

The prevalence of substance use and its associations amongst students attending high school in Mitchells Plain, Cape Town

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Abstract

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Purpose: In South Africa, there has been an increase in illicit drug trafficking and consumption and associated problems since the 1990s. Mitchells Plain in Cape Town is seen as a community battling with crime, gangsterism, unemployment, overcrowding, substance abuse and poverty. This study evaluated the actual prevalence of substance abuse amongst high school students in this community and factors associated with substance use. In particular, the study evaluated the use of *tik* (crystal methamphetamine), a relatively new drug.

Method: A cross-sectional study was performed amongst 12 secondary schools in Mitchells Plain; Grade 8 and Grade 11 classes were randomly selected to produce a sample of 438 learners. The students completed an anonymous questionnaire that contained enquiries on substance use, demographic and school performance details, and personal and sexual risks.

Results: Lifetime and annual prevalence rates were: alcohol (50.6%/41.0%), tobacco smoking (49.7%/36.2%), cannabis (32.1%/21.1%), crystal methamphetamine (9.2%/4.6%), ecstasy (4.4%/2.7%), mandrax (2.1%/0.9%), solvents (3.0%/0.9%) and cocaine (0.9%/0.9%). Illicit substance use was significantly associated with age (OR 1.6; CI 1.2–2.2), substance use by other members of the household (OR 2.8; CI 1.2–6.3), carrying a knife (OR 10.9; CI 4.2–28.8), attempted suicide (OR 3.7; CI 1.4–9.5) and higher sexual risk (OR 1.6; CI 1.2–2.3).

Conclusion: The prevalence of substance use amongst adolescent students attending high schools in Mitchells Plain, Cape Town, is high for all substances relative to national and international figures. Government officials, educators and health care workers are alerted to the need for more comprehensive interventions to prevent and treat substance abuse in this and similar communities.

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Introduction

In South Africa, there has been a dramatic increase in illicit drug trafficking, consumption and associated problems since the 1990s.¹ Reasons for this are globalisation as well as political and social transformation, which have resulted in changing trade regulations and the increased movement of people and goods across borders, with an accompanying increase in the availability and supply of illicit substances. The real price of illicit drugs has also dropped, making them more affordable and available to adolescents.²

Worldwide, the use of alcohol and illicit substances contributes 9.8% to the global burden of disease for people aged between 15 and 29 years.^{3,4} In developing countries, alcohol and illegal drugs are responsible for 4.1% of deaths and 4.4% of disability-adjusted life years (DALYs) in the same age group.

Patterns of substance use, developed during adolescent years, predict patterns of use, mortality and morbidity later in life.⁵

In South Africa, substance use, including tobacco, alcohol, cannabis and cocaine, is a common problem amongst school-going adolescents.⁶ Alcohol is the primary substance of abuse in young adolescents, with lifetime use prevalence rates of between 25% and 40% and hazardous use of 12%.^{2,3} Studies have suggested a greater prevalence in school versus community-based surveys amongst males, as well as in poor, disadvantaged and rural areas.² In Cape Town, however, a higher lifetime prevalence of 43% has been reported amongst adolescents.³

The prevalence of lifetime tobacco smoking amongst South African adolescents aged between 12 and 17 years is reported as 22%. A wide variation in the prevalence of tobacco smoking amongst South African adolescents is observed. Cape Town, at 27%, is at the higher end of the spectrum.

While the prevalence of illicit substance use in adolescent students is generally lower than that of tobacco and alcohol, the harmful effects and health risks can be more serious.⁷

The annual prevalence of illicit drug use amongst Grade 8 and Grade 10 students in the USA during 2007 was 13% and 28%, respectively.^{5,8} In a comparative South African study, the prevalence of illicit substance use was reported to be 12% in both grades.⁸

Cannabis is the most common illicit substance used in South Africa, with a prevalence of 5% to 10% amongst adolescents. Prevalence rates appear to have been steadily increasing over the past 15 years. There is a higher prevalence in males and urban areas and amongst coloured and white students compared to other racial groups.⁹ Its adverse effects include social, interpersonal and legal difficulties, cognitive impairment, respiratory tract infections, the risk of psychosis, and dependence in 10% of users.⁹

In the United Kingdom, 5% of adolescents use inhaled solvents⁹ while, in South Africa, rates of 7% for rural youths aged 10 to 21 years have been reported.⁶ Rates are much higher in some communities; 46% of male schoolchildren in KwaZulu-Natal, for example, had inhaled benzene and 35% had inhaled thinners. The use of inhaled solvents is most common amongst younger adolescents and tends to decline with age. The early use of inhalants may reflect the fact that many inhalants are affordable, available for purchase, often available in the home and legal to buy and possess. Diminished use in older students reflects the perception that these inhaler agents are considered as “kids’ drugs”.¹⁰

Ecstasy use amongst students has been increasing in the USA. It is considered to be appealing to young individuals with anxiety and depression because it causes feelings of relaxation, euphoria and friendship. Its annual prevalence in the USA has grown from 2.4% in 2004 to 3.5% in 2007.¹⁰ The Henry Kaiser Foundation described its prevalence in South Africa as 2% in 2001.¹¹ Very few other studies have reported on its prevalence in South Africa.

Crystal methamphetamine is a substance that has been strongly associated with use in the Mitchells Plain suburb of Cape Town, as highlighted by local media. It is assumed to be prevalent amongst adolescent and early-adult users. Its desired effects include increased vigour, intensified emotions, increased alcohol tolerance and decreased appetite. Its detrimental effects include irritability, violence, paranoia, cardiovascular disease, renal disease, teratogenesis and neurological sequelae, and carries a high potential for psychological and physical dependence.⁷ It is known as ‘ice’ and ‘crystal meth’ and its colloquial term in Cape Town is *tik*. Few studies have been done to document its prevalence in adolescent students in South Africa.

In South Africa, the trend is that tobacco, alcohol and solvents are used at a young age, with the more illicit drugs used by older adolescents; there is usually a higher prevalence of substance abuse amongst male and older adolescents.

Students who come from intact families and have a religious faith are less likely to abuse substances,^{3,12,13,14,15,16} and students who have family members that abuse substances are at higher risk.^{13,17} Peer groups and relationships have the potential both to increase and decrease risk.¹³ Poor school performance, absenteeism, being bullied and carrying a knife are associated with substance abuse.^{10,13,18} Individuals who use substances are at a higher risk of engaging in risky sexual behaviour, with the potential for teenage pregnancy and contracting sexually transmitted infections and HIV.

Historically, South African prevalence studies for adolescent substance use have been designed to represent different racial categories across regions rather than specific communities. Since the end of apartheid, urban communities have become more racially heterogeneous and, as interventions need to be tailored to communities and not racial groups, the design of studies also needs to change. This study focused on one such community in Mitchells Plain, Cape Town, where the media has highlighted the problem of substance abuse, and intended to describe the prevalence of substance abuse amongst high school students and associated risk behaviours.

Methods

A cross-sectional survey was performed across secondary schools in Mitchells Plain from April to September 2007.

Setting

Mitchells Plain is a densely populated suburb of Cape Town, with over 350 000 people, and was established in the 1970s during the notorious apartheid era as a township designated for the coloured community. It is known as a community battling with crime, gangsterism, unemployment, overcrowding, substance abuse and poverty.¹⁹ Since the repeal of the apartheid laws in the early 1990s, the community has become more heterogeneous, with Xhosa-speaking people from the Eastern Cape moving into the area. Thirty-eight per cent of the population is aged between 15 and 35 years.

Sampling

A sample size of at least 385 was calculated to give 5% precision with 95% confidence intervals. Twelve out of the 15 high schools agreed to participate, submitting a list of the number of Grade 8 and Grade 11 classes and the number of students per class. Classes were then randomly selected from each of the Grade 8 and Grade 11 lists until the required sample size was obtained. All the students in a selected class were invited to complete the questionnaire, a total of 545 students eventually being selected to allow for non-participation. All 12 high schools were represented in the selected grades, 226 students being selected from Grade 8 and 212 from Grade 11. Of the three high schools that refused to participate, one was undergoing a change of leadership and the other two did not respond to any

forms of communication. Grade 8 and Grade 11 classes were selected to allow comparison with similar studies and because this covered the upper and lower ends of the adolescent age range.

Instrument

Data were collected by an anonymous, structured, self-completed questionnaire previously validated for use in a similar survey.¹⁶ Relevant modifications were made to incorporate information specific to this study and its local context, such as the use of *tik*. In addition to substance use, the questionnaire included the demographic, behavioural, educational and psychosocial information of the learners.

Procedure

The parents of the students selected to participate in the study were provided with information about the study and given the opportunity to decline consent for their children to participate. The students were also all informed and asked to give their written assent. Ethical approval was obtained from Stellenbosch University. Teachers and school staff were excluded from the classrooms while the questionnaire was being completed to increase the perceived level of confidentiality and, on completion, the questionnaires were placed in a ballot-type box.

Data analysis

Data analysis was performed using Statistica Version 8. An analysis of variance was used to determine associations between continuous and categorical variables. If the data were not equally distributed and the test for the homogeneity of variance was statistically significant, a non-parametric test, the Mann-Whitney Test, was applied to determine statistical significance. Categorical data were analysed using cross-tabulation and the maximum-likelihood chi-square test. Continuous variables were compared to each other using regression and correlation analysis with the Spearman r value. Variables found to be significantly associated with substance use outcomes were subjected to a multiple logistic regression analysis.

A personal risk score was determined by giving one point to each question pertaining to personal risk behaviour, with a possible total score of four. For the calculation of sexual risk, students with a single sexual partner during the past 12 months were given one point, students with two sexual partners were given two points and students with three or more sexual partners were given three points. Students were given one point if they did not use any contraception. Students reporting that their last sexual partner was unfamiliar to them were also given one point. The maximum points obtainable for sexual risk were therefore five points.

Results

The questionnaire was completed by a total of 438 students. Their baseline characteristics are described in Table 1.

Table 1: Demographic characteristics of respondents (n = 438)

Characteristic	Variables	N	%
Gender	Males	209	47.7
	Females	229	52.3
Age	< 16 yrs	222	50.9
	≥ 16 yrs	214	49.1
Grade	Grade 8	226	51.6
	Grade 11	212	48.4
Racial group	Coloured	366	83.9
	Black	55	12.6
	White	12	2.8
	Asian	3	0.7
Spoken languages	English	338	77.2
	Afrikaans	326	74.5
	Xhosa	53	12.1
	Zulu	9	2.1
Raised by	Both parents	277	63.2
	Single parent	113	25.8
	Other	48	11.0
	Step-parent	26	5.9
School performance	Repeated a grade	101	23.1
	Grade A	66	15.1
	Grade B	76	17.4
	Grade C	80	18.3
	Grade D	58	13.2
	Grade E	30	6.8
	Grade F	12	2.7
Household members using substances	Cigarettes	297	67.8
	Alcohol	205	46.8
	Cannabis	77	17.6
	Tik	36	8.2
	Mandrax	13	3.0
	Ecstasy	10	2.3
	Crack cocaine	4	0.9
Religion	Believes in a religion	397	90.7
	Participates in religious activities	355	81.1
Social behaviour	Perpetrated theft	116	26.5
	Damaged property	50	11.4
	Carried knife during past 4 weeks	38	8.6
	Bullied somebody at school	60	13.7
	Was victim of bullying	86	19.6
	Was involved in physical fights	129	29.5
	Was gang member	29	6.6
Was involved in acts of gangsterism	18	4.1	
Suicidal behaviour	Suicidal ideation	103	23.5
	Communicated suicidal ideation	80	18.3
	Suicide attempt	65	14.8
Sexual behaviour	Sexual intercourse (lifetime)	103	23.5
	Number of students who had sex with multiple sexual partners	34	33.0
	Number of students who had sex and used contraception on last occasion	66	64.0
	Number of students who had sex and used condom on last occasion	51	77.3

Table II: Prevalence of various substances used amongst respondents (n = 438)

Substance	Variable	n	%	Variable	Mean	SD	N
Alcohol	Lifetime	221	50.6	Age: First use (yrs)	13.3	2.5	214
	Past year	179	41.0	Monthly use (days)	3.7	5.9	198
	Past month	150	34.3	Binge days/mth	3.4	5.4	184
Cigarettes	Lifetime	217	49.7	Age: First use (yrs)	12.6	2.1	213
	Past year	158	36.2	Monthly use (days)	13.8	12.5	182
	Past month	154	35.2	No. of cigs/mth	102.8	202.0	183
Cannabis	Lifetime	140	32.1	Age: First use (yrs)	14.2	1.8	137
	Past year	92	21.1	Monthly use (days)	6.3	9.3	63
	Past month	63	14.4				
Tik	Lifetime	40	9.2	Age: First use (yrs)	14.5	1.6	19
	Past year	20	4.6	Monthly use (days)	9.4	6.9	8
	Past month	10	2.3				
Ecstasy	Lifetime	19	4.4	Age: First use (yrs)	14.9	1.4	19
	Past year	12	2.7	Monthly use (days)	0.7	0.5	15
	Past month	10	2.3				
Buttons (Mandrax)	Lifetime	9	2.1	Age: First use (yrs)	14.1	2.2	9
	Past year	4	0.9	Monthly use (days)	2.2	2.0	6
	Past month	4	0.9				
Solvents	Lifetime	13	3.0	Age: First use (yrs)	11.3	1.4	13
	Past year	4	0.9	Monthly use (days)	0.8	1.1	9
	Past month	4	0.9				
Crack	Lifetime	4	0.9	Age: First use (yrs)	11.3	3.3	4
	Past year	4	0.9	Monthly use (days)	6.3	6.2	4
	Past month	4	0.9				

Table III: Relationship of substance use in past year to continuous variables

Annual use		Age (years)			Absenteeism (days)			Household members (number)		
		n	Mean	P value	n	Mean	P value	n	Mean	P value
Cigarettes	Yes	158	15.8	< 0.01	152	5.3	0.86	55	5.7	0.44
	No	56	14.7		53	4.3		156	5.2	
Alcohol	Yes	179	15.8	0.17	172	5.9	0.24	179	5.3	0.44
	No	40	15.3		39	3.5		39	5.6	
Cannabis	Yes	92	16.3	0.06	89	7.1	0.75	92	5.2	0.59
	No	40	15.3		46	4.2		45	5.4	
Other illicit substances	Yes	32	16.2	< 0.01	29	12.8	0.20	32	5.2	0.47
	No	403	15.1		375	3.9		394	5.5	
		Personal risk score			Sexual risk score			Age of sexual debut		
Cigarettes	Yes	158	1.5	0.03	158	0.7	0.24	60	14.3	0.16
	No	56	1.1		56	0.5		13	13.3	
Alcohol	Yes	179	1.4	< 0.01	179	0.7	0.53	71	14.0	0.63
	No	40	0.9		40	0.6		13	13.7	
Cannabis	Yes	92	1.6	0.93	92	1.0	0.29	51	14.2	0.52
	No	47	1.6		47	0.8		19	13.8	
Other illicit substances	Yes	32	1.1	0.03	32	1.3	< 0.01	20	13.5	0.40
	No	405	1.5		405	0.4		84	14.0	

The mean age was 15.2 (SD 1.7) and the mean number of household members 5.4 (SD 2.3), with a mean number of 1.2 people (SD 1.2) sharing the students' rooms. The students were absent from school for a mean of 3.9 days (SD 6.3) in the previous term. The mean age of sexual debut was 13.9 years (SD 2.3) and the mean number of sexual partners in the last 12 months was 2.0 (SD 2.1).

Table II describes the prevalence rates for the various substances in terms of lifetime use, as well as use in the past month or year and the age of first use. The lifetime prevalence for *tik*, a relatively new substance, was found to be 9.2%.

Of the 34% of students reported having a drink during the past month, 12.1% consumed alcohol on at least three

days of the month. Harmful alcohol consumption (binge drinking, defined as having more than five drinks at a single time) during the last month was reported by 21.0% of the learners, who drank more than five drinks at a time on an average of 3.4 days (CI: 2.9–4.5).

Table III demonstrates the associations between continuous variables and substance use by the students during the past year, and Table IV the associations with categorical variables. *Tik*, ecstasy, solvents, buttons and crack were analysed together as a single variable and referred to as "other illicit substances".

Regarding to binge drinking, this study demonstrated an association with physical fights during the previous 12 months. The students who engaged in physical fights were

Table IV: Relationship of substance use in past year to categorical variables

Categorical variable		Cigarettes use (N = 158)			Alcohol use (N = 179)			Cannabis use (N = 92)			Other illicit substances (N = 32)		
		n	%	p	n	%	p	n	%	p	n	%	p
Gender	Male	77	48.7	0.45	86	48.0	0.52	50	54.4	0.12	21	65.6	0.03
	Female	81	51.3		93	52.0		42	45.7		11	34.4	
Repeated last grade	Yes	44	28.0	0.33	50	28.1	0.28	27	29.4	0.76	13	40.6	0.02
	No	113	72.0		128	71.9		65	70.7		19	59.4	
Prayed	Yes	132	13.7	0.85	143	82.2	0.08	71	78.0	0.02	25	78.1	0.34
	No	21	86.3		31	17.8		20	22.0		7	21.9	
Raised by	Both parents	107	67.7	0.41	117	64.3	0.54	62	67.4	1.00	21	65.6	0.49
	Single parent	37	23.4		47	26.3		22	23.9		6	18.8	
	Other parent	17	8.9		17	9.5		8	8.7		5	15.6	
Raised by step-parent	Yes	8	5.1	0.93	11	6.2	0.78	5	5.4	0.49	1	3.1	0.45
	No	150	94.9		168	93.9		87	94.6		31	96.9	
Alcohol consumption in home	Yes	79	50.0	0.65	114	63.7	0.66	55	59.8	0.05	20	62.5	0.07
	No	79	50.0		65	36.3		37	40.2		12	37.5	
Cigarette use in home	Yes	130	82.3	0.35	141	78.8	0.21	76	82.6	0.80	24	75.0	0.39
	No	28	17.7		38	21.2		16	17.4		8	25.0	
Illicit substance use in home	Yes	43	27.2	0.51	49	27.5	0.10	32	34.8	0.55	15	46.9	0.00
	No	115	72.8		129	72.5		60	65.2		17	53.2	
Perpetrated theft	Yes	52	33.1	0.36	60	33.9	0.62	37	40.7	0.01	11	34.4	0.33
	No	105	66.9		117	66.1		54	59.3		21	65.6	
Damaged property	Yes	23	14.7	0.55	25	14.2	0.08	17	18.9	0.83	7	22.6	0.07
	No	133	85.3		151	85.8		73	81.1		24	77.4	
Carried knife during past four weeks	Yes	21	13.4	0.98	24	13.6	0.29	14	15.6	0.15	11	36.7	0.00
	No	136	86.6		153	86.44		76	84.4		19	63.3	
Bullied somebody at school	Yes	26	16.7	0.40	31	17.4	0.94	21	22.8	0.45	9	29.0	0.02
	No	139	83.3		147	82.6		71	77.2		22	71.0	
Was victim of bullying	Yes	24	15.4	0.03	38	21.4	0.36	10	10.9	0.29	7	22.6	0.70
	No	132	84.6		140	78.7		82	89.1		24	77.4	
Was involved in physical fights	Yes	66	42.3	0.24	69	39.0	0.11	40	43.5	1.00	14	45.2	0.63
	No	90	57.7		108	61.0		52	56.5		17	54.8	
Attempted suicide	Yes	26	16.7	0.58	37	20.9	0.62	18	19.6	0.53	10	31.2	0.02
	No	130	83.3		140	79.1		74	80.4		22	68.8	
Involved in acts of gangsterism	Yes	12	7.59	0.56	14	7.8	0.02	10	10.9	0.38	5	15.6	0.07
	No	146	92.4		165	92.2		82	89.1		27	84.4	

NB: Where the sum of Yes and No does not equal N, this is due to missing data

noted to have a significantly more frequent pattern of high-risk alcohol consumption ($p < 0.01$). These students had more alcohol binge days per month than those who did not engage in fights (2.5 vs. 1.3 days). Congruent with the association of engaging in physical fights and binge drinking was the observation that the students who participated in acts of gangsterism also abused alcohol more frequently (3 days per month compared to 1.6 days [$p = 0.05$]).

In this population, the odds of the use of illicit substances by the students who consumed alcohol were 6.6 (CI 1.1–39.0; $p = 0.02$) and 96% of the students who used illicit substances had consumed alcohol during the past year. Cannabis was also significantly associated with more harmful substance use, such as *tik*, ecstasy, buttons and crack. The odds ratio of the use of illicit substances by the students who were using cannabis was OR 3.8 (CI 1.13–11.05; $p = 0.01$). Overall, 85% of the students who used illicit substances had also used cannabis.

Table V reports on a logistic regression of factors associated with substance abuse. After regression, age, illicit substance use at home, carrying a knife, attempted suicide and sexual-risk behaviour remained significantly associated.

Table V: Logistic regression analysis for variables associated with illicit substance use

Variables	Illicit substance use		
	OR	95% CI	p
Age	1.6	1.2–2.2	0.00
Gender	1.6	0.5–4.7	0.39
Repeating a grade	1.3	0.5–3.3	0.60
Illicit substance use in the home	2.8	1.2–6.3	0.02
Personal risk	1.0	0.7–1.4	0.98
Carrying a knife	10.9	4.2–28.8	< 0.01
Being bullied	1.1	0.4–3.0	0.92
Suicide attempt	3.7	1.4–9.5	0.01
Sexual risk	1.6	1.2–2.3	0.01

Discussion

The prevalence of substance use amongst adolescent students attending high schools in Mitchells Plain, Cape Town, is high for all substances. Half of all students had used alcohol during their lifetime and 34% had consumed alcohol during the previous month, compared to 31% previously reported for Cape Town.^{8,16} More than double the number of students had smoked a cigarette during their lifetime, compared to students in the USA and in South Africa as a whole, and more than a third of students in Mitchells Plain had smoked during the previous month, compared to 21% previously reported for Cape Town.^{8,10,11,16} The prevalence for cannabis was three times higher than the national prevalence rate of 10% determined in 2007.⁹

Nine per cent of all students had used *tik* and one in twenty students had used it during the previous year. The use of *tik* surpassed the use of ecstasy, cocaine and crack. Age, domestic substance use, carrying a knife, suicide attempts and risky sexual behaviour were strongly associated with illicit substance use.

The findings of this study corroborate international and local studies that alcohol is the commonest substance of use amongst adolescent students attending high school and that cigarette use is more prevalent than that of cannabis and other illicit substances.^{9,6,13,16,17,20,21} This may be explained by the relative accessibility and availability of alcohol and cigarettes compared to other illicit substances and the social acceptability of alcohol consumption and cigarette smoking.

Although direct comparison is limited by different methodologies, the prevalence rates for alcohol use by students in Mitchells Plain are higher than those in similar international and local studies.^{16,20} Higher levels of alcohol abuse are found in poor and disadvantaged areas, although the nature of the association is not fully understood.^{2,6,7,22,23,24}

Interpersonal violence is the second most common contributor to the burden of disease in South Africa.²⁵ Research has shown that learners who are problem drinkers have higher rates of rebelliousness, antisocial behaviour, aggressive behaviour, delinquency and family problems.²⁶ A World Health Organization report has concluded that alcohol misuse has various negative consequences, such as homicide and alcohol-related motor vehicle accidents.⁴ In South Africa, it has been found that high levels of consumption are associated with violence, crime and traffic-related trauma.²⁷ This carries a high risk of arrest and imprisonment. The strong association between carrying a knife and illicit substance use is a finding of this study that is corroborated in comparative literature.²⁸ Using illicit substances and carrying a knife increase the potential for interpersonal violence and misconduct in schools. Fellow learners, educators and parents should be made aware of the threat of personal harm and should be discouraged from engaging in confrontation with students suspected of using substances.

The prevalence rates for smoking are surprising in view of the low prevalence rates recorded by other national studies, the assumed success of the anti-tobacco lobby, and legislation restricting advertising, public smoking, underage purchasing and incremental increases in taxes and levies.^{6,8} In the USA, a steady decline in adolescent smoking is paralleled by students' perceptions of the diminished availability of cigarettes. Further research is therefore warranted to determine whether restrictions on the sale of cigarettes to under-18-year-olds are being enforced. In addition, further interventions to raise awareness of the harmful effects of

smoking need to be encouraged. This is imperative if one accepts that adolescent smoking is an antecedent to adult smoking and to illicit substance use.¹³ The association of adolescent smoking with family members who smoke is also described elsewhere,¹³ highlighting the importance of family-oriented and more comprehensive interventions for dealing with adolescent substance use.^{12,13,14} This study also shows that domestic illicit substance use is associated with illicit substance use in learners. This strengthens the case for including family-oriented interventions as part of a comprehensive approach to substance use amongst adolescent learners. Emerging research has shown that positive parenting skills and “parental correctness” are protective against substance abuse.¹³

The relatively high prevalence of *tik* has considerable implications, as these results imply that, in Mitchells Plain, the 4 000 adolescents who used *tik* in the previous year had a high risk of rapid progression to dependency and harm. These findings highlight the need for critical attention by health care and educational organisations, and predict a growing demand on health care and social services.

The high prevalence of cannabis use by these students makes them susceptible to the cognitive impairment of comprehension, time perception, verbal recall and converting short-term memory into long-term memory. These potential learning difficulties apply to approximately 40 000 students in Mitchells Plain between the ages of 12 to 20 years and may extrapolate into poor academic performance, school failure, school drop-out and a demand for additional learning resources. Cannabis is cultivated locally in South Africa and in neighbouring countries and is ‘packaged’ in convenient paper bags, money bags and matchboxes. It is therefore easily available. Cannabis is inexpensive and easy to produce and the law prohibiting possession is not frequently enforced.⁹ Interventions aimed at interrupting supply, leading to an increase in cost, are encouraged as a means of stemming the growth of the popularity of the substance.

This study concurs with the association between sexual activity and substance use, which is well documented in literature,²⁹ and can be extrapolated to a higher rate of teenage pregnancy, sexually transmitted diseases and HIV in this population of learners. The study findings of a significant association between sexual risk behaviours and illicit substance use are a pertinent factor in the design of targeted interventions. We suggest that interventions aimed at addressing substance use should include safe sex education and awareness of the explicit risk of HIV.

Up to 70% of adolescents who use illicit substances have a co-morbid mental illness, with major affective disorder being the most prevalent and depression the most lethal.^{12,30} It is therefore noteworthy that one in three students in this study

who reported using illicit substances had attempted suicide. The interaction between mental illness and substance abuse is complex. On the one hand, substances can directly effect neurotransmitters and contribute to the biological causation of mental illness. On the other hand, family dysfunction and low self-esteem are associated with both a higher risk of suicide and substance abuse.^{31,32} Parenting skills workshops and programmes aimed at improving support and self-esteem at the family level may therefore be beneficial.^{31,32} Educators and parents should also be alerted to the signs of mental illness and the possibility of associated substance abuse. Health services should, furthermore, be sensitive to the needs of adolescents and the interactions with mental illness, suicide and substance abuse.

Students using illicit substances in Mitchells Plain are younger than their European counterparts. We therefore infer that the risk of students developing substance dependency at an earlier age is high. Identifying these young individuals with harmful substance use patterns outside of surveys, however, is not easy. Early and continuous screening is therefore required to recognise misuse patterns and the development of harmful substance use. The emphasis falls on screening susceptible adolescents as a secondary prevention measure and targeting individuals with early emerging problems. There is therefore a need for resources to screen students for harmful substance use, assess them comprehensively and treat problem use promptly. Awareness campaigns addressing use, risk and the harmful effects of common substances, with emphasis on alcohol and cigarette use, should be promulgated in the younger, under-14-year-old adolescent, while greater emphasis should be placed on the use of cannabis and *tik* in the older adolescent (over the age of 14). As part of a comprehensive approach to behaviour change in adolescent substance use, brief motivational interviewing (BMI) could be linked to the screening tests mentioned above.^{5,7,12,33} Evidence supporting BMI is strong and is guided by the premise that harm reduction strategies are successful in encouraging young students to adopt more moderate and less harmful approaches to substance use.^{5,12}

Limitations of the study

The study is limited in that it reports only on one area of Cape Town, albeit an area that is regarded as a hot spot for substance abuse. Prevalence rates are also self-reported and dependent on the accuracy with which the learners completed the questionnaire. The analysis furthermore did not specifically account for the effect of the clustering of students within specific classes and many statistical tests were performed, which increases the possibility of false positive associations.

Conclusion

The prevalence of substance use amongst adolescent students attending high schools in Mitchells Plain, Cape Town, is high for all substances relative to national and international figures. Government officials, educators and health care workers are alerted to the need for more comprehensive interventions to prevent and treat substance abuse in this and similar communities.

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