

ORIGINAL ARTICLE

## Drug Use Among Prisoners: By Any Definition, It's a Big Problem

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According to several studies, the prevalence of drug use<sup>1</sup> among prisoners is manifold compared to general population. However, comparisons across studies are hampered by the use of a variety of mutually non-comparable methodologies. We report substance use among Finnish prisoners using three methods and analyze these differences. The material consisted of 610 Finnish prisoners in 2006 and represents all Finnish prisoners. The subjects participated in a comprehensive field study including a standardized psychiatric interview (SCID-I). Alcohol abuse/dependence was diagnosed in 68% (SCID-I) and 72% (ICD-10) among men and 70% (both SCID-I and ICD-10) among women. Drug abuse/dependence was diagnosed in 62% (SCID-I) and 69% (ICD-10) among men and 64% (SCID-I) and 70% (ICD-10) among women prisoners. Interview data revealed that the majority had at least tried most substances. Both alcohol and drug abuse/dependence were vastly more common among Finnish prisoners than reported elsewhere. The DSM-IV-based SCID-I produced slightly lower prevalence estimates than an ICD-10 clinical examination, but overall SCID/ICD agreement was very good. It seems that physicians use information other than that captured by standardized structured clinical interview when placing a diagnosis. Nonclinical interview-based prevalence figures may overestimate harmful use of drugs unless known risk patterns of use (e.g., intravenous use) are specifically addressed.

**Keywords** drug abuse, alcohol abuse, dependence, hazardous drinking, prisoner, prisoners' problem use, health, SCID

### INTRODUCTION

The relationship between drug use and criminal activity is displayed in multiple ways: certain crimes are drug-defined (e.g., possession and trade), some are drug-related (e.g., financing the use), and still others are simply related through an inclination toward a deviant lifestyle, where e.g. participation in society's legitimate economy through work is frowned upon. Dealing with drugs is associated with a large proportion of crime (Bean, 2002). Offenders' relationship with drugs is not, however, necessarily only a "lifestyle" issue. Several studies have shown that drug use among criminal offenders is more often than not characterized by a clinically diagnosable substance dependence (Andersen, 2004; Brochu, Guyon, & Desjardins, 2001; Lurigio & Schwartz, 1999; Seddon, 2000).

A recent systematic review of substance use and dependence in prisoners reported substantial heterogeneity among studies (Fazel, Bains, & Doll, 2006). Prevalence estimates (DSM-IV) for alcohol use/dependence varied between 18% and 30% among male and between 10% and 24% among female prisoners; the corresponding figures for drug use/dependence were 10%–48% (men) and 30%–60% (women). A review by Andersen (2004) reported higher figures (>50%) for alcohol use/dependence for countries not included in the review by Fazel et al. (2006). Drug use/dependence figures were generally in the same range as in Fazel et al. (2006), with two notable exceptions. First, Chiles, Cleve, Jemelka, and Trupin (1990) reported 61% prevalence of drug use/dependence among sentenced male prisoners in Canada. Second, Joukamaa (1995) reported drug (excluding alcohol) use/dependence among 6% of the Finnish male prisoners.

<sup>1</sup>The journal's style utilizes the category *substance use* as a diagnostic category. Substances are used or misused; living organisms are and can be used. Editor's note.

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In their study of alcohol and drug use among offenders in England and Wales, Singleton and coworkers (O'Brien, Mortimer, Singleton, & Meltzer, 2003; Singleton, Meltzer, & Gatward, 1998) used a self-developed set of questions to measure drug use; in addition, criteria were set for drug dependence. Dependence for a drug was deemed if the respondent gave a positive answer to any one of the dependence symptoms (e.g., inability to cut down, need for larger amounts), except in the case of cannabis where two signs of dependence were required. Hazardous drinking was assessed by using the alcohol use disorders identification test (AUDIT) questionnaire (Saunders, Aasland, Babor, De La Fuente, & Grant, 1993). Lifetime prevalence of drug use ranged from 21% (methadone) to 79% (cannabis) among male sentenced prisoners. Among females, the proportions ranged from 18% (solvents) to 65% (cannabis). Dependence for any illicit drug was indicated in 43% of male and 41% of female sentenced prisoners; the highest prevalence figures were found for heroin and cannabis. The figures were generally higher for young (under 21 years of age) offenders (Lader, Singleton, & Meltzer, 2000).

A recent French study (Lukasiewicz et al., 2007) used a method where two psychiatrists interviewed each prisoner together: one using the mini-international neuropsychiatric interview (MINI) plus v 5.0 (Sheehan et al., 1998) and the other, a more experienced clinician, using an open clinical interview. Agreement on DMS-IV dependence diagnoses was good: 0.91 for alcohol and 0.95 for any drug. A diagnosis was set if either of the clinicians suggested it. As a result, alcohol use disorder was diagnosed in 18% and drug use in 28% of the study subjects.

Questionnaires such as cut-annoyed-guilty-eye (CAGE; Ewing, 1984), drug use screening test (DAST; Gavin, Ross, & Skinner, 1989) and severity of dependence scale (SDS; Gossop, Best, Marsden, & Strang, 1997) have also been used to assess alcohol and drug dependence in the prison population (e.g., Brooke, Taylor, Gunn, & Maden, 1998). Structured interviews were used by Strang et al. (2006) to estimate the prevalence of drug use among prisoners in England and Wales: 75% had used amphetamine, 69% cocaine, and 58% heroin in their lifetime. Similarly, structured interviews typically conducted by trained nurses have been used e.g. in Australia (Butler, Levy, Dolan, & Kaldor, 2003).

The US Department of Justice periodically surveys drug use, among other issues, in jail and prison inmates (Bureau of Justice Statistics [BJS], 2009). The 1996 survey, for example, estimated that 85% of the convicted jail inmates had used drugs in their lifetime and that 55% had used drugs in the month before the offense (Wilson, 2000). In 2004, BJS introduced DSM-IV-based measures of drug dependence and use: the prevalence of dependence of any drug was estimated at 36% among state and 29% among federal prisoners (Mumola & Karberg, 2006). Fifty-three percent of state and 45% of federal prisoners met the DSM-IV criteria for drug use or dependence. These figures are in sharp contrast with U.S. population estimates of 0.6% for dependence and 2.0% for use/dependence (Mumola & Karberg, 2006).

In addition to being a general public health issue, drug use has been considered to be one of the main health problems in prisons throughout Europe (MacDonald, 2005). Intravenous (iv) or intramuscular (im) use has received special attention due to heightened risk of spreading blood-borne virus infections such as hepatitis or human immunodeficiency virus (O'Brien et al., 2003; Dolan, Kite, Black, Aceijas, & Stimson, 2007b). In a recent meta-analysis among prisoners by Vescio et al. (2008), injecting drug users were found to be 24 times as likely to have a hepatitis C infection as those not injecting.

Several studies have shown that the prevalence of psychoactive substance use among criminal offenders is manifold compared with the general population. However, comparisons across studies are greatly hampered by the use of a wide variety of mutually noncomparable methodologies. Furthermore, as Andersen (2004) noted, several factors may affect the quality of data on substance use among prisoners; thus, it is wise to use a diversity of methods to assess use and analyze differences in results. This paper, based on a comprehensive field study of a nationally representative sample of prisoners in Finland, reports the prevalence of psychoactive substance use obtained using three methods of assessment. Furthermore, the levels of agreement and differences among these three methods were analyzed.

## MATERIAL AND METHODS

The material consisted of 610 Finnish offenders and it represents all Finnish prisoners. Samples were gathered for male ( $N = 309$ ) and female prisoners ( $N = 101$ ). The male stratum consisted of a random sample of 106 inmates from Helsinki prison and inmates from Riihimäki ( $N = 102$ ) plus a random sample of incoming prisoners from Turku ( $N = 101$ ) prison. The female stratum came from Hämeenlinna prison and consisted of random samples of 51 inmates and 50 incoming prisoners. Both men and women contained both remand and sentenced prisoners. Data were gathered between October 2005 and October 2007; the majority of data were obtained in 2006.

In addition, separate samples of life sentence offenders ( $N = 100$ ) and fine defaulters ( $N = 100$ ) were collected to illustrate possible differences between substance use among ordinary prisoners and these two special groups. Generally, prison sentences are rather short in Finland, and a person can get a life sentence only from manslaughter. On the other hand, "fine defaulters" serve very short terms through a conversion process where fines are converted into confinement because of inability to pay them. The life-sentenced prisoner sample was an almost total sample (sample of 100 out of 131 eligible) of all life-sentenced prisoners in Finland at the data collection time. Fine defaulters were a total sample of incoming fine defaulters from Jokela and Vantaa prisons; data collection was stopped as the sample size reached 100.

The study received ethical approval from the Pirkanmaa Hospital District ethical council and the Ministry of Justice. Participation was voluntary and a written informed consent was obtained from all participants. The

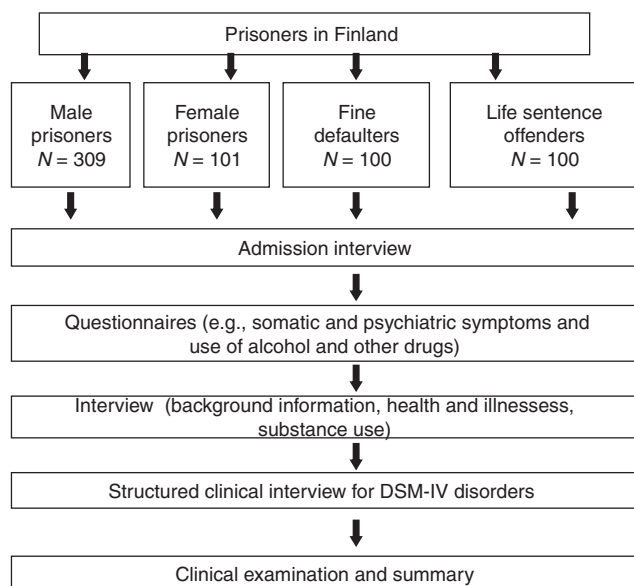


FIGURE 1. The data collection protocol.

prisoners were very willing to cooperate, although the process (Figure 1) was rather demanding. Altogether 13% ( $n = 95$ ) of eligible prisoners refused ( $n = 70$ ) or were unable to take part in the data collection due to a short sentence or transfer to another institution ( $n = 25$ ).

The subjects participated in a comprehensive field study consisting of laboratory tests, several questionnaires, interviews, the structured clinical interview for DSM-IV disorders (SCID; see First, Williams, & Spitzer, 1997) and clinical medical examination (Figure 1). These present analyses utilized alcohol and drug use data from the interviews, SCID-interviews, and the clinical summary. The clinical summary (ICD-10) consisted of information from both the SCID-I and the medical examination. The interviews were conducted by registered nurses, the SCID-interviews were conducted by SCID-trained psychologists, medical examinations and clinical summaries were conducted by medical doctors working for the Prison Health Services; most of the clinical examinations were performed by two of the authors (P.V. and T.W.).

Substance dependence-related diagnosis codes have been shown in Table 2. Substance dependence/abuse was indicated in the SCID-I-based diagnosis if the following DSM-IV codes were used: alcohol dependence/abuse (291.80, 291.50, 291.30, 303.90, 305.00), opioid dependence/abuse (304.00, 305.50), cannabinoid dependence/abuse (304.30, 305.20), sedative dependence/abuse (304.10, 305.40), cocaine dependence/abuse (304.20, 305.60), stimulant dependence/abuse (304.40, 305.70), hallucinogen dependence/abuse (304.50, 305.30), and inhalant dependence/abuse (304.60, 305.90).

In addition to the above drug abuse/dependence diagnosis, codes 292.11, 292.12, 292.84, and 292.89 were deemed an indication of drug abuse/dependence. The SCID psychologists were instructed not to use the diagnosis codes for multiple drug use but to code the substances individually.

In the interview, the respondent was asked at what age he/she had first used a substance, if he/she had used the substance in the past 30 days, and if he/she had used the substance orally, nasally, by inhaling smoke, intramuscularly and/or intravenously. To facilitate comparisons between the diagnoses, substances were combined as follows: "opioids" (heroin, buprenorphine, other opioids), "sedatives" (benzodiatsepinas, barbiturates) and "stimulants" (amphetamine, ecstasy); "alcohol," "solvents," "cannabis," "cocaine," and "hallucinogens" were considered as individual substances.

The ratios between abuse/dependence diagnosis (ICD-10) and interview data were calculated for each stratum and an adjusted figure was calculated by adding up these stratum-specific ratios and dividing the sum by the number of strata (four).

Two (ordinary) male prisoners did not participate either in the clinical examination (ICD-10) or in SCID-I, and two women skipped SCID-I. Most other information, however, was available, including interview data on substance use. Thus, these four subjects were included in the data set; substance abuse/dependence diagnoses were set as "none" for them.

The term "men" is used to refer to the stratum of 309 ordinary male prisoners (not including fine defaulters or lifetime sentenced). Fisher's exact test was used to test the independence of diagnoses and offender groups (in two-by-two tables) and Cohen's kappa was used to measure the agreement between the two evaluations of dependence: one based on structured interview (SCID-I) and the other based on clinical evaluation (ICD-10). SPSS version 16.0 was used for analysis.

## RESULTS

The age range was 16–69 years; mean age for ordinary male prisoners was 34.1 years and 34.6 years among women (Table 1). No age difference was found between ordinary male prisoners and women.

## SUBSTANCE DEPENDENCE DIAGNOSES

There were no gender differences in lifetime alcohol dependence (Fisher's exact test,  $p = ns$ ) either in SCID-I diagnoses or in ICD-10 diagnoses (Table 2). Likewise, lifetime drug (excluding alcohol) dependence (diagnosed using SCID-I and ICD-10) was equally prevalent (Fisher's exact test,  $p = ns$ ) among men and women. Lifetime substance dependence diagnoses were notably more prevalent when placed in a clinical examination (ICD-10) compared to SCID-I structured clinical interview, except among women.

Cohen's kappa was used to measure the agreement between the two evaluations of dependence: one based on the structured interview (SCID-I) and the other based on clinical evaluation (ICD-10). For alcohol dependence, kappa coefficient for men was 0.777 (substantial agreement,  $p < 0.01$ ; Landis & Koch, 1977) and 0.861 (almost perfect agreement,  $p < 0.01$ ) among women

TABLE 1. Study subjects by stratum and age

Age	Men (%)	Women (%)	Fine defaulter (%)	Life sentenced (%)
16–24 years	17	19	18	5
25–34 years	42	32	31	31
35–44 years	23	32	20	35
45–69 years	17	18	31	29
Total (%)	100	100	100	100
Mean age $\pm$ SD (years)	34.1 $\pm$ 10.4	34.6 $\pm$ 10.0	37.6 $\pm$ 12.5*	39.2 $\pm$ 9.9*
Total (N)	309	101	100	100

\*Group mean age different from “men” ( $p < 0.05$ ).

prisoners. For any drug dependence, kappa coefficient was 0.719 (substantial agreement,  $p < 0.01$ ) among men and 0.653 (substantial agreement,  $p < 0.01$ ) among women.

### SUBSTANCE ABUSE/DEPENDENCE DIAGNOSES

The prevalence of SCID-I-based lifetime diagnoses for substance abuse/dependence was slightly higher than the corresponding prevalence of dependence (Table 3). It is notable that although drug dependence was more prevalent than alcohol dependence among both men and women, abuse/dependence prevalence was higher for alcohol than for drugs. As for SCID-I, the prevalence of clinical examination-based ICD-10 diagnoses for substance abuse/dependence were slightly higher than the corresponding prevalence of dependence (Table 3). Also, prevalence was slightly higher than in corresponding SCID-I-based abuse/dependence figures.

For alcohol abuse/dependence, the agreement between the structured interview (SCID-I) and the clinical evaluation (ICD-10) was very good; kappa coefficient for men was 0.885 (almost perfect agreement,  $p < 0.01$ ) and 0.858 (almost perfect agreement,  $p < 0.01$ ) among women prisoners. For any drug abuse/dependence, kappa coefficient was 0.836 (almost perfect agreement,  $p < 0.01$ ) among men and 0.866 (almost perfect agreement,  $p < 0.01$ ) among women.

### SUBSTANCE USE IN INTERVIEW DATA

Interview data on lifetime prevalence of use showed very high figures for all substances (Table 4); however, there were some respondents that reported never having used any substance, not even alcohol. Looking at the ratio between abuse/dependence diagnosis (ICD-10) and interview data, “any drug” abuse/dependence diagnosis was placed on around 80% of those that had abused drugs; however, the ratio on individual substances varies from around 10% (solvents, cocaine) to around 60% (stimulants).

Interview data on lifetime prevalence of injecting drug use show high figures for opioids and stimulants (Table 4). Women reported more injecting abuse of stimulants than ordinary male prisoners (Fisher’s exact test,  $p \leq 0.05$ ). The ratio between abuse/dependence diagnosis (ICD-10) and injecting abuse prevalence in the interview data is below 100% in cocaine (42%), opioids (63%),

and stimulants (95%). Most study subjects with sedative abuse/dependence diagnosis (ICD-10) did not report injection abuse of the substance.

A considerable proportion of opioid injecting abusers were not diagnosed as opioid abuse/dependence cases using either SCID-I or ICD-10. Kappa coefficient for SCID-I among women was  $\kappa = 0.232$  (fair agreement,  $p < 0.01$ ) and among ordinary male prisoners  $\kappa = 0.440$  (moderate agreement,  $p < 0.01$ ). For ICD-10, the coefficients were slightly higher: 0.300 for women (fair agreement,  $p < 0.01$ ) and 0.681 for men (substantial agreement,  $p < 0.01$ ).

### SPECIAL PRISONER GROUPS

Fine defaulters and life-sentenced prisoners were both older than ordinary male prisoners (Table 1). Lifetime alcohol dependence (as diagnosed using SCID-I) was equally prevalent (Fisher’s exact test,  $p = ns$ ) among life-sentenced men and ordinary male prisoners (Table 2). The prevalence was higher among fine defaulters than among ordinary male prisoners (Fisher’s exact test,  $p = 0.02$ ). Lifetime drug (excluding alcohol) dependence (diagnosed using SCID-I) was equally prevalent (Fisher’s exact test,  $p = ns$ ) among fine defaulters and ordinary male prisoners (Table 2). The prevalence was lower (Fisher’s exact test,  $p < 0.01$ ) among the life-sentenced. Lifetime alcohol dependence (diagnosis placed in clinical examination, ICD-10) was equally prevalent (Fisher’s exact test,  $p = ns$ ) among life-sentenced and ordinary male prisoners (Table 2). The prevalence was higher among fine defaulters (Fisher’s exact test,  $p < 0.01$ ). Lifetime drug (excluding alcohol) dependence (diagnosis placed in clinical examination) was equally prevalent (Fisher’s exact test,  $p = ns$ ) among fine defaulters and ordinary male prisoners. Looking at the interview data, fine defaulters reported more injecting use of sedatives (Fisher’s exact test,  $p < 0.01$ ) than ordinary male prisoners (Table 4). The life-sentenced reported less injecting use of all drugs (Fisher’s exact test,  $p < 0.01$ ) than ordinary male prisoners.

### DISCUSSION

Comparisons across substance abuse studies are difficult because a wide variety of mutually noncomparable methodologies have been used. Andersen (2004)

TABLE 2. Lifetime substance dependence prevalence by strata; diagnosis placed using SCID-I structured clinical interview (DSM-IV) and clinical examination (ICD-10)

Substance (DSM-IV; ICD-10)	Men		Women		Fine defaulter		Life sentenced	
	DSM-IV (%)	ICD-10 (%)	DSM-IV (%)	ICD-10 (%)	DSM-IV(%)	ICD-10(%)	DSM-IV(%)	ICD-10 (%)
Alcohol (303.90; F10.2x)	52	62	51	52	66	86	60	62
Opioids (304.00; F11.2x)	18	27	10	11	18	35	8	19
Cannabinoids (304.30; F12.2x)	14	23	4	4	7	26	12	19
Sedatives (304.10; F13.2x)	13	27	13	14	3	32	12	23
Cocaine (304.20; F14.2x)	1	4	0	0	1	6	2	6
Stimulants (304.90; F15.2x)	39	48	38	38	28	45	23	28
Hallucinogens (304.50; F16.2x)	1	5	0	0	2	9	1	3
Inhalants (304.60; F18.2x)	0	4	0	0	0	3	0	4
Polydrug (F19.2x)		23		26		21		22
Any drug	58	67	60	66	54	70	42	46
Any (alcohol or other drug)	75	84	77	84	85	97	68	72
N	309	309	101	101	100	100	100	100

TABLE 3. Lifetime substance abuse/dependence prevalence by strata; diagnosis placed using SCID-I structured clinical interview (DSM-IV) and clinical examination (ICD-10)

Substance	Men		Women		Fine defaulter		Life sentenced	
	DSM-IV (%)	ICD-10(%)	DSM-IV (%)	ICD-10(%)	DSM-IV (%)	ICD-10(%)	DSM-IV (%)	ICD-10(%)
Alcohol	68	72	70	70	86	87	72	74
Opioids	19	28	10	13	18	35	8	19
Cannabinoids	18	27	4	6	10	30	16	22
Sedatives	16	30	15	17	3	33	17	26
Cocaine	2	5	0	0	1	6	3	7
Stimulants	41	52	39	45	30	52	30	37
Hallucinogens	2	6	0	0	3	10	1	5
Inhalants	0	4	0	0	0	3	0	4
Polydrug		25		28		23		23
Any drug	62	69	64	70	63	71	47	52
Any (alcohol or other drug)	83	88	81	89	93	97	75	80
N	309	309	101	101	100	100	100	100

TABLE 4. Substance use lifetime prevalence and injecting use (im and iv) prevalence by strata from interview data

Substance	Men		Women		Fined/default		Life sentenced	
	Use (%)	im/iv (%)	Use (%)	im/iv (%)	Use (%)	im/iv (%)	Use (%)	im/iv (%)
Alcohol	99		97		100		98	
Opioids	58	38	55	45	61	48	44	22
Cannabinoids	81		70		80		63	
Sedatives	58	12	63	7	67	23	50	3
Cocaine	46	7	33	11	38	6	27	0
Stimulants	74	53	71	64	73	62	60	32
Hallucinogens	34	2	29	3	41	2	12	0
Inhalants	22		17		26		24	
Any drug	83	55	79	65	85	64	70	36
Any (alcohol or other drug)	99		97		100		99	
<i>N</i>	309	309	101	101	100	100	100	100

Note: im = intramuscular use; iv = intravenous use.

suggested that a diversity of methods should be used for reliability. The present study reported the prevalence of psychoactive substance abuse among Finnish offenders obtained by using three methods of assessment. The DSM-IV-based SCID-I produced slightly lower prevalence estimates than an ICD-10 clinical examination by a medical doctor. Nonclinical interview-based prevalence figures for substance abuse were very high and may have overestimated harmful abuse of drugs; therefore, known risk patterns of use (e.g., intravenous use) should be specifically addressed. In any case, it is important to assess abuse/dependence and risk patterns of abuse specifically for different drugs. SCID/ICD agreement was generally very good; however, it was better for abuse/dependence than dependence. Most likely, these differences mainly resulted from different diagnostic criteria in DSM-IV and ICD-10 (American Psychiatric Association, 2000; WHO, 1992) and are thus understandable. Even so, the magnitude of the difference is surprisingly large in e.g. sedative dependence among fine defaulters. It seems that physicians use information other than that captured by the standardized structured clinical interview when placing an ICD-10 diagnosis. But comparison between studies would be easier if standardized diagnostic tools were used.

This study, based on a representative sample of Finnish prisoners, showed that the majority of them were either alcohol or drug abusers, or both. This conclusion was supported by a structured clinical interview (SCID-I, DSM-IV), clinical examination (ICD-10), and a comprehensive interview by a nurse. Alcohol abuse/dependence was diagnosed in 68% (SCID-I) and 72% (ICD-10) among male prisoners and in 70% (both SCID-I and ICD-10) among female prisoners in Finland. Compared with corresponding prevalence estimates from studies (mainly from the United States) reviewed by Fazel et al. (2006), alcohol abuse/dependence is vastly more common among Finnish prisoners. It is also noteworthy that although alcohol abuse/dependence was more prevalent among men in studies reviewed by Fazel et al. (2006), abuse/dependence was as prevalent among Finnish women prisoners as it was among men. Furthermore, in this study, any drug abuse/dependence was diagnosed in 62% (SCID-I) and 69% (ICD-10) among male prisoners and 64% (SCID-I) and 70% (ICD-10) among female prisoners; again, figures are considerably higher than those in other studies using comparable methodology (Fazel et al., 2006). Interview data revealed that the majority of prisoners had at least tried most substances, including opioids. Injecting use was alarmingly common; 55% of men and 65% of women reported to have injected drugs, most commonly stimulants.

The prevalence estimates of alcohol abuse/dependence for Finnish general adult ( $\geq 30$  years of age) population were 7.3% among men and 1.4% among women (Pirkola et al., 2005). In 2006, 13% of the 15- to 69-year-old populations in Finland had experimented with cannabis, 2% with amphetamines, 1.0% with cocaine, and 0.6% with opiates (Hakkarainen & Metso, 2007). Population

(15–55-year-olds) prevalence of problem use, defined as “use of substance to such an extent that it causes social or health problems to the user,” has been estimated to be 0.4%–0.6% for amphetamines and 0.1%–0.2% for opiates; these estimates were based on administrative registers (Partanen et al., 2007). Drug treatment clients’ primary substances were buprenorphine and other opiates (46%), stimulants (19%), alcohol (17%), cannabis (17%), and pharmaceuticals (7%) (Kuussaari & Ruuth, 2008).

The prevalence figures for drug abuse/dependence are also in stark contrast with earlier findings for prisoners in Finland: in 1985 the prevalence was at a notably low level of 6% (Joukamaa, 1995). The study protocol and methods were not as comprehensive in 1985, but it is certain that a considerable change has taken place during these 21 years. Although the prevalence of drug use was lower among women (Pirkola et al., 2005) in the general population, the prevalence among women offenders was the same as among men—a result that is in line with studies elsewhere (Maden, Swinton, & Gunn, 1994; Tye & Mullen, 2006). Whereas deviant behavior (i.e., offending and illegal substance use) is less common among women, the interrelatedness of different forms of deviant behavior appears to be rather similar for both women and men.

Injecting drug use was reported by more than half of the male prisoners and almost two-thirds of the female prisoners—a gender difference also found in studies elsewhere (Butler et al., 2003). Similar (Dolan et al., 2007b) and even lower (O’Brien et al., 2003) figures reported elsewhere have caused great concern regarding the spread of blood-borne virus infections. Vescio et al. (2008) reported that injecting drug users were 24 times as likely to have a hepatitis C infection as those not injecting.

Looking at special prisoner groups, lifetime drug dependence was notably less prevalent among lifetime sentenced prisoners and fine defaulters; furthermore, alcohol dependence was more prevalent among fine defaulters than ordinary male prisoners. This is probably partly explained by the difference in average age between these groups: life sentenced and fine defaulters were older. This tendency of younger prisoners to have higher rates of drug dependence and older prisoners to have higher rates of alcohol dependence has also been noted by Karberg and James (2005) and may indicate deepening substance use problem among new generations of criminal offenders. In any case, the substance use culture among Finnish criminal offenders has taken a radical turn toward substances other than alcohol.

One possible explanation for the high drug dependence figures may be found from national sentencing policies, especially on drug-related offences, and from the prison population size. The concept of “a prisoner” varies in time and between cultures/nations (e.g., Andersen, 2004). The prison population rate for Finland was 64 per 100,000 at the end 2007 (International Centre for Prison Studies, 2009). The figure is at a low European level but less than one-tenth of the corresponding rate in the United States of



America (760 per 100,000), where most of the comparable prison studies originate.

A notable advantage of prisoner studies is the availability of the study subjects; participation rates as high as 90% are customary in prison health studies (Andersen, 2004; Butler et al., 2003)—this level was also attained in the present study. Outside prisons, drug users are a hard-to-reach group, even in treatment settings. One likely explanation is that for prisoners such participation offers a welcome diversion from the otherwise monotonous prison life (Andersen, 2004).

Some limitations should be remembered when interpreting the results. In this study, the psychologists were instructed not to focus on substance disorders in SCID interviews because the medical doctors had more information (medical records and questionnaires) at their disposal in the clinical examination (ICD-10). Therefore, polydrug dependence was also excluded from SCID ratings. This procedure affected the SCID-I prevalence of opioid and sedative abuse/dependence the most—the prevalence ended up higher than if part of these cases had been placed under a polydrug code. Clinical examinations (and resulting ICD-10 diagnoses) were conducted by two experienced medical doctors with a long history of working within the Prison Health Service; this probably resulted in the use of stricter criteria for dependence than would have been used by doctors not as knowledgeable on the study population. Even so, the examinations led to notably more numerous diagnoses than did the SCID interviews.

The need for treatment while in prison or in community service is evident from the high prevalence figures among offenders in the present and other studies. Mumola and Karberg (2006) showed that a quarter to a third of prisoners in the United States had committed their offense under the influence of drugs. Also, prisoners meeting DSM-IV criteria for drug abuse or dependence were more likely to have a criminal history (Mumola & Karberg, 2006). It has been observed that the majority of problem drug users end up in prison sooner or later (Dolan, Khoei, Brentari, & Stevens, 2007a). After release from prison, the risk of reoffending is particularly high among those dependent on psychoactive substances (Hough, 2002). Furthermore, it has been suggested that drug dependence, compared with alcohol dependence, has a much stronger and sustained effect on continued offending (Schroeder, Giordano, & Cernkovich, 2007). As Andersen (2004) noted, criminal substance users are the most dysfunctional subgroup of substance users and most in need of professional care. This is also indicated by a heightened risk of death: standardized mortality ratios for drug- or alcohol-related deaths as high as 14–16 for men and 77–103 for women have been reported (Kariminia et al., 2007). Often the involvement in the criminal justice system is a direct result from a treatable disease, the addiction. Recent advances in substance use treatment show potential for transforming the sanction-oriented approach more toward treatment (Chandler, Fletcher, & Volkow, 2009). In fact, punishment programs recognizing the attribution of addiction to future

crime have been shown to reduce recidivism (Belenko, Foltz, Lang, & Sung, 2004; Dolan et al., 2005; Warner & Kramer, 2009). The problem is, however, that most people diagnosed with dependence are not motivated for treatment. A successful method for motivating dependent criminals for continued addiction treatment might pose a very cost-effective innovation, both in terms of reducing human suffering and reducing the burden of crime to the society.

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## Declaration of Interest

The authors report no conflict of interest. The authors alone are responsible for the content and writing of this paper.

## RÉSUMÉ

### L'usage des stupéfiants parmi les prisonniers –un problème grave selon tous les critères

Il ressort de plusieurs études que l'usage de la drogue parmi les prisonniers est maintes fois plus fréquent que dans l'ensemble de la population. La comparaison entre les diverses études est cependant entravée par l'emploi de méthodologies mutuellement non comparables. Nous rapportons ici l'usage de stupéfiants parmi les prisonniers finlandais selon trois méthodes et analysons les différences constatées. Les sujets d'un corps de 610 prisonniers finlandais examinés en 2006 et représentatifs de l'ensemble des prisonniers finlandais ont participé à une étude de terrain approfondie incluant un entretien psychiatrique standardisé (SCID-I). L'usage et/ou la dépendance de l'alcool ont été diagnostiqués pour 68% (SCID-I) et 72% (ICD-10) des hommes et 70% (SCID-I et ICD-10) des femmes. L'usage et/ou la dépendance de stupéfiants ont été diagnostiqués pour 62% (SCID-I) et 69% (ICD-10) des hommes et 64% (SCID-I) et 70% (ICD-10) des femmes. Les données des entretiens ont révélé que la majorité des prisonniers avaient au moins essayé la plupart des substances. L'usage et/ou la dépendance tant de l'alcool que de la drogue étaient largement plus fréquents parmi les prisonniers que dans le reste de la population finlandaise. Basée sur DSM-IV, SCID-I a produit des estimations de fréquence légèrement inférieures à celles de l'examen clinique d'ICD-10; mais en règle générale la concordance SCID/ICD a été très bonne. Il semble que pour l'établissement d'un diagnostic les médecins utilisent une information autre que celle captée par l'entretien clinique structurée standardisée. A défaut de traiter spécifiquement les schémas de risque connus de la pratique (p. ex. piqûre intraveineuse), les chiffres issus de l'entretien non

clinique sont susceptibles de surévaluer l'usage néfaste de stupéfiants.

## RESUMEN

### El consumo de drogas entre prisioneros, se mire como se mire, es un gran problema

Según varios estudios, la prevalencia del abuso de drogas entre prisioneros es muchas veces superior a la del resto de la población. Sin embargo, es difícil establecer comparaciones entre los diversos estudios realizados debido a la variedad de metodologías usadas que no permiten comparaciones entre sí. Por nuestra parte, examinamos el consumo de drogas en las prisiones finlandesas usando tres métodos y analizamos las diferencias que presentaron. El material se basa en 610 prisioneros finlandeses en el 2006 y representa a todos los prisioneros de Finlandia. Los sujetos participaron en un estudio de campo exhaustivo que incluía una entrevista psiquiátrica estandarizada (SCID-I). Se diagnosticó abuso o dependencia del alcohol al 68% (SCID-I) y 72% (ICD-10) de los hombres y al 70% (tanto la SCID-I como el ICD-10) de las mujeres. Se diagnosticó abuso o dependencia de las drogas al 62% (SCID-I) y 69% (ICD-10) de los prisioneros y al 64% (SCID-I) y 70% (ICD-10) de las prisioneras. Los datos de las entrevistas revelaron que la mayoría por lo menos había probado la mayoría de drogas. Tanto el abuso o la dependencia del alcohol como de las drogas eran muchísimo más comunes entre los prisioneros finlandeses que en los de cualquier otro lugar. La SCID-I, basada en el DSM-IV, dio como resultado una prevalencia ligeramente menor que el examen clínico ICD-10, pero en general la correspondencia entre la SCID y el ICD fue muy buena. Parece ser que al elaborar el diagnóstico, los médicos se basan en otro tipo de información que la que se recoge mediante la entrevista clínica estructurada y estandarizada. Las cifras de prevalencia obtenidas mediante entrevistas de tipo no clínico puede que sobrestimen el uso nocivo de drogas a menos que se traten específicamente los patrones de uso de riesgo conocidos (p. ej., el uso intravenoso).

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## GLOSSARY

**DSM-IV:** Diagnostic and Statistical Manual of Mental Disorders (DSM) is published by the American Psychiatric Association (APA) and provides diagnostic criteria for mental disorders; it is a registered trademark belonging to the APA. The DSM can be used to establish a diagnosis or categorize patients using diagnostic criteria. The current version, DSM-IV, was published in 1994 with a "Text Revision" in 2000.

**Fine defaulter:** In Finland, a person who failed to comply with a court order to pay a fine was ordered to spend time in prison and the sum was converted into days of imprisonment. Persons imprisoned through this process were typically unemployed/pensioners with very little income.

**ICD-10:** The International Statistical Classification of Diseases and Related Health Problems (ICD) provides codes to classify diseases and a variety of signs, symptoms, abnormal findings, complaints, social circumstances, and external causes of injury or disease. It is published by the World Health Organization (WHO). The ICD is revised periodically and the current version, ICD-10, was published in 1992.

**Life sentence:** Lifetime sentence in prison has only been used in cases of homicide in Finland. After 12 years in prison, the Helsinki Court of Appeal will evaluate the prisoner's case and situation and decide on whether or not to continue enforcing the sentence. In case the imprisonment continues, a reevaluation is performed every two years. In addition, the President can use her/his power to grant an amnesty.

**Structured Clinical Interview for DSM-IV Disorders (SCID):** The Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) is a diagnostic method used to determine major mental disorders. The instrument is usually administered by a clinician or trained mental health professional, for example a psychologist. An Axis I SCID assessment with a psychiatric patient usually takes one to two hours, depending on the past psychiatric history.

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