

# **The Nature and Extent of Heroin Use In Cape Town: Part 2 - A community survey**

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# Contents

	<b>Page</b>
1. Background	3
1.1 What is heroin?	3
1.2 Global trends	3
1.3 Health consequences of heroin use	3
1.4 Research on heroin use in South Africa	4
1.5 Estimating the size of the heroin using population	6
1.6 Pilot study of heroin use in Cape Town	7
2. Aims and objectives of the present study	8
2.1 Aims	8
2.2 Objectives	8
3. Methods	8
3.1 Study design and sampling strategy	8
3.2 Procedures	9
3.3 Ethics	9
4. Results	10
4.1 Frequency analyses	10
4.1.1 Demographic profile of the sample	10
4.1.2 Self-reported drug use	11
4.1.3 Heroin use: age of onset, frequency, and mode of use	11
4.1.4 Treatment history & treatment issues	12
4.1.5 Arrest history of participants	12
4.1.6 Overdose and suicide	12
4.1.7 Injecting use, needle sharing & blood-borne virus risks	13
4.1.8 Sexual risk behaviour	13
4.1.9 Severity of dependence	14
4.1.10 Blood-borne virus testing	14
4.1.11 Purchasing heroin and related issues	14
4.2 Estimating prevalence in Cape Town	16
5. Discussion & conclusion	17
Acknowledgements	19
References	20

## **1. BACKGROUND**

### **1.1 What is heroin?**

Heroin is classified as an opiate. Opiates act on opioid receptors on the central nervous system 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 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).

### **1.2 Global trends**

The 2002 United Nations Office of Drugs and Crime's (UNODC) report on Global Illicit Drug Trends estimates 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.

### **1.3 Health consequences of heroin use**

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 central nervous system (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 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; Neiaqus et al., 1998; Koester et al., 1996).

#### **1.4 Research on heroin use in South Africa**

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, Port Elizabeth, and Gauteng and Mpumalanga province 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 has 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 at which patients present 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 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 injection has increased steadily from 36% 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 amongst patients who are younger than 20 years in Cape Town and 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).

##### Quantitative community/school surveys

Household, school and community surveys on drug abuse have been conducted from time to time in South Africa, however all reported very low levels of heroin use.

A household survey of youth aged 10-21 years conducted during 2000 and 2001 by WHO and UNDCP (WHO & UNDCP, 2003) in greater Pretoria and in Bela-Bela (a rural town) found that 1% of the 193 respondents reported lifetime use of heroin, while none of the rural respondents had used it.

A national household survey of persons 15 years and older in 2002 by Shisana et al. (2003) found that 0.01% of the respondents reported having used heroin in the past 30 days. This would translate to a national past 30 days prevalence of 4500 users, probably an underestimate given the nature of household surveys.

A national survey conducted amongst 10-21 year olds in black communities in 1994 by the Human Sciences Research Council found that 0.9% of the 1378 respondents reported life-time, past 12-month and neighbours use of heroin respectively (Rocha-Silva, 1996).

A survey conducted in the uThukela health district in KwaZulu-Natal during 2002 amongst youth aged 13-23 (both in-school and out-of-school) found that 4% of in-school males reported life-time use of heroin and 1% of the in-school females, while 3% of the out-of-school males reported life-time use of heroin and <1% of these females. Furthermore, 3% of the in-school males reported current use of heroin (1% of females) and 1% of out-of-school males reported current use (<1% of females). A total of 1692 in-school youth and 562 out-of-school youth participated in the survey (Adejumo, 2003).

A non representative survey conducted in five high schools in the Helderberg region of the Cape Metropole during 2000 by a substance abuse prevention NGO (Bridges) found that 1.9% of the 3474 respondents had tried heroin at least once (Fisher, 2000). Another survey by Bridges conducted in 2002 in both primary and high schools in the Helderberg region found that only one primary school pupil (N = 991) and one high school pupil (N = 387) reported having tried heroin at least once (Fisher, 2003).

High-school surveys conducted among large, representative samples in Cape Town in 1997 (Flisher et al., in press), Durban in 1998 (Bhana et al., 1998) and Port Elizabeth in 1999 (Terblanche, 1999) did not report any use of heroin.

Even a survey of 3082 adult arrestees, conducted in Cape Town, Durban and Johannesburg at total of ten police stations over an 18-month period from 1999 to 2000, found that very few participants reported heroin use. Interviews were conducted in August/September 1999, February/March 2000 and August/September 2000 to establish changes over time. Results showed that across the three sites and for each of the three phases of the survey between 0.2% and 2.5% of the arrestees reported having used heroin at least once. Johannesburg and Cape Town had slightly higher levels than Durban (Plüddemann et al., 2002). A national survey of 1143 arrestees conducted by the HSRC during 2000 did not report any use of heroin.

#### Quantitative surveys with non-representative samples

Surveys conducted amongst young people in 'special settings' also did not find particularly high levels of heroin use, or the sample sizes were very small. For example, a survey conducted by a volunteer organisation known as Ravesafe at three raves in Johannesburg between December 2000 and February 2001 found that 8% of the 80 participants had tried heroin, but only one used it daily (Gillespie, 2001). A second survey conducted at two raves in Johannesburg in 2001 found that 4.8% of the 126 respondents had used heroin at least once, however only one person reported weekly use of the drug (Gillespie, 2002). A second survey by the same organisation at a rave in Boksburg in 2002 found that 7% of the 54 respondents had used heroin at least once, although only one person reported daily use (Gillespie, 2003). Both surveys conducted by Ravesafe relied on volunteer participation, although the latter survey did offer an incentive for participation in the form of a draw for two music concert tickets.

A number of small surveys conducted at rave parties in Gauteng found some use of heroin. A study of 56 'ravers' in Johannesburg in 1999 found that 12% reported having used heroin at least once (Willmers, 1999).

### Qualitative studies

A study commissioned by the UNODC of drug markets in Johannesburg, using mainly key informant interviews reported that use of heroin is used by some sex workers in Hillbrow and surrounding areas (Leggett, 2000). However, research conducted by the same author amongst over 50 sex workers in Durban did not report any use of heroin (Leggett, 2001).

A qualitative investigation into the use of heroin in Cape Town by Gossman (2003) indicated that heroin use appeared to be increasing and that heroin was available in many suburbs in Cape Town.

### **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, 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".

### **1.5 Estimating the size of the heroin using population**

Although research shows an increase in demand for heroin abuse treatment, the size of the heroin using population is still unknown. As mentioned above, data sources are currently limited to information from treatment centres, reflecting only those seeking treatment, and a few school and community surveys where the potential for under-reporting is high. Mortuaries and trauma units do not currently routinely report heroin overdose deaths/incidents.

Given the health consequences of heroin use mentioned above, estimating the size of the heroin using population, in a defined area, is important for policy development and health resource planning, especially at a local level. Estimates are also required by the UN, specifically for their Annual Reporting Questionnaire on Drug Abuse (ARQ). A number of methods to estimate the actual size of a population using available data exist.

One such technique is the 'multiplier method'. Multiplier techniques work by making informed assumptions about the proportion of cases in the study population who experience a particular event in a particular time period, such as an estimate of the proportion of drug users in treatment at some point during a given year – the so-called multiplier – and a benchmark number representing the total number of the drug-using population known to have been in treatment during the year in question. Benchmark data are normally gleaned from various existing data sources, such as records of drug treatment centres, whereas the multiplier is usually extracted from an emerging survey. For example, if primary data collection as part of a survey revealed that 20% of heroin abusers had been in treatment the previous year, the total

number of likely heroin users can be estimated by multiplying the total number of recorded treatment cases (e.g. 5000) by the multiplier (5) (= 25000) (UNODCCP, 1999).

A second technique is the 'capture-recapture method'. This method was first used to estimate animal populations in parks or nature reserves. Researchers identified a herd, for example, tagged a random sample of animals, released them and then drew a second random sample of the same number and determined how many of the tagged animals were in the second sample. This number is then multiplied with the original sample to determine the population. A similar methodology can also be applied to estimating numbers of drug users.

Internationally a number of countries have used these techniques to estimate the size of the heroin-using population, including the UK, Australia and Pakistan (Hall, Ross, Lynskey, Law, & Degenhardt, 2000; Frischer et al., 1993).

In South Africa benchmark data on the number persons in treatment for heroin was available from data collected by the South African Community Epidemiology Network on Drug Use (SACENDU) (Parry et al., 2002), however no good multiplier information is available. This study aimed to obtain a treatment multiplier to estimate the number of heroin users in Cape Town. The ideal is to obtain a range of multipliers (estimates) from different data sources or through different methods (e.g. capture-recapture). Based on intensive discussions held at a UNODC sponsored meeting in Pretoria in November 2002 it was clear that there was no other readily available bench mark data (such as arrest data or fatal overdose data) from which to obtain additional estimates. Due to the high cost and practical issues the capture-recapture method was not a feasible option for this study.

### **1.6 Pilot study of heroin use in Cape Town**

Findings from a qualitative study on heroin use in Cape Town indicated that heroin use appears to be increasing in Cape Town. Through interviews with key informants in contact with heroin users in Cape Town and through focus group discussions with heroin users in treatment, it was established that a number of issues are cause for concern relating to the apparent increase in heroin use in Cape Town, including the lack of affordable treatment services for heroin users, problems with methadone prescription, an increase in heroin use amongst previously disadvantaged communities, and the lack of affordable detoxification services. The study also suggests that changes are taking place in the profile of users, with increasing use among females, Afrikaans speakers and lower SES populations on the Cape Flats. The time between taking other drugs and experimenting with heroin may be declining.

## 2. AIMS AND OBJECTIVES OF THE PRESENT STUDY

### 2.1 Aims

The study had the following aims:

1. To obtain an estimate of the number of heroin users in Cape Town.
2. To identify heroin users in Cape Town in terms of demographic and other factors.

### 2.2 Objectives

Further to the above aims the study had the following objectives:

1. To identify the nature of heroin use, namely frequency of use, supply source, mode of use, the using environment/setting, and other drugs used.
2. To begin to assess the health and broad social burden of harm incurred by heroin users to themselves, friends, family and society in general.
3. To inform intervention efforts to reduce harm associated with heroin use in Cape Town (at micro and macro levels).

## 3. METHODS

### 3.1 Study design and sampling strategy

In order to obtain the multiplier, a snowballing or chain referral sampling technique was used to interview 250 heroin users using a structured questionnaire. This type of sampling is most frequently used where there is no access to an adequate sampling frame and when there is little information available about the specific group under study. The technique involves identifying a few respondents who thereafter refer others from their particular social network, in this case heroin using acquaintances, for possible involvement in the study.

The survey was initiated in different settings and geographical areas where clusters of heroin users were known to reside, and an attempt was made to recruit respondents from as many locations as possible to improve the validity of the sample. Originally eight areas were identified as suggested starting points for sampling, spread across the six s-called “substructures” of the Cape Metro. In the eventual sample all six substructures were represented, including a wide range of suburbs in terms of socio-economic status and demographic profile. Table 1 shows the number and proportion of participants residing in each substructure.

Table 1: Study participants by substructure of residence

<b>Suburb</b>	<b>Frequency</b>	<b>Percent</b>
Helderberg	18	7.2
Central	116	46.4
Southern	54	21.6
Tygerberg	28	11.2
Eastern	24	9.6
Northern	4	1.6
Other province	1	0.4
Other country	3	1.2
Unknown	2	0.8
<b>Total</b>	<b>250</b>	<b>100.0</b>

In order to obtain the multiplier for estimating the number of users subjects were asked if they have been in treatment between July 2003 to June 2004 and to name the centre (in order to identify those who had been to the centres forming part of the SACENDU data collection system).

### **3.2 Procedures**

#### Eligibility criteria

Heroin users between 18 and 49 years of age, residing in the Cape Town metropolitan area were targeted.

#### Inducement

No monetary inducement was provided to participants. Petty cash to cover the cost of tea, coffee or cooldrink for the participants was provided to interviewers.

#### Interviewers

Interviewers were trained in a group training session by the principal investigator in a five hour training session. This training included:

1. The goals and objectives of the study.
2. Discussion of recruitment issues.
3. Discussion of eligibility criteria.
4. Training in drug terminology and effects, including overdose.
5. Comprehensive guidance in the administering of the questionnaire.
6. Ethics.
7. The avoidance of potential bias.
8. Briefing on the services available to drug users in the study site.

Ultimately four interviewers were utilized for the study. Interviews were completed over a five week period.

#### Questionnaire

The questionnaire consisted of 13 sections: 1) demographic information, 2) heroin use history, 3) drug use history, 4) treatment history, 5) treatment issues, 6) arrest history, 7) overdose issues, 8) injecting, 9) blood-borne virus risks, 10) sexual risk, 11) dependence severity scale, 12) blood-borne virus testing, 13) heroin market questions. It was informed by questions used in studies conducted in other countries as well as the pilot study conducted in 2003/2004.

### **3.3 Ethics**

#### Informed consent, confidentiality and anonymity

Ethical approval for the study was granted by the University of Cape Town's Research Ethics Committee in May 2004. All participants in the study provided informed consent. Subjects received an information sheet on the study and were asked to sign a consent form. Subjects were assured of confidentiality and anonymity.

## 4. RESULTS

### 4.1 Frequency analyses

#### 4.1.1 Demographic profile of the sample

The demographic profile of the heroin users is given in Table 2. Almost 80% of the sample was male and 55% were White, 37% Coloured and 6% Black.<sup>1</sup> The mean age of the participants was 23.4 years (SD = 3.92). Most had never been married (78%). Over 60% of the sample had completed grade 12 and 33% reported some tertiary education. The majority of the sample reported living in a house or flat (84%) and a further 14% reported renting a single room. The average number of people living in each 'household' was 4.5 (SD = 1.59). Most of the participants were South African citizens or permanent residents (97%). Of those who were not SA citizens two were Angolans and one was Canadian.

Table 2: General demographic information

	N	%
<b>Gender</b>		
Male	198	79.2
Female	52	20.8
<b>Race</b>		
Black/African	14	5.6
Coloured	93	37.3
White	136	54.6
Other	6	2.4
<b>Age</b>		
18-20	63	25.2
21-25	132	52.8
26-30	41	16.4
31-35	12	4.8
36-40	2	0.8
<b>Marital status</b>		
Single, never married	194	77.9
Married	15	6.0
Separated	4	1.6
Divorced	3	1.2
Living with lover/partner	33	13.3
<b>Highest level of schooling completed</b>		
Grade 1-5	4	1.6
Grade 6-9	32	12.9
Grade 10-11	54	21.8
Grade 12	155	62.5
Artisan's certificate	3	1.2

<sup>1</sup> \* The terms "white", "black", and "Coloured", originate from the apartheid era. They refer to demographic markers and do not signify inherent characteristics. They refer to people of European, African and mixed (African, European and/or Asian) ancestry, respectively. These markers were chosen for their historical significance. Their continued use in South Africa is important for monitoring improvements in health and socio-economic disparities, identifying vulnerable sections of the population, and planning effective prevention and intervention programmes

### 4.1.2 Self-reported drug use

Table 3 shows the lifetime, past 12 months, past 30 days and past 3 days use of various substances as reported by the participants in the survey. The Table shows that regular tobacco use was very common among heroin users interviewed, with 98% having smoked cigarettes in the past 3 days. Alcohol use was also common, although this survey did not assess the quantities of alcohol consumed. Notably the next most common drug of use was methamphetamine (a drug that has shown a rapid increase in use in 2004), with 75% of participants reporting that they had used methamphetamine in the past 3 days. Cannabis was the next most common substance reported, with 37% reporting use in the past 3 days. Use of Mandrax (the sedative, methaqualone) was also fairly common. While a relatively high proportion had tried Ecstasy at least once (18%) very few had used it in the past 3 days. Use of other drugs in the past 3 days was uncommon.

Table 3: Self-reported drug use (%)

	Lifetime	Past 12 months	Past 30 days	Past 3 days
Tobacco	99.6	99.6	99.6	97.6
Alcohol	93.6	93.6	93.6	60.4
OCM pain relievers <sup>1</sup>	9.6	9.2	7.2	4.0
OCM cough/allergy meds <sup>1</sup>	14.4	13.6	11.6	6.4
Cannabis - dagga	53.2	52.8	52.8	37.2
Inhalants- glue/snuff/petrol	3.2	1.6	1.2	0.8
Crack rocks	9.6	7.6	2.0	0.8
Cocaine powder	11.6	4.8	2.0	0.4
Amphetamines <sup>2</sup>	7.6	4.8	3.2	0.4
Mandrax/white-pipe	38.4	36.0	33.2	22.4
LSD	6.8	2.8	2.8	1.2
Designer drugs, eg Ecstasy	18.0	12.8	3.6	2.0
Prescription pain relievers <sup>3</sup>	2.8	2.8	1.2	1.2
Prescription relaxants <sup>4</sup>	0.8	0.4	0.4	0.0
Prescr. sleeping tablets <sup>5</sup>	2.4	0.0	0.0	0.0
Heroin	100.0	98.8	95.6	92.8
Methamphetamine	80.0	80.0	80.0	75.2

1 - Over-the-counter medicines used to achieve effects other than what they are medically used/prescribed for

2 - Uppers, diet pills

3 - Substances that relieve severe pain, e.g. Welconal, morphine

4 - Substances that help people to relax, e.g. Valium, Librium, Ativan

5 - Substances that help people to sleep, e.g. Amytal, Nembutal, Rohypnol

### 4.1.3 Heroin use: age of onset, frequency, mode of use

The average of onset of heroin use was 20.5 years (SD = 2.59), ranging from 12 years to 32 years. Over 80% of the participants were introduced to heroin by a friend. For over a third (35%) of the participants heroin was the first drug they ever tried. Most of those who reported trying other drugs first had tried cannabis or cannabis/Mandrax first. Three quarters of the sample reported smoking/inhaling or snorting as their mode of heroin use, while 25% reported injecting as their mode of use. Of those who had injected in the past 12 months, 67% reported that they had shared a needle. Most of those who reported injecting in the past 12 months had also injected in the past 30 days (93%). In the 30 days preceding the interview the majority of participants had used heroin every day (67%) and 93% had used heroin in the past 3 days. Coloured participants had used heroin for a significantly longer period on average than the

White participants ( $t = 2.117$ , 227 df,  $p < 0.05$ ), however White participants were significantly more likely to have injected heroin in the past 3 days ( $\chi^2 = 10.733$ ,  $p < 0.01$ ).

#### **4.1.4 Treatment history & treatment issues**

Twenty-one percent of all the participants stated that they had “been in treatment” for substance abuse in their lifetime (Table 4). Of these 33% had been in treatment in the past 12 months, with 82% reporting heroin as the primary substance for which they received treatment. Of these participants who could recall the location, 90% ( $n=9$ ) had been to a private specialist substance abuse treatment centre and one had been to a general practitioner. Eight participants had been in treatment for substances other than heroin (lifetime). Eight percent of all the participants reported that they had been to a general practitioner, general hospital or psychiatric hospital for heroin treatment in their lifetime.

Only 29% of the participants felt they “might need treatment for heroin”. Interestingly, 61% thought there were enough treatment centres in Cape Town where heroin users could seek help and 55% thought treatment was affordable for most heroin users. In response to the question which type of facility may be most needed (i.e. inpatient, outpatient or aftercare), however, almost 75% said “all of the above”. Overall, 27% of the participants had used methadone at least once. Very few reported having used other substitutes like buprenorphine or Naltrexone (3%).

#### **4.1.5 Arrest history of participants**

Thirteen percent of all the respondents had been arrested at least once. Of those who had been arrested, 31% had been arrested in the past 12 months ( $n = 10$ ). Seven of these had been arrested for drug possession. Only two participants were charged and none were found guilty of the alleged offence. Ten participants reported other offences they had committed in their lifetime, most of which were related to stealing or selling/possessing drugs. Participants who had been using heroin for a longer period were significantly more likely to have been arrested at least once ( $t = 2.603$ , 238 df,  $p < 0.05$ ).

#### **4.1.6 Overdose and suicide**

Of all the participants 33% answered “yes” to the question “have you ever had a heroin overdose?” Over three quarters (26%) of those who reported an overdose, had an overdose in the past 12 months of who almost half had one or two overdose experiences in the past 12 months. Four participants reported eight overdose experiences in the past 12 months and one participant reported 12 overdoses. Overdose was significantly related to the duration of heroin use, with those having used heroin for a longer period being significantly more likely to have experienced an overdose ( $t = 5.982$ , 204 df,  $p < 0.01$ ).

Of those who reported an overdose, 12% experienced it in the last 3 months or less, 30% 3-6 months ago, 34% 6-12 months ago, and 25% more than 12 months ago. Most had the overdose at a friend’s home (77%) or in their own home (15%). Only 44% sought medical treatment the last time they had an overdose, mostly at an emergency room (83%). In response to the question “Have you heard of other users in Cape Town having fatal overdoses in the last 12 months”, 47% answered “yes”. The number of overdoses participants claimed to have heard about ranged from one to thirty in the past year, while the average number of overdoses participants had heard about was 6.4 and the mode was 2.<sup>2</sup>

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<sup>2</sup> Note that where participants gave ranges (e.g. 10-20 overdoses) the midpoint of the range was used to calculate the mean.

Of all the participants, 9% reported that they had tried to commit suicide in the past 12 months.

Table 4: Summary of key indicators

Question	N answering “yes”	% answering “yes”
Have you ever been in treatment for substance abuse?	52	20.8
Do you feel you might need treatment for heroin (again)?	71	29.3
Have you ever been arrested?	32	13.3
Have you ever had a heroin overdose?	70	33.0
Have you tried to deliberately overdose or kill yourself in the past 12 months?	20	8.7

#### 4.1.7 Injecting use, needle sharing & blood-borne virus risks

Overall 23% of all the participants had injected heroin in the past 12 months. Furthermore, 18% of all the participants reported that they had injected heroin in the past 3 days and 80% of those who had, reported injecting daily. Of those who injected, the youngest starting age was 17 years and oldest 32 years, with an average of 22.2 years (SD = 2.93). Most were taught to inject by a friend (56%) or partner (32%), while some were also taught by a parent (9%). Over three quarters reported injecting in either their own home, and/or their friend’s home, and/or their dealer’s home. Two participants reported injecting in a public toilet, while none reported injecting in a “shooting room”. Most said they had last injected at a friend’s home (90%).

Although only one person reported injecting with a needle they had already used more than five times in the past 30 days, 69% said they had done so 2-5 times. Five respondents had shared a needle more than five times in the past 30 days, while 29% had shared 3-5 times and 27% had shared twice. Most reported using the needle after a close friend (45%) or their regular sex partner (37%). Most of those who reported injecting reported having been injected by someone else in the past month (91%), ranging between once and more than 5 times. Two thirds had been injected by someone else 2-5 times in the past 30 days, mostly by a close friend or regular sex partner (75%). Most reported that they were in a friend’s home the last time they used a needle after someone else (88%). All but six of the injectors had also used injecting equipment after someone else, including a spoon, water, filter, tourniquet and the drug solution/mix.

In the past month most of the injectors got their needles from a pharmacy (43%) or a heroin dealer (28%). An equal proportion also got needles from another user (13%) or from a hospital (13%). Over half of the injectors (57%) had been denied needles at least once, and 48% had been denied needles in the past 30 days. Most of these “denials” had occurred at a pharmacy or hospital (81%). Asked whether needles were easy to obtain, a third said “very easy”, another third said “easy”, and a third said “difficult” or “very difficult”.

Those participants who reported injecting in the past 3 days were significantly more likely to have been in treatment for substance abuse ( $\chi^2 = 16.238, P < 0.01$ ), to feel they might need treatment for heroin (again) ( $\chi^2 = 16.482, p < 0.01$ ), to ever have had a heroin overdose ( $\chi^2 = 39.421, p < 0.01$ ), and to have tried to commit suicide in the past 12 months ( $\chi^2 = 7.594, p < 0.05$ ).

#### **4.1.8 Sexual risk behaviour**

A third of the participants had one sexual partner in the past 12 months, 30% had two sexual partners, 28% had three to five sexual partners, and 7% had more than five sexual partners in the past 12 months. Over the past 30 days, 57% had one sexual partner and 38% had two sexual partners. Six percent of the respondents had been paid for sex at least once in their life (nine males and five females), and nine participants were currently working in sex work (five males and four females). The number of clients they had in the past month ranged from one to twelve. Overall, 28% of participants had always used a condom with their regular partner, 66% “sometimes” used a condom, and 5% never used a condom with their regular partner. Proportions for condom use with “non-regular or casual” partners were fairly similar, with 35% always using a condom, 60% sometimes using a condom, and 1% never using a condom.

#### **4.1.9 Severity of dependence**

The Severity of Dependence Scale (SDS) is a measure of dependence developed by Gossop et al. (1995), estimating the severity of a drug users dependence. The scale was developed for users of cocaine, heroin and amphetamines, but has also been used for other drugs. The scale consists of five items, namely:

- 1) Did you think your use of *heroin* was out of control?
- 2) Did the prospect of missing a fix or not chasing make you anxious or worried?
- 3) Did you worry about your use of *heroin*?
- 4) Did you wish you could stop?
- 5) How difficult would you find it to stop or go without *heroin*?

Items 1-4 are scored on a four-point scale (0=never/almost never; 1=sometimes; 2=often; 3=always or nearly always), while item 5 is scored as 0=not difficult; 1=quite difficult; 2=very difficult; 3=impossible. Scores are totalled and higher scores indicate a higher degree of dependence.

In this sample, 85% of the participants had a score of 4 or more which is indicative of dependence. Scores ranged from 1-12 and the mean score was 5.4 (SD=1.81).

#### **4.1.10 Blood-borne virus testing**

A number of participants declined to answer questions on HIV testing/status (13%). However, 68% of those who responded had been tested for HIV. Eight of these participants stated that HIV test had been positive, yielding an overall prevalence of 3.2% of all participants and 5.4% of those who were tested.

Overall, 50% of the participants had been tested for hepatitis C, and 8% of those tested were positive (n=10). Of those tested for hepatitis B (47%), three reported a “current infection”, three reported that they “have hepatitis B”, three had a “past infection”, and two were a “carrier”.

#### **4.1.11 Heroin purchasing and related issues**

Participants were asked a series of questions relating to their heroin purchasing activity/behaviour. Asked how they contacted the person they got their heroin from the last time, 51% “visited a house”, 39% “called them on a telephone”, 4% “approached them in public”, and 4% “paged them on a beeper”. Most of the participants got their heroin at a “house or apartment” the last time they got it (71%), 18% got it at a “public building”, and 6% got it in a “street or alley”. It was more common for the participants to purchase the heroin “outside their neighbourhood” (72%) than in their own neighbourhood. Over a third of the participants (36%) stated that someone else had obtained the heroin for them the last time

they got heroin. For 55% of the heroin users, the person they got their heroin from the last time was a “regular source”, while it was an “occasional source” for 40%, and a “new source” for 5%.

Over half of the participants reported that they had purchased heroin every day over the past 30 days (56%), and a further 7% got it on 20-29 of the past 30 days. Most got their heroin from one or two different people over the past 30 days (54%) and a further 40% got it from three to five different people in the past 30 days. Most participants paid between R50-R60 per quarter gram of heroin. Most purchased one or two sections only. Asked whether there was a time over the past 30 days when they tried to purchase heroin, had the cash, but did not buy, 38% answered “yes”. This related mostly to “police activity” (51%) or lack of availability from dealers (26%). A number also stated that the dealer did not have the quality they were seeking (18%).

On average the participants had spent ZAR342 on heroin in the past 7 days, with one participant spending ZAR840 in the past 7 days. Overall participants spent an average of ZAR548 on drugs in the past 7 days (including alcohol and cigarettes) and overall the 250 participants spent almost ZAR 135 000 on drugs in the past 7 days. This would translate to over seven million Rand in one year for these drug users alone.

Also noteworthy was that overall 27% of the participants had, at some point in their life, sold heroin.

## 4.2 Estimating prevalence in Cape Town

As described in the “Aims & objectives” section of this report, this study aimed to obtain an estimate of the number of heroin users in Cape Town, using the multiplier technique. Benchmark data was available from the SACENDU project, and it was decided to use the period from 1 June 2003 until 31 July 2004 as the benchmark input.

Of all the participants interviewed in this survey, only five could be positively identified as having been in one of the treatment centres monitored by SACENDU during July 2003 to June 2004. During this period 294 adult patients (aged 18-49 years) had been in treatment at all the centres monitored by SACENDU with heroin as their primary substance of abuse.

Thus an estimate was calculated as follows:

Benchmark (B) = 294 [the number of heroin patients in treatment during a 1 year period]  
Multiplier (M) = 5 in 250, i.e. 1 in 50, therefore M = 50

Thus estimate: B x M  
 $294 \times 50 = 14\,700$

In 2001 the city of Cape Town’s population was estimated at 2.9 million people. Using the prevalence of 14 700, this yields a ratio of 5.1 per 1000.

If adolescents (i.e. those younger than 18) who were in treatment centres monitored by SACENDU during the above period are included in the calculation, the estimate increases by about 1000 users.

### Robustness of the estimate

The standard survey methods of calculating confidence intervals that are available depend upon the validity of the assumptions of the method. It is not important to show how the estimate is influenced by the sampling variation (confidence interval), but to show how it is influenced by departures from these assumptions, since failure to meet these assumptions produces biased estimates.

Multiplier methods seldom use statistical theory to derive confidence intervals. Instead, an upper and lower estimate is generated by varying the multiplier or the benchmark, based on information on their uncertainty obtained during the study or from an outside source.

### Example:

Estimate is  $294 \times 250 / 5 = 15\,000$  (roughly)

#### Varying multiplier by 1:

Lower estimate:  $294 \times 250 / 6 = 12\,000$  (roughly)

Upper estimate  $316 \times 250 / 4 = 18\,000$  (roughly)

#### Varying benchmark by 50:

Lower estimate  $244 \times 250 / 5 = 12\,200$

Upper estimate  $344 \times 250 / 5 = 17\,200$

It is clear that the estimate is much more influenced by changes in the multiplier than in the benchmark.

## 5. DISCUSSION & CONCLUSION

Multiple drug use was clearly common in this sample of heroin users, with 75% reporting methamphetamine use, 37% reporting cannabis use, and 22% reporting Mandrax use in the 3 days prior to the interview. Alcohol and tobacco use was also very common. On average the participants in this survey started using heroin when they were 20 years old and on average had been using heroin for about 3 years. According to the SDS, 85% of the participants were classified as “heroin dependent”. Although about a fifth of the participants had been “in treatment” at some point in their life for substance abuse, only 7% had been “in treatment” in the past year.

Only 10 of the participants (4%) reported that they had been arrested in the past year and offences were generally related to theft or drug possession. It would thus appear that heroin users are not engaging in overt criminal activity on a regular basis that result in their being arrested. A key informant interviewed in Phase 1 of this study described the typical “criminal behaviour” of a heroin user as “wheeling, dealing and stealing”. This was, to some extent, confirmed by this survey, although the findings in this survey could reflect policing rather than actual levels of criminal behaviour.

Three quarters of those who reported an overdose (33%), had experienced it in the past 12 months. Given the estimated number of users in Cape Town, this phenomenon has significant implications for the health services in Cape Town, particularly the emergency rooms. It should be ensured that emergency room staff are adequately trained to recognise and treat heroin overdose cases. Although no data exists in South Africa on heroin overdose deaths, the fact that almost half of the participants in this survey claimed to have heard of a heroin overdose death in the past year give some indication that this is occurring relatively frequently.

Injecting heroin use was fairly uncommon in this sample, with 18% reporting injecting use in the past 3 days and 23% in the past 12 months. [This is comparable to the 28% of heroin patients reporting injecting in Cape Town in the first half of 2004 (as noted by the SACENDU project)]. Over two thirds of the injectors reported needle sharing in the past month, indicating that this issue is cause for concern and does occur commonly among injectors. Although only eight participants reported that they were HIV positive, HIV transmission through needle sharing may still become a serious issue as heroin use (and injecting) increases in the city. Incidentally, two of the eight participants who were HIV positive reported having shared a needle in the past month. While many participants reported obtaining their needles from pharmacies, almost half had been denied needles in the past month. This would seem to indicate that there may be a need for needle exchange programmes or that local government should perhaps consider taking a position on the issue of needle purchasing from pharmacies/hospitals.

Information on heroin purchasing behaviour obtained in this survey confirmed comments made by key informants and focus group participants in Phase 1 of this study. Heroin dealing activity is still relatively “hidden”, with most users visiting a house or apartment for their purchase or calling the dealer on the telephone. Very few “approached the dealer in public”. There was an indication that police presence is sometimes a hindrance in the heroin buying process, indicating that an increase in visible policing in the city may indeed have a curbing effect on heroin dealing activity.

The amount of money spent on heroin (and other drugs) by the participants gives some indication as to the sheer size of the illegal drugs market. If the estimate of ZAR 7 million (which however also includes alcohol and cigarettes) referred to earlier as the total spent by 250 heroin users in one year is used to calculate the spending of the estimated 15 000 heroin users in the city, a sum of almost ZAR 420 million is arrived at. This projection provides some idea of the “muscle” behind the drug marketing industry, and depicts what intervention efforts are up against in their effort to curb both use and marketing.

The estimate obtained in this study was substantially higher than any of the key informant estimates (which ranged between 3000-5000). It would seem clear that Cape Town has a large number of heroin users who have not had recent contact with a specialist treatment centre. It would also seem that the city’s capacity for treating heroin dependence is woefully inadequate, given the assertion that most heroin users would seek treatment at some point in their “using career”, and (according to the key informants interviewed in Phase 1 of this study) this is likely to occur relatively soon after heroin use commences.

It should nevertheless be kept in mind that ideally a prevalence estimation study would have multiple estimates to compare from different sources (e.g. arrests or overdose deaths) and thus the estimate arrived at in this study should be used with caution, as no alternative estimation technique is currently readily available.

In conclusion, it is clear that heroin use has become a major concern in Cape Town and may still be increasing. The drug is being used in many suburbs of the city and is no longer confined to White youth but is increasingly used by Coloureds and, though still less commonly, Blacks. The lack of state funded rehabilitation services must be addressed urgently and post treatment support networks and follow-up systems also need to be encouraged and supported.

#### Limitations of the study

The prevalence estimation obtained in this study should be treated with caution, as only one benchmark and one multiplier were used. Ideally multiple benchmark data sources (and hence a variety of multipliers) should be used in a prevalence estimation exercise. Unfortunately alternative baseline/benchmark data is currently not available in South Africa. For example, non-natural deaths are currently not routinely subjected to toxicology screens, only upon request from the authorities (usually when there is a suspicion of drug involvement). Thus no accurate data on drug related deaths in the country/Cape Town is available. Data on arrests has also become difficult to obtain due partly to restructuring in the police force.

#### Future research

Future research could investigate to what extent heroin users are engaged in criminal activity for which they are not arrested, focus on particular geographic areas, and possibly employ alternative methods for prevalence estimation (such as capture-recapture). Ongoing surveillance of heroin users may also be required as the problem is unlikely to remain static, perhaps in the way the problem is monitored in Australia via the Illicit Drug Reporting System (IDRS) (Shand et al., 2003).

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