

Drug Use and HIV Risk Behaviour in Three Urban South African Communities

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ABSTRACT The present study assesses drug usage and HIV risk using a modified version of the Drug Abuse Screening Test, Short Form (DAST-10) for substances other than alcohol among a sample of urban South African dwellers. Results indicate that the prevalence of (more than once) illicit drug use was 25% for cannabis, followed by methamphetamine (Tik) (7.3%), mandrax (5.4%), pills from the street (3.3%) and any drug injected by needle (1.2%). Nearly one in three urban dwellers showed symptoms of drug addiction over the past 12 months as indicated by scores on the DAST-10. Drug use in sexual contexts was related to HIV risks; the strongest predictors for HIV risk were cannabis use and sharing needles before sex, partner used cannabis and shared needles before sex and a high drug abuse score on the DAST-10. Based on the prevalence of drug use and its relation to HIV risk in these urban samples institutions such as health facilities are encouraged to provide screening opportunities to identify and to provide services for groups at high risk for drug abuse.

INTRODUCTION

South Africa has a massive HIV/AIDS problem with an estimated 10.8% of the population aged 2 years and older HIV positive (16.2% among persons 15 to 49 years) (Shisana et al. 2005). The epidemic largely affects Black Africans and younger women compared to young men. The key risk factors driving the epidemic include multiple sex partners, inconsistent condom use, age-mixing, inadequate access to prevention information and low self-perceived risk of HIV. Most of the HIV infections in South Africa are transmitted sexually, followed by vertical transmission (Shisana et al. 2005).

Based on national surveys current (past month) use of cannabis ranged among adolescents from 9% in 2002 to 2% in 2005, and among adults 2% (4.4% among men and 0.3% among women) in 2005. In 2005, past 3 months use of other illicit drugs was highest for cocaine/crack (0.3%), mandrax/sedatives (0.3%), followed by club drugs/amphetamine-type stimulants

(0.2%), opiates (0.1%) and hallucinogens (0.1%). Comparisons revealed that the prevalence and intensity of most illicit drugs used was higher among males, lower educated, and living in urban areas compared to females, higher educated, and living in rural areas (Peltzer and Ramlagan 2007; Peltzer et al. in print; Shisana et al. 2005). Kalichman et al. (2006b) found in three Cape Town communities cannabis use ranged from 11% in urban residential neighbourhoods, 13% in a racially integrating township and 19% in an African township, and cocaine use was 2-3% in the three communities. Drug treatment data provide information about those seeking help. The primary substance(s) of abuse at admission to most government-funded treatment centres in 2006 in South Africa was alcohol 51.3%, cannabis 19.9%, methamphetamine (Tik) 5.2%, crack/cocaine 7.8%, cannabis and mandrax 2.6%, heroin/opiates 5.5%, and prescription and over-the-counter drugs 2.8% (Peltzer et al. in print). Overall the number of treatment admissions has significantly increased over the past 10 years. The percentage of admissions for cannabis, heroin, and methamphetamine increased between 1996 and 2005, while the admission percentages decreased for alcohol. Cannabis abuse alone increased from 14% in 1999 to 17% in 2005 of all treatment demand. Cannabis mixed with mandrax has remained stable from 7% in 1999 to 7% in 2005 (Peltzer et al. in print).

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Further, it was found that cannabis use was associated with HIV status (Shisana et al. 2005). Cannabis use was furthermore found to be associated with having multiple sexual partners, a finding that has been replicated in studies conducted elsewhere (e.g., Brodbeck et al. 2006; Castilla et al. 1999; Howard and Wang 2004). For an example in a Spanish study that looked a variety of drugs and sexual behaviour, it was found that greater frequency of drunkenness and cannabis use were associated with having more than one sexual partner, sexual risk behaviour (i.e. more than one partner and failure to use a condom regularly) was more frequent among persons who had been drunk or used cannabis or cocaine (Castilla et al. 1999). This finding is similar to Shisana et al. (2005), in relation to cannabis, individuals who had used cannabis (19.7%) were more likely to have more regular sexual partners than those who have never used cannabis (4.7%). Even when looking at irregular sexual partners those who used cannabis had more irregular partners compared to those who did not use cannabis.

The Shisana et al. (2005) study found that alcohol and cannabis use did not influence unprotected sex, which conforms to other studies which found alcohol use to be inconsistently related to protective behaviours (e.g., condom use) (Cooper, 2002). Anderson et al. (1999) found that persons at risk for HIV because of their sexual behaviour or drug use were not more likely to use condoms than were persons not at increased risk.

Previous epidemiological research has examined the prevalence of drug use other than alcohol among the general population (Shisana et al. 2005); however, much less attention has been given to drug abuse. Despite the increasing rates of illicit drug use among the general population (Peltzer et al. 2007) there is a paucity of research assessing possible drug abuse and HIV risk in the general population. Previous research seem to indicate that the prevalence and intensity of most illicit drugs used was higher among persons living in urban areas compared to rural areas (Peltzer et al. in print), and studies with drug using HIV risk populations such as sex workers (Parry et al. 2008; Wechsberg et al. 2006) and men who have sex with men (Parry et al. in print) in urban areas in South Africa. This prompted the study to focus on "urban" (inner city) populations.

There is also a lack of information regarding screening instruments that may be used to detect possible drug abuse (other than alcohol) among

South Africans. One screening test that could be considered for this population is the Drug Abuse Screening Test, Short Form (DAST-10), a brief screening instrument that can be used in clinical and non-clinical settings to detect possible substance abuse problems associated with the use of a wide variety of drugs other than alcohol (Skinner 1982).

The main objectives of this study were (1) to assess the prevalence of drug usage and associated problems among urban South Africans, and (2) to examine the associations between drug use and HIV risk.

METHODS

Sample and Procedure: The sample included 1379 persons (46.7% men and 52.7% women) from three urban areas of Queenstown (n=384, 27.8%), Ekurhuleni, Tembisa (n=597, 43.3%) and Cape Town, Cape Flats (n=398, 28.9%) in South Africa. In both Queenstown Municipality and Ekurhuleni Metropolitan Council, one third of the data were collected from some patients attending a health clinic and the rest from places where people gather such as bus or taxi or train stations, shops and vendors, street junctions, and social congregating areas in one African township and one coloured township each area. In Cape Town data were collected in community centres of two Coloured townships in the Cape Flats. These venues were selected because they represent all public access areas in the township. Participants were approached by a fieldworker and asked whether they would take a short time to answer a confidential questionnaire. All potential participants present at the venue were approached to participate and more than 95% of persons approached agreed to complete the survey. Sixty-five percent of all persons who agreed to complete the survey were able to self-administer the survey with minimal assistance; about one in three (35%) of participants required reading assistance and were therefore interviewed. Participants received 15ZAR (US\$1.75) to compensate for their time and effort in participating. The English version of the survey instruments were translated into three target languages (Afrikaans, Xhosa, Zulu). Back-translation procedures were performed through several steps in order to keep the translated version in concordance with the original and to be adaptable to South African cultures.

MEASURES

Demographic Characteristics: Participants reported their age, race, years of formal education, whether they were employed, and their marital status.

The Drug Abuse Screening Test (DAST-10) is a brief screening instrument used to assess possible abuse of drugs other than alcohol in the past 12 months. Respondents were instructed that DAST-10 questions were about drugs other than alcohol, and they were instructed to answer “yes” or “no” to each of the DAST-10 items. Respondents were informed that drug refers to the use of prescription drugs not prescribed to the respondent, or the use of prescription drugs in a manner not intended by the prescribing clinician, or the use of other drugs such as cannabis (dagga), cocaine, LSD, ecstasy, and others. The DAST-10 items used in this study are listed in Table 3.

The DAST was originally modified based on the Michigan Alcohol Screening Test, and the two scales have very similar properties. Developed in North America, the DAST is a well-validated instrument that has been shortened to a 20-item version (DAST-20) and a 10-item version (DAST-10), both of which have been shown to have similar psychometric properties and acceptable internal consistencies (Cronbach’s alpha .85) and test–retest reliabilities ($r=.70$) (Cocco and Carey 1998). Furthermore, the DAST-10 and the DAST-20 correlated (.97) with each other (Cocco and Carey, 1998). The DAST-10 has been shown to have good internal consistency (Cronbach’s alpha = .86), temporal stability (test–retest intraclass correlation coefficient = .71), and the ability to identify individuals who need more intensive assessment for substance abuse problems (Yudko et al. 2007). Coefficient α for the DAST-10 in this study was .85. Based on previous research, we used a cutpoint score of 3 because this cutpoint has shown the best balance between sensitivity and specificity (French et al. 2001; Maisto et al. 2000; Yudko et al. 2007).

Drug Use History: Participants reported if they had ever, once or more than once used cannabis (dagga), mandrax (methaqualone), methamphetamine (known as “Tik”), pills from the street and other drugs.

HIV Risk-related Behaviors: Sexual practices and HIV-risk history factors were assessed by participants reporting their number of male and female sex partners and frequency of sexual

events, including vaginal and anal intercourse with and without condoms in the previous 3 months. Participants were instructed to think back over the past 90 days (3 months) and estimate the number of male and female sex partners they had had and the number of occasions in which they practiced vaginal and anal sexual behaviors with and without condoms. In addition, the lifetime history of sexually transmitted infection (STI) diagnoses and symptoms was also assessed, by participants reporting whether they had ever been diagnosed with an STI and whether they had ever experienced an open sore on their genitals (genital ulcers). A composite of five (six for men) unweighted risk factors was constructed to serve as an index of HIV transmission risks. The risk index consisted of sexual behavioural factors associated with increased risks for sexually contracting or transmitting HIV, specifically (a) engaging in unprotected vaginal and anal intercourse and reporting never having used a condom; (b) having two or more sex partners in the past 3 months; (c) exchanging sex for money, drugs, or a place to stay; (d) having been diagnosed with an STI; and (e) has hit sex partner or was hit by sex partner. It should be noted that STIs may be redundant risk factors, as may be numbers of partners and exchanging sex. However, each risk factor can occur independently, and there is greater risk for HIV transmission with the accumulation of risk factors, such as ulcers caused by an STI (Kalichman et al. 2006a). Cronbach alpha was for the HIV risk screen in this sample .64.

Data Analysis: Associations between categorical variables were tested using chi-square and logistic regression analysis. Correlational analyses were conducted to examine the associations between DAST-10 scores (range 0–10), frequency of illicit drug use.

RESULTS

Table 1 shows that the sample was mainly aged 21–35 years (60.8%), mainly female (53%), mostly had completed secondary education (63.7%), mostly Black African (53.4%) and Coloured (44.0%), mostly unmarried (71.9%) and unemployed (63.5%).

Prevalence Rates of Illicit Use of Drugs and the DAST-10: Overall Sample

The prevalence of illicit drug use was 25% for

Table 1: Sample characteristics (N=1379)

Category	N	%
<i>Age, years</i>		
18-20	177	13.1
21-25	428	31.6
26-35	396	29.2
36-45	216	15.9
46 or older	138	10.2
<i>Sex</i>		
Male	644	47
Female	727	53
<i>Education</i>		
No formal education	46	3.4
Primary	225	16.6
Secondary	862	63.7
Tertiary	221	16.3
<i>Race</i>		
Black African	724	53.4
Coloured	598	44
White	26	1.9
Indian/Asian	2	0.1
Other	8	0.6
<i>Marital Status</i>		
Married	378	28.1
Unmarried	966	71.9
<i>Employment Status</i>		
Employed	483	35.5
Not employed	877	63.5

cannabis, followed by Tik (7.3%), mandrax (5.4%), pills from the street (3.3%) and any drug injected by needle (1.2%). Men used significantly more often illicit drugs than women except for drug injection by needle (see Table 2).

As illustrated in Table 3, the 12-month prevalence of reporting one to two DAST-10 items for the overall sample was 58%, and that of reporting three or more DAST-10 items was 28%. For inner city women and men, the three most prevalent DAST-10 items in the past 12 months were as follows: (1) not being able to stop drug use, (2) spouse or parents complained about drug involvement, and (3) feeling bad or guilty about drug use. Urban men were significantly more likely than women to experience nine of the ten DAST-10 items.

Table 2: Illicit drug use

More than once drug use (vs once or never)	Total sample	Men	Women	χ^2
Cannabis	25.0	43.1	8.8	249.51***
Methamphetamine (Tik)	7.3	10.9	3.9	35.85***
Mandrax	5.4	9.1	2.1	47.84***
Pills from the street	3.3	5.4	1.6	24.46***
Any drug injected with needle	1.2	1.0	1.4	2.38
Any other drug	2.7	4.4	1.2	26.22***

*** $P < .001$

Association between the DAST-10 and Frequency of Illicit Drug Use

Correlational analyses showed that the DAST-10 was positively and significantly related to the past 12-month frequency of drug use for 7 drugs, including cannabis ($r = .35, p < .001$), Tik ($r = .55, p < .001$), mandrax ($r = .45, p < .001$), pills from street ($r = .41, p < .001$), any drug injected with a needle ($r = .26, p < .001$), and any other drug ($r = .35, p < .001$).

Drug use and HIV Risk

More than one in five participants indicated that they had used cannabis before sex, and almost one in ten had used Tik or mandrax before sex. Men had used more often cannabis, mandrax, and Tik before sex than women (see Table 4).

Table 5 presents the prevalence of risk behaviour on the HIV risk screen. The most common risk behaviours included vaginal sex without a condom (61%), history of STD (33%), being hit by a sex partner (24%), having two or more female sexual partners in the past three months (27%). Men engaged in more often in HIV risk behaviour (sex without a condom, history of STD, multiple sex partners and transactional sex) than women.

Predictors of HIV Risk

HIV risk behaviour scores were collapsed to binary data (lower risk=0-2 vs. higher risk=3-9) and analysed using logistic regression. Logistic regression was conducted using the HIV risk scores as dependent and drug use items as independent variables. The strongest predictors for HIV risk behaviour scores were cannabis use and sharing needles before sex, partner used cannabis and partner shared needles before sex and a high drug abuse score on the DAST 10 (see Table 6).

Table 3: Prevalence and gender differences in DAST-10 items (n=1379)

	<i>Total sample</i>	<i>Men</i>	<i>Women</i>	<i>Sex differences</i>
1. Did you use drugs other than those required for medical reasons?	14.7	20.8	9.4	35.66***
2. Did you abuse more than one drug at a time?	13.3	19.9	7.6	44.74***
3. Are you always able to stop using drugs when you want to? (reverse scored)	57.1	53.6	60.2	6.21*
4. Have you had blackouts or flashbacks as a result of drug use?	14.5	22.0	7.8	55.57***
5. Do you ever feel bad or guilty because of the use of drugs?	29.1	34.9	24.2	19.00***
6. Does your spouse or parents ever complain about your involvement with drugs?	29.3	37.3	22.3	37.00***
7. Have you neglected your family because of the use of drugs?	16.1	22.2	10.7	33.26***
8. Have you engaged in illegal activities in order to obtain drugs?	11.4	15.7	7.6	22.32***
9. Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs?	16.6	22.8	11.0	34.55***
10. Have you had medical problems as a result of your drug use (e.g., memory loss, hepatitis, convulsions, and bleeding)?	12.4	17.4	8.0	27.86***
DAST score=0	14.1	10.2	17.5	64.35***
DAST score=1-2	57.8	53.4	61.6	
DAST score=3-5	16.9	18.8	15.3	
DAST score=6-10	10.2	17.5	5.6	
DAST score=3 or more	28.2	36.3	20.9	40.18***

*** $P < .001$ **Table 4: Illicit drug use before sex**

	<i>Total</i>		<i>Men</i>		<i>Women</i>		χ^2
	<i>N</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	
Shared needles to inject or shoot up drugs	62	4.5	34	5.4	28	3.9	1.66
Had sex partner who shared needles to inject or shoot up drugs	112	8.2	58	9.0	54	7.6	.98
Used cannabis before sex	293	21.6	237	37.1	56	7.9	162.24***
Partner used cannabis before sex	232	17.1	106	16.6	125	17.6	.22
Used mandrax before sex	107	7.9	84	13.2	23	3.2	45.52***
Partner used mandrax before sex	106	7.8	67	10.5	39	5.5	11.69***
Used Tik before sex	124	9.1	87	13.7	37	5.2	29.01***
Partner used Tik before sex	111	8.2	71	11.1	40	5.6	13.55***

*** $P < .001$ **Table 5: Individual risk items from the HIV risk screening instrument**

	<i>Total</i>		<i>Men</i>		<i>Women</i>		χ^2
	<i>N</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	
Had two or more male sexual partners in the past 3 months	208	15.7	33	5.5	175	24.4	
Had two or more female sexual partners in the past 3 months	352	26.9	337	53.0	15	2.2	
Vaginal sex without condom	826	60.9	423	66.0	399	56.3	13.34***
Anal sex without condom	197	14.6	108	16.9	89	12.6	4.95*
History of STD	444	32.5	247	38.8	197	27.3	20.31***
Has hit a sex partner	321	23.9	222	35.1	97	13.7	83.69***
Has been hit by a sex partner	384	28.5	110	17.5	272	38.3	71.20***
Gave money, drugs or place to stay in exchange for sex	197	14.4	167	26.2	30	4.2	130.11***
Received money, drugs or place to stay in exchange for sex	177	13.0	76	11.9	101	14.1	1.46

* $P < .05$; *** $P < .001$

Table 6: Logistic regression analyses between drug use variables and HIV risk behaviour score

	OR (95% CI) <i>Unadjusted</i>	OR (95% CI) <i>Adjusted</i>
Cannabis before sex	7.34 (5.39-9.99)*	6.53 (4.60-9.27)*
Mandrax before sex	5.54 (3.41-8.98)*	1.36 (0.68-2.69)
Tik before sex	3.48 (2.28-5.30)*	0.82 (0.44-1.51)
Shared needles	8.43 (4.09-17.39)*	4.60 (2.09-10.12)*
<i>Nagelkerke R square=.21</i>		.21
Partner used cannabis before sex	5.19 (3.75-7.20)*	3.34 (2.27-4.91)*
Partner used mandrax before sex	7.71 (4.56-13.05)*	2.44 (1.20-4.99)
Partner used Tik before sex	4.52 (2.83-7.21)*	1.02 (0.54-1.91)
Partner shared needles	4.63 (2.95-7.26)*	2.57 (1.56-4.25)*
<i>Nagelkerke R square=.15</i>		.15
DAST-10 total score		
<i>Nagelkerke R square=.03</i>	1.14 (1.08-1.20)*	

* $P < .001$

DISCUSSION

In this study sample of 1379 inner city adults in South Africa a high prevalence of illicit drug use (25% for cannabis, 7.3% Tik, 5.4% mandrax, and 1.2% any drug injected by needle) was found and 28% reported three or more DAST-10 items in the past year from using a substance other than alcohol, which is higher than in other studies (e.g. 10% among American College students, McCabe et al. 2006). These findings suggest that inner city adults in South Africa may need to be provided with opportunities for screening to detect their at risk status for drug abuse. More importantly, additional efforts are needed to ensure that adequate assessment, monitoring, and treatment options are available for those individuals at risk for drug abuse.

The study found high HIV risk behaviour, e.g. 61% had vaginal sex without a condom. This findings is similar to the most recent national HIV population-based survey in South Africa, where it was found that 62% had not used a condom during the last intercourse. The majority of the adult and youth respondents (66%) in the same study believed that they would not get HIV while 34% believed they probably or definitely would (Shisana et al. 2005). This low HIV risk perception may be one of the factors contributing to low condom use.

The study found that a number of participants had used illicit drugs in the context of sex (more than one in five had used cannabis before sex, and almost one in ten had used Tik or mandrax before sex). The strongest predictors for HIV risk behaviour were cannabis use and sharing needles before sex, partner used cannabis and shared needles before sex and a high drug abuse score

on the DAST 10. This result agrees with the general finding that individuals using cannabis and other substances engage in sexual risk behaviours more often (see, for example, Brodbeck et al. 2006, Castilla et al. 1999; Shisana et al. 2006). These findings suggest that drug abuse and HIV risk prevention intervention programmes should be targeted to inner city adults in South Africa.

Limitations

This study was cross-sectional and could not test if a direct causal relationship between drug use and HIV risk. This study also did not include multivariate analyses that may identify direct and interactive effects of expectancies about alcohol and other drugs, alcohol and drugs in the context of sex, intoxication before intercourse, sexual norms, roles, impulsivity, perceived vulnerability, and risk taking related to other behaviours.

Furthermore, as non-probability sampling was used and amongst mainly Africans and Coloureds only, the findings are not generalisable to the inner city populations in South Africa. Despite these limitations, we conclude that our findings have implications for increased attention to the drugs use and HIV risk prevention interventions in urban areas in South Africa.

CONCLUSION

Because cannabis and other drug use may be part of the lifestyle of many at-risk individuals, attention needs to be given to the role of drugs may play in sexual risk taking. It is therefore important to look at drugs for prevention interventions. On the other hand cannabis remains an illegal substance in South Africa

nonetheless it is easy to access and grow. It is also a fact that certain sections of the population are advocating the legalization and use of cannabis for religious and medicinal purposes in South Africa in the face of this evidence it would import to explore the impact of cannabis use of sexual behaviour and how this will in turn impact on infection with HIV.

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