

REVIEW ARTICLE

BRIEF OVERVIEW OF THE STATUS OF DRUG ABUSE IN IRAN

Azarakhsh Mokri MD*

Department of Psychiatry, Tehran University of Medical Sciences, Tehran, Iran

Introduction

During the recent decades, Iran has suffered from drug abuse and its consequences. Although the practice of smoking opium is not a novel issue and has been present in this country since centuries, it has currently turned into a malignant social phenomenon with widespread social, psychological, familial and economic clamity. Emergence of intravenous drug use along with transmission of infectious diseases including HIV and HCV has added further to the burden. This brief review intends to offer a look at the drug abuse scene in Iran.

Prevalence of substance abuse in Iran

Attaining a definite estimate of prevalence and incidence of substance abuse in Iran is not possible. Social stigmatization along with legal restrictions on substance abuse prevents drug users from admitting their act, offering clear data and referring to governmental sectors. During the recent 5 years, some indirect estimates have been made. The figures are based on several avenues for obtaining information such as:

- Treatment and rehabilitation centers;
- The judiciary system and prisons;
- Limited household surveys;
- Opioid testing for issuing various licenses and qualifications;
- The Rapid Situation Assessment (RSA) study;
- Key informants and local authorities;
- Annual consumption of opiates in the nation.

Mandatory urine testing for applicants

According to the law, urine examination for

*Correspondence: A. Mokri MD, Department of Psychiatry, Tehran University of Medical Sciences, Tehran, Iran. E-mail: mokri@ams.ac.ir

opiods is mandatory for obtaining permission for marriage, license for driving heavy vehicles and employment. The examinations are performed by authorized laboratories. Thin-layer chromatography (TLC) is the standard method, and availability of morphine and codeine with a minimum concentration of 300 ng/mL is regarded as positive. Results show that, in 1997, from 603,247 tests performed in applicants for marriage, 8,043 (1.34 %) were positive. Testing for job applicants (1.58 % positive) and issuing driving license revealed similar results: the figures were 1.58 % and 3.96 %, respectively. The total number of tests in 1997 exceeded 960,000, of which 2.39% were positive.¹

Caution should be applied when referring to these figures. The applicants are always informed in advance about the testing and the dating of urine collection is up to the client. Thus, many drug users evade testing or refrain from drug use temporarily before the examination, which leads to an underestimation of the true figures. On the other side, testing positive for opiods is not synonymous for substance abuse or dependence. Casual use or use of opiod medications will also render the tests positive. As individuals having positive urine tests are not prosecuted and no further inquiry is made, it is not possible to discriminate between these groups.

As the applicants are always more than 15 years of age, considering that 60 % of the Iranian population is near to this age group, thus those testing positive for opiods will comprise more than 1,000,000.

The RSA study

In order to obtain a clearer view of substance abuse in the nation, the Iranian Welfare Organization in collaboration with the United Nation's International Drug Control Program

(UNDCP) office performed a rapid situation assessment in a study from 1998 to 1999. Although suffering from methodologic shortcomings, this is the most comprehensive and reliable study performed nationwide thus far. Ten provinces among the 28 in Iran were selected, and drug users, family members and key informants were structurally interviewed. Caution was taken to select provinces from different cultural and ethnic backgrounds. The sample, comprised of a total of 1,472 substance abusers, was recruited from individuals referring to treatment centers ($n = 477$), prisoners ($n = 506$) and street addicts ($n = 489$). The latter group was not in any kind of treatment and a snowball sampling strategy (chain referral) was applied for their identification. Through a structured questionnaire, inquiries regarding demographic features of the sample, their practices, addiction career and attitudes were made.²

The designers of this study claimed that their large scale sampling along with inquiry from representatives of different drug using groups has rendered the results somewhat reliable.

Although the results of the RSA study could not directly address the issue of nationwide prevalence, cautious inferences can be made. For example, the results showed that 24.2 % of the drug users had a history of admission to rehabilitation centers. In addition, the sample subjects had an average 11-year history of substance abuse. During this interval the rehabilitation system affiliated to the Welfare Organization had more than 177,000 first-time admissions. The exact number of referrals to the centers under the supervision of the judiciary sector is not known. Considering that around one-quarter of the drug users admitted residence in rehabilitation centers sometime during their addiction, at least 700,000 drug addicts should be present in the nation. This figure does not include the individuals that have been sheltered in other rehabilitation centers, which will probably increase the figures.^{2,3}

Data from the judiciary system

Detaining and incarceration of drug users in Iran has displayed its own vicissitudes during the previous two decades. Rather than being dependent on the number of drug users, is contingent on public attitude and judiciary policies. At best, it offers a rough estimate of the addiction problem in Iran. In 1989, almost 100,000 drug users were

detained. This figure decreased continuously to its minimum in 1992, reaching around 25,000 only to rise again thereafter. In 1998, the number of drug users arrested surpassed the rate in 1989, reaching 105,120. In the year 2000, 144,578 drug users were arrested. These figures do not consider those detained for drug trafficking, which apparently shows a similar trend. From 1995 to 2000 there has been a 20% annual rise in the number of people arrested for trafficking or use. It seems the decrease in the early 1990s was mostly a result of slackening policies against drug use, but the sharp rise in recent years is mostly a result of the increasing level of drug use and trafficking in the nation. The results of the RSA study showed that 16% and 37% of addicts referred to treatment centers and street addicts had a history of detainment because of drug use. Because of the rapidly changing population profile in the nation, along with the pattern of substance abuse including age of onset and prosecution of drug users, it is not easy to draw conclusions from these data, but it can be cautiously summarized that, currently, only one quarter of drug users get arrested in their lifetime in Iran.

In 1990 around 27.6 tons of illicit drugs were seized in the nation. This almost doubled in 2 years. In 1995 and 2000 astonishing rates of 150 and 250 tons were seized, respectively. And authorities believe that the seizures usually comprise 10–20 % of the total amount of drug entering the nation.

Drawing on such data, authorities in the Drug Control Headquarters (DCHQ) and other officials believe that around 1,200,000 to 2,000,000 individuals living in Iran will fit in the DSM-IV description of drug abuse or drug dependence. However, pessimistic estimates of up to 4,000,000 have also been stated.¹

Profile of drug abusers in Iran

The average Iranian addict is very likely male, married and employed. Data from various provinces and within different groups show that more than 90 % of the drug abusing population is male. In fact, the RSA study claimed that, on average, 93 % of drug abusers in the nation are male, whether imprisoned, in treatment or on the streets. The lowest preponderance of males belonged to Tehran, with 87 %. Men comprise 98% of individuals seeking treatment in governmental centers.¹⁻³

Around two-thirds of the addict population is

Status of Drug Abuse in Iran

Table 1. Brief profile of drug abusers in Iran

Feature	Available estimate
Mean age	33 years (\pm 10 years)
Mean age of beginning illicit drugs	22 years (\pm 7 years)
Sex	> 90% male
Marital status	> 50% currently married
Living alone	< 10%
Employment rate	~ 80% employed
History of incarceration	~ 40% total 20–25% because of drug use
Intravenous drug use	20–25% lifetime 10–15% recent months

married. This figure is lowest in Tehran, where only half seem to be married. Even in the incarcerated group, the majority (51 %) was married. In fact, less than 10% of the addicts live alone; a spouse, parent or sibling is usually present. Employment is also the rule in this group. Unemployed drug abusers comprise only a fifth of the population.

According to the RSA, 27 % of the street addicts were unemployed, while unemployment was 24 % and 10 % in the treatment-seeking and incarcerated addicts, respectively. Interestingly, one report from Kermanshah, a western province with high addiction rates, claimed that only 3.7 % of 149 drug abusers residing under probation in a rehabilitation camp were unemployed before detainment. Pooled data from rehabilitation centers across the nation have shown that more than 85 % of the inmates were employed before admission. See Table 1 for a brief profile of drug abusers in Iran.²

Narcotics are the main drugs of abuse in Iran. In the RSA, opium was abused during the month before inquiry in 73 % of the respondents. Heroin ranked second with 39 % admitting use in the preceding month. The Iranian narcotic users also abuse a preparation of opium called Shireh. It is

prepared by extracting the alkaloids from opium and condensing the concentration by means of evaporation. History of cannabis use in the preceding month was present in 13 % of the sample. Cocaine and stimulant use was negligible. On average, 62 % of the respondents were single drug users during the period. History of cigarette smoking and alcohol consumption was present in 94.4% and 63% of the cases, respectively. Mean age of first time cigarette smoking and alcohol consumption were similar (18.8 ± 5.67 years and 18.9 ± 4.15 years, respectively). Pooled data from referrals to the rehabilitation centers and outpatient clinics showed a similar pattern (Table 2).¹⁻³

Opium and shireh are smoked or ingested and, in rare instances, injected, while heroin is sniffed, smoked or injected. Around 20–25 % of Iranian drug abusers admit having injected at least once in their lifetime.

About 46.6 % of drug abusers claim to have at least one first-degree relative, most likely the father, abusing drugs. In one quarter of the cases there is more than one family member abusing drugs.

Data from various sources show that the mean age of drug users is around 33 years (\pm 10 yr). Pooled data from different provinces also show that the mean age of first illicit drug use is 22.2 (\pm 7.1) years of age. In these groups, in 59 % of the cases opium is the first illicit drug used, while cannabis is the first drug in 31.1% of the cases. Onset of drug abuse with heroin is rare and is seen in only 5.6 % of the cases.¹⁻³

Intravenous drug use in Iran

As stated earlier, a quarter of Iranian narcotic abusers have a history of intravenous (IV) injection of opioids, mainly heroin. Appearance of heroin injection dates back to 1960s. A study performed on 318 narcotic abusers with a lifetime history of IV drug abuse has shown that the average Iranian IV drug user (IDU) is 31.4 (\pm 8.7) years of age, significantly 2 years younger than non-IDU, has started drug use around 3.5 years before non-IDUs

Table 2. Drug of abuse in the Iranian substance abuser.

Drug of abuse	Data from the RSA study ($n = 1472$)*	Data from rehabilitation centers**	Data from outpatient clinics**
	One Month	Life time	
Opium	73.3%	94.6%	69%
Heroin	39.4%	43.5%	28%
Shireh	21.9%	50.1%	Not available

* Single use during the recent month and lifetime was the dominant pattern in 61.6% and 26.7% of respondents. **Main drug of abuse at time of presentation

(19.6 yr vs 23.1 yr) and started injecting while 26.2 (± 6.7) years old. Thus, injection of illicit drugs begins on average 7 years after its non-IV consumption. While the male-to-female ratio for non-IDU is 12:1, it is 31.3:1 for IDUs. More than half of the IDUs are single.^{2,4}

IDUs were more likely to be unemployed (32.8% vs 15.3%, $p < 0.001$), own a house (16.1% vs 29.9%, $p < 0.001$) and live with family members (88.9% vs. 94.2%, $p < 0.001$) in comparison to non-IDUs. Interestingly, the illiteracy rate was significantly lower (7.1%) in this group than in the non-IDU group (13.9%, $p < 0.001$). Table 3 offers a brief comparison of IDUs and non-IUDs in Iran.

There was no significant difference between annual income in IDUs and non-IDUs, but the former were more likely to have a history of illegal activity with financial motives (20.1% vs 4.9%, $p < 0.001$). Besides, IDUs expend on average twice as non-IDU on drugs. A history of imprisonment for any reason including drug use was twice as likely in IDUs (72.7% vs 36.3%, $p < 0.001$), half of which were imprisoned more than once.⁴

A history of drug use was present in half of the individuals in both groups but in IDUs, the father was more likely to be a drug abuser (22.6% vs 17.7%, $p < 0.05$).

Half of the IDUs in the sample had started injecting after 1993. Even after correcting for the increase in the number of drug abusers in Iran and a probability of higher mortality and lower survival in IDUs, it seems that the proportion of IV drug use is increasing in Iran. The mean age of onset of IV drug use has not significantly changed during the recent three decades in Iran and had been most likely between 24–27 years of age.^{2,4}

Syringes and injection needles are easily available in Iran and there is no limitation to purchasing disposable ones from pharmacies. Due to subsidiary policies of the Health Ministry, not related to IDU and the HIV issue, prices are also reasonable. More than 80% of IDUs claim to purchase sterile needles from pharmacies. Half (49.2 %) dispose the needle after a single use. Only 11.8 % claimed using the needle more than four times before disposal.

Despite easy access to needles, 49.8 % of IDUs had a positive history of sharing needles with friends, relatives and inmates. History of needle sharing was least prevalent in drug users seeking treatment at outpatient centers (37.8 %) and most common in street addicts (70.2 %). It appears that the sharing is related to a practice of injecting with

a peer group. Two-thirds of IDUs claimed to have engaged in this practice, and when doing so, 90 % shared needles.^{2,4}

Inquiries regarding IDUs awareness of AIDS have been made. Results showed that 76.4 % of the sample population were aware of the illness, two-thirds of whom named needle sharing among the means of transmission. The majority (90.6%) were aware that there is no definite cure for AIDS and it is fatal. Interestingly, non-IDUs were less aware of AIDS. One study showed that, among a sample of 1,124 IDUs and non-IDUs, only 14.7 % had ever performed HIV testing and the majority had never undergone any diagnostic procedure concerning AIDS. Among the 165 tested, three were positive.

Current status of AIDS and HIV are quite obscure and data are controversial. The first patient suffering from AIDS in Iran was identified in 1986. The Iranian Domestic Committee on AIDS claimed that 1,953 HIV-positive cases have been identified during 1986–2000. The number of HIV positive cases had escalated to 2,721 by July 2001. The committee estimated that more than 60,000 HIV-positive individuals are present in the nation. Current estimates claim that 60–70% of HIV transmission has been due to needle sharing in IDUs. Thus, the problem of HIV in Iran is primarily a problem of drug abuse.^{2,5,6}

Treating drug abuse in Iran

Formal and explicit treatment of drug abusers after the 1979 revolution began in 1994, after an amendment in the acts concerning addiction by the Iranian legislative system. From this period onwards, medical intervention for drug abuse

Table 3. A short comparison of intravenous drug users (IDU) and non-IDUs.

Feature	IDUs	Non-IDUs
Mean age* (yr)	31.4 (± 8.7)	33.5 (± 10.9)
Mean age of beginning illicit drugs* (yr)	19.6	23.1
Male-to-female ratio**	31.3: 1	12.2: 1
Marital status*	38.1%	62.0%
Living alone*	11.1%	5.8%
Unemployment rate*	32.8%	15.3%
History of illegal activity for obtaining drug money*	20.1%	4.9%
Illiteracy rate*	7.1%	13.9%

* $p < 0.001$, ** $p < 0.005$.

Status of Drug Abuse in Iran

became legalized and explicit. Drug users seeking treatment would be exempt from prosecution and could freely refer to registered centers. At this time, the Prevention Deputy of Welfare Organization set up outpatient centers for voluntarily admitted drug users. In these centers, rapidly burgeoning in all provinces, drug users were detoxified by clonidine and miscellaneous psychoactive therapeutics for a period of 14 days. During the detoxification period and thereafter, patients received individual counseling, supportive psychotherapy and participated in group sessions mainly with an unstructured composition. Some centers mandated routine urine toxicology tests and service was offered for only totally abstinent patients, although some had less stringent inclusion and follow-up demand. In some centers, separate psychoeducational and counseling sessions, mostly in groups, were offered to family members of the drug abusers. The above-mentioned services were offered at very low subsidized prices and frequently after paying an admission fee; all follow-up services, including relapse treatment, were free of charge.⁷

Unfortunately, the results showed that, despite the persistence and effort by staff and family members, attrition and relapse rates were high. In one unpublished study by the Welfare Organization in Bandar-Abbas, a southern city in Iran, the 6-month relapse rates mounted to 95 %. Similar finding in Tehran and major cities showed such discouraging results. Although some of the failures were attributed to lack of expertise in staff members, unstructured and occasionally arbitrary basis of the interventions, lack of proper motivation in health workers and logistic problems in the clinics, apparently a major portion is related to the essence and inherent aspects of drug abuse.

In order to improve outcome, naltrexone treatment for relapse prevention was introduced in 1999. A pilot study was performed at Rouzbeh Hospital, an affiliate of Tehran University of Medical Sciences, by the author. In this intervention, after detoxification, patients ($n = 104$) were maintained on naltrexone 50 mg per day and were requested to refer for visits, counseling and evaluation every week, during which naltrexone was prescribed. In every weekly visit, the patients had to ingest one capsule in the presence of a supervising staff or research assistant. Preliminary results showed that the 6-month relapse rate dropped to less than 50 %, in contrast to the 85 % rate before the introduction of this drug. This pilot

study suffered from methodologic drawbacks, but its promising results encouraged a larger multicenter study with a larger sample size. In the ongoing multicenter projects, individuals receive naltrexone (50 mg/day) upon weekly visits to outpatient centers for 6 months. Along with naltrexone prescription, subjects will participate in eight-session structured relapse prevention groups and family members will take part in six-session counseling and psychoeducation groups. Weekly urine toxicology will monitor patient abstinence and compliance with treatment. Preliminary results from the multicenter study show that the average 6-month abstinence rate is around 30–45%. The definite results of this project would be ready sometime in 2003.

Meanwhile, attempts have been made to improve detoxification techniques. In Rouzbeh Hospital in 1999, ultrarapid detoxification (URD) was introduced and performed without any complication on more than 80 patients. The procedure consisted of heavy sedation with midazolam, without need for intubation, and gradual IV administration of naloxone. The average duration of the task was 6 hours. Although patient inquiries showed relative satisfaction, the long-term follow up revealed no superiority over classical means of detoxification. Before the introduction of URD, feasible methods of detoxification comprised of clonidine or sedative hypnotics prescription, applying acupuncture, gradual tapering of the illicit drug or by herbal adjuvant treatments, all which mostly offer limited patient satisfaction and a high profile of withdrawal symptoms. This led to public and even commercial interest in URD, with private clinics showing preference in the procedure.

In fact, although utilized stealthily in private clinics, opioid agonists were not officially available for detoxification till 2001 in Iran. In the recent years, an attempt to detoxify with buprenorphine was performed with promising results.

Along with attempts to improve pharmacologic treatment for drug dependent individuals, psychotherapeutic interventions were also pursued. Structured Relapse Prevention (SRP) group therapy, cognitive behavioral individual and group therapies and motivational enhancement interviews were implemented in some centers. Acupuncture, not widely used at governmental clinics, prevailed in private offices. Therapeutic communities (TC) were inaugurated in Tehran and Isfahan and a few

other cities in 2001. Their effectiveness and cost-benefit are to be clarified. Meanwhile, Narcotic anonymous (NA) groups were initiated in the country in 1994 and are currently available in the major cities. Along with such groups, similar self-help groups with various ideals and belief systems were introduced.

A number of NGOs for rehabilitation, training and emotional and financial support for the former drug users and their families were established. These NGOs offered consultation and unstructured group therapies by former drug users as well.

The prevailing policy for drug treatment is attaining pure abstinence, and any compromise is usually regarded as failure. Thus, harm reduction is not accounted as the primary objective. Some clinics offer consultation and educational groups on HIV prevention, but the campaign for harm reduction and HIV prevention is limited and scattered. In Tehran, Kermanshah (West of Iran) and Shiraz syringe exchange programs, treatment of sexually transmitted disease and consultation on drug dependence have recently been launched as part of the activity of so-called triangular clinics. But considering drug abuse treatment, no program primarily addresses harm reduction and all such activities are dispersed among abstinence oriented treatment attempts. As has been stated before, syringes are widely purchasable in the country, but in groups confined to certain areas such as prisoners and detainees, restricted access to disposable needles along with a trend toward IV heroin use has wreaked limited epidemics of HIV. To date, no agonist maintenance treatment is available in the country. Even high-risk groups-individuals not able to maintain abstinence despite continuous efforts-and patients suffering from severe comorbid states are not able to receive such interventions.

Discussion

As is apparent from the above data, nationwide reliable surveys are missing in Iran, and the status and profile of drug abuse is acquired through limited rapid assessment and extrapolation of data from the judicial system, patients referring to treatment facilities and other indirect means of estimation. Despite such shortcomings, some authors endorse rapid assessment especially in states of crises for obtaining information regarding the status and profile of HIV and drug use.⁸ Besides, many nations rely on indirect rather than

direct national household surveys for attaining the necessary information. For example, the European Monitoring Center for Drugs and Drug Addiction (EMCDDA), in an attempt to identify existing methodologies and support the development of reliable and valid methods for national prevalence estimation throughout the European Union, has excluded household population survey. Instead, other methods such as (1) gathering information from multiple indicators, (2) extrapolation from police data, (3) extrapolation from treatment data, (4) extrapolation from drug-related deaths, (5) back-calculation from HIV cases, and (6) capture-recapture were accepted as reliable and recommended methods for estimation of drug abuse prevalence and depiction of the addiction scene.⁹ Hence, some credit should be given to the current available data and estimates in Iran.

It is clear that opioids are the primary drugs of abuse in the nation. Meanwhile two different forms of opioid abuse afflict Iran; a highly problematic and risky heroin injection and a less burdensome but more prevalent opium smoking and ingestion. Opium abusers are less stigmatized, more functional and have fewer history of incarceration, criminal behavior, HIV-related risky behavior and comorbid mental disorders. On the contrary, heroin users more readily convert to iv drug use, are at risk of HIV and display more instances of criminal and antisocial behaviors. It is also evident that the proportion of heroin to opium use is increasing. Considering the appearance and rapid escalation of HIV cases who have acquired the infection through needle sharing, nowadays many health professionals are beginning to realize the increasing heroin injection habit as the major problem in the Iranian drug abuse scene. Many believe that preventing heroin use and decreasing the risk of HIV transmission through shared needles rather than restricting any kind of opioid use should be the primary goal of the Iranian health system. Preventing opium use should come only thereafter.

Unpublished data from the Welfare Organization and other health centers claim that most heroin users begin with opium consumption and for controversial reasons convert to heroin after a few months or years. Experience from other Asian countries who had an endemic opium smoking habit has shown that reckless campaigns against opium consumption many ironically lead to a disastrous heroin injection habit.^{10,11} The fact that currently the number of opium smokers in Iran is 4 to 5 times the number of heroin dependents,

Status of Drug Abuse in Iran

stresses the necessity of effort for preventing such conversions. There is a dormant giant that should not be awakened!

With the rapidly increasing IV drug use in the nation, insisting only on abstinence-oriented models might also have catastrophic results. Countries that withheld harm-reduction policies were forced to pay with pandemics of HIV and AIDS.¹¹⁻¹³

Agonist maintenance programs with buprenorphine or methadone are among the highly successful interventions for limiting HIV transmission in drug users.¹⁴⁻¹⁷ Rapid extension of HIV due to intravenous drug use led implementation of agonist substitution in many countries. Even countries like France, which traditionally favored pure abstinence models and banned agonist substitution, were forced to start and rapidly extend such interventions. In just 4 years up to 60,000 patients underwent buprenorphine or methadone maintenance treatments.¹⁸ From such experience and making comparisons for Iran, it appears that maintenance programs should be started immediately, with any delay leading to disastrous consequences.

Availability of sterile syringes in the market is no guarantee of their utilization. Needle dispensing and exchange programs should be implemented alongside.

World experience has documented that rapidly starting a comprehensive program comprised of extensive psycho-education, needle exchange and low threshold maintenance treatment will effectively blunt and limit HIV epidemics in countries with similar drug scenes.¹¹⁻¹³

References

- 1 Drug Control Headquarters. Annual report of drug control. 2001.
- 2 Razzaghi EM, Rahimi Movaghar A, Hosseini M, et al. *A Rapid Situation Assessment of Drug Abuse in Iran*. Tehran: UNDCP; 1999.
- 3 Iranian Ministry of Health and Medical Education. Statistics on Drug abuse in Iran. 2000.
- 4 Welfare Organization. A report on intravenous drug users in Iran. 2001.
- 5 Iranian Ministry of Health and Medical Education. Statistics on HIV/AIDS in Iran. 1999.
- 6 Prevention Department of Welfare Organization. A summary report of drug-related infectious disease in Iran. 2000.
- 7 Ministry of Health and Medical Education. Protocols for substance abuse treatment. 2001.
- 8 Rhodes T, Stimson GV, Fitch C, et al. Rapid assessment, injecting drug use, and public health. *Lancet*. 1999; **354**: 65-8.
- 9 Frischer M, Hickman M, Kraus L, et al. A comparison of different methods for estimating the prevalence of problematic drug misuse in Great Britain. *Addiction*. 2001; **96**: 1465-76.
- 10 Westermeyer J. The pro-heroin effects of anti-opium laws in Asia. *Arch Gen Psychiatry*. 1979; **33**: 1135-9.
- 11 Rhodes T, Ball A, Stimson GV, et al. HIV infection associated with drug injecting in the Newly Independent States, eastern Europe: the social and economic context of epidemics. *Addiction*. 1999; **94**: 1323-31.
- 12 Rinken S, Vallecillo. The evolution of Spanish HIV prevention policy targeted at opiate users: a review. Drug: education, prevention and policy. 2002; **9**: 45-56.
- 13 Dehne KI, Grund JPC, Kobysheva Y, et al. The HIV/AIDS epidemic among injectors in Eastern Europe: patterns, trends and determinants. *J Drug Issues*. 1999; **29**: 727-74.
- 14 King VL, Stoller KB, Hayes M, et al. A multicenter randomized evaluation of methadone medical maintenance. *Drug Alcohol Depend*. 2002; **65**: 137-48.
- 15 Marsch L. The efficacy of methadone maintenance interventions in reducing illicit opiate use, HIV risk behavior and criminality: a meta-analysis. *Addiction*. 1998; **93**: 515-32.
- 16 Ward J, Hall W, Mattick RP. Role of maintenance treatment in opioid dependence. *Lancet*. 1999; **353**: 221-6.
- 17 Gossop M, Morsden J, Stewart D, et al. Reduced injection risk and sexual risk behaviors after drug misuse treatment: results from the National Treatment Outcome Research Study. *AIDS Care*. 2002; **14**: 77-93.
- 18 Thirion X, Micallef J, Barrau K, et al. Recent evolution in opiate dependence in France during generalisation of maintenance treatments. *Drug Alcohol Depend*. 2001; **61**: 281-5.