency of engagement in regretted sex. Reduced sexual control (Component 2) was not significantly associated with any of the demographic or alcohol use variables, but positively correlated with inconsistent condom use.

Table 6. Loadings of variables on Components 1, 2 and 3

Variables	Component 1	Component 2	Component 3
When you drink your desire to have sex with a spouse or regular sexual partner increases	.86	-.15	.06
When you drink your desire to have sex with a casual partner increases	.54	-.35	-.20
When you drink the pleasure of sexual intercourse increases	.89	.06	-.08
When you drink your sexual performance improves	.76	.39	.13
When you drink your ability to insist on condoms with your sexual partner worsens	.07	.84	-.18
When you drink your ability to resist (or say no to) unwanted sexual advances worsens	-.21	.75	.23
Drinking alcohol before having sex makes you completely forget about using condoms at all	.17	.60	-.46
Drinking alcohol before having sex makes you very much more likely to have sex that you will regret	.16	-.02	.86

Table 7. Correlations between Component 1 and Component 2, and socio-demographic, alcohol use and sexual behaviour variables

Domain	Variable	Component 1	Component 2
Socio-demographic	Age	-.25*	.01
	Male	.10	.16
	Married status	-.28** <sup>a</sup>	.01 <sup>a</sup>
	Employed	.23** <sup>a</sup>	.05 <sup>a</sup>
	Socio-economic status	-.09	-.15
Alcohol use	Frequency past month	.09	-.03
	Typical quantity	.28**	-.03
	Problem drinking	.34** <sup>a</sup>	-.06 <sup>a</sup>
Sexual behaviour	Number of sex partners	.35**	.08
	Condom use	-.12	.28*
	Regretted sex	.25*	-.13

\*p<.05; \*\*p<.01; p<.001. <sup>a</sup>Point biserial correlation coefficient

## Discussion

This report describes one of the first studies of which we are aware to investigate South African adults' perceptions about alcohol's effects on sexual encounters. This study confirms numerous previous studies' findings that alcohol consumption is associated with sexual risk behaviour.

This quantitative study complemented the qualitative study which preceded it (see Morojele et al., 2004) in that it also revealed two main types of effects that alcohol consumption may have on sexual behaviour; drinking seems to increase the appeal of sexual episodes and reduce people's control with respect to sexual encounters. The variables which were found to be associated with the reported increased sexual appeal due to drinking were being younger, not being married, being employed, drinking more, being a problem drinker, having more sexual partners and engaging in regretted sex. This profile seems to suggest that inexperienced, younger, heavier drinking adults are at greatest risk of having alcohol-related risky sexual encounters.

The only variable which was significantly associated with reduced sexual control was condom use. Those who reported being less able to have control over their condom use after drinking were less likely to have used condoms in their lifetime. It seems that those who are usually not inclined to use condoms may become even less inclined to use them after drinking; on the other hand, other individuals who are most strongly committed to condom use become even more vigilant when drinking.

Other findings of the study suggested that the lifestyle that is characteristic of heavy drinkers compounds their risk of becoming sexually-affected by their drinking. As is characteristic of adults in South Africa, drinking among adults in our study tended to involve heavy drinking. Most people who reported that they sometimes consume alcohol would not drink very frequently, but would drink large quantities of alcohol during the sittings in which they would drink. Consequently, drinking would usually involve becoming intoxicated, and as we have seen, intoxication, is more likely to be associated with sexual risk behaviour than is mere or frequent drinking.

A second lifestyle factor of note among this group in middle adulthood concerns the context of drinking. Drinking was seen to occur mainly in the company of others. For men more than women, it occurred in public places such as shebeens, bars and taverns which are conducive to the occurrence of match-making and sexual encounters taking place.

As revealed in the qualitative study reported elsewhere (Morojele et al., 2004), the few women who would frequent these venues would do so either with fellow women or on their own, and transactional sex would be negotiated or actually take place in some of the venues. As discussed in the qualitative assessment report, social disapproval of these behaviours in these venues was seldom in evidence.

The research suggests that men are at greater risk of engagement in alcohol use-related sexual risk behaviour than women for a number of reasons. Men seem to be more likely to drink at all and drink larger quantities than women. They are also more likely to report that they engage in sex under the influence of alcohol, that drinking increases their desire to have sex with a casual partner and that drinking worsens their ability to resist unwanted sexual advances. Males, therefore, are a key target group for sexual risk reduction interventions which deal with drinking as a risk factor for sexual risk behaviour.

In a study of male and female youth in Zimbabwe, Mataure et al. (2002) found that alcohol has the same sorts of effects on people's sexual risk behaviour as those found in this study. However, in our quantitative study there was no strong evidence of the gender differences observed by those investigators. In fact, in our study males seemed to be more vulnerable than females to alcohol-related sexual risk behaviours.

As mentioned above, younger, less experienced, single, heavier drinker seems to be the profile of those most at risk for alcohol use-related sexual risk behaviour. The results suggest that heavy drinking, rather than frequency of drinking episodes, should be considered as among the targets for sexual risk reduction interventions for adults. One of the rationales behind the targeting of high levels of alcohol consumption as part of HIV risk reduction programmes is that alcohol use may reduce the effectiveness of health education activities, as suggested by other investigators in Zimbabwe (e.g. Wilson, Chiroro, Lavelle and Mutero, 1989). Our findings suggest that those who engage in heavy drinking need to be made aware of the potential negative effects of alcohol on sexual risk behaviours, particularly through prevention initiatives. Indeed a wide range of strategies is required from preventative initiatives on the effects of alcohol use on sexual behaviour to more general HIV/AIDS interventions. Such initiatives should help adults in this age group who drink alcohol to navigate their sexual lives in a more controlled manner. Those whose drinking decreases their sexual control should be taught skills to re-empower them. Treatment

## ALCOHOL USE AND SEXUAL ENCOUNTERS

for problem drinking may also be a logical option for HIV risk reduction interventions for adults in South Africa.

Despite its strengths, the study has a number of limitations. This study may have been improved by also examining respondents' beliefs about how their sexual partners would behave in sexual encounters after drinking alcohol. For example, in the qualitative study described elsewhere (Morojele et al., 2004), women reported that men would sometimes become more aggressive sexually after they had consumed alcohol. A second main limitation of the study was that it was confined to one region of South Africa and focused on individuals who have been identified as being in the age group 25 to 44 years, which is most at risk of engaging in 'risky drinking'. Future research should include other regions and age groups of potentially 'at-risk' and vulnerable alcohol users. Finally, the small sample may have reduced the power of the study and prevented certain statistically significant associations from being observed. However, being part of a rapid assessment study, this investigation served as a pilot study to provide preliminary indications of potentially important predictors of alcohol use-related sexual risk behaviours. It would be useful for this study to be replicated using larger samples. Additional research is also needed to develop and evaluate the impact of interventions for alcohol users to reduce their sexual risk behaviour. This study has demonstrated clearly that drinking is linked to alcohol use, and highlights an urgent need for adult alcohol users in South Africa to be an important target group for HIV intervention efforts.

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## References

- Australian National Health and Medical Research Council (1992). *Is there a safe level of daily consumption of alcohol for men and women? Recommendations regarding responsible drinking behaviour* (2<sup>nd</sup> edition). Canberra: Australian Government Publishing Services.
- Brown, S. A., Christiansen, B. A., & Goldman, M. S. (1987). The Alcohol Expectancy Questionnaire: an instrument for the assessment of adolescent and adult alcohol expectancies. *Journal of Studies on Alcohol*, 48(5), 483-491.
- Department of Health (2001-2002). *South Africa Demographic and Health Survey*. Pretoria: National Department of Health.
- Department of Health (2003). *National HIV and syphilis antenatal seroprevalence survey in South Africa 2002*. Pretoria: National Department of Health.
- Campbell, C., Williams, B., & Gilgen, D. (2002). Is social capital a useful conceptual tool for exploring community level influences on HIV infection? An exploratory case study from South Africa. *AIDS Care*, 14(1), 41-54.
- Clift, S., Anemona, A., Watson-Jones, D., Kanga, Z., Ndeki, L., Changalucha, J., Gavyole, A., & Ross, D. A. (2003). Variations of the HIV and STI prevalences within communities neighbouring new goldmines in Tanzania: importance for intervention design. *Sexually Transmitted Infection*, 79(4), 307-312.
- Fritz, K. E., Woelk, G. B., Bassett, M. T., McFarland, W. C., Routh, J. A., Tobaiwa, O., & Stall, R. D. (2002). Alcohol use, sexual risk behavior and HIV infection among men attending beerhalls in Harare, Zimbabwe. *AIDS and Behavior*, 6(3), 221-228.
- Gwati, B., Guli, A., & Todd, C. H. (1995). Risk factors for sexually transmitted disease among men in Harare, Zimbabwe. *Central African Journal of Medicine*, 41(6), 179-181.
- Hargreaves, J. R., James, R., Morrison, L. A., Chege, J., Rutenberg, N., Kahinde, M., Hayes, R., & Buvé, A. (2002). Socioeconomic status and risk of HIV infection in an urban population in Kenya. *Tropical Medicine and International Health*, 7(9), 793-802.
- LaBrie, J. W., Schiffman, J., & Earleywine, M. (2002). Expectancies specific to condom use mediate the alcohol and sexual risk relationship. *Journal of Sex Research*, 39(2), 145-152.

- Leigh, B. (1990). The relationship of sex-related alcohol expectancies to alcohol consumption and sexual behaviour. *British Journal of Addiction*, 85, 919-928.
- Mataure, P., McFarland, W., Fritz, K., Kim, A., Woelk, G., Ray, S., & Rutherford, G. (2002). Alcohol use and high-risk sexual behavior among adolescents and young adults in Harare, Zimbabwe. *Aids and Behavior*, 6(3), 211-219.
- Mbulaitwe, S. M., Ruberantwari, A., Nakiyingi, J. S., Carpenter, L. M., Kamali, A., & Whitworth, J. A. G. (2000). Alcohol and HIV: a study among sexually active adults in rural southwest Uganda. *International Journal of Epidemiology*, 29, 911-915.
- Mnyika, K. S., Klepp, K. I., Kvåle, G., & Ole-Kingori, N. (1996). Risk factors for HIV-1 infection among women in the Arusha region of Tanzania. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology*, 11(5), 484-491.
- Mnyika, K. S., Klepp, K. I., Kvåle, G., & Ole-Kingori, N. (1997). Determinants of high-risk sexual behaviour and condom use among adults in the Arusha region, Tanzania. *International Journal of STDs & AIDS*, 8(3), 176-183.
- Morrison, C. S., Sunkutu M. R., Musaba, E., & Glover, L.H. (1997). Sexually transmitted disease among married Zambian women: the role of male and female sexual behaviour in prevention and management. *Genitourinary Medicine*, 73(6), 555-557.
- Macrojele, N. K., Kachieng'a, M.A., Mokoko, E., Nkoko, M. A., Moshia, K. M., Parry C. D. H., Nkowane, M. A., & Saxena S. Use of a rapid assessment methodology to assess alcohol-related sexual risk behaviour in alcohol using populations: findings from qualitative components. Poster displayed at the XV AIDS Conference, Bangkok, Thailand, July 2004.
- Plant, M. A. (1990). Alcohol, sex and AIDS. *Alcohol and Alcoholism*, 25(6), 711-713.
- Shisana, O., & Simbayi, L. (2002). *Nelson Mandela HSRC Study of HIV/AIDS: South African national HIV prevalence, behavioural risks and mass media household survey 2002*. Cape Town: HSRC Publishers.
- Statistics South Africa (2003). *Census 2001. Census in Brief*. Pretoria: Statistics South Africa.
- Trigg, C., Peterson, K., & Meekers, D. (1997). Psychographic predictors of risky sexual practice. *SafAIDS News*, 5(4), 13-15.
- UNAIDS (2004). *Report on the global HIV/AIDS epidemic, July 2004*. Geneva: Joint United Nations Programme on HIV/AIDS.

MOROJELE ET AL.

Wilson, D., Chiroro, P., Lavelle, S., & Mutero, C. (1989). Sex worker, client behaviour and condom use in Harare, Zimbabwe. *AIDS Care, 1*(3), 269-280.



## ORAL FRUCTOSE-INDUCED DISPOSITION OF BLOOD ETHANOL AND ASSOCIATED CHANGES IN PLASMA URATE

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### Abstract

Truly, alcohol abuse and dependence cause criminal offences, violence, road and domestic accidents, negligence and other problems rarely addressed in our Nigerian society today. The search for agents that could either alter drinking behaviour or enhance blood ethanol clearance rate has therefore, become important in recent times. In this study, the ingestion of 0.5g fructose/kg by apparently healthy volunteers who had imbibed 0.55g (20%) ethanol/kg as a single dose, insignificantly ( $p > 0.05$ ,  $n = 40$ ) reduced the time required to attain a zero blood alcohol level, BAL (from  $5.08 \pm 0.59h$  to  $3.00 \pm 0.38h$ ), but significantly ( $p < 0.05$ ,  $n = 40$ ) increased blood alcohol clearance rate (from  $0.024 \pm 0.003\%/h$  to  $0.043 \pm 0.004\%/h$ ) and plasma urate ( $0.303 \pm 0.065$  mmol/L to  $0.545 \pm 0.066$  mmol/L, after 15h post consumption time). Oral fructose may be beneficial in treating alcohol intoxication, but its routine use could predispose individuals wishing to reduce their blood alcohol levels to the development of hyperuricemia and its associated diseases.

**KEY WORDS:** alcohol, urate, hyperuricaemia, alcohol abuse

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## Introduction

In view of the very long association of alcohol with human life and culture, it is not surprising that alcoholic beverages are much enjoyed in this country, and despite the dangers inherent in their prolonged ingestion, alcohol abuse and addiction have continued to grow, constituting serious problems in many communities including ours.

The permissive sociocultural attitude of Nigerians to alcohol use makes the society 'accept' drinking as a social phenomenon, and so, its associated problems rarely attract the desired attention. Therefore, the search to discover a substance which could accelerate ethanol oxidation and provide a rapid means of clearing blood ethanol would be of potential benefit in reversing the effects of ethanol.

About 90% to 98% of ingested alcohol is eliminated from the body through oxidative metabolism and the basic pathways involve the progressive oxidation of ethanol to ethanoic acid via ethanal (Peters & Preedy, 1998). The major site of this oxidation is the liver parenchyma cells but other potential minor sites include the stomach (Baraona et al., 1991), vascular tissue and brain (Lieber, 1997).

The major pathway for alcohol oxidation involves hepatic alcohol dehydrogenase, ADH (EC 1.1.1.1), a dimeric zinc metalloenzyme (Bosron et al., 1983) that catalyzes the conversion of ethanol to ethanal. In ADH-mediated oxidation of alcohol, hydrogen is transferred from the substrate (ethanol) to the cofactor,  $\text{NAD}^+$ , converting it to its reduced form, NADH, and ethanal is produced. This leads to a marked shift in the redox potential of the cytosol and the oxidation of the generated ethanal by aldehyde dehydrogenase, ALDH (EC 1.2.1.3) results in a similar shift in the mitochondria. These increases in both cytosolic and mitochondrial  $\text{NADH}/\text{NAD}^+$  ratios cause secondary hyperuricemia by raising the lactate/pyruvate ratio (Levy et al., 1977).

Fructose recycles NADH and so, provides  $\text{NAD}^+$  for further ethanol oxidation. This NADH attenuating potential or fructose provides the basis for its stimulatory action on blood ethanol, the so-called 'fructose effect'. It follows that fructose administration would theoretically ameliorate the secondary hyperuricemic condition induced by ethanol oxidation. However, other studies failed to confirm the 'fructose effect' (Ylikahri et al., 1976; Levy et al., 1977, Schmidt et al., 1995).

In the face of these conflicting reports, we investigated whether and to what extent fructose affects blood urate and alcohol levels in

intoxicated Nigerian subjects under conditions applicable to real-life situations.

### Materials and methods

*Choice of subjects:* Forty (20 males and 20 females) consenting, free living adult Urhobos with very weak alcohol drinking habit (about 1 oz/wk) in apparent good health were selected after interview and routine medical examinations which were used to ascertain their health condition.

The mean  $\pm$  SD body weight of the subjects is  $66.4 \pm 3.1$ kg (63 – 70kg) for males and  $63.2 \pm 2.4$ kg (60 – 65kg) for females, and their mean  $\pm$  SD ages are  $29.2 \pm 2.3$ yr (27 – 31yr) and  $27.5 \pm 2.5$ yr (25 – 30 yr) for the male and female subjects, respectively. They were non-smoking Nigerians with no past medical history of alcohol and/or drug abuse, and individuals with similar body frame and size were selected. The Urhobo ethnic group dominates the Delta Central Senatorial District in Southern Nigeria.

*Testing exercise:* The unpaid, but consenting undergraduate volunteers were gathered in a research laboratory about 4 hours after having eaten breakfast around 06:00. The timing of the breakfast is important since the condition of the stomach, full or empty (Rogers et al., 1987) and the time of the day, morning, afternoon or evening (Peters & Preedy, 1998) have been reported to affect alcohol absorption, distribution and bioavailability. The participants were then given a moderate dose of 0.55g (20%) ethanol/kg body weight via the oral route on two different occasions separated by two weeks. They were instructed to consume the alcohol in a single dose within 10 minutes of it having been diluted to 20% with orange squash in their presence and full view. In both occasions, the experiments were conducted in a similar manner with the exception of fructose use. During the first occasion, alcohol alone was consumed, but during the second, 0.5g fructose/kg body weight was orally administered about 20 minutes after the alcohol dose was ingested.

Blood alcohol level (BAL) was determined (Busher & Redetzki, 1951) every 30 minutes post (alcohol) consumption using 0.5ml of whole blood obtained from a cannula fixed to a vein on the forearm by a qualified nursing officer. The results were replicated after 3 months in order to minimize the effects of personal, technical and instrumental errors, and the individuals' responses at different times which could alter data. Participants who could not complete the four rounds of the testing exercise were not included in the analyses and results.

*Fitting the blood alcohol – time curves:* Blood alcohol – time curves for each subject were plotted on a graph of BAL (%) versus post-consumption time (h). The mean alcohol oxidokinetic data from the two sets of experiments were then determined from the individual curves and recorded.

*Statistical analysis:* Two related mean values were compared and the level of statistical significance of the difference was established at the 5% probability level using the Student's t test.

*Analysis of plasma urate:* Plasma urate was determined hourly for 5 hours and at 15 hours post consumption time using the uricase-aminoantipyrine method (Caraway, 1963). The reagents were supplied in a commercial test kit by Randox Laboratories Ltd., United Kingdom.

### Results

The results obtained from the study are presented in Tables 1 and 2.

Table 1. Mean alcohol oxidokinetic data

	Male (n=20)		Female (n=20)	
	Ethanol alone	Ethanol + fructose	Ethanol alone	Ethanol + fructose
Peak blood alcohol level, PBAL (mM)	20.2±0.5	16.5±0.5	20.9±1.0	21.0±0.7
Time to attain PBAL (min)	51.0±12.6	39.0±10.2	39.5±12.5	39.0±12.0
Time to reach zero BAL (min)	325±30	189±29	285±41	171±18
Blood alcohol clearance rate, $\beta$ 60 (mM/min)	0.076±0.011	0.127±0.015*	0.094±0.011	0.181±0.018*
Age (yr)	29.2±2.3		27.5±2.5	
Body mass index, BMI (kg/m <sup>2</sup> )	24.2±2.7		26.2±3.0	

Values are expressed as mean ± SEM of the first and its replica determinations. n = number of subjects.

\*Statistically different from the comparable mean value ( $P < 0.05$ ).

## ORAL FRUCTOSE AND BLOOD ETHANOL

Subjective behaviours of intoxication associated with alcohol drinking have been reported to occur during the ascending period, that is, the absorption phase (Jones & Neri, 1985), and this was observed to be for about 50 minutes in the males and about 40 minutes in the females.

The data shown in Table 1, coupled with the above observations show that females had similar peak blood alcohol level (PBAL) but faster rates of absorption, distribution and disappearance of blood alcohol. Administration of oral fructose however, produced some remarkable changes in the kinetics of alcohol oxidation in both the male and female subjects. The male PBAL, was reduced and the time taken to attain such PBAL was shortened by 23.5%. In the female group, the PBAL and the time taken to reach such peak were hardly affected by oral fructose.

Oral fructose reduced the total duration of intoxication, that is, the time taken to record zero BAL by 41.9% in the men and by 40% in the women. Blood ethanol clearance rate ( $\beta_{60}$ ) in both the male and female subjects was increased by 66.1% and 92.6%, respectively, in the presence of fructose. The increases in both genders were demonstrated to be statistically significant ( $p < 0.05$ ).

Table 2. Changes in plasma urate levels induced by the administration of ethanol and ethanol + fructose in both male and female volunteers

Post consumption time (h)	Plasma urate levels (mmol/L)			
	Male (n=20)		Female (n=20)	
	Ethanol alone	Ethanol +fructose	Ethanol alone	Ethanol + fructose
0	0.269±0.084	0.266±0.119	0.196±0.052	0.216±0.049
1	0.350±0.081	0.615±0.015	0.276±0.050	0.498±0.021
2	0.401±0.080	0.627±0.020	0.321±0.061	0.527±0.016
3	0.407±0.076	0.645±0.019	0.270±0.086	0.555±0.023
4	0.332±0.077	0.661±0.025*	0.255±0.088	0.557±0.032*
5	0.328±0.092	0.656±0.031*	0.262±0.063	0.543±0.046*
15	0.322±0.102	0.575±0.088 <sup>†</sup>	0.284±0.029	0.515±0.043 <sup>†</sup>

Note: Values are expressed as means±SD for the first and replica determinations.

n= number of subjects.

<sup>†</sup> Significantly different from the basal (oh) value.

\* Significantly different from the basal (oh) and ethanol induced values ( $p < 0.05$ ).

Reference values: Male (0.202 – 0.417 mmol/L) and female (0.143 – 0.337 mmol/L)

The result shows that ethanol consumption insignificantly ( $p > 0.05$ ) increased plasma urate in both genders, and this further confirms earlier (Levy et al., 1977) and recent (Onyesom, 2003) reports. However, fructose exaggerated the ethanol-induced urate level in plasma, even to a statistically

significant level ( $p < 0.05$ ) when compared with the basal (pretreatment) value.

### Discussion

Earlier reports (Jones & Jones, 1976; Jones & Neri, 1985; NIAAA, 1997) have demonstrated significant differences in male and female peak blood alcohol level (PBAL) and the degree of intoxication, and have suggested that this difference could be related to the body water content. The total body weight of men is composed of 55% to 65% water while that of women is 45% to 55% water, and since alcohol distribution throughout the body is proportional to water content of the body tissues then, alcohol tends to be more diluted in the body of males than in females. But when individuals within the same age bracket and similar body mass index (BMI), with a very weak alcohol drinking habit were selected for the same investigation, PBAL for both the male ( $20.2 \pm 0.5 \text{mM}$ ) and female ( $20.9 \pm 1.0 \text{mM}$ ) subjects were observed to be similar (Table 1). It follows that irrespective of gender, individuals with similar BMI and body frame/size could have proportionate water content that may not produce significant difference in PBAL.

This study again, demonstrates that oral fructose promoted the clearance of alcohol from the blood in both genders, though it was faster in the females. This seems to further confirm the reports of other researchers, who observed an increase of about 50% (Brown et al., 1972), 80% (Rogers et al., 1987) and 100% (Rawat, 1974). However, Mascord et al. (1991) observed greater individual variation ranging from a 13% decrease to a 300% increase in the ten subjects studied. Since first described 53 years ago (Stuhlfauth & Neumaier, 1951) the efficacy of fructose in lowering blood alcohol levels remains a contentious issue, the literature abounding with conflicting reports. The biochemical mechanism remains an enigma. The conventional explanation is that since the rate of alcohol oxidation by hepatic ADH is 30% dependent upon the rate of re-oxidation of NADH, the metabolism of fructose to sorbitol or to glycerol utilizes NADH and so offers the means of re-oxidizing NADH and this facilitates further alcohol metabolism. Therefore, in the presence of alcohol, the metabolism of fructose in the liver is diverted from  $\text{NAD}^+$  to NADH requiring pathways, which in turn generates  $\text{NAD}^+$  needed for alcohol oxidation. Available evidence (Tygstrup et al., 1965; Scholz & Nohl, 1976) has confirmed such diversion in fructose metabolism in the presence of ethanol. Mascord et al. (1991) observed that administration of oral fructose, increased the rate of alcohol disposition by 80% but noted an increase (rather than decrease) in

blood lactate/pyruvate ratios, and so concluded that accelerated NADH recycling to  $\text{NAD}^+$  did not provide an explanation for the fructose effect.

However, Yamamoto et al. (1997) have reported that fructose enhances hepatic ATP degradation, particularly in the presence of alcohol. A fall in cellular ATP would presumably activate mitochondrial electron transport, which in turn expedites NADH oxidation to  $\text{NAD}^+$ . Fructose enhances hepatic ATP degradation by temporarily trapping its high energy phosphate as fructose - 6-phos, and other phosphorylated glycolytic intermediates.

Another explanation for the 'fructose effect' is that ingestion of sugars in general delays alcohol absorption (Jones, 1983). This does not, however, account for the specific effect of fructose, which is much more profound than that of other sugars like glucose. Also, it does not explain our finding of enhanced alcohol clearance even when fructose was ingested 20 minutes after alcohol intake had ceased, when alcohol absorption was presumably nearly completed.

On the contrary, a study by Levy et al. (1977) dismissed the ability of fructose to enhance ethanol metabolism, claiming that the attendant increases in lactate and urate were contra-indications for its use. On the other hand, Ylikahri et al. (1976) reported that although neither fructose nor glucose affected the rate of ethanol elimination, the intensity of intoxication, or the subsequent hangover, fructose did prevent the metabolic derangements seen with alcohol alone, such as the metabolic acidosis (due to lactate and/or ketone bodies) and hypoglycaemia.

Albeit, oral fructose is indeed effective in lowering blood alcohol levels among Nigerians. When given after the end of a drinking session, it shortened the time taken for blood alcohol to fall to a predetermined (zero) level by over 1½h. In conclusion, our study adds weight to those reports claiming that oral fructose does enhance metabolic clearance of ingested alcohol. The concluding statement suggests that fructose metabolism in the presence of ethanol operates mechanism(s) that efficiently re-oxidizes NADH, and the secondary hyperuricemic condition induced by ethanol consumption may not be due to NADH/ $\text{NAD}^+$  redox shift (increase) alone.

Fructose-induced increases in blood ethanol oxidation might increase the level of acetaldehyde, and acetaldehyde has been demonstrated to increase the activity of xanthine oxidase (Gonthier & Fridovich, 1991). Xanthine oxidase converts hypoxanthine and xanthine to urate. Blood urate changes caused by ethanol consumption have been observed to bear a positive correlation with blood pressure (Onyesom, 2003). Thus, apart from the risk of gouty attacks, the use of fructose in the treatment of alcohol intoxication among Nigerians may also predispose patients to the danger of

high blood pressure and associated diseases. In view of this, the use of oral fructose should be supported with substances (Vitamin B<sub>1</sub> cysteine and methionine) involved in the metabolic detoxification of acetaldehyde.

### References

- Baraona, E., Tokoyama, A., Ishii, H. Hernandez-Mmunoz, B., Takayi, T., Tsuchiya, M. & Lieber, C.S. (1991). Lack of alcohol dehydrogenase isoenzyme activities in the stomach of Japanese subjects. *Life Science*, 49, 1929-1934.
- Bosron, W.F., Magnes, L.J., & Li, T. K. (1983). Kinetic and electrophoretic properties of native and recombinant isoenzymes of human liver alcohol dehydrogenase. *Biochemistry*, 22, 1852-1857.
- Brown, S.S., Forrest, J.A.H, and Roscoe, P. (1972). A controlled trial of fructose in the treatment of acute alcohol intoxication. *Lancet* ii, 898-900.
- Busher, T.H., & Redetzki, H. (1951). Enzyme determination of blood alcohol. *Klinika Wochenschy*, 29, 615-616.
- Caraway, W. T. (1963). Quantitative determination of uric acid. *Clinical Chemistry*, 4, 239-243.
- Gonthier, L. & Fridovich, M. (1991). Effects of peurariae flos and peurariae radix supplementation on hepatic malondialdehyde and glutathione contents in ethanol-treated rats. *American Journal of Clinical Medicine*, 1, 1-4.
- Jones, A. W. (1983). Effects of fructose, glucose, and mixed sugars on ethanol detoxification and blood glucose response in rats. *Medicine and Biology*, 61, 319-323.
- Jones, B.M., & Jones, M.K. (1976). Alcohol effects in women during the menstrual cycle. *Annals of the New York Academy of Sciences*, 273, 576-587.
- Jones, A.W & Neri, A. (1985) Age-related differences in blood ethanol parameters and subjective feelings of intoxication on healthy men. *Alcohol & Alcoholism*, 20, 45-52.
- Levy, R., Elo, T., & Hanenson, I. B. (1977). Intravenous fructose treatment of acute alcohol intoxication: Effects on alcohol metabolism. *Archives of Internal Medicine*, 137, 1175-1177.



- Lieber, C.S. (1997). Ethanol metabolism, cirrhosis and alcoholism. *Clinica Chimica Acta*, 257(1), 59-84.
- Mascord, D., Smith, J., Starmer, G.A., & Whitefield, J.B. (1991). The effect of fructose on alcohol metabolism and the (lactate)/(pyruvate) ratio in man. *Alcohol & Alcoholism*, 26, 53-59.
- National Institute on Alcohol Abuse and Alcoholism, NIAAA (1997). Alcohol metabolism. *Alcohol Alert*, No. 35, NIAAA: Bethesda, MD.
- Ongyesom, I. (2003). Changes in blood pressure and plasma urate induced by the metabolism of alcohol in humans. *Global Journal of Medical Science*, 2(2), 157-160.
- Peters, T.J., & Preedy, V.R. (1998). Metabolic consequences of alcohol ingestion. *Novartis Foundation Symposium*, 216, 19-24.
- Rawat, A.K. (1974). Effectiveness of fructose in the management of alcohol withdrawal syndrome in man. In: *Aldehydes Metabolizing Systems*. Thurman, R.G., Yonetani, T.L., Williamson, J.R., & Chance B., eds, pp 13-23, New York :Academic Press,.
- Rogers, J., Smith, J., Starmer, G.A., & Whitefield, J.B. (1987) Differing effects of carbohydrates, fat and protein on the rate of ethanol metabolism. *Alcohol & Alcoholism*, 22: 345-353.
- Schmidt, V., Rescheleit, T., Oehmichen, M., & Schneble, H. (1995). Old wine in new bottles: the 'promiller-killer' party Plus. *Blutalkohol*, 32, 241-253.
- Scholz, R., & Nohl, H. (1976). Mechanism of the stimulatory effect of fructose on ethanol oxidation in perfused rat liver. *European Journal of Biochemistry*, 63, 449-458.
- Suhlfauth, K., & Neumaier, H. (1951). Die Wirkung der Laevulose auf Alcoholintoxikationen. *Medica Klinica*, 46, 591.
- Tygstrup, N., Winkler, K., & Lundquist, F. (1965). The mechanism of fructose effect on ethanol metabolism in human liver. *Journal of Clinical Investigation*, 44, 817-830.
- Yamamoto, T., Moriwaki, Y., Takahashi, S., Yamakita, J., Tsutsumi, Z., Ohata, H., Hiroishi, K., Nakano, T., & Higashino, K. (1997). Effect of ethanol and fructose on plasma uridine and purine bases. *Metabolism*, 46, 544-547.

- Ylikahri, R. H., Leino, T., Huttunen, M. O., Poso, A. R., Eriksson, C. J., & Nikkila, E. A. (1976). Effects of fructose and glucose on ethanol-induced metabolic changes and on the intensity of alcohol intoxication and hangover. *European Journal of Clinical Investigation*, 6, 93-102.

## THE NATURE AND EXTENT OF HEROIN USE IN CAPE TOWN: A QUALITATIVE STUDY

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### Abstract

The aim of this study was to obtain qualitative data from key informants and heroin users (in treatment/recovery) on the nature, extent and consequences of heroin use in Cape Town in order to obtain a clearer impression of the extent of heroin use in the city and the associated consequences experienced by users. The method involved three mixed-gender focus group discussions with adults who had been in treatment for heroin addiction and 15 semi-structured key informant interviews with professionals in the treatment, law enforcement and NGO sector. Results highlighted that heroin use is clearly on the increase in Cape Town and that the demographic profile of users is changing. The lack of affordable treatment programmes was a key issue that emerged. It appears that HIV/AIDS is not yet a major concern among heroin users in Cape Town and prevalence of infection appears to be low at this stage.

### Introduction

Heroin is classified as an opiate. Opiates act on opioid receptors on the central nervous system (CNS) and include drugs like morphine, codeine, methadone and Wellconal (dipipanone, a derivative of methadone). Heroin, known chemically as diacetylmorphine, is produced from morphine, which is extracted from the Asian poppy (*Papaver somniferum*). Heroin is four to

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eight times as potent as morphine. It has the appearance of a white or brownish powder. It was put under international control at the UN Single Convention in 1961 (International Council on Alcohol and Addictions, 2000).

The 2002 United Nations Office of Drugs and Crime's (UNODC) report on Global Illicit Drug Trends estimated that globally about 13 million people abuse opiates. About 70% of opiate abuse relates to heroin. Of 63 countries reporting trend data (1999-2000) 71% reported an increasing trend in heroin abuse. In Asia, Europe and Oceania, which together have 73% of the world's total population, between two-thirds and three-quarters of substance abuse treatment demand is related to opiate abuse.

Heroin use holds a number of implications for the health and well-being of the individual user. The depressant action of the drug on the CNS places the user at risk for an overdose and pulmonary complications, such as pneumonia and tuberculosis. In addition, a long-term health outcome of heroin use is psychological and physical dependence (Darke et al., 1996; Mientjies et al., 1996; Fernandez, 1998).

Research commissioned by the WHO estimated that globally for the year 2000 a median estimate of 69 152 deaths could be attributed to opioid overdose (Degenhardt et al., in press). Data from the Australian Bureau of Statistics indicates that in 2000, a total of 737 deaths attributed to opioid overdose occurred among persons aged 15 to 44 years (National Drug and Alcohol Research Centre, 2000). A review of all forensic cases from July 1995-February 1997 in Sydney, Australia, found that 4% of all cases were related to drug overdose and 80% of these were related to heroin (Garrick, Sheedy, Abernethy, Hodda, & Harper, 2000). A retrospective analysis of the deaths of over 2700 heroin injecting drug users (1985-1998) in Italy showed that 37% were due to overdose and a further 33% were due to AIDS (Quaglio et al., 2001). Non-fatal overdose may also have consequences including paralysis, seizures, nerve palsy, peripheral neuropathy and cardiac arrhythmia, many of which result in a lifelong compromise of health and well-being (Strang, 2002).

The use of heroin also holds important implications for public health. Injection drug use (IDU), through the direct and indirect sharing of injection equipment, is a well-known risk factor for the transmission of blood-borne viral infections, such as HIV, hepatitis B, hepatitis C, and hepatitis G. The United States Centers for Disease Control and Prevention reported that in 1999, 5932 AIDS-related deaths occurred in the United States that were attributed to IDU. Non-injection users (NIUs) are also at

increased risk for contracting HIV and hepatitis due to the high risk sexual behaviours associated with patterns of drug dependence and the possibility of NIUs becoming IDUs as heroin dependence develops and users seek a more efficient means of administering the drug (Diamantis et al., 1997; Neingus et al., 1998; Koester et al., 1996).

Although prevalence rates for heroin consumption are generally low in Africa, UN reports point to a steady increase in heroin use in a number of African countries, especially countries located along the primary drug trafficking routes, such as Ghana, Nigeria, and South Africa. According to the UNODC's report for 2004, South Africa is estimated to have one of the highest prevalence rates of heroin use in Africa (United Nations Office for Drugs & Crime, 2004).

*Treatment demand for heroin-related problems.* The South African Community Epidemiology Network on Drug Use (SACENDU), a project monitoring drug abuse trends in the cities of Cape Town, Durban and Port Elizabeth, and Gauteng and Mpumalanga provinces has shown an increasing demand in recent years for treatment of heroin abuse in the urban areas of Cape Town and Gauteng, but not in the other sites (Plüddemann et al., 2003a). In Cape Town only 2% of all patients (N = 2301) in substance abuse treatment during the first half of 1998 had heroin as a primary substance of abuse. However, in the second half of 2003, 7% of all patients (N = 1659) were in treatment for heroin abuse. The trend in Gauteng has followed the same pattern, with 8% of 2617 patients treated for heroin during the 1<sup>st</sup> half of 2003, although decreasing to 6% in the 2<sup>nd</sup> half of that year. In both these sites a further 2% of all patients reported heroin as a secondary substance of abuse in the 2<sup>nd</sup> half of 2003. Most patients are white and relatively young. Since January 1997, the mean age of patients presenting for heroin abuse treatment has decreased from 29 to 24 years in Gauteng and 27 to 24 years in Cape Town. From 1997 to 2003, between 22% and 34% of persons seeking treatment for heroin abuse in Cape Town and between 24% and 43% in Gauteng, were female. This contrasts with drugs like cannabis and Mandrax, where over 90% of patients are male. An increase in injection heroin use has also been noted, with the proportion of heroin patients reporting injection drug use increasing from 29% in the second half of 1999 to 51% in the second half of 2001 in Cape Town, however decreasing again to 44% in the second half of 2003. In Gauteng the proportion of heroin patients reporting injecting has increased steadily from 38% in the second half of 2001 to 49% in the second half of 2003. Heroin was also the third most common primary drug of abuse among patients who were younger than 20 years in Cape Town in the second half of 2003.

Anecdotal information from professionals working in substance abuse treatment and prevention also suggests a possible increase in heroin use in certain township areas, such as Hammanskraal in Pretoria and Langa in Cape Town (Plüddemann et al., 2004a; Plüddemann et al., 2004b).

*Police data.* Currently purity testing of heroin samples seized by police is not routinely conducted, however statistics on heroin seizures and arrests made by police are available. On a national average an increase in heroin seizures has been reported by the South African Narcotics Bureau (SANAB) over the past few years. SANAB reports that in 1996 only 800g of heroin were seized nationally. This increased steadily to 13.5kg by 2000, with a slight decline from this figure being recorded in 2001 (9.5kg) and 2002 (9.5kg). The number of arrests made nationally for either the possession of or dealing in heroin has also increased steadily from 12 in 1996 to 284 in 2002. Seizures of heroin reported by the Forensic Science Laboratories in Cape Town and Pretoria also increased drastically in the 2<sup>nd</sup> half of 2002, with over 73kg reported by the Pretoria lab in the 2<sup>nd</sup> half of 2002, compared to no more than about 6kg in previous periods (Plüddemann et al., 2004a). According to the UNODC's Country Profile on Drugs and Crime (UNODC, 2002) heroin is sourced from markets in Southeast and Southwest Asia, and couriered principally via Johannesburg International Airport. Other sources include seaport entry via Mombasa and Dar es Salaam. The drugs are then transported down East Africa's main arterial road networks toward South Africa. Most of the heroin available in South Africa is known as "Thai White".

*Other studies.* Other school and community surveys conducted in the country have found very low levels of heroin use (Rocha-Silva et al., 1996; Shisana et al., 2003; Adejumo, 2003; Flisher et al., 2003).

Therefore this study aimed to obtain qualitative data from key informants and heroin users (in treatment/recovery) on the nature, extent and consequences of heroin use in Cape Town in order to obtain a clearer impression of the extent of heroin use in the city and the associated consequences experienced by users.

## Methods

1. Questions to *key informants* – A semi-structured interview was conducted with 15 key informants, focusing on obtaining input on who uses heroin, how and where they use it, different types of users, how many, and questions relating to crime and HIV/AIDS.

## HEROIN USE IN CAPE TOWN

The key informants represented the following sectors:

- Specialist substance abuse treatment centre personnel.
- Social workers and outreach workers outside treatment centres.
- Prevention specialists at selected NGOs focusing on substance abuse.
- Police: Organised Crime Unit.
- Private practitioners: social workers, psychiatrists, psychologists.

2. Three *focus groups* were conducted with adults (i.e. 18 years or older) to obtain qualitative data on the nature and extent of heroin use in Cape Town, to obtain input on the questions which should be included in a questionnaire for the community survey, and to obtain ideas and opinions on how to access heroin users for the purpose of a community survey:

- Two focus groups were conducted with people who had received inpatient treatment recently. These people were recruited from a post primary treatment 'halfway house' and a private primary treatment facility.
- One focus group was conducted with people who were attending or had attended outpatient treatment.

The focus group discussions were recorded and transcribed. The principal investigator was the primary facilitator in all focus groups with one additional member of the research team assisting with the recording of the discussions.

*Informed consent & ethical approval.* All focus group participants signed an informed consent form and were assured that their names would not be associated with the study and all personal particulars would be kept strictly confidential. Ethical approval for the study was obtained from the University of Cape Town's Research Ethics Committee.

*Protection of participants.* A trained substance abuse counsellor was present for all the focus group interviews to ensure that the recovery process of those who were undergoing treatment was not impeded. Subjects were not asked to narrate their own experiences directly but were asked about their views on issues related to heroin in their community.

## Results

A total of 17 questions were asked of the key informants (KIs). Responses to selected questions will be described in this section on a question by question basis. Responses from the focus groups on these topics will also be provided under the applicable questions. In addition, where possible, reference will be made to the findings from the SACENDU project data for Cape Town (July – December 2003).

### **Question: What are the demographics of heroin users in Cape Town?**

*Age range:* Most of the KIs thought that most heroin users are in their early twenties, with the majority falling between late teens and early thirties, and a few in their forties. The focus groups generally agreed, although more comments were made on younger users:

- “You get quite a few 15-16 year olds – mainly girls that use heroin– but that’s like random. It is not like specific group – just like one random person but out of most of my friends I am probably the youngest to use.”
- “I think it varies. In the last three years I sponsored three girls who started using heroin at the age of 13. One year, one girl I was sponsoring was 12, so I think it just varies.”
- “There’s a lot of the young you can see on the streets and I live in Observatory – but it’s also [the same in] Woodstock, Mowbray – but there’s a lot of older guys and women – both sexes. On the street you notice quite a lot of young boys definitely.”

The latest data available (July - December 2003) from the South African Community Epidemiology Network on Drug Use (SACENDU) indicated that the mean age of heroin patients in Cape Town treatment centres was 24 years, with a range of 14-44 years.

*Gender & ethnicity:* Interestingly a slight majority of the KIs thought that female heroin users slightly outweighed males by about 3:2, while a few thought there was a 50/50 split. Most users were thought to be



## HEROIN USE IN CAPE TOWN

White, although some KIs were of the opinion that heroin use is increasing among Blacks and Coloureds.\*

The focus groups agreed that most users were white, middle class youth, both male and female. A few participants felt that heroin use was increasing among Blacks and Coloureds:

- “OK my experience has been predominantly like middle class white people. I am sure there are black heroin users but it seems to be quite a white thing.”
- “More men than women but there are definitely women using it specifically white women. I reckon some coloured – ja the coloured population are also affected – possibly even more than the white population in my experience. Black, foreign nationals, not so much the local black population. But I do believe it is taking place in places like Nyanga but not the numbers like the coloured and white population.”
- “My general experience as well is that it is more well to do white people – has not caught on really with as many as cocaine or crack – more well to do white people.”

One focus group participant mentioned that dealers seem to be targeting young black people in certain areas:

- “Something I would like to mention – it might not be fact but it is something that I found quite interesting – I was told at one stage that dealers are trying to get into the black market – they are selling [for] even less – the black and very young – “baby” market – they are trying to sell them less than R50 – like R10 or R15 shots at the station so that they can get them hooked without selling them big quantities or anything like that but they are aiming at selling to “babies” little bits at a time. Something I heard that is starting to happen because they, obviously the Nigerians, come here and they see that the black people aren’t using, the whites are the target and they have cottoned onto it.”

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\* The terms “White, Black, and Coloured” refer to demographic markers and do not signify inherent characteristics. These markers were chosen for their historical significance. The demographic characteristics of substance users are important in identifying vulnerable sections of the population and in planning effective prevention and intervention programmes.

The latest data available from SACENDU (July – December 2003) indicated that 66% of patients in treatment for heroin use were male. Furthermore, 66% were white and 31% were coloured, representing a significant increase in coloured patients over previous periods.

*Employment status:* Except for those who are students, it appears that most heroin users are unemployed or “between jobs”, especially by the time they enter a treatment programme. A number of KIs indicated that users are often employed as waitrons or in the professional sector. The focus group participants had the following comments:

- “I never managed to hold down a steady job when I was an addict. It would always like infiltrate. I would start steal money or not arrive for work or just be completely strung out. Ja it just got to the stage that I was unemployable.”
- “I managed to carry 3 jobs in order to keep my addiction going.”
- “Everybody at my work sort of knew something was up but they did not know what it was. And I was not going to tell them and when I came clean then I told them look I have gone and taken time off this is why. I was lucky enough that I had understanding employers. I could I take at work where I could operate and nobody would see I was stoned or high or whatever because it just centres you.”

SACENDU data for the second half of 2003 indicated that 59% of heroin patients entering a treatment programme in Cape Town were unemployed, 27% were working full or part-time and 14% were students.

*SES & Education:* Most users were perceived to be middle or upper class, although an increase among lower income groups was mentioned. Most users seem to have high school education, with a number entering tertiary education, but many not completing it.

SACENDU data for July - December 2003 indicated that 76% of heroin patients entering treatment had secondary education, and 12% had tertiary education.

*Geographic locations:* The KIs indicated that heroin users came from both the northern and southern suburbs of Cape Town, with some also

## HEROIN USE IN CAPE TOWN

mentioning towns outside the metropole, like Paarl. The focus group participants agreed with this.

### **Question: Has there been a change in the above, if so what is it?**

As mentioned above, KIs thought that heroin use has moved into lower income areas, including the Cape Flats, that more Afrikaans speakers appear to be using now, and that the number of female users has increased. KIs also mentioned that it is now used in schools, sometimes as a secondary drug, and that injecting is increasing.

Comments made in the focus groups concurred with this:

- “Definitely. Every day you start seeing people you never thought would ever, you know. It’s seeping into all sorts of classes you know. Before it was quite a dirty list– the old drug users that was using it – but now it is seeping into the business world, everywhere.”
- “I started 2 years ago and then I couldn’t get it in the Northern suburbs, but the last year and a half I could get it there. It is on the increase.”

### **Question: Is the number of heroin users increasing in Cape Town? Elaborate. Estimated number of users?**

Most of the KIs thought heroin use is increasing in Cape Town, while a few thought it may be stabilising. Availability was mentioned as the main reason for the increase in heroin use, with law enforcement seeing it as a major problem, noting that enquiries from the public about heroin had increased, that informers had more information about heroin and that many young people knew about heroin. Some mentioned permissive parenting, the pace of modern living and people’s naivety about the drug as contributing factors. The fact that heroin appears to have become less stigmatised, even glamorised was also mentioned. Some also thought that the fact that a heroin habit can be maintained relatively cheaply may also be contributing to an increase in use.

Only a few of the KIs were willing to estimate the number of heroin users in Cape Town, with estimates ranging between 1000-5000 users. A few thought that the treatment centres were only encountering a

small fraction of the actual number of users. One KI reported having come across a 'den' in Sea Point where heroin was being used daily.

Law enforcement mentioned the suburbs of Table View, Edgemean, Sea Point, Muizenberg, Woodstock, Observatory, Mowbray, Parow and the city of Bellville as particular "problem areas".

**Question: Drug use history – do most users start with heroin or other drugs? If so, which drugs?**

Most users appear to start with drugs like cannabis and alcohol, often progressing to Ecstasy, cocaine and then heroin. Some KIs felt it was becoming more common for people to use heroin as their first drug. There was also the opinion that Ecstasy has 'paved the way' for the use of other drugs (like heroin).

Focus group participants also generally thought that heroin is not the first drug used, although there are exceptions. Some users reported starting to use heroin to 'come down' from crack:

- "They say most people start on something else. The reason I did, is to come down because you reach such a high on crack, but eventually whatever you are using is not bringing you down and heroin brings you down."
- "It has often happened that they eventually only use heroin because they have become so addicted to that – as we all know you can't just stop heroin and financially you start letting go of the crack because you can't afford that so it becomes primary where it used to be a secondary drug – that's the trend."

**Question: Are there enough treatment options? Elaborate**

The KIs unanimously felt that there were not enough treatment options in Cape Town. They indicated that there is a need for more affordable, state subsidised, inpatient centres. They also felt that medical aids could review their policies relating to substance abuse treatment. Most of the KIs thought that heroin addiction would be difficult to treat on an outpatient basis, but that outpatient treatment could be successful if a detox clinic was available and if there was a strong support system attached to the outpatient centre. Some of the KIs felt that a special treatment centre for heroin addicts may be needed. Some outpatient counsellors expressed their frustration at not being able to offer effective treatment to heroin patients.

## HEROIN USE IN CAPE TOWN

Even law enforcement felt that treatment affordability was an issue and that government assistance is needed.

Focus group participants also felt that affordability of treatment was a major issue:

- “No. Because of the price the majority of people out there could not afford it. The majority users don’t work as such, majority users steal etc – even if they want to come clean they cannot.”
- “We are very fortunate because a lot of people I know would like to come clean but cannot.”

### **Question: Knowledge of frequency of overdose occurrences (fatal and non-fatal)?**

Non-fatal overdoses were reported to be very common, often occurring after treatment, when the user is not used to his/her “usual dose”. The maximum number of fatal overdoses one of the KIs was able to recall was 10 in the past 2 years. Most of the KIs had not had frequent direct contact with fatal overdoses. Suicides and road accidents (driving under the influence) were mentioned as “unknown” mortality factors.

### **Question: Do users make use of general emergency services?**

Most heroin users seem to make use of emergency services at some point, however hospital staff often seem to lack the knowledge of how to deal with overdoses. Some of the KIs also expressed that sometimes hospital staff are reluctant to treat addicts as they view addiction as a self-imposed problem and not an illness. Hospitals also do not have a follow-up system for drug addicts.

**Question: Do most users inject? Do they share needles? Users' knowledge of safe injection practices? Where are needles sourced?**

Although most of the KIs thought that most heroin users smoke the drug, they did feel that injecting is increasing and that needles have become less stigmatised. Responses from the KIs indicated that heroin users are aware of the dangers of needle sharing, but most felt they would share when desperate for their next "fix". Needles seem to be mostly obtained from pharmacies. Law enforcement also mentioned the theft of a range of medical supplies from clinics as a problem.

Responses from the focus groups varied. Some of the participants had never injected, but many felt that most users would progress to injecting:

- "There's still a big stigma around needles. I personally held that stigma for quite a while as I am sure other people do like that if I was injected then it was like I was in big trouble but when I started injecting then it was like well I have not been awake and its not that serious anyway. But I do think there is a progression – but then there's professional people in business who will have a toot or smoke after a dinner party like ...."
- "When I started shooting up first other people were shooting me up in the beginning and I kind of like told myself it was not that bad because I was not doing it, someone else was."

One issue discussed in the focus groups was whether people should have access to clean needles, through needle exchange programmes or not. Most of the participants seemed to be in favour of enabling access to clean needles:

- "You know how many times I have stashed my needles in the dustbin up the road and like three o' clock in the morning you want needles you go to like three hospitals they will all turn you away they don't actually care what you tell them and you end up taking your own needles out of the dustbin after being there for a week and sticking them in the ..... So that you can like use them which is crazy. So like preventing you from getting a

## HEROIN USE IN CAPE TOWN

needle at 4 o'clock in the morning causes more damage than giving them."

- "No I think it is a problem in this country that there isn't easy access to needles. I mean I know there is a big difference because I spent a long time in London and they've got a needle exchange system going. There's a lot of chemists involved wherever you are going. They will give you a disposable thing where you can dispose of your old needles you take that back and they give you another pack and they give you everything. They will give you sterile things, tourniquets, and new needles, and I mean my experience is that it stops people from sharing needles."

### **Question: Opinion of HIV prevalence among heroin users versus the general population?**

Most of the KIs did not seem to view HIV as a major problem among heroin users to date, although some thought that their sexually irresponsible behaviour may place them at higher risk of contracting the virus. They also thought injecting users were probably at higher risk of contracting HIV. Very few had encountered HIV positive heroin users thus far. Those users who become involved in sex work were also perceived to be at higher risk.

The focus group participants had varying opinions on the issue of HIV risk and infection, although some thought an addict may be more likely to have multiple sexual partners.

- "I don't know I don't think so. I think the person is more at risk from having casual unprotected sex. When I was a heroin addict I could not get it up – I was impotent while I was using it. So I was not having sex which means I was only using the needle. But I think the fact of that is that most women heroin users that use heroin for 5-10 years plus turn to prostitution."
- "Basically I think it looks like this – everybody has sex, most people have unprotected sex, addicts are more susceptible to casual sex and then the needles just add to the problem."

One participant also alluded to heroin use in the (male) sex work industry.

- “I would say yes. I was exposed to it for the first time while I was working in Cape Town sex industry that’s where I was exposed to it for a while. The boys would sit in the back and wait and while I was sitting in the room at the back somebody would have some. It started with just my friend and myself – I’d arrive for my weekend shifts and he’d say guess what I’ve got cause I knew you were coming as an excuse for his own use. Didn’t get hooked that time because he was buying it himself – eventually the whole group of friends were taking it you know – just the two of us – and then another person gets brought into the bathroom, and then its four people doing their hair and its five people doing their hair at the same time and we then move from the bathroom to the back room where we end up taking it and smoking lots of cigarettes and getting so high and wasted. So I would definitely say in the industry, you take it to do what you have to do.”

Another issue that emerged was that eventually addicts are no longer concerned with their health, focusing only on the next “high”.

- “I used to use shared needles occasionally. I was fortunate, I know I was fortunate because it can easily happen. I mean it’s got to be increasing. I mean it is sort of blood transfusion, when I was sticking needles in my veins with other people I could get what they’ve got and it is not just that one dude - so I think it compounds the risks and when I’m on drugs I don’t give a shit about myself. I just don’t care as long as you are getting high you know that is what you are worrying about. You don’t worry if you are taking your vitamins or you know what I mean – this does not come into the equation.”

**Question: Methadone use – Is this common? Sources?**

It appears that many heroin addicts attempt to ‘come off’ heroin using methadone, which they obtain from general practitioners (*Physeptone linctus*). This methadone is of a very low concentration and hence often not successful. Often general practitioners also prescribe too much methadone at once, creating dosage administration problems.

Focus groups participants differed about the usefulness of methadone, with some seeing it merely as a substitute for heroin.



## HEROIN USE IN CAPE TOWN

- “Methadone is the worst thing ... I did a lot of programmes over the years and it was the hardest thing ever to come off – it is just substituting heroin for heroin. It does not have quite the kick but it is the same feeling – that warm thing you know.”
- “The first time I was using it I was on methadone for 2 weeks and using 60mls a day and the last 2 times that I have detoxed it has been 30mls a day so it has been a day or two of complete hell and then it is over so I am not of the opinion that it might keep you sicker for longer. Just a day or two.”
- “Oh it was easy. Give me 150mls of Methadone a day and I could have carried on for the rest of my life. I know in England that was a big thing – people weren’t registered as addicts – if you were registered the doctor would give you 150mls for the rest of your life. It is not a solution, I mean in my eyes it is not a solution. I could quite happily have done it but then I would still be in the shit if I did not use that.”

The issue of the low dose of methadone in Physeptone *linctus* was also mentioned by one of the participants:

- “I think unfortunately what I found was that most of what was prescribed was Physeptone *linctus* with a very small amount of methadone in it and it did not really work very well. Large quantities of it was needed and I could not get a prescription big enough to help me through the sickness. Had they been prescribing a better quality methadone like I find in the clinics it probably would have certainly helped me.”

### **Question: Are users involved in any criminal activity?**

Most users eventually become involved in petty theft, especially from their family members. Some become involved in organised crime and drug dealing. Most crime is related to obtaining money to buy heroin. The focus group participants commented as follows:

- “Well it would be doing whatever it would take to get money. For me it was when the work dried up it was then selling my family’s possessions and then begging. Going around saying I

ran out of petrol or whatever and then stealing from other people.”

- “I agree with him it is a necessity. It is certainly madness, I’m sure all of us in this room are fairly nice decent individuals being brought up reasonably well, but necessity prompts it.”
- “I know with me I wanted to be the biggest drug dealer in Cape Town by the age of 21. For me it was like adoration that spurred on the whole thing.”

**Question: Are users arrested or imprisoned for drug related or other offences? How common is this?**

Most of the key informants thought heroin users don’t have much contact with the criminal justice system, while a few thought it was quite common for them to get arrested. Law enforcement confirmed that prison sentences are fairly uncommon, with most users who are arrested receiving a fine.

Opinions of the focus group participants varied, based mostly on their personal experience.

- “My experience is I got arrested on numerous occasions but was fortunate enough not to get convicted and do time. I was permanently in trouble with the law.”
- “Not really. Heroin made me sleep a lot. Other drugs maybe, but heroin – I was not doing anything against the law or a person. I would just sit and listen to house music.”
- “I don’t think the police do anything about it. It is very difficult to get caught with possession.”
- “Generally I think heroin addicts they don’t hang around – they hang around waiting until they got it and then they are out of there. It is not as easy to be caught with it because you use it before they even got to that stage and they are not social – it is not like coke where you are still part of society because you isolate yourself.”

## HEROIN USE IN CAPE TOWN

### **Question: Is sex work common among users?**

Most of the KIs (including law enforcement) responded that it was fairly common for female users to provide sexual favours for money or drugs (often to the dealer). Some male and female users become involved in sex work.

Although this issue was not discussed in detail in the focus group discussions, one of the focus group participants mentioned becoming involved in sex work (see question 10) and a few commented in general:

- “Either to the dealers or anybody. Especially the white girls with the dealers sex is a big issue. The dealers are becoming sexually involved with those girls. They are not pimping them, they are just using them for themselves.”

### **Question: Knowledge of price, purity, type and availability? Have any changes occurred recently?**

Although heroin is readily available, users still need to have a contact/dealer, as the heroin trade still seems to operate in a ‘closed network’. Some KIs reported being aware of areas where “visible dealing” was taking place. A few of the KIs reported that heroin currently available was of a poor quality. Both “Thai White” and “Brown Sugar” heroin appear to be available. Law enforcement commented that the price had decreased from R40 per quarter in 2003 to R30 per quarter in 2004 and that heroin was readily available, mostly Thai White.

The focus group participants concurred that heroin was easily available in both the southern and northern suburbs of Cape Town.

- “Oh it is the easiest thing in the world. You don’t have to leave home, it is so easy.”
- “.....when I decided I wanted to use heroin I did not have any contacts, I did not know who used heroin, I just walked down the road and talked to a couple of guys and within half an hour I was sorted – quite literally – just a matter of asking a couple of Nigerians, there’s this, the other and you find your man.”
- “It is not just Sea Point area it is also Table View and there you find it easy, even Durbanville – it is readily available in all areas.”

- “You walk down in the main road in Mowbray and you get offered at least, like 10 times from one side to the other.”

One participant had this to say on the issue of price:

- “It stayed constant for 2½ years. It was R50, now R40 for a quarter [gram]. A friend of mine told me – we were using the same dealer – it seems to like now the people who have been using it they don’t want to drop the price, they only do it for new people. They don’t tend to - obviously if you have been paying R50 they are not going to drop that - but if it does change any newcomers they come in at the new price. Sometimes you win and sometimes you lose.”

According to law enforcement dealing is mostly controlled by foreign nationals (Nigerians and Tanzanians), although locals are used as “runners”.

*Other general comments.* Most of the KIs agreed that treating heroin addiction on an outpatient basis is very difficult and they felt that methadone should only be used in an inpatient setting. Some commented on the lack of support groups, like NA, in the lower income areas. Some questioned the effectiveness of current drug education campaigns and felt the state was doing nothing to address a growing problem. They were also concerned about the renowned high mortality rate among heroin users and about the poor detoxification service provided by most hospitals.

## Discussion

The discussions with both the key informants and the focus group participants left little doubt that heroin use is increasing in the Cape Metropolitan area. The comments from focus group participants on the availability of the drug supported this strongly, as well as comments on “user areas” within the metro with few suburbs appearing to be “excluded” from heroin use. Furthermore the demographic profile of heroin users also appears to be changing, with use now also increasingly occurring among the Coloured population and also starting in the Black population. It would also appear that more young people are starting to experiment with the drug than has previously been the case.

The lack of affordable treatment options for users emerged as a key theme throughout the discussions and interviews, and this issue requires urgent attention. Some participants in the study also felt that access to and availability of detoxification services also need to be improved, particularly in the state hospital setting.

Although there were mixed views from participants on harm reduction strategies and whether they would be effective or not, it did become clear that these strategies need to be considered and debated in the light of the increase in heroin use. Currently no harm reduction strategies, such as needle exchange programmes, are operational in Cape Town and while injecting heroin use may currently be relatively low, this situation may well change.

HIV/AIDS does not appear to be a serious issue among heroin users in Cape Town yet, although there is a potential for this to change very quickly, as has been the case in other countries. Research in other countries, including Russia, Ukraine, Belarus and Kazakhstan, has shown a rapid spread of HIV through needle sharing subsequent to there being little evidence of HIV transmission associated with injecting drug use in these countries (Rhodes et al., 2002). Although the focus group participants did indicate knowledge of the risks of needle sharing, in contrast to research conducted in Kenya (Beckerleg & Hundt, 2004), many also felt that knowledge may not prevent needle sharing in a desperate situation. Thus every effort should be made to attempt to curb needle sharing and risky sexual behaviour.

Nevertheless, it became clear that there are a number of other negative health and social consequences associated with heroin use, including weight loss and poor general health (with continued use), depression in many users, risk of overdose, strained family relationships and social isolation, petty crime, and sometimes sex work, that need to be addressed.

Finally, it is anticipated that a community survey of 250 heroin users in Cape Town during July – August 2004 will yield further detail on issues related to heroin use in Cape Town; will give an indication of the extent of the problem; and will quantify some of the themes emerging from the qualitative research discussed in this paper.

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### References

- Adejumo, O. (2003). Substance use among the youth in the uThukela health district. In: Plüddemann et al. Monitoring Alcohol and Drug Abuse Trends in South Africa. *Proceedings of SACENDU Report Back Meetings*, October 2002: January – June 2002 (Phase 12). Parow: Medical Research Council.
- Beckerleg, S.E., & Hundt, L.G. (2004). The characteristics and recent growth of heroin injecting in a Kenyan coastal town. *Addiction Research and Theory*, 12(1), 41-53.
- Centres for Disease Control. U.S. HIV and AIDS cases reported through December 2000. Year-end edition Vol.12, No.2. <http://www.cdc.gov/hiv/stats/hasr1202.htm>.
- Darke, S., Ross, J., & Hall, W. (1996). Overdose among heroin users in Sydney, Australia: I. Prevalence and correlates of non-fatal overdose. *Addiction*, 91, 405-41.
- Degenhardt, L., Hall, W., Warner-Smith, M., & Lynskey, M. (In press). *Illicit drug use*. Chapter in: Comparative Risk Assessment. The Global Burden of Disease Project. World Health Organization. Geneva.
- Diamantis, I., Bassetti, S., Erb, P., Ladewig, D., Gyr, K., & Bategay, M. (1997). High prevalence and coinfection rate of hepatitis G and C infections in intravenous drug addicts. *J Hepatol*, 26, 794-797.
- Fernandez, H. (1998). *Heroin*. Minnesota: Hazelden, 19-67.
- Flisher, A.J., Parry, C.D.H., Evans, J., Muller, M., & Lombard, C. (2003). Substance use by adolescents in Cape Town: prevalence and correlates. *Journal of Adolescent Health*, 32, 58-65.
- Frischer, M., Leyland, A., Cormack, R., Goldberg, D. J., Bloor, M., Green, S. T., Taylor, A., Covell, R., McKeganey, N., & Platt, S. (1993). Estimating the population prevalence of injection drug use and infection with human immunodeficiency virus among injection drug users in Glasgow, Scotland. *American Journal of Epidemiology*, 138(3), 170-181.
- Garrick, T. M., Sheedy, D., Abernethy, J., Hodda, A. E., & Harper, C. G. (2000). Heroin-related deaths in Sydney, Australia. How common are they? *American Journal of Addiction*, 9(2), 172-178.

## HEROIN USE IN CAPE TOWN

- Hall, W., Ross, J., Lynskey, M., Law, M., & Degenhardt, L. (2000). How many dependent opioid users are there in Australia? *NDARC Monograph*, 44, 8-15.
- International Council on Alcohol and Addictions. (2000). *Encyclopaedia on Substance Abuse: International CD-ROM on Alcohol and Drug Abuse*. LH Publishing.
- Koester, S., Booth, R.E., & Zhang, Y. (1996). The prevalence of additional injection-related HIV risk behaviours among injection drug users. *Journal of Acquired Immune Deficiency Syndrome and Human Retrovirology*, 22, 202-207.
- Mientjies, G.H., Spijkerman, I.J., van Ameijden, E.J., & Coutinho, R.A., van den Hoek, A. (1996). Incidence and risk factors for pneumonia in HIV infected and noninfected drug users. *J Infect*, 32, 181-186.
- National Drug and Alcohol Research Centre (2000) *1999 Australian Bureau of Statistics data on opioid overdose deaths*. National Drug and Alcohol Research Centre, University of NSW. Retrieved, from the World Wide Web: <http://www.med.unsw.edu.au/ndarc>
- Neiagus, A., Friedman, S.R., Hagen, D.L., Miller, M., & Des Jarlais, D.C. (1998). Trends in the non-injected use of heroin and factors associated with the transition to injecting. In Inciardi J.A., & Harrison L.D. (eds), *Heroin in the age of crack cocaine*. Thousand Oaks: Sage Publications, 131-159.
- ODCCP studies on Drugs and Crime. (2002). *Global Illicit Drug Trends 2002. United Nations Office of Drug Control and Crime Prevention*: New York.
- Plüddemann, A., Parry, C.D.H., Bhana, A., Harker, N., Potgieter, H., & Gerber, W. (2004a). Monitoring Alcohol and Drug Abuse Trends in South Africa (July 1996 – December 2003). *SACENDU Research Brief*, 7(1), 1-12.
- Plüddemann, A., Hon, S., Bhana, A., Matthysen, S., Potgieter, H., Gerber, W., & Parry, C.D.H. (2004b). Monitoring Alcohol and Drug Abuse Trends in South Africa. *Proceedings of SACENDU Report Back Meetings*, April 2003: July – December 2003 (Phase 15). Parow: Medical Research Council.
- Quaglio, G., Talamini, G., Lechi, A., Venturini, L., Lugoboni, F., & Mezzelani, P. (2001). Study of 2708 heroin-related deaths in north-eastern Italy 1985-98 to establish the main causes of death. *Addiction*, 96(8), 1127-1137.
- Rhodes, T., Lowndes, C., Judd, A., Mikhailova, L. A., Sarang, A., Rylkov, A., Tichonov, M., Lewis, K., Ulyanova, N., Alpatova, T., Karavashkin, V., Khutorsky, M., Hickman, M., Parry, J. V., &

- Renton, A. (2002). Explosive spread and high prevalence of HIV infection among injecting drug users in Togliatti City, Russia. *AIDS*, 16(13), 25-31.
- Rocha-Silva, L., de Miranda, S., & Erasmus, R. (1996). *Alcohol, tobacco and other drug use among black youth*. HSRC Publishers: Pretoria.
- Shisana, O., Zungu-Dirwayi, N., Toefy, Y., & Simbayi, L. "Substance use and HIV in South Africa: Results of a household survey." Paper presented at the NIDA meeting "Collaboration across continents: Drug abuse, health disparities, HIV and other health-related research", Cape Town, July 2003.
- Strang, J. (2002). Looking beyond death: Paying attention to other important consequences of heroin overdose. *Addiction*, 97(8), 927-928.
- United Nations Office on Drugs and Crime. (2002). *South Africa: Country Profile on Drugs and Crime*. United Nations Office on Drugs and Crime: Pretoria.
- United Nations Office on Drugs and Crime. (2004). *World Drug Report 2004*. United Nations Office on Drugs and Crime: Vienna.



## **DOES ALCOHOL USE TAKE AWAY CONDOM USE? QUALITATIVE EVIDENCE FROM SELIBE PHIKWE AND MAHALAPYE TOWN DISTRICTS, BOTSWANA**

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### **Abstract**

*This paper explores the perceptions of male patrons of liquor outlets towards the relationships between alcohol abuse, sexual risk-taking and HIV infection in Botswana. It is based on 33 focus group discussions and 16 in-depth interviews conducted in liquor outlets in the towns of Mahalapye and Selebi Phikwe during February and March 2003. Results indicate that alcohol expectancies are grounded in traits that reinforce myths, misperceptions and fears about sexuality and condom use. These myths act as a barrier to condom use and place patrons of liquor outlets at risk of HIV infection. Overall, alcohol intoxication is viewed as a serious deterrent to condom use. The paper addresses the research and policy implications of these findings.*

### **Introduction**

Globally, alcohol has been found to be related to unsafe sex practices, accidents, violence and loss of productivity (WHO, 2001). Alcohol-induced intoxication lowers inhibitions, and increases the likelihood of men fumbling over condom application, having sex without condoms and having multiple sexual partners (Gordon et al., 1997; Ford & Norris, 1998; Poulson et al., 1998; Estrin, 1999). The correlation between alcohol abuse and a lifetime tendency toward high-risk sexual behaviours, including multiple sexual partners, unprotected intercourse, and the exchange of sex for money or drugs has been documented (Allen et al,

**KEY WORDS:** alcohol use, condom, qualitative research

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1992; Bassett et al, 1994, NIAAA, 2002). In Zimbabwe, two studies found that beer hall attendance alone, was independently associated with HIV infection (Bassett et al., 1994) and that having sex while intoxicated was strongly associated with recent HIV seroconversion in male clients of beerhalls who had been regularly intoxicated in the previous six months (Fritz et al., 2002). While in South Africa, a study that included male and female risky drinkers and partners of risky drinkers between the ages of 25 to 44 years, revealed that sexual arousal and stimulation; conducive environment to engage in risky sex, multiple sexual relationships and forced sex were some of the effects associated with alcohol consumption (Kachieng'a, 2003).

The present study uses qualitative data gathered at liquor outlets to explore perceptions of alcohol abuse and how alcohol affects protective health behaviours such as consistent and proper condom use. Qualitative data are useful for describing a phenomenon in terms of criteria elicited from informants' point of view, that is, the *emic* perspective. Using the Health Belief Model, which assumes that people are motivated to protect their health and they make rational calculations of costs and benefits in adopting precautionary behaviour (Carmel, 1991), the study investigates whether alcohol use is correlated with sexual risk-taking behaviour such as sex without a condom as well as examining the consequences of alcohol use and sexual risk-taking during specific sexual encounters.

For a long time, factors that had been suggested to contribute to the rapid spread of HIV in Botswana included: (1) the secondary position of women (particularly their lack of power to negotiate condom use); (2) cultural attitudes toward fertility; (3) a high prevalence of sexually transmitted diseases; and (4) social migration (Ball, 1996; MacDonald, 1996). Recently, the geographical pattern of HIV in Botswana was speculated to be directly related to the existence of truck routes and mining activities (National AIDS Coordinating Agency (NACA) 2003a). Studies on behaviour change communication (BCC) in Botswana have unequivocally documented that unprotected sexual intercourse was driving the spread of HIV, with its concomitant factors of sexual coercion, multiple sex partners, lack of knowledge and information, and inconsistent and improper condom use. Although there is ample evidence globally that people who abuse alcohol are more likely to engage in risky behaviours such as unprotected sex (Allen et al., 1992; Bassett et al, 1994; NIAAA, 2002), scholars in Botswana have for many years overlooked alcohol abuse as one of the major contributing factors to unprotected sexual intercourse.

Botswana's strategies to mitigate the spread of HIV have focused on education leading to reduced behavioural risk; adequate treatment for STDs, such as HIV/AIDS, health seeking behaviour, voluntary testing accompanied by pre and post counselling, treatment and care of those living with AIDS; and community home-based care. The strategies also included promotion of proper and consistent condom use through easy access, availability and procurement (NACA, 2003a). These responses, however, have failed to address how alcohol abuse affects proper and consistent use of the condom despite the overwhelming evidence that alcohol affects condom use.

There is generally very little published data on alcohol abuse in Botswana and in particular, its relationship to HIV/AIDS. A nationally representative youth sexual behaviour study on knowledge, attitudes, practices and behaviours in Botswana, found that one in five males aged 15-24 admitted having been "too drunk to make a rational decision (regarding condoms)" the last time they had sexual intercourse (MOH, 2001). Campbell (2003: 146-147) has asserted that alcohol was probably the most abused substance in Botswana. Although Campbell (2003: 159) concluded that "alcohol-induced intoxication influences non-use of condoms, and inconsistent condom use by alcohol users partly explains why incidence of sexually transmitted infections is significantly higher among alcohol users than non-alcohol users", he recommended the need for further investigation of the interrelationship between alcohol and sex in order to strengthen conclusions about the subject. Only one study from Botswana to date has found a significant association between drinking alcohol before sex and HIV infection in tuberculosis patients. Among tuberculosis patients in Botswana, controlling for other factors, those who used alcohol (or whose partner used alcohol) before sex were 6.8 times more likely to have HIV infection (Talbot et al., 2002). This study concluded that there is a link between alcohol consumption, HIV infection, HIV treatment outcomes and other sexually transmitted diseases.

It was not until very recently that both the Botswana National Strategic Framework for HIV/AIDS 2003-2009 and the Substance Abuse and Drug Trafficking Strategic Plan, 2003-2007 identified alcohol as one of the key socio-cultural factors driving the epidemic. The use of alcohol is associated with high risk sexual behaviors which in turn, increase risk of exposure to HIV (Tsimako, 2003).

In light of the dearth of data on the relationship between alcohol abuse and HIV/AIDS, the African Comprehensive HIV/AIDS Partnerships (ACHAP) funded the research to pilot community mobilization campaigns on alcohol abuse and HIV prevention in Mahalapye and Selebi Phikwe

District Towns. A University of Botswana researcher (the author) was identified to design and supervise the qualitative data collection and analysis in each of these two districts. This research was aimed at strengthening the capacity of a civil organisation (Men, Sex and AIDS) to develop educational materials to promote responsible drinking and adoption of HIV preventive behaviours as well as to evaluate the feasibility of using these liquor outlets as venues for alcohol consumers-centred HIV prevention activities. This study uses the same data to report on the link between alcohol and condom use.

### **Theoretical framework**

The Health Belief Model (Pollak et al., 1992) holds that health behaviour is a function of individuals' socio-demographic characteristics, knowledge and attitudes. As King (1999) puts it, the model stipulates that an individual must hold the following beliefs in order to be able to change behaviour: (1) Perceived susceptibility to a particular health problem ("am I at risk for HIV?"); (2) Perceived seriousness of the condition ("how serious is AIDS; how hard would my life be if I got it?"); (3) Belief in effectiveness of the new behaviour ("condoms are effective against HIV transmission"); (4) Cues to action ("witnessing the death or illness of a close friend or relative due to AIDS"); (5) Perceived benefits of preventive action ("if I start using condoms, I can avoid HIV infection"); (6) Barriers to taking action (I don't like using condoms"). The model's tenet is that individuals weigh the benefits against the perceived costs and barriers to change. For change to take place, benefits must outweigh costs. With respect to HIV, interventions often target perception of risk, beliefs in severity of AIDS, beliefs in effectiveness of condom use and benefits of condom use or delaying onset of sexual relations (King, 1999).

In a nutshell, those at risk must first understand how STIs and HIV are transmitted and how to prevent transmission, and then move from understanding to change in behaviour. The utility of this model for understanding alcohol abuse and risky sexual behaviour will be evaluated as the qualitative data pertaining to alcohol and condom use are examined. It will be shown that this model is of value in endeavouring to explain the contemporary high level of alcohol abuse and HIV in Selebi Phikwe and Mahalapye.

## Description of Selibe-Phikwe and Mahalapye towns

Mahalapye and Selibe Phikwe towns/districts were selected among 23 districts of Botswana by ACHAP to pilot community mobilization campaigns on alcohol abuse and HIV prevention based on two selection criteria: political commitment and readiness or ability to address a controversial subject.

*Selebi Phikwe* is a copper-nickel mining town located in the north-east of Botswana, 400 kilometres from the capital Gaborone. To the south of the town, about 100 kilometres, lies the boarder with the Republic of South Africa, which exposes the town to the influx of mobile population groups. The population of Selebi Phikwe is currently estimated at about 50 000 (Population and Housing Census, 2001). The population has an expansive population pyramid with 65.3 percent being between the ages of 15 and 59 years. The explosive population growth is mainly attributed to migration of young men and women who came in search of employment in the mining and manufacturing sectors. High migration and high population density have serious implications for excessive alcohol consumption and the town's exposure to HIV/AIDS. Selebi Phikwe's current HIV prevalence of 52.2 percent among women aged 15-49 years remains the highest in the country (NACA, 2003b).

*Mahalapye* is situated along the major railway and the highway to the northern part of Botswana. It is located 200 kilometres from Gaborone. It is the headquarters of both the district administration and the railway system in the country. The public sector, comprising the defence force, district council, education, health and agriculture is the largest employer in Mahalapye. Botswana Railways (a parastatal) is the second largest employment sector in Mahalapye. The population of Mahalapye is currently estimated at about 43 538 (Population and Housing Census, 2001). Mahalapye's current HIV prevalence rate is 37.4 percent among women aged 15-49 years. Mahalapye is surrounded by mainly small, under-resourced villages and this means that there is an inherent internal migration to and from Mahalapye (NACA, 2003b).

### The qualitative analysis

Two qualitative data collection exercises were undertaken: focus group discussions (FGD) and in-depth interviews (IDI). Thirty-three FGDs

(16 in Selibe-Phikwe and 17 in Mahalapye) and 16 IDIs (6 in Selebi-Phikwe and 10 in Mahalapye) were conducted. Discussants and interviewees who were willing, knowledgeable or experienced, and who viewed alcohol abuse and HIV from different perspectives were chosen. They ranged from 18 years to 65 years. The aim was to assemble a "wide-ranging panel of knowledgeable informants" (Weiss, 1994: 17). Free flow of discussion within focus groups was facilitated by choosing discussants who were similar in status and shared a common perspective on the topic under investigation. In general focus groups consisted of 5 to 10 people. Of the FGDs, only five in Selibe-Phikwe and one in Mahalapye comprised of both males and females, the rest were preponderantly male dominated.

IDIs interviewees were chosen for their ability to inform on the nature of alcohol abuse and risky sexual behaviour, the knowledge, attitudes, values pertaining to alcohol abuse and HIV infection, the problems people face in these areas of their lives, their own experiences, and their broader perceptions of alcohol abuse and risky sexual behaviour. Ten of the interviewees were men and six were women: they ranged in age from 19 to 65; six of the men were married and only three of the women were married. Most had at least one child. Older people were also included to provide a "window on the past" (Weiss, 1994:1).

Some discussants and interviewees were selected purposively, while others were recruited through snowball sampling. Eighteen unemployed males between 20 and 24 years who were members of the Men, Sex and AIDS Non-Governmental Organisation were selected from Selebi Phikwe and Mahalapye for two weeks of training in qualitative research skills. Eight of them had Cambridge Certificate (senior high school Certificate) while the rest had Junior high school certificate. Given that research increases significantly if relations between researchers and community members are participatory and collaborative (Porter and Prysor-Jones, 1997), discussions with different individuals and groups at community, target and individual levels were held prior to and during data collection.

*Data gathering process.* Moderation and note taking of all focus group sessions and in-depth interviews were done by youth researchers. Both FGDs and IDIs were tape recorded and transcribed verbatim in Setswana as soon as possible after completion of the interview. This was done to preserve original meaning and detect emergent themes that needed more probing in the subsequent interviews. Although the normal practice of qualitative researchers is to transcribe only as much as they need (Weiss, 1994), in this instance everything was transcribed, the transcripts were

treated as a set of material to be mined. For in-depth interviews, notes were taken and the proceedings were moderated and tape-recorded.

Given the sensitive nature of the subject, discussants and interviewees were assured that all information provided would be treated confidentially. Ensuing discussion therefore used pseudonyms to protect their identity. An Issue-focused approach was adopted in analyzing the qualitative data. This is an approach that describes what has been learned from all informants about a particular situation (Weiss, 1994). Data were coded according to concepts and categories used in the paper, and from these coded data, excerpt files were compiled that collected material from focus groups and interviews that dealt with the same issue.

Findings from both FDGs and the IDIs are supported by quotations translated by the author and by case descriptions. Excerpts have been presented using the "preservationist approach" (Weiss, 1994: 192); that is, material has been presented in the original speech so as to reproduce the words on tape as accurately as possible. Verbatim vernacular words, with English translations in parenthesis, have been inserted in places for emphasis. Since the FDGs and IDIs were not representative, terms like "a few", "some" or "many" are used to give impressionistic views in situations where to state proportions would be meaningless. Where informants are described as "younger adults", "adults" or "elderly" their ages were, respectively, less than 25 years, 25-49 years and 50 years or older.

*Definition of concepts.* Kilmarx (2003: 2) defines some alcohol related concepts as follows: (1) "alcohol use is the "ingestion of substance without experiencing negative consequences"; (2) Alcohol misuse is "same activity but now experiencing negative consequences", (3) Alcohol abuse is "a continued pattern of use in spite of negative consequences"; and (4) alcohol addiction is "the compulsive use of substances regardless of negative consequences". Moreover, Leigh (1999:206), defines alcohol expectancies as "People's beliefs about how alcohol will affect their emotions and behaviour." She further argues that "drinkers have expectations about the effects of drinking, and these effects influence how and how much they drink."

The above definitions will serve as a guiding principle and will be employed in the discussion of the relationship between alcohol consumption and condom use in assessing how patrons of liquor outlets perceive their alcohol consumption and in identifying their motives for drinking.

## Results

*Motives for alcohol drinking, HIV awareness and alcohol abuse perception.* This study has identified a variety of reasons why clients of liquor outlets drink alcohol and this includes: to relieve stress, to forget family and life hardships; to pass time, meet friends and socialize, lack of recreational facilities, unemployment, acceptability and availability of alcohol, peer pressure, enhanced confidence, sexual stimuli and addiction. All informants instantly stated that there was a distinction between alcohol users and drunkards or alcohol abusers. They reported that alcohol users are those who drink alcohol moderately without any premeditated ideas of wrong-doing while drunkards or alcohol abusers (used interchangeably) were those who drink with the intention of 'behaving badly'. The study found that in the two districts, patrons of liquor outlets believed that there was an association between alcohol abuse and HIV/AIDS. They also attested to the presence of a high level of both HIV/AIDS and alcohol abuse in spite of high levels of awareness. They lamented that the two district communities had a high density of liquor outlets which serve as convenient social settings for meeting potential sexual partners, including commercial sex workers.

The majority of discussants and respondents concurred that alcohol abuse was the excessive intake of alcohol resulting in anti-social behaviours including fighting, insulting people, public indecency, having sex "everywhere" at anytime even when people are watching, for instance, copulating behind the bar toilets. Some defined it as drinking alcohol with premeditated intention to do something bad or horrendous. The consensus was that alcohol drinking which is basically fast and excessive, with the main aim of simply getting drunk as quickly as possible, was alcohol abuse. Generally, alcohol abuse was defined as the consumption of alcohol in a rather strict, premeditated and almost methodical endeavour to get blind drunk. A few respondents, however, defined alcohol abuse as drinking alcohol with a hidden motive of engaging in some anti-social behaviour like rape.

*Alcohol abuse and related sexual risks.* Liquor outlets, especially bars and nightclubs, were construed as locations offering a conducive milieu for engaging in risky sexual behaviours. Most discussants and respondents unequivocally stated that alcohol abuse exposes the abusers to sexual risks. They contended that after imbibing alcohol, they engage in irrational and impulsive sexual actions. One male bar attendant in an IDI in



## ALCOHOL & CONDOM USE

Mahalapye said: "Alcohol makes them impetuous, they become loose, horny and more zealous for sex..." They just inadvertently crave and yearn for sex. One elderly woman in an IDI at a certain Selebi Phikwe bar, shared this sentiment:

"Even though you can see that I am old enough to be your mother, when alcohol gets in my veins, I can freely have sex with a younger person... But when I am sober, I could feel so insulted and rebuke you if you made sexual advances. If I am drunk, I become so cooperative and hot-headed. You can use me sexually the way you like, while I am ecstatically cheering, calling you names like honey, sweetie and all those sweet-for-nothings. Many boys at this bar have taken my friends and I for a sex ride. They just wait for us to be tipsy and that is it".

The majority of liquor outlet patrons corroborated the above excerpt that alcohol eased both men and women's bashfulness. They unequivocally linked alcohol to casual and commercial sex. Some reported that a high number of assault cases, including rape, increase at month-end and weekends after heavy drinking, while women who try to walk home alone when most liquor outlets close at midnight are raped and in these rape cases condoms are rarely used.

*Alcohol abuse and condom use.* The view that sex while drunk was strongly associated with lack of/or inconsistent and improper condom use and that alcohol increases ambivalence towards condom use was frequently expressed, and is clearly a driving force behind the spread of HIV in Mahalapye and Selebi-Phikwe. Respondents generally reported that intoxicated people were more prone to indulging in unprotected casual sex.

Most male discussants and respondents reported that after alcohol consumption, condoms were not used at all and in some instances, when condom use was attempted, it was not used properly. This was attributed to drinking alcohol with motives of deriving sexual stimulus and enhancement which are expected to culminate in impulsive and virile sexual actions. However, a few respondents argued that drinking alcohol with the expectation that it would lead to irresponsible sexual risk-taking is a reflection of general personal character defects and should not be linked to alcohol, but to general personal destructive behaviour. While discussants and respondents frequently claimed that intoxicated people were more prone to unprotected casual sex, a few respondents refuted these claims.

These respondents asserted that they used condoms properly at all times, irrespective of whether they were drunk or not.

Several examples crediting alcohol abuse as a major factor hindering condom use were given. Liquor outlets were said to create a "deregulated" environment, making sexual activity much more spontaneous, and taking precautions easier to advocate than to implement. A younger adult male discussant in Selebi Phikwe, related his views and experience:

"I remember the other day at this very bar, I was with a sugar mummy. Wow! She was strikingly beautiful, when we got to her place; she told me that she detested a condom. As we were both tipsy, we had sex without a condom and there seemed to be no problem. To tell you the truth, the following day I was full of remorse, not because I had sex with an elderly lady, but for the fact that a condom had not been used".

The above excerpt clearly indicates that while this young adult male perceived himself as susceptible to HIV, believed that a condom is effective against HIV transmission, and perceived that using a condom could avoid HIV infection, his main stumbling block or barrier to using a condom was intoxication from alcohol. The comment of another younger adult male discussant in Selebi Phikwe, acknowledged risky sexual behaviour that was even more extreme in its casualness in the following statement:

"I remember the other time when I got to Bar 93, many girls were there. Hey! Very ugly and unkempt girls I tell you.... To tell the truth, I ended up taking one home because, I think, as I took more beer, she became prettier and more attractive. The following day I had a dilemma. I did not know how to make her leave the house without my neighbours noticing. I was embarrassed to be seen with such an ugly person. I regretted greatly in the morning, when I realized that the person was not only ugly, but was almost like a walking skeleton. I said to myself, this is an epitome of AIDS.... My greatest remorse emanated from not using a condom. I was sick the whole day and felt remorse, until I took a few beers to mollify my feelings in the evening at the same bar".

The above utterances link the lack of condom use to impulsive sexual intercourse and making decisions induced by intoxication. Respondents also suggested the need for knowledge about the importance of condom use. They also recognised a level of unpredictability about when and how sexual activity was likely to occur and as alleged by the latter, a lack of preparedness to live with effects of unprotected sex which, was pacified by more alcohol intake.

*Attitudes towards condom use.* In investigating attitudes towards non-use of condoms and their root cause, respondents advanced a wide array of myths, misconceptions and fears; however, for the purpose of this study, only those that reinforced the belief that alcohol impacted negatively on condom use have been mentioned here. The following excerpts from both FGDs and IDIs showed the strong masculine pride motives underpinning this phenomenon. Although perceived by some as a mere myth, most discussants and respondents felt that these cultural values and customs, were often the root cause of not using a condom. Condoms were perceived to decrease sexual pleasure and sensation. One adult male in Mahalapye in a FGD whinged about a condom: "Condoms reduce erection... You cannot take more than one sexual round. Again, when using it, instead of leaving semen inside the woman, it comes back to you. This then blocks blood veins; afterwards you cannot get an erection. You are completely dead". While the majority said, condoms take away spontaneity of sex and break the mood, some explicitly mentioned that since they mostly sleep with strangers, to start a long process of taking out a condom does not augur well for the spontaneous sexual act as some casual partners suddenly change their minds, while one is still struggling with the condom. This was frequently expressed as *go patereka nopa* (literally "to sieze the erection moment"). One younger adult male in Mahalapye claimed: "During foreplay, one easily loses erection when putting on a condom, condom use also makes one very uncomfortable during sex...We f\*\*k these girls in awkward situations such as in toilets, in the dark, so, condoms are really a hassle". An adult male discussant in Mahalapye put it succinctly: "As for me Sir, when I am drunk a condom is a taboo. Even those who claim to use it here are lying". This sentiment was shared by another younger adult male in Selebi Phikwe: "Using a condom by itself needs skill that even sober people fail to master. I have tried to use it while drunk and in all those occasions I have failed dismally. It makes me clumsy."

The opponents of condom use stated that sex feels better without condoms as a condom deprives one of the joy of sex. There were some mixed messages about the effect of a condom, with some claiming that

condoms cause loss of erection, premature ejaculation and difficulty in maintaining erection. At worst, others claimed that ejaculation was impossible while using condoms. Some claimed that condoms were too small and tight hence they constricted their erect penises, thus making it difficult to ejaculate. Others complained that condoms smell terribly and when they are drunk, the smell makes them feel like throwing up (vomiting). There were some who claimed that when drunk they rely on their partners as demonstrated by a younger adult male in Selibe Phikwe: "I always rely on the sex partner's benevolence to remind me to use a condom and I ask those who are not shy to put it on me. However, very few girls know how to do it."

The excerpts above indicate that most men recognized that alcohol was a deterrent to condom use. It was also observed in the two study areas that masculine pride among most men was measured by a hard and strong erect penis and the condom was seen as weakening this masculine ideal. Some stated that alcohol helps in delaying ejaculation and that use of a condoms tempers with this pleasure. While most discussants and respondents demonstrated knowledge of and benefits of using a condom in their sexual encounters, the overwhelming majority unequivocally cited alcohol as a deterrent to consistent and proper use of a condom.

#### *Alcohol and indiscriminate multiple sexual partnerships.*

In the two communities, there was a widespread belief that alcohol causes people to have little control over sexual impulses. Most discussants and respondents indicated that when they consume alcohol, they expect largely positive sexual effects from drinking alcohol. There was an entrenched belief that alcohol increases the libido and hence the desire for having sexual intercourse. It was frequently stated by most discussants and respondents that sexual arousal and rational decision-making, such as condom use cannot happen simultaneously within a person who is intoxicated from alcohol. Linked to this belief is lack of discipline and bad mannerism (*go tlhoka boitshwaro*). After drinking alcohol, men start seeking women as sex objects. There was a tendency to link alcohol to sex, with "raw sex" dubbed *sehabo* (literally a relish).

Most women, especially teenagers, do not have money to buy alcohol, so they use covert prostitution to gain money for alcohol. While women use sexual favours to gain money for alcoholic drinks and cigarettes; men have a tendency to get women drunk so as to use them sexually, and, in most cases, they do not use condoms and these girls are mere casual sex partners. While the notion of exploiting older men by posing as a willing sexual partner with the aim of disappearing thereafter

may seem innocuous, it was reported that in most cases it is the women who get drunk quickly and this ends up in unplanned, unprotected sexual intercourse. This is because, while the girl's motive is just to binge on alcohol and disappear, the man's motive is to drink slowly while tactfully watching how each successive drink softens the girl by making her drunk (*go itagisetsa*). Ultimately, the speed at which the girl drinks intensifies intoxication and the man ends up being a 'winner'.

Alcohol was frequently reported by both discussants and respondents to have numerous sexual expectation effects, which were: increasing sexual assertiveness by eliminating bashfulness and reducing inhibitions (some dubbed alcohol as a lawyer/advocate for the shy people); raising the sex drive which enhances physical pleasure; and lastly, enhances sexual performance. These were couched in multiple sex rationalisations. It was repeatedly stated that alcohol stimulates sexual desires and this usually culminates in both men and women when drunk seeking the immediacy of sexual gratification with whoever happens to be available. The majority of male discussants and respondents claimed that with each successive alcohol drink, they increasingly become unable to be selective and cautious, as ugly ladies become more beautiful and charming to men as they get drunk. They become brave enough to talk to and propose sex to ladies and the ladies more easily accept sexual offers (*ba repa*) when drunk than when sober. They claimed that women have a tendency of going to bars when they do not have money to buy themselves some drinks, so they depend on men to buy drinks while they offer them sex in return. An adult male focus group discussant in Mahalapye observed:

"Women have very bad manners. They come to bars knowing very well that they don't have money, expecting men to buy them alcohol. When you innocently buy her drinks while socialising with her, without any intentions of having sexual intercourse with her, she will then ask you to accompany her to her home (*bo mpuledise*) when the bar closes. When you get to her home, she asks you to open the door for her (*bo mpulela lebati*), after that she asks you to put on the light in her house (*bo ntshubela lebone*) and then she pleads with you to sleep at her home saying that it's late and not safe for you to go home alone. This, then, becomes a gift from God. ...If it were you, would you just lie next to her without having sexual intercourse? Sometimes this happens even without use of a condom".

The above statement was corroborated by a younger adult female respondent in Selebi Phikwe, who stated that:

“Selebi Phikwe has no job opportunities for young women like me to make money and we are very poor. So, we come to these bars and begin to dance. It is while we are dancing, that men approach us and start dancing with us. A man will then offer to buy you a drink and once you agree, you will drink and dance with him exclusively until both or one of you feels drunk and tired. ...Even though we initially drink with these older men with the hope of vanishing after they are drunk, alcohol increases the sex drive and we end up also wanting to have sex when drunk. Because bars close very late and we are afraid of being raped while trying to go home, those who have cars just drive to their homes without our consent and when they reach home, sex is non-negotiable. In most cases we regret the following day realising that a condom had not been used because we were drunk. This has happened to me several times so much that I have concluded that I have HIV..... And, most of these girls that you see locked in a slow dance with these men; they are going to have sex with them afterwards, there is no way out. This happens almost all the time”.

It was frequently claimed by discussants and respondents that clients of liquor outlets engage in sex with everyone at anytime anywhere (behind bars, in public toilets, on the streets, at the car park etc). Bar owners and attendants reported in graphic details how their clients behave when intoxicated. This was explicitly put by an adult male bar attendant in Selibe Phikwe:

“For the many years that I have worked here, I have seen bizarre things. When clients are drunk, everything is turned into a bedroom. They sleep everywhere without caution; behind bars, in public toilets, and many other places around this bar.... There is no doubt that alcohol makes them stupid. Don't you remember the story in the Bible that Lot, Abraham's cousin, was made drunk by his two daughters so that they could have sex with him? What is interesting is that I always catch them having sexual intercourse in the toilets and behind bars, but I have hardly picked up a used condom. They do not use condoms. We have them in this bar and they never ask for them. We have both men and women bar

## ALCOHOL & CONDOM USE

regulars who are bent on variety. They rarely pick familiar sex partners; every time they come, they are looking for new sex targets.... Selebi Phikwe has an ephemeral population and around month-end, it is possible to get about 100 new faces and hell breaks loose. To tell you the truth, I have noticed that compliance with safer sex rules in bars is difficult.”

Another younger male discussant in Mahalapye contended that:

“Money talks mister, cash power. If you have money, everything is very smooth. Girls are controlled by triple Cs. When one has a lot of cash, a car and a cell phone one is regarded as strong and powerful. One does not have to propose a lady; you just show the car keys, the cell phone and give her a P100 note to buy alcoholic drinks instead of a lower denomination note, and make sure she sees the money in the wallet, in that way you are a winner.”

The above, selected excerpts, indicate that older men lure young, vulnerable poor women with money. A woman’s craving for money and alcohol forces her to have sex with strangers without a condom. The alcohol inhibiting effect compromises rational decision making, confidence and assertiveness to negotiate safer sex. The prevalence of casual multiple sex partnerships and rape cases was attributed to the late closing hours of bars and night clubs. The underlying motive for alcohol drinking for both men and women is the expectations of deriving sexual virility and enhancement couched in the entrenched belief that while alcohol lowers inhibitions, it also has aphrodisiac properties.

While the majority of discussants and respondents felt that alcohol has a massive contribution in increasing susceptibility to HIV, because it reduces a person’s ability to make informed choices around safer sex and protecting themselves from HIV infection, there were, however, a few respondents who refuted this claim. The overwhelming majority, attributed the highest prevalence of HIV in Selebi Phikwe to the high density distribution of liquor outlets. The proximity of the Selebi Phikwe Copper and Nickel Mine and Botswana Defence Force Camp to bar locations that combine sexual opportunities and alcohol availability, with a high preponderance of men with cash in the midst of numerous poverty-stricken women resonated as the engine that drove the spread of HIV. Some discussants contended that if the sale of alcohol could be stopped, the rate at which HIV was spreading would go down.

A few respondents who opposed the above claim argued that there were some people who were inclined to engage in fatalistic, impulsive and sexual risky behaviour, knowing very well that they would attribute their carelessness to alcohol intoxication. They contended that the direct causal relationship between alcohol and HIV/AIDS is questionable. They asserted that the disinhibiting properties of alcohol renders them incapable of erection and kills their sex drive. They therefore argued, on the contrary, that alcohol has no contribution at all to the spread of HIV/AIDS. It's the people's attitude and behaviour (personal characteristics) that is to blame. Some claimed that they had no interest in ladies once they were intoxicated; they claimed to be extra cautious at all times and maintained that in spite of using alcohol regularly, they still take care of their families. They argued that understanding the motive for drinking was paramount. They alleged that they were more responsible and that their partners encourage them to drink because they were jolly and happy after taking a few drinks. These respondents said alcohol suppresses their sexual desire (*nopa*), as they become sexually dormant, weak, tired and dizzy when they are under the influence of alcohol.

Some participants, however, confessed that they were afraid that if they confirmed that alcohol contributed to the spread of HIV, then alcohol might be banned. One adult male bar owner in Mahalapye said: "...Our Vice President Ian Khama hates alcohol. So, if we start linking it with HIV/AIDS, alcohol will immediately be banned in the whole country... that is why despite our awareness of the fact that alcohol contributes to the spread of HIV, we vehemently deny such knowledge."

Overall, alcohol-induced intoxication was perceived to facilitate multiple sex partners and commercial sex patronage for both men and women who are generally inclined to participate and for men who otherwise are reluctant to engage in commercial sex work. For some men who are ambivalent or who perceive commercial sex as a sure route to HIV infection, drinking alcohol is believed to cloud their judgement and to reduce inhibitions. Alcohol-induced intoxication was frequently cited as providing a plausible alibi for socially deplorable behaviour.

### **Discussion and conclusion**

Four major findings emerge from this study: First, male patrons of liquor outlets drink alcohol for three main reasons: coping motives (to relieve stress, to forget family and life hardships); social motives (to meet friends and socialize); and enhancement motives (sexual stimulation and assertiveness). These three reasons were documented in other studies



## ALCOHOL & CONDOM USE

(Stewart et al., 1996; Peltzer, 2003). Second, because liquor outlets combine sexual opportunities and alcohol availability in the same physical location, this creates the greatest risk for patrons engaging in unprotected sex. Thus, liquor outlets are high-risk places for sexual risk-taking. Third, the majority of female liquor patrons are exposed to assault and rape when liquor outlets (especially bars and night clubs) close, at midnight. Their attempt to walk home after liquor outlets close exposes women to gender based violence in the form of physical and sexual abuse, thus making them vulnerable to HIV.

The fourth finding is that, while most informants recognized the benefits of using condoms in their sexual encounters, the overwhelming majority unequivocally cited alcohol as a deterrent to consistent and proper use of condoms. There are alcohol expectancies premised on the myth that alcohol has aphrodisiac properties which facilitate sexual virility and enhancement and these compromise proper and consistent condom use. Overall, alcohol-induced intoxication was perceived to facilitate multiple sex partners and commercial sex.

The above findings call for re-orientation of the behaviour change communication (BCC) strategies and activities, to make liquor outlets one of the focal points of HIV intervention programs in Botswana. In order for patrons of liquor outlets to change their negative views against condoms, it is imperative for them to learn about the myths, misperceptions and fears that act as barriers to condom use. The behaviour change communication liquor outlets-based AIDS prevention programs should emphasize personal susceptibility to AIDS, while instilling the belief that patrons of liquor outlets can and should use condoms consistently and also identify ways to overcome barriers to condom use. Promotional strategies should include information on condom use and emphasize proper and consistent use. Civil society organizations with demonstrable commitment to sexual and reproductive health issues of men in Botswana such as *Men, Sex and AIDS* and *True Men* should use liquor outlet sites for HIV prevention education.

Studies have shown that people who strongly believe that alcohol enhances sexual arousal, like in this study, were more likely to practice risky sex after drinking (Cooper, 2002; Dermen et al., 1998; Dermen and Cooper, 2000). The BCC programmes should aim at removing the myths and misperceptions about liquor and the libido. The myth that alcohol has aphrodisiac properties should be dispelled by using appropriate information, education and communication.

Studies have found that women have lower total body water content than men of comparable size. Because of their smaller quantity of body water, women achieve higher concentrations of alcohol in their blood than men after drinking equivalent amounts of alcohol (NIAAA, 2004).

This implies that women's notion of binge drinking with men at liquor outlets with the intention of vanishing from men after consuming alcohol is ill-advised as some sexual activity engaged in by patrons at liquor outlets is spontaneous and purely for pleasure and money reasons. There is need for a campaign against excessive liquor consumption. This approach should be reinforced with occasional talk shows at the liquor outlets, which could be fostered by "liquor outlet-based server training, altering alcohol availability and improving linkage of alcohol and HIV preventive services" (NIAAA, 2002:23). Furthermore, posters and television videos should be placed in conspicuous places in liquor outlets to provide education and information on sexual and reproductive health issues including gender-based violence and dangers of unprotected sex. Accepting multiple sexual partners as an economic survival strategy for women, calls for interventions to tackle such contextual factors as poverty and gender inequality.

The BCC approach in Botswana has laid much emphasis on the ABC approach in which A stands for abstinence or delay of sexual activity, B for be faithful, and C for condom use. Shelton et al. (2004: 891) have argued that "Although *be faithful* literally implies monogamy, it also includes reductions in casual sex and multiple sexual partnerships (and related issues of partner selection)." They further contend that polarised discussion on promoting abstinence or condom use has led to neglecting the ABC approach. The BCC programs should promote abstinence and monogamy as positive values which have a long-term impact on the spread of HIV/AIDS and other STIs.

Understanding the nuances and intricacies of the liquor outlet sub-culture is paramount in addressing the alcohol-condom relationships. Formative research to identify whether what liquor outlets patrons say they ought to do (the rules), what they say they do (the norms) and what they actually do (the reality) are congruent with their sexual behaviour is imperative. Large-scale studies of general sexual risk behaviour should be conducted in Botswana so that available information gathered could be evaluated against what was found in smaller studies of more specific populations. Nationally representative studies on the patterns and consequences of alcohol consumption are imperative because liquor outlet owners have a tendency to dismiss small-scale studies as anecdotal and not meriting much attention.

Currently, Botswana does not have a national alcohol policy or a coherent strategy to address the issue of alcohol as a major risk factor for HIV/AIDS. The implication of the findings of this study is that there should be development of a national alcohol policy for tackling the dual epidemics of alcohol abuse and HIV/AIDS. Furthermore, HIV/AIDS-related policies

## ALCOHOL & CONDOM USE

should recognize that there is an “overlap between some individuals at risk of alcohol abuse and individuals at risk of HIV infection” (NIAAA, 2002: 5), which calls for alcohol to be addressed as a risk factor in the design of these policies.

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### References

- Allen, S., Tice, J., Van de Perre, P., Serufilira, A., Hudes, E., Nsengumuremyi, F., Bogaerts, J., Lindan, C., & Hulley, S. (1992). Effect of serotesting with counseling on condom use and Seroconversion among HIV Discordant Couples in Africa. *British Journal of Medicine*, 304, 1605-1609.
- Ball, A. (1996). *The Social and Cultural Construction of Sexual Risk by Youth in Botswana*. PhD Thesis, University of Manitoba, Winnipeg.
- Bassett, M.T., McFarland, W.C., Ray, S., Mbizvo, M.T., Machezano, R., van de Wijgert, H.H., Katzenstein, D. (1996). Risk factors for HIV infection at enrollment in an urban male factory cohort in Harare, Zimbabwe. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology*, 13, 287-293.
- Campbell, E.K. (2003). A note on alcohol consumption and sexual behaviour of youths in Botswana. *African Sociological Review*, 7(1), 146-161.
- Carmel, S. (1991). The health belief model in the research of AIDS-related preventive behaviour. *Public Health Reviews*, 18, 73-85.
- Cooper, M.L. (2002). Alcohol use and risky sexual behaviour among college students and youth: Evaluating the evidence. *Journal of Studies on Alcohol*, Supplement 14(1), 101-117.
- Dermen, K.H., Cooper, M.L., & Agocha, V.B. (2000). Inhibition conflict and alcohol expectancy as moderators of the relationship between

- alcohol use and risky sex in adolescents. *Journal of Studies on Alcohol* 59(1), 71-77.
- Estrin, D. (1999). In Ghana, young men's condom use is linked to lack of barriers, perceived susceptibility to HIV infection. *International Family Planning Perspectives*, 25, 106-107.
- Ford, K., & Norris, A.E. (1998). Alcohol use, perceptions of the effects of alcohol use, and condom use in urban minority youth. *Journal of Acquired Immune Deficiency Syndrome and Retrovirology*, 17, 269-274.
- Fritz, K. E., Woelk, G.B., Bassett, M.T., McFarland, W.C., Routh, J.A., Tobaiwa, O., & Stall, R.D. (2002). The association between alcohol use, sexual risk behavior and HIV infection among men attending beerhalls in Harare, Zimbabwe. *Journal of AIDS and Behaviour*, 6(3), 221-228.
- Gordon, C.M., Carey, M.P., & Carey, K.B. (1997). Effects of drinking event on behavioural skills and condom attitudes in men: Implications for HIV risk from controlled experiment. *Health Psychology*, 16, 490-495.
- Kachieng'a, M. (2003). *Link between alcohol and risky sexual behaviour*. Report of the national workshop on alcohol and other substance abuse and HIV/AIDS. Gaborone Sun Conference Centre, Ministry of Health. Gaborone, Botswana. 24-27 June, 2003.
- Kilmarx, P. (2003). *Association between alcohol and HIV*. Report of the national workshop on alcohol and other substance abuse and HIV/AIDS. Gaborone Sun Conference Centre, Ministry of Health. Gaborone, Botswana. 24-27 June, 2003.
- King, R., (1999). *Sexual Behavioural Change for HIV: Where Have Theories Taken Us? UNAIDS Best Practice Material Collection: Key Material. UNAIDS/99/27E*.
- Leigh, B. (1999). Thinking, feeling, and drinking alcohol expectancies and alcohol use. In Peepe, S. & M. Grant (eds). *Alcohol and Pleasure: A Health Perspective*. International Centre for Alcohol Policies: Series on Alcohol and Society.
- MacDonald D. (1996). Notes on the socio-economic and cultural factors influencing the transmission of HIV in Botswana. *Social Science & Medicine*, 42(9), 1325-1333.
- Ministry of Health. (2001). *The sexual behaviour of young people in Botswana*. Gaborone, Botswana.
- National AIDS Coordinating Agency. (2003a). *Status of the 2002 National Response to the UNGASS Declaration of Commitment on HIV/AIDS*. Ministry of State President, Gaborone, Botswana.

## ALCOHOL & CONDOM USE

- National AIDS Coordinating Agency. (2003b). Botswana 2003 second generation HIV/AIDS surveillance: A technical report. Ministry of State President, Gaborone, Botswana.
- National Institute on Alcohol Abuse and Alcoholism (NIAAA).(2002). *Alcohol Alert*. Number 57, September (downloaded from NIAAA website).
- Peltzer, K. (2003). Drinking motives, behaviour and problems among black South African university students. *African Journal of Drug & Alcohol Studies*, 2(1&2), 1-10.
- Pollack, M., Paicheler G., & Pierret J. (1992). *AIDS: A Problem for Sociological Research*. Sage Publications, London.
- Population and Housing Census. (2001). *Population of towns, villages and associated localities*. Central Statistics Office. Gaborone, Botswana.
- Shelton, J.D., Halperin, D.T., Nantulya, V., Potts, M., Gayle, H.D., & Holmes, K.K. (2004). Partner reduction is crucial for balanced "ABC" approach to HIV prevention. *Education and Debate*, 238, 891-893.
- Stewart, S.H., Zeitlin, S.B., & Samoluk, S.B. (1996). Examination of a three-dimensional drinking motives questionnaire in a young adult university student sample. *Behaviour Research & Therapy*, 34(1), 61-71.
- Talbot, E.A., Kenyon, T.A., Moeti, T.L., Hsin, G., Dooley, L., El-Halabi, S., & Binkin, N.J. (2002). HIV Risk Factors Among Patients with Tuberculosis—Botswana. *International Journal of Sexually Transmitted Diseases and AIDS*. 139(5), 311-317.
- Tsimako, T. (2003). *Tsogang banna, emang basadi*. Report of the national workshop on alcohol and other substance abuse and HIV/AIDS. Gaborone Sun Conference Centre, Ministry of Health, Gaborone, Botswana. 24-27 June, 2003.
- Weiss, R.S. (1994). *Learning from Strangers: The Art and Method of Qualitative Interview Studies*. New York: The Free Press.
- WHO (1993). *The Health of Young People: A Challenge and a Promise*. World Health Organisation, Geneva.

#### BOOK REVIEW

***The E in Rave: A profile of young ecstasy users and its implications for educators***

Fanitsa Servogiannis, University of South Africa, Pretoria, 2003

ISBN 1-86888-235-7

Price: South Africa: R89, 00 (VAT and postage included)

Other countries in Africa: R98, 10 (airmail included)

This clearly written and attractively illustrated book fills a gap in the current literature on recreational drug use in South Africa. The explicit purpose of the book is to provide educators of adolescents with accurate information about the use and abuse of Ecstasy and its potential complications. (Educators are broadly defined as parents, teachers, guidance counsellors and psychologists.) The book not only meets this aim, but also provides a very useful background to the Ecstasy and Rave culture in South Africa.

The book is slim (less than 150 pages) and divided into five chapters. An introductory chapter provides a brief history of Ecstasy use throughout the world and in South Africa, and includes definitions of a number of key concepts such as 'rave' and 'youth'. The second chapter is perhaps one of the most useful of the book and includes a detailed explanation of the composition of Ecstasy (MDMA - methylenedioxyamphetamine), and a comprehensive and clear description of the physical and emotional effects of the drug. Educators will find the photographs of different types of Ecstasy pills and the simple anatomical illustrations of the neurochemical effects on the brain very useful. Issues of causality versus association in attributing effects to MDMA are well explained with a welcome limit on scientific jargon. Students and researchers working in the alcohol and other drug field will find this overview especially useful.

The third chapter departs from a single focus on the drug itself and considers the broader environment of the Rave culture which so often provides a backdrop to regular Ecstasy use. The author warns that 'it is risky to theorise about Rave culture' (page 85), but is nonetheless able to convey to the educator the many facets of this culture. Dancing, mysticism and spirituality are briefly explored. There is little to no discussion of Ecstasy use by young people other than middle-class ravers and use in countries neighbouring South Africa is not addressed.

## BOOK REVIEW

The fourth chapter will be more useful to the researcher than the educator as it details the results of a survey of young people attending Durban rave clubs who had tried MDMA at least once. Graphs of the quantitative data allow the reader to quickly scan the results, but it is the qualitative information contained in comments such as: 'You hear all that negative stuff...then you go to a Rave and try it anyway and you realise, 'Man, they bullshitted me!' (page 105) that provides a richer picture of the drug scene. Unfortunately, very few of the verbatim comments are included.

The last chapter attempts to provide an overview of how to address drug-taking by a young person and describes a number of approaches and some strategies. A list of contact numbers for relevant organisations based in South Africa is provided. The educator will find the section on the implications of this study for adolescents, parents and teachers helpful, but perhaps lacking in practical steps to address problematic drug use. The author stresses that we need to discuss the current lack of conclusive data from controlled trials with young people, rather than present them with pseudo-facts about Ecstasy which they very soon disprove.

Overall, this book will provide concerned parents and teachers (and young people!) with an accurate account of MDMA use within South Africa. Although the survey itself is limited to South Africa, researchers and educators living in other African countries will still find the background chapters informative. The tone is refreshing in its complete lack of moralising and data and facts are presented clearly. However, those looking for a practical guide to dealing with drug use will be disappointed, with this possibly being beyond the scope of such a book. At times the book suffers from resembling an academic dissertation too closely, but it is rescued by the colourful photographs, illustrations and generally easy-to-read text. School libraries and professional organisations working with young people will find *The E in Rave* a valuable and affordable addition to their collections.

*Reviewed by:*

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## AFRICAN JOURNAL OF DRUG & ALCOHOL STUDIES

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# AFRICAN JOURNAL OF DRUG & ALCOHOL STUDIES

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Perceived effects of alcohol use on sexual encounters among adults in South Africa.....	1
<i>Neo K. Morojele, Millicent A. Kachieng'a, Matsobane A. Nkoko, Kgaogelo M. Moshia, Evodia Mokoko, Charles D. H. Parry, A. Mwansa Nkowane, &amp; Shekhar Saxena</i>	
Oral fructose-induced disposition of blood ethanol and associated changes in plasma urate.....	21
<i>Innocent Onyesom &amp; Emmanuel O. Anosike</i>	
The nature and extent of heroin use in Cape Town: A qualitative study.....	31
<i>Andreas Plüddemann &amp; Charles D. H. Parry</i>	
Does alcohol use take away condom use? Qualitative evidence from Selibe Phikwe and Mahalapye town districts, Botswana.....	53
<i>Joseph M. N. Pitso</i>	
<b>Book review</b>	
<i>The E in Rave: A profile of young ecstasy users and its implications for educators.....</i>	74
<i>By Fanitsa Servogiannis</i>	
<i>Reviewed by Nandi Siegfried</i>	
<b>INSTRUCTIONS TO CONTRIBUTORS.....</b>	<b>76</b>

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