

Cocaine Use in Brazil – Patient Profiles, Drug Histories and Patterns of Use

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ABSTRACT

We studied profiles and drug histories of 294 cocaine users from 15 treatment services in São Paulo, Brazil. Mean age of subjects was 27 years and 90% were male. Over 50% had used five different substances apart from cocaine, usually tobacco, alcohol, cannabis, tranquillisers and solvents. Mean age at first cocaine use was 18.9 years when 87% had snorted the drug. Thirty-two percent had injected cocaine, 82% had smoked crack and 74% reported a full transition of route. Sixty-three percent reported daily cocaine use. Median duration of cocaine use was 6.3 years. Acts of acquisitive crime were common and 56% had been arrested. Our findings are discussed in terms of implications for prevention and treatment.

Key words. Cocaine, Crack cocaine, Client profiles, Use patterns, Brazil.

RÉSUMÉ

Nous avons étudié les profils et histoires d'utilisation de drogues de 294 sujets utilisant de la cocaïne issus de 15 centres de traitement à São Paulo, Brésil. L'âge moyenne des sujets a été 27 ans et 90% appartenaient au sexe masculin. Plus de 50% avaient utilisé cinq autres substances outre la cocaïne, en général du tabac, de l'alcool, de la cannabis, des tranquillisants et des solvants. L'âge moyenne de la première utilisation de la cocaïne a été 18,9 ans et 89% la prenaient en aspirant. Trente-deux pour cent avaient injecté de la cocaïne, 82% avaient fumé du crack et 74% ont reporté une complète transition de ses voies d'administration. Soixante-trois pour cent ont reporté une utilisation journalière de la drogue. La durée médiane de l'utilisation de la drogue a été 6,3 ans. Des actes des vols étaient fréquents et 56% ont subi une arrestation. Nos données ont été discutées vis-à-vis leurs implications pour les stratégies de prévention et traitement.

RESUMEN

Nosotros estudiamos perfiles e historias de drogas en 294 usuarios de cocaína de 15 servicios de tratamiento en São Paulo, Brasil. La edad media de los sujetos fue 27 años e 90% fueron hombres. Sobre el 50% usaron cinco diferentes sustancias aparte de cocaína, usualmente tabaco, alcohol, cannabis, tranquilizantes y solventes. La edad media del primer uso de cocaína fue 18.9 años, de éstos el 87% aspiró la droga. Treinta y dos por ciento se inyectaron cocaína, 82% fumaron crack y 74% reportaron a la fulminante transición del itinerario. Sesenta y tres por ciento usaron diariamente. La duración media de uso de cocaína fue 6.3 años. Actos de adquirir crímenes fue común y 56% fueron detenidos. Nuestro estudio fue discutido en términos de prevención y estrategias de tratamiento.

INTRODUCTION

Cocaine misuse has been extensively studied – there were nearly five hundred references to cocaine use among humans in Medline during the period 1996 to 1997 alone. Most of these studies are experimental, interventional, or observational in design, usually hypothesis based with one or a small number of hypotheses being tested. However, when just one aspect of cocaine misuse is the primary focus of study, it is easy to lose sight of the overall picture. Descriptive studies help overcome this imbalance by giving more historical, evolutionary and contextual information (Craddock et al., 1997). But most descriptive studies also tend to focus on narrow fields of investigation, such as gender differences (Lundy et al., 1995), HIV-risk behaviour (Grella et al., 1995) and routes of administration and severity of dependence (Gossop et al, 1994). Literature reviews are able bring together this diverse and often dispersed data (Wallace, 1991; Platt, 1997), although several large texts on cocaine have remarkably little to say about patient profiles and long-term patterns of use (Kosten and Kleber, 1992; Weiss et al, 1993; Gold, 1993). There is a risk, however, that in trying to create a picture of cocaine use by pooling studies from different decades and cultures, we obscure the very features that characterise its use during specific time periods and in individual countries. Cohort studies (Siegel, 1984; Hartgers et al, 1991; Murphy et al, 1989) give important information on the longitudinal changes that occur during a person's drug using career, but such studies are very time consuming and expensive to undertake. Detailed descriptive studies, of a cross-sectional nature, can give useful longitudinal and evolutionary data as well as provide a kind of snapshot of patient profiles, patterns of use and associated behaviours at a particular point in time.

In Brazil there is evidence that cocaine use is on the increase (Carlini et al, 1993; Galduróz et al, 1997) and there appears to have been an increase in the number of people

using crack, at least among patients presenting to treatment services (Dunn et al., 1996). However, there have been very few detailed studies of cocaine users in Brazil. Existing studies have serious limitations, in particular the use of extremely small samples, with as few as 21 or 25 patients (Scivoletto et al., 1996; Nappo et al., 1996) and which are extremely homogeneous, with patients coming from just one treatment agency (Murad, 1983; Bastos et al., 1988; Castel and Malbergier, 1989; da Silveira et al., 1989). Furthermore, patients are usually interviewed with questionnaires that have not been piloted (Murad, 1983, Bastos et al., 1988; Castel and Malbergier, 1989, da Silveira et al., 1989; Bucher et al., 1995) or that are simply translations of ones developed in other countries (WHO Collaborative Study Group, 1993; Nappo et al., 1996). Many of these interview schedules contain remarkably few questions, just 31 in one study (Bucher et al., 1995) and 35 in another (Castel and Malbergier, 1989), so that little useful data is actually collected. Studies using more extensive interviews (WHO Collaborative Study Group, 1993; Nappo et al., 1996) and larger samples (de Souza, 1994; WHO Collaborative Study Group, 1993) have tended to focus on very specific aspects of cocaine use, such as HIV-risk behaviour among intravenous users.

The aim of this study was to investigate in greater detail patient profiles, the history and evolution of drug use and the many behaviours associated with it, in a large heterogeneous sample of cocaine users, using a structured interview schedule that had been developed and piloted in Brazil.

METHODS

Design

A cross-sectional survey undertaken between January 1996 and October 1997.

Setting

Patients came from 15 different settings that offer treatment, counselling or assistance to drug users or HIV-positive patients. The characteristics of the services (and the number interviewed in each location) are as follows: two public outpatient clinics for drug users, one state funded and the other a charitable institution (n=87); two public inpatient units for drug users, one a detoxification unit in a general hospital (n=42) and the other a detoxification and rehabilitation unit in a psychiatric hospital (n=37); a social worker based counselling service for patients with drug problems linked to the Police Department (n=40); a private treatment and drug rehabilitation unit (n=7); a municipal drug clinic for homeless adolescent drug users (n=7); two public outpatient clinics for patients with HIV disease, one in São Paulo City (n=10) and the other in the port city of Santos (n=37); and 6 different residential homes or hospices for people with HIV disease (n=27), including one specialising in supporting transvestite prostitutes. All services are situated in the State of São Paulo, the majority in the City of São Paulo itself.

Sampling

Although this sample is essentially a convenience sample, we deliberately chose a wide range of services with diverse characteristics to maximise patient heterogeneity. Outpatient clinics and a non-medical counselling service were over sampled in relation to inpatient units so as to give greater representation of subjects from the less severe end of the drug misuse continuum. Patients were also sampled from a private residential rehabilitation unit as well as one specialising in the treatment of homeless teenagers and adults, thus giving representation from both extremes of the socio-economic spectrum. A fifth of patients were interviewed in clinics, hospices or hostels for people with HIV disease, as this group of patients is under represented in drug treatment services in Brazil,

even though 40% or more of injecting drug users are HIV-positive (WHO Collaborative Study Group, 1992).

An attempt was made to systematically interview all patients who fitted the inclusion criteria on the day in which the service was visited. Usually all patients could be interviewed but on occasions this was not possible, in which case patients were selected according to the order in which their names appeared on the inpatient lists or the order in which they presented to the outpatient clinics.

Subjects

Patients were included in the study if they admitted to having used cocaine or crack more than once in their life. Only 6 patients refused to participate, claiming pressure of time and a further 3 had to be excluded as they were too heavily sedated. A total of 294 patients were interviewed. Subjects gave verbal consent to maintain anonymity.

Instruments

A structured interview schedule in Portuguese had been especially designed for use in this study and had been extensively piloted beforehand. The initial draft of the interview was developed during a series of 20 exploratory interviews with Brazilian cocaine users. This version was then piloted in a further 40 cocaine users from five different drug and HIV treatment services. After each interview modifications were made to the interview schedule until the final version was obtained. The interview consists of 245 questions, all but 5 of which are closed questions with responses that are numerical, dichotomous or multiple choice in format. The areas that the interview covers are: sociodemographic details, history of licit drug use, history of illicit drug use, initiation into cocaine use, transitions in the route of administration of cocaine, pattern of cocaine use during peak usage, recent use, injecting history, criminal history, treatment experience, cocaine overdoses, drug use

among other family members and HIV-risk behaviour. HIV testing was not undertaken in this study but results of previous tests were recorded. For HIV positive patients interviewed in the same location in which they were being treated, results were confirmed by looking in the case notes. For HIV negative patients, who were often interviewed in a different setting from that in which the test had been performed, the result was not usually confirmed. Those who had never had an HIV test were classified as of unknown serological status.

Interviews

Interviews were conducted by three researchers, the majority (n=262, 89%) by the first author and the rest by a psychiatrist and a psychologist, both with clinical experience in the drug misuse field, who had been trained to use the interview schedule. Training consisted of observing five interviews performed by the principal author and then being observed by the same for a further five. Subsequent interviews were intermittently observed to maintain a high level of consistency.

The interviewers introduced themselves to the patients as researchers from the Federal University of São Paulo who were conducting a survey into patients' experiences with cocaine and crack. Patients were asked in private if they had used these drugs more than once in their life. Those who responded in the affirmative were asked to participate. All patients were guaranteed that any information given would be treated confidentially and would not be shown to other people, not even to those working in the service where the patient was being treated. Patients were reassured that non-participation in the study would not prejudice their treatment in any way. Interviews were conducted in private in a room away from other patients and staff. The interviews took between 30 and 50 minutes to complete.

Analysis

A data bank was created using the SPSS (Statistical Package for Social Scientists) for Windows programme, version 6.0.1. To compare the means of normally distributed variables, 95% confidence intervals were calculated to see if there was any degree of overlap. For comparisons of the relative frequency of variables between two or more groups, the X^2 test was used. Parametric but markedly skewed data were either transformed and analysed using the Student t-test or analysed using non-parametric tests, including the Mann Whitney U test and the Kruskal Wallis one way analysis of variance. In this paper a descriptive analysis of the data is presented in relation to the patients' drug histories, patterns of use and associated behaviours.

RESULTS

Sociodemographic characteristics

Two hundred and ninety-four patients were interviewed between January 1996 and October 1997. The sociodemographic characteristics of these patients are summarised in Table 1.

Table 1.

Licit Drug Use

Eighty-one percent (n=237) of patients were current smokers and a further 7% (n=19) ex-smokers. The median number of cigarettes smoked per day was 20. Seventy-two percent (n=212) currently drank alcohol and a further 16% (n=46) used to drink but had given up. Forty-two percent (n=109) of patients who had ever drunk alcohol reported that they had drunk on a daily basis at some stage in their life and 9% (n=26) had undergone

some form of treatment for alcohol problems in the past. The most common forms of which were: inpatient (n=17), outpatient (n=9) and Alcoholics Anonymous (n=7).

Illicit Drug Use

The history of illicit drug use is shown in Table 2, as this was a study of cocaine users, all patients had used this drug. Patients had experimented with a median of 5 different groups of drugs in addition to cocaine, usually cannabis, alcohol, tobacco, solvents and tranquillisers. Of the patients reporting tranquilliser use, only 54% said that they had always taken them with a doctor's prescription, the remainder having bought them illegally. For amphetamines, only 2% had taken them with a prescription. Other drugs commonly reported include: anticholinergics, in particular *Artane* (30%), LSD (17%), a hallucinogenic tea known as "cha de lírio" (15%), mushrooms (13%) and opiates (3%). Only 3 patients reported having used heroin and only 2 had bought it in Brazil.

Table 2.

Sequence of Drug Use

There was a tendency for drugs to have been taken in a particular temporal sequence starting with tobacco, followed by alcohol, cannabis and solvents, at more or less the same age, then amphetamines, cocaine and finally tranquillisers (Table 3).

Table 3.

Initiation into Cocaine Use

The first time cocaine was used, the most common route of administration was by snorting (n=255, 87%), followed by smoking (n=21, 7%) and then injecting (n=18, 6%). The mean age at initiation of cocaine use was 18.9 years (range: 7–46 yrs). There was no statistically significant difference between age at initiation for each route of administration (Kruskal-Wallis one-way ANOVA, $X^2=2.4$, d.f.=2, $p<0.3$ – a nonparametric test was used

due to unequal variances), but as the number of initial injectors and smokers was small there is the risk of a type 1 error having occurred. Initial experimentation was usually a social activity with 95% reporting that they had used the drug with someone else. Often there had been several people present - the median number of individuals, excluding the patient, being three. In 68% of cases (n=188) a friend was said to have bought the cocaine and in a further 23% (n=64) the patient had either bought it himself or made a financial contribution. The most frequently cited locations in which cocaine was used on the first occasion were: at a friend's house (n=71, 25%), on the street (49, n=18%), in a bar or nightclub (n=37, 13%) or in the patient's own home (n=34, 12%).

Patients had begun using cocaine between 1961 and 1996. Prior to 1990 only two (1%) patients reported smoking crack as their initial route of administration compared with 19 (13%) from 1990 onwards. Likewise more patients had begun using cocaine by injection before 1990 (n=17, 12%) compared with after this date (n=1, 1%). These changes in the initial route of administration of cocaine before and after 1990 were statistically significant ($X^2=30$, d.f.=2, $p<0.0001$). When considering all patients who had ever used crack (n=240), only 5% (n=11) had used it in before 1990 compared to 76% (n=69) of the 91 patients who had ever injected cocaine. Figure 1 shows the percentage of patients who had ever smoked crack, ever injected cocaine and ever snorted cocaine by the year in which they first did so, as many patients had used more than one routes the total number of patients is greater than 294.

Transitions in the Route of Cocaine Administration

Of cocaine users who began by snorting the drug (n=255), 29% (n=75) went on to inject cocaine at least once and 80% (n=205) to smoke crack at least once. A transition in the route of administration was defined as use of the new route for at least one month.

Seventy-seven percent (n=197) of the initial cocaine snorters exhibited at least one transition, of these the first transition was to smoking crack in 73% (n=143) and to injecting in 27% (n=54). Nineteen percent (n=49) of initial cocaine snorters underwent a second transition, 41% (n=20) of these were back to snorting and 59% (n=29) to smoking.

Of the initial crack smokers (n=21), 9 went on to experiment with snorting cocaine and 1 to inject but only 7 underwent a full transition, all towards snorting. Two of the initial crack smokers underwent a second transition, one to injecting and the other back to smoking.

Eighteen patients began using cocaine by injection, of these 13 went on to experiment with snorting cocaine and 14 with crack. A transition of route was reported by 14 initial injectors, to snorting in 6 cases and to smoking in eight. A second transition occurred in four, 1 to snorting and 3 to smoking.

Pattern of Cocaine Use during Peak

Patients were asked to identify a period in their life when their cocaine use had been heaviest. This period had a median duration of one year (interquartile range: 1 to 3 years). Preferred route of cocaine administration during this peak had been by smoking in 59% (n=173), snorting in 23% (n=68) and injecting in 18% (n=53). Sixty-three percent of patients stated that they had been using cocaine on a daily basis during this period (71% of crack smokers, 66% of injectors and 40% of snorters) and a further 43% (n=99) had used on one to six days per week. There was a linear trend for crack smokers to use more frequently than cocaine injectors, who in turn used more often than cocaine snorters (Mantel-Haenszel test for linear association, $p < 0.0001$). On a “heavier day” users consumed up to a median of: 10 rocks of crack (range: 1 to 60, approximately 0.5 to 30g); 5g of powder for cocaine snorters (range 0.5 to 25g); or 5g of powder for cocaine injectors

(range: 0.5 to 30g). Sixty-three percent of patients reported that they binged on cocaine, with binges lasting a median of 3 days, during which the drug was used continuously without the user stopping to eat or sleep.

Patients often described taking other drugs at the same time as cocaine with the specific aim of trying to dampen its excessively stimulating effects. Forty-six percent (n=135) said that they generally drank alcoholic beverages, usually spirits (74%), to achieve this effect and 9% (n=25) smoked cannabis. Drinking alcoholic beverages at the same time as using cocaine was strongly associated with having drunk on a daily basis at some stage in the past ($X^2=22.1$, d.f.=1, $p<0.0001$) and with ever having undergone treatment for alcohol misuse ($X^2=4.1$, d.f.=1, $p<0.05$).

During this peak period, cocaine use continued to be a social activity. Only 16% (n=46) always used cocaine alone, whilst 41% (n=121) always used it with other people – the remainder stated that they usually used alone (n=67, 23%) or usually used with someone else (n=59, 20%). The number of additional people present ranged from 1 to 23 (median=4). Most patients used cocaine in a variety of locations, including: a friend's house (73%), on the street (69%), the patient's own home (69%), in a car (51%), in an abandoned house or building (38%) and on wasteland (36%).

Sixty-three percent of patients said they always bought their cocaine themselves whilst 11% always used a go-between or “runner”, the remaining 26% did both. Drugs were usually bought in more than one location, the most common being in *favelas* or shantytowns (70%), on the street, particularly in the city centre (64%), and in bars (10%). When the drug was purchased, each member of the group generally made a financial contribution (58%), the rest stated that they always bought the drug only with their own money.

Injecting Drug History

Thirty-two percent (n=95) of the sample had injected a drug at some stage in their life. For 81% the first drug injected was cocaine, 10% had injected a pharmaceutical agent known as *Glucoenergan* (a weak stimulant sold in ampoules containing ethylamine phenyl-norcanfan, vitamin C and glucose) and 6% amphetamine. Twenty-two percent of injectors (n=21) had injected just a couple of times before giving up, the remainder had gone on to inject for a continuous period of time. There was no difference in the proportion of men and women who had ever injected. Injectors stated that on “heavier days” they had injected cocaine a median of 15 times (interquartile range: 10 to 27).

Sixty-eight percent (n=65) of injectors had borrowed a previously used syringe and 64% (n=61) had lent one to someone else. Sharing of “works” was common with 78% having shared spoons or bottle tops, used for “cooking up” cocaine, and 82% having shared rinse water. Eighty-two percent of injectors used to wash their syringes, but most had used ineffective disinfecting agents, such as cold tap water (71%).

Financing Drug Use

Patients often reported the necessity of using alternate means, frequently illegal, to finance their cocaine habit. The most commonly cited activity was to sell one’s own belongings (66%), especially trainers, sound systems, jeans and compact discs, followed by selling objects belonging to other family members (40%). Theft of other people’s (non-relative’s) property was reported by 38% and armed robbery by 21%. Drug dealing was undertaken by one third of patients, with cannabis being the drug most frequently sold (61%), followed by cocaine powder (52%) and crack (40%).

Thirteen percent (n=39) of patients reported transactions in which they had exchanged sex for drugs or money to buy drugs. Sex for drug/money transactions was more

common among women than men (24% vs. 12%), but as there were only 29 women in the total sample this difference should be treated with caution.

Criminal History

Fifty-six percent (n=165) of patients had been arrested at some stage in their life, of whom 75% (n=124) had spent time locked up in police cells and 29% (n=47) in prisons. There were no differences between men and women in the likelihood of having been arrested. The median number of arrests was two (interquartile range: 1 to 3). Thirty-two percent (n=53) of arrestees had used drugs whilst in custody but only 9 had injected, six of whom had shared injecting equipment with other prisoners.

Abstinence and Treatment History

Patients were asked if they had ever made a deliberate attempt to stop using cocaine and had succeeded for at least one month. Only 16% stated that they had never successfully stopped using cocaine of their own volition. The median of the maximum period of abstinence, for those who had made a successful attempt, was 6 months (interquartile range: 3 to 12 months). Patients with a positive HIV test were much more likely to report having had a 12 month or greater period of abstinence compared to those with a negative test or those who had never undergone the test ($X^2=33.97$, d.f.=2, $p<0.0001$)

Twenty-five percent (n=74) of the sample came from services for people with HIV/AIDS and the rest (n=220) from services for drug misusers. Overall, 81% (n=237) of subjects were currently undergoing treatment for drug misuse, including: outpatient treatment (53%), inpatient treatment (38%), residential rehabilitation (6%) and Narcotics Anonymous (1%).

Forty-five percent (n=133) of the total sample had undergone previous episodes of treatment for drug misuse. Men and women had similar treatment histories. Patients who

had been interviewed in HIV services were much less likely to have undergone any previous treatment for drug misuse than those interviewed in drug services (24% vs. 52%, $X^2=16.4$, $df=1$, $p<0.0001$). The commonest types of previous treatment were: residential rehabilitation (39%), inpatient (38%), NA (28%), outpatient (27%) and some sort of spiritual or religious intervention (15%). Seventeen percent had never had any contact with a drug treatment agency of any kind. Curiously, having had a period of abstinence from cocaine greater than six months was associated with never having had contact with a drug treatment agency ($X^2=21.8$, $d.f.=1$, $p<0.0001$), an association explained by the low level of contact that HIV positive patients had with drug treatment services, whilst at the same time being the group with the longest periods of abstinence.

Cocaine Overdose

Forty-three percent of patients ($n=126$) had taken an overdose of cocaine. The last reported overdose had occurred with crack in 58%, intravenous cocaine in 23% and snorted cocaine in 18%. A third of overdoses had been serious enough for the patient to have been taken to hospital for emergency treatment. The median number of cocaine overdoses was one. Fifty-six percent had also witnessed someone else take an accidental cocaine overdose.

Alcohol and Drug Use by Other Family Members

Fifty-eight percent of patients had a relative with an alcohol problem. Of these, older family members predominated, in particular parents (24%) and uncles/aunts (21%). Cocaine use was slightly less prevalent among relatives (43%) and tended to be concentrated among younger members, in particular brothers/sisters (22%) and cousins/nephews/nieces (15%).

Fifteen percent ($n=20$) of patients with a current partner ($n=138$) reported that he or she used cocaine. Having a current cocaine-using partner was more common among

women than men, but as a substantial number of patients had no current partner (n=154), the numbers were too small to submit to statistical analysis. Fifty-one percent (n=144) of patients had had an ex-partner who had also been a cocaine user, women were more likely than men to have had such a partner (74% vs. 48%, $X^2=5.6$, d.f.=1, $p<0.02$).

Recent Drug Use

Sixty-one percent (n=179) of cocaine users had taken the drug during the previous month, of these the preferred route of administration had been by smoking 72% (n=129), snorting 26% (n=46) and injecting 2% (n=4). For those who had not used during the last month, the median drug-free interval was 3 months (range 1.1 to 144 months). Twelve percent (n=34) of patients had not used cocaine for over 12 months, 33 of whom were HIV positive.

Duration of Cocaine Use

The duration of cocaine use was calculated from age at first use to age at last use. Data were markedly and positively skewed with a median duration of 6.3 years (interquartile range: 3.4 to 10.9yrs). A square-root transformation led to a distribution approaching normality (mean 2.59, s.d=0.98). Men and women had a similar median duration of use, 6.3yrs and 7.0yrs, respectively (transformed means=2.6 and 2.7, Student t-test, $t=0.77$, d.f.=292, $p>0.4$). HIV status was related to duration of cocaine use, with HIV positive patients having a median duration of 10.8 years, HIV negative patients 6.3 years and patients with unknown serological status 4.3 years. Using the transformed data, a one-way analysis of variance showed a statistically significant difference in the mean duration between groups ($F=21.8$, d.f.=2, $p<0.0001$). Those who had never had any contact with any form of drug treatment agency (n=50) had the longest median duration of cocaine use (11.4 years) - all of these patients came from treatment agencies for people with HIV.

DISCUSSION

In this study we have described in detail the drug histories of 294 cocaine users from initiation into drug use to most recent use. This is the first Brazilian study of its type which has used a relatively large and heterogeneous sample in conjunction with a structured interview schedule that is both ample in scope and has been developed and extensively piloting in Brazil.

In this sample lifetime polydrug use was the norm, with patients having used a median of 5 different types of substances (usually alcohol, tobacco, cannabis, solvents and tranquillisers) in addition to cocaine, a finding that has been reported in several other studies (Means et al, 1989; Miller et al, 1989; Kleiman et al, 1990, Platt, 1997). The prevalence of heroin and other opiate use was lower than that reported in other countries, particularly the UK (Mott, 1992) and USA (Kleinman et al, 1990; Means 1989). Our cocaine users described a temporal sequence in the progression of their drug use, starting with licit substances (tobacco and alcohol), followed by solvents and cannabis, then amphetamines and cocaine and finally tranquillisers. This sequence of drug use, sometimes known as A-M-O (alcohol, marijuana and other illicit substances), is a well-described phenomenon (Mackesy-Amiti et al, 1997; Andrews et al, 1991; Kandel and Faust, 1975). The implications of this finding are that if risk factors for progression along this road of drug misuse could be identified, it might be possible to develop interventions at an earlier stage aimed at preventing “heavier” drug use.

Concomitant cocaine and alcohol consumption was reported by nearly half the sample, with spirits being the preferred beverage. Patients said that alcohol was being used specifically to dampen down the excessively stimulating effects of cocaine. Concomitant

cocaine and alcohol consumption was associated with reports of daily alcohol consumption and with treatment episodes for alcohol misuse. A high prevalence of concurrent cocaine and alcohol misuse/dependence has been noted by other authors (Platt, 1997; Kleinman et al., 1990), but the nature of this relationship has not been fully explained. We cannot be certain from our study whether the daily alcohol consumption and treatment episodes preceded or followed the cocaine misuse and this association warrants further investigation.

Eighty-seven percent of our sample began using cocaine by snorting, compared to 60% of cocaine users from London in 1991 (Gossop et al, 1994), 96% of those from New York City in 1987 (Kleinman et al, 1990) and 82% of those from Miami between 1988 and 1990 (Pottieger et al, 1992). Although the majority of our sample began using cocaine by this route, most went on both to experiment with other routes of administration and to undergo transitions of route. Transitions were common, irrespective of initial route of administration, with 74% of all cocaine users reporting at least one transition and a further 19% a second. This finding suggests that among treatment-seeking cocaine users, snorters, smokers and injectors are not distinct populations, but rather the same population at different stages of evolution in their drug using careers. Transitions have been studied with other drugs of misuse, in particular heroin (Griffiths et al., 1994; Strang et al., 1992) and amphetamines (Darke et al., 1994). For example, Griffiths et al (1994) found that 39% of heroin users underwent at least one transition. Researchers have started to investigate risk factors for transitions, particularly those towards injecting (Ameijden et al., 1994; Des Jarlais et al., 1992; Irwin et al., 1996). The following factors having been found to be associated with this transition: previous experimentation with the injecting route, regular long-term cocaine use, current heroin use and having a sexual relationship with a partner who injects (Ameijden et al., 1994; Des Jarlais et al., 1992). Further research is needed to

see if it is possible to prevent transitions, particularly towards routes that have a higher potential for dependence and HIV transmission.

Crack appears to be a relatively new drug in Brazil. According to Inciardi (1993), the first police seizures of crack occurred in São Paulo in 1991 and a previous study from the same city showed that among treatment-seeking cocaine users, there was an increase in reported crack use between 1990 and 1993 (Dunn et al., 1996). We found that before 1990 crack use was rare but thereafter became increasingly common both as a primary and secondary route of administration and this was associated with a corresponding decline in the number and proportion of people injecting cocaine. Two studies from the United Kingdom have shown similar results for crack and smokable heroin, with the former appearing in the late 1980s and the latter in the late 1970s (Gossop et al, 1994; Strang et al., 1992). It is important to monitor the arrival of new drugs, or new ways of administering existing drugs, as these may have implications for both prevention and treatment.

Although cocaine and crack are relatively cheap in Brazil, selling at around R\$5.00 (US\$5.00 in 1996/97) for half a gram (Dunn and Ferri, 1998), the high consumption and low legitimate income that most of our patients had, meant that an additional, non-legitimate, income was often necessary. For example, a patient using 2.5g of crack a day, 6 days a week would spend around R\$600 (US\$600.00) per month - almost 6 times the Brazilian minimum wage and considerably more than what over 80% of our sample actually earned. Not surprisingly there was a high level of acquisitive crime and a large proportion of our patients had been arrested and jailed. The association between cocaine use and crime has been well documented, particularly among more frequent users on low to middle incomes (Hunt, 1991). Other countries have developed schemes whereby drug users who are arrested by the police on relatively minor charges, such as theft and possession of

small quantities of drug, are diverted away from the criminal justice system towards drug treatment agencies (Advisory Council on the Misuse of Drugs, 1991). In Brazil, where prisons are dilapidated and grossly overcrowded, such a scheme would be worth piloting.

In terms of HIV transmission, our findings reveal an alarmingly high level of HIV-risk behaviour among those who have injected cocaine. Sixty-eight percent of injectors had borrowed a used syringe, 64% had lent one to someone else, 78% had shared spoons and 82% rinse water. Although most injectors made some attempt to clean their syringes, they usually used ineffective disinfecting agents such as cold tap water. Epidemiological studies suggest that the prevalence of HIV among Brazilian intravenous cocaine users is between 40 and 60% (WHO Collaborative Study Group, 1993), whilst that of hepatitis B between 40 and 75% (Barata et al., 1993, de Carvalho et al., 1996) and hepatitis C 75% (de Carvalho et al., 1996). Needle exchanges have been extremely difficult to introduce in Brazil despite the HIV epidemic, which has now made significant inroads to the heterosexual population (Dunn and Laranjeira, 1996). Only as recently as 1997 were needle exchanges legally sanctioned in the State of São Paulo. Educational interventions are clearly needed to better inform cocaine users how to avoid infection with HIV and hepatitis B and C. However, of those cocaine users already infected with HIV, 60% had never had contact with any form of drug treatment agency - a glaring failure of the treatment system. Drug treatment agencies in Brazil have been somewhat passive in their approach to HIV prevention, waiting until drug users enter in contact with them (Dunn and Laranjeira, 1996). The above findings highlight the need for more active approaches, such as outreach work.

This study has several limitations, despite the number of patients interviewed, the relatively large number of settings used and the heterogeneity of the patients recruited, the sample was essentially a convenience sample. Furthermore, only 10% of the sample were

female, despite the fact that all the services attended both sexes. Whether this is a true reflection of the prevalence of cocaine use among women in São Paulo is impossible to say. There are no data available on the sampling frame, i.e. all cocaine users in São Paulo, for us to know how representative our final sample was. Therefore, our results can only be generalised with caution. Just how different cocaine users recruited from treatment agencies in Brazil are from those in the community is unknown, but studies from the USA suggest that these differences may be considerably less than was previously believed. Carroll and Rounsaville (1992) found that treatment-seeking and community-recruited cocaine users were comparable in terms of severity of cocaine use and the prevalence of current and lifetime psychiatric disorders and that it was the non-treatment sample that showed the highest levels of polysubstance misuse and criminal involvement. In future epidemiological studies of Brazilian cocaine users should employ alternative methods to obtain more representative samples of this relatively hidden population, for example, snowball sampling and social network analysis.

Our findings have important implications for the future development of drug treatment services and HIV prevention in Brazil, revealing an urgent necessity for more active approaches, preventive measures and outreach work. They also highlight the importance of regularly monitoring patterns of drug use so that new drugs and new ways of administering them can be identified early on and responded to accordingly. Several suggestions for future research have been made, some of which we are currently pursuing.

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Table 1. Sociodemographic characteristics of 294 cocaine users in São Paulo.

Characteristic	Number	Percent
Sex:		
Male	265	90
Female	29	10
Age: mean (standard deviation)	27.1 years (7.8)	range:10.7-49.7yrs
Civil status:		
Single	183	62
Married/Co-habiting	71	24
Sep./Wid./Divorced	40	14
Schooling:		
None	3	1
Not completed 1° school	144	49
Completed 1° school	36	12
Not completed 2° school	46	16
Completed 2° school	35	12
Not completed university	24	8
Completed university	6	2
Origin:		
São Paulo City	169	58
State of São Paulo	64	22
Other States	60	20
Other country	1	0.3
Employment:		
Full-time (salaried)	81	28
Part-time (salaried)	5	2
Self-employed	19	7
Housewife	2	1
Student	12	4
Retired/Sick-leave	40	14
Unemployed	135	46
Monthly income (minimum wages*):		
< 1	101	34
>1 <2	41	14
>2 <3	37	13
>3 <4	28	10
>4 <5	26	9
>5	61	21
Accommodation:		
House/flat (owned/rented)	62	21
Parent's house	159	54
Other person's house	33	11
Street	5	2
Other	35	12

*minimum wage = R\$114.00 (US\$114.00)

Table 2. Illicit drug history of cocaine users in São Paulo (n = 294)

Drug	Ever used n (%)	Ever used on daily basis n (%)	Used in last month n (%)	Used in last year n (%)
Cannabis	283 (96)	201 (71)	108 (38)	184 (65)
Solvents	160 (54)	33 (21)	3 (2)	10 (6)
Amphetamines	69 (24)	16 (23)	0 (0)	2 (3)
Tranquillisers	150 (51)	88 (59)	60 (40)	83 (55)
Cocaine	294 (100)	184 (63)	179 (61)	260 (88)

Table 3. Age at initiation into licit and illicit drug use of cocaine users in São Paulo (n=294).

Drug	Mean age (years)	Standard deviation (years)	Range (years)	95% Confidence interval (years)
Tobacco (n=256)	14.2	3.22	7 – 29	13.8 – 14.5
Alcohol (n=258)	15.0	2.71	7 – 24	14.7 – 15.3
Cannabis (n=283)	15.1	3.23	7 – 37	14.7 – 15.5
Solvents (n=160)	15.2	3.42	7 – 27	14.6 – 15.7
Amphetamines (n=69)	17.6	3.11	11 – 27	16.9 – 18.3
Cocaine (294)	18.9	5.60	7 - 46	18.3 – 19.5
Tranquillisers (n=150)	22.3	7.11	10 – 46	21.2 – 23.4

Figure 1. Year in which cocaine first injected (n= 91), first smoked (n= 240) or first snorted (n= 269)

