At-Risk Behaviors with Regard to HIV and Addiction Among Women in Prison

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ABSTRACT. The bulk of studies pertaining to addiction among delinquents have been conducted on male subjects. However, the few studies examining female inmates show that a significant proportion of them present an addictive disorder. Furthermore, the HIV infection rate is higher among these women than among incarcerated men. This study attempts to verify if women presenting a combination of criminal and addictive behaviors are at a higher risk of developing an earlier and a more severe delinquency than other delinquent women. Another goal is to determine whether women showing this comorbidity present a higher incidence of HIV-related risk behaviors. The study was conducted on a sample of 210 women from the Montreal detention center. It shows that addicted inmates present earlier onsets of both drug use and criminal behaviors compared to other female inmates. Addicted women also exhibit significantly more HIV-related risky behaviors, both in their drug use and in their sexual practices. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: getinfo@haworthpressinc.com]*

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INTRODUCTION

The vast majority of studies concerning use of psychoactive substances have been conducted with samples composed solely of men (Inciardi, Lockwood & Pottieger, 1993; Wilsnack & Wilsnack, 1991) and information on addiction among women has often been extrapolated from research on male populations. This has not only led to a lack of information on the specific situation of women, but has also fostered a bias whereby men's addiction is treated as the standard by which women's addiction is measured. This may have affected research, evaluation, and treatment of women's addiction to psychoactive substances (Nadeau, 1994; Robbins & Martin, 1993; Saunders, Bailly, Phillips & Allsops, 1993; Wilke, 1994). Women's profiles, however, differ from men's whether with regard to the process of initiation to substance use (Addiction Research Foundation, 1996; Bucholz & Robins, 1991; Chavkin, Paone, Friedman & Wilets, 1993; Nadeau & Harvey, 1995), to modes of consumption (Grella, 1996; Wilsnack & Wilsnack, 1991), or to problems linked to substance abuse. A series of studies conducted in Quebec by Quebec Group for Research and Intervention concerning Psychoactive Substances (RISQ) show that more addicted women than men live in particularly difficult socioeconomic conditions and experience psychological and psychiatric problems (Brochu, Guyon & Desjardins, in press; Guyon & Landry, 1996). Women's lack of visibility in studies on the use and abuse of psychoactive substances is in part a result of prejudices concerning female consumption habits. For example, problem drinking was for a long time viewed as a male role (Inciardi et al., 1993), and therefore few researchers conducted studies on female drinking.

Any examination of addiction as an at-risk behavior among female offenders inevitably raises the question of the prevalence of HIV/AIDS. Many researchers have tried to estimate the prevalence of HIV/AIDS among prison inmates (Blumberg, 1990; Correctional Service of Canada, 1994; Hammett & Dubler, 1990; Harding, 1987; Inciardi, 1990). These studies, whether conducted in Europe or in North America, found a rate of HIV infection higher among prison inmates than in the population at large (Correctional Service of Canada, 1994; Harding & Schaller, 1992; Heilpern & Egger, 1989).

Past studies also show that in the inmate population, a higher proportion of women than men are HIV-positive (Correctional Service of Canada, 1994; Dufour et al., 1996; Hankins et al., 1994; Rothon, Mathias & Schechter, 1994; Singleton et al., 1990; Vlahov et al., 1991). Dufour et al. (1996) showed that in a Quebec region, 8% of incarcerated women were HIV-positive as compared to 2% of men. These results are similar to those found

elsewhere in Canada (Rothon et al., 1994) and in the United States (Vlahov et al., 1991; Singleton et al., 1990).

These findings raise several questions: why do female prisoners have higher rates of HIV infection than male prisoners? The scientific literature on the subject suggests several hypotheses. Initially, prostitution was often presumed to constitute a significant risk factor for women to contract HIV/AIDS (Darrow, 1991; Estebanez et al., 1990; Magura, Kang, Shapiro & O'Day, 1993) but several studies have shown that offering sexual services in exchange for money or drugs is not significantly linked to being HIV-positive because the majority of prostitutes practice safe sex with their clients (Gossop, Griffiths, Powis & Strang, 1993; Quadagno et al., 1991; Taylor, Fisher et al., 1993). It has also been suggested that the higher rate of HIV infection among female inmates may be a result of unprotected sexual relations with their regular partners (Berman & Brown, 1990; Decker & Rosenfeld, 1992; Leigh, 1990; Magura et al., 1993), who are often intravenous drug users (Cohen, 1991; Mondanaro, 1987; Murphy, 1987). In addition many of the women use intravenous drugs (Morse, 1990; Patel, Hutchinson, & Sienko, 1990; Vlahov & Polk, 1988; Wellish, Anglin & Prendergast, 1993). Addiction may constitute a risk factor for both delinquency and HIV infection with significant differences in the frequency and type of at-risk behaviors between men and women in detention centers.

AIMS OF THE STUDY

This study of a population of incarcerated women has two goals. The first is to determine whether women who have problems of both addiction and criminality are at a greater risk of developing more serious delinquent behavior at an earlier age than other female offenders. The second goal is to identify behavior problems for these women that place them at risk of HIV infection. In other words, the study seeks to document the phenomenon of coexisting addiction and delinquency among female offenders, both with regard to their specific deviant trajectories and to certain at-risk behaviors that they may develop during their lifetime.

METHODS

The study was conducted in 1994 with 210 addicted female inmates newly admitted to Tanguay Detention Center (a Montreal prison for women). Each participant was interviewed in a private room by a trained interviewer. The participation rate was 69%.[1]

All interviews were based on the French version of the Addiction Severity Index (ASI) (McLellan, Luborsky, Woody & O'Brien, 1980). This psychometric instrument is designed to measure the seriousness of a set of problems frequently observed among addicted persons (including alcoholic individuals). It is composed of seven scales: Drug, Alcohol, Medical Status, Family and Social Relationships, Psychological Status, Employment and Resources, and Legal Situation. A composite score, based on a combination of items, may be calculated for each of these scales. Each of these scores is calculated using a formula designed to ensure equal weighting of the component items. Scores are expressed in decimals on a scale of 0 to 1, where 1 represents the highest degree of severity, each score being independent from the others. The psychometric properties of the ASI have been previously reported. The French version is comparable to the original instrument when used with a population of addicted clients (Bergeron, Landry, Ishak, Vaugeois, & Trépanier, 1992) or with a population of inmates (Brochu & Guyon, 1995), according to the reliability and validity tests.

The composite scores on the Alcohol and Drugs scales were used to identify addicted respondents. Using the mean scores of clients in the Domrémy-Montréal Center sample, a cut point was established for the inmate respondents: those whose scores on the Alcohol or Drugs scales were more than one standard deviation from the mean of Domrémy-Montréal respondents were considered as addicted. This resulted in 39% of inmate respondents being classified as addicted, a proportion comparable to that found in other studies (Lévesque, 1994).

Two other questionnaires (administered during interviews) were also used. First, an in-house questionnaire on the history of psychoactive substance use and of criminal activities. This questionnaire comprises three sections. The first deals with onset of consumption of various psychoactive substances (e.g., *age at which you first consumed alcohol*, and *age at which you started consuming alcohol regularly*). The second section concerns the criminal history (e.g., *age at which you committed your first offense)* and the last section deals with the respondents' educational and family situation (e.g., *age at which you dropped out of school*).

Finally, certain at-risk behaviors with regard to Sexually Transmitted Diseases (STDs) and HIV were assessed in a subsample, with a response rate of 75% (n = 73). Analysis of risky behaviors was carried out on this subsample, which is representative of the whole sample. A questionnaire constructed and validated in a prior research conducted in the same prison (Paquette, 1993), was modified for the present study. The questionnaire is administered by an interviewer and is composed of 28 closed questions, often multiple-choice, dealing with topics such as sexual behavior, physical health, use of

intravenous drugs, previous screening, and specific questions for HIV-positive women.

Statistical tests (chi-square, t-test) were performed to detect the differences between addicted and non-addicted respondents with regard to sociodemographic variables, judicial antecedents, psychoactive substance use, the chronological sequence of the trajectory of substance use and criminality, and the types of at-risk behaviors for HIV.

RESULTS

Sociodemographic Comparisons

Table 1 shows that, on average, addicted inmates were younger [mean age 31 years (S.D. = 6.1) as compared to 33.2 years (S.D. = 8.2)] and that more of

TABLE 1. Social and Economic Characteristics of Addicted and Non-Addicted Inmate Women: Montreal 1994

CHARACTERISTICS	Addicted Inmates (n = 82) %	Non-Addicted Inmates (n = 128) %	X^2	p
AGE				
18-24	19.5	15.6		
25-34	54.2	45.3		
35+	28.0	39.1	2.7	n.s.
mean	31.0	33.2	t = □ 2.24	< .05
(S.D.)	(6.1)	(8.2)		
LIVING ARRANGEMENTS				
As a couple	42.7	42.2		
Alone, no children present	29.3	15.6		
Single parent	8.5	21.1		
Other	19.5	21.1	9.4	< .05
EDUCATION LEVEL				
< Grade 12	73.2	65.4		
12 + grade	26.8	34.6	1.4	n.s.
EMPLOYMENT STATUS				
Unemployed, social support (welfare)	52.4	52.3		
Employed	26.8	31.3		
Unstable employment	20.7	16.4	0.8	n.s.

them were living alone at the time of imprisonment compared to non-addicted respondents. Surprisingly, relatively few of the addicted inmates were single mothers (8% as against 21%). In many cases, this may be linked to their addiction, in that they may have been more likely to have lost custody of their children.[2] There were no significant differences in educational status or employment status between addicted and non-addicted inmates.

Comparison of Criminal Profiles

The first major aim of this study is to get a clearer picture of the criminal history of addicted offenders. Table 2 highlights the major differences in the number and type of offenses. Addicted female inmates were significantly more likely to have been convicted of theft, fraud, assault, prostitution, mischief, and public nuisance/vagrancy or public intoxication. Fewer addicted inmates had been convicted of driving while intoxicated, which may be due to the fact that the main addictive substance used by this group is cocaine, not alcohol (Table 3). Addicted inmates had a more extensive criminal record: a mean of 14.5 convictions (S.D. = 16; median = 8) compared to 8.0 (S.D. = 15.7; median = 3) for the other group, despite the fact that addicted inmates were significantly younger ($t = 2.89$; $p < 0.01$).

Substance Use Profile

Table 3 shows the lifetime prevalence of substance use according to the type of substance and the number of years of consumption. The vast majority of addicted inmates consume several different substances on a regular basis, often in combination with alcohol.

Of the addicted inmates interviewed, 81% stated that they had taken cocaine in the course of their life, for a mean period of 6.5 years. Alcohol is the second most frequently used substance, with a mean period of use and intoxication of 9 years. Cannabis and other sedatives/hypnotics and tranquilizers are also used by a high proportion of addicted female inmates. Although only 18% had used heroin, this proportion is high compared to the proportion of women treated for heroin addiction in Quebec rehabilitation centers (5.5%) (Guyon & Landry, 1996). When asked which substance had originally caused their substance abuse problem, 50% of the addicted female inmated cited cocaine and 20% cited the combined use of several drugs, usually including cocaine.

The substance most frequently used by non-addicted female inmates was alcohol, with over one-third of this group stating that they had used cannabis or cocaine at some time in their life. Lifetime use of each substance is always lower for non-addicted inmates ($p = .05$-$.001$), except for inhalants.

TABLE 2. Criminal History by Group. Montreal 1994

OFFENSE CATEGORIES	Addicted Inmates (n = 82) %	Non-Addicted Inmates (n = 128) %	X^2	p
Offenses against the administration of law	86.6	83.6	0.3	n.s.
Theft	50.0	35.2	4.6	< 0.05
Drug-related offenses	39.0	29.7	2.0	n.s.
Fraud	45.1	25.0	9.2	< 0.01
Assault	45.1	23.4	10.8	< 0.001
Sexual offenses	53.7	18.0	29.3	< 0.001
Misdeed	30.5	16.4	5.8	< 0.05
Robbery	17.1	9.4	2.7	n.s.
Homicide, murder	6.1*	1.6*	-	n.s.[1]
Criminal negligence	1.2*	0.8*	-	n.s.[1]
Rape, incest	0	0	-	-
Other criminal offenses	17.1	9.4	2.7	n.s.
VIOLATIONS OF THE MUNICIPAL CODE OR THE MOTOR VEHICLE ACT				
Drunk driving	13.4	22.7	2.8	n.s.
Other violations of the Motor Vehicle Act	25.6	35.2	2.1	n.s.
Disorderly conduct, vagrancy, public drunkenness	12.2	1.6*	-	< 0.001[1]
Average number of convictions	14.5	8.0	2.9[1]	p < 0.01

* n < 10
[1]Fischer's exact test

One of the most striking results of this study is the young age of initial substance use among addicted inmates. There is a marked difference between the two groups studied with regard to onset of substance use and the trajectories of criminal history.

Figure 1 shows the chronological sequence of a series of events, including use of alcohol and other drugs and the course of respondents' behaviors, prior to first arrest and conviction. Three findings stand out. First, the trajectories

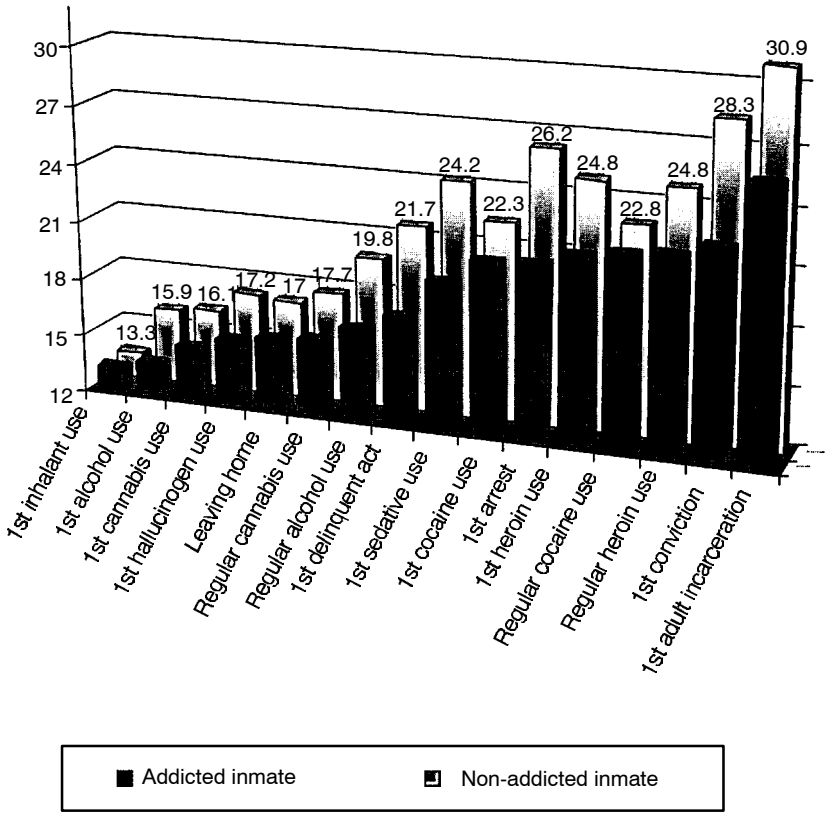
TABLE 3. Types of Substances and Years of Use, Inmate Women, Montreal, 1994 (n = 210)

	Lifetime Use				Years of Use[2]			
SUBSTANCES	Addicted Inmates (n = 82) %	Non-Addicted Inmates (n = 128) %	X^2	p	Addicted Inmates (n = 82) $\overline{X}$	Non-Addicted Inmates (n = 128) $\overline{X}$	T	p
Cocaine	80.5	36.7	38.5	< .001	6.5	5.7	0.93	n.s.
Alcohol any use at all	75.3	45.3	18.2	< .001	9.3	6.8	2.34	< .05
Alcohol to intoxication	73.2	41.4	20.3	< .001	8.8	6.1	2.59	< .01
Cannabis	57.3	35.2	10.0	< .01	9.9	7.3	2.04	< .05
Others sedatives/hypnotics /tranquilizers	46.3	18.8	18.3	< .001	5.9	5.3	0.56	n.s.
Hallucinogens	24.4	6.3*	14.2	< .001	3.5	3.8*	0.23	n.s.
Heroin	18.3	4.7*	10.3	< .001	4.6	4.8*	0.14	n.s.
Other opiates	15.9	3.9*	9.1	< .01	5.2	3.8*	0.61	n.s.
Amphetamines	12.2	4.7*	4.0	< .05[1]	5.1	4.7*	0.22	n.s.
Barbiturates	8.5*	2.3*	4.2	< .05[1]	4.7*	9.0*	1.20	n.s.
Inhalants (solvents)	3.7*	1.6*	0.9	n.s.	6.3*	5.0*	0.31	n.s.

* n < 10
1 Fischer's exact test
2 Consumers only

of addicted and non-addicted female inmates are quite similar, with the same events occurring in the same order, with two exceptions. Among addicted inmates, initial cocaine use is closely followed by a first arrest, whereas the first arrest occurs three years later, on average, among non-addicted inmates. Second, addicted inmates consistently initiate each of the behaviors at an earlier age and are settled into a regular pattern of substance use and delinquency more quickly. There were significant differences regarding alcohol use (onset [$p < 0.01$] and regular use [$p < 0.01$]), regular use of cannabis ($p < 0.05$) and hallucinogens ($p < 0.05$), and the onset of sedative use ($p < 0.05$). There are significant differences for all factors related to delinquency and criminal record. Third, among addicted inmates, a high proportion of those events first occurred and became habitual during adolescence. Thus, all substances except cocaine and heroin were first used before the age of 20. By the

FIGURE 1. Mean Age at Initiation to Substance Use and Other Social Correlates of Criminality and Criminal History



age of 13 to 15, addicted inmates had already started using inhalants, alcohol, and cannabis. The first instance of substance use generally occurred while they were still living with their parents, in contrast to the prevailing situation among non-addicted inmates. By the time they were 15, addicted inmates had started to leave home, had initiated use of hallucinogens, and consumed cannabis on a regular basis. [Note: Regular use is defined as ''at least once a month over a period of at least three months'']. This coincides with the onset of the second phase of adolescence, during which peer group influence is of great importance. On average, members of this group committed their first criminal activity between the ages of 17 and 18 (mean age = 17.6, S.D. = 7.1),

whereas non-addicted inmates did so 4 years later. For addicted inmates, entry into adulthood coincides with initiation of cocaine use, closely followed by their first arrest; in short, the beginning of recognized criminality.

Comparison of HIV-Related Risky Behaviors

The high rate of HIV infection among female inmates reported in the scientific literature suggests that there may be a greater prevalence of at-risk behaviors among this group. Addiction constitutes an aggravating factor, given the association between use of psychoactive substances and risk-taking, particularly with regard to sexual behavior (Amaro, 1995; Dermen & Cooper, 1998). We therefore attempted to determine whether there were significant differences between addicted and non-addicted inmates with regard to certain behaviors considered as risky (Table 4).

This portion of the study concerned a subsample of 73 women who were representative of the Montreal female inmate population and whose profile with regards to addiction had been established (see the ''Methods'' section, above). Overall, 9% of respondents reported that they were HIV-positive, but the rate jumped to 28% among respondents who had engaged in prostitution and intravenous drug use. In order to achieve the second goal of the study, an at-risk behavior index was constructed, including the eight following elements: (1) sexual relations with a person at risk of being HIV-positive over the previous 6 months, (2) self-assessment of being highly at risk due to sexual behavior, (3) repeated unprotected sexual relations over the previous 6 months, (4) use of intravenous drugs over the course of a lifetime, (5) needle sharing over the course of a lifetime, (6) self-assessment of being highly at risk due to use of intravenous drugs, (7) having been in a junkhouse, and

TABLE 4. Addicted and Non-Addicted Inmate Women and HIV Risk, Montreal 1994

	Addicted Inmates	Non-Addicted Inmates	Total
	(n = 34) 46.6%	(n = 39) 53.4%	N = 73 100.0%
AT RISK	28 82.4%	17 51.3%	45 61.6%
NOT AT RISK	6 17.6%	22 56.4%	28 38.4%

$X^2 = 11.5$ $p < 0.001$

(8) having had partners who were intravenous drug users over the previous 6 months.

Overall, 62% of all respondents were considered to be at risk, having answered affirmatively to at least one of the components of the at-risk index: 82% for addicted inmates and 59% for the non-addicted women. The difference between the two groups is significant at 0.001. Of course, these results are circular to a certain degree, given that addiction itself constitutes a risk because of the way certain drugs are taken. A breakdown of the index reveals a clearer picture of the situation (Table 5).

Firstly, it appears that differences between the two groups are unrelated to unprotected sexual relations or having a partner who is an intravenous drug user. The factor that accounts for the greatest proportion of difference in the index is having at-risk sexual relations (multiple partners, prostitution, anal sex without protection). Over 62% of addicted inmates report having engaged in such behaviors as compared to 21% of non-addicted inmates. Next in importance is the use of intravenous drugs. More than half of the addicted inmates stated that they had done so during the 12 months preceding the interview. Surprisingly, 10% of non-addicted inmates also reported having used intravenous drugs during the same period, but had ceased doing so at the time of the study. The use of syringes previously used by another person is

TABLE 5. Alcohol, Drug Addiction and Type of Risk Behavior Among Inmate Women, Montreal 1994

BEHAVIORS	Addicted Inmates (n = 31) %	Non-Addicted Inmates (n = 42) %	X^2	p
Risky sexual relations	61.8	20.5	12.9	< 0.001
Intravenous drug use[1]	52.9	10.3	15.7	< 0.001
Needle sharing	41.2	7.7	11.4	< 0.001
Self-evaluation of risk regarding sexual relations	50.0	17.9	8.5	< 0.01
Junkhouse	38.2	10.3	8.0	< 0.01
Self-evaluation of risk regarding drug utilization	26.5	7.7	4.7	< 0.05
Repeated nonprotected sexual relations	29.4	17.9	1.3	n.s.
Intravenous drug user partner	14.7	12.8	0.5	n.s.

[1] Last 12 months

the third most frequent factor, reported by 41% of addicted inmates. Only 7.7% of non-addicted inmates reported having done so, and only in isolated instances. More than one-third (38%) of addicted inmates stated that they had used drugs in a junkhouse, which is a particularly high-risk behavior given the multiple occasions for syringe exchanges and for sexual relations. Finally, one out of two addicted inmates considered that they were at risk of contracting HIV because of their sexual behavior (multiple partners, non-protected relations, etc.), and 27%, because of their mode of substance use, including syringe exchanges.

DISCUSSION

Addiction and criminality are closely linked. This fact has long been recognized in the scientific literature (Barré, 1996; Bretteville-Jensen & Sutton, 1996; Brochu, 1997; Brochu, Biron & Desjardins, 1996; Collison, 1996; Da Agra, 1996; Erickson, Cohen & Allen, 1996). Our study confirms the strength of this association in the particular case of incarcerated women. This study of life trajectories of a population of female inmates in Montreal shows that those who are addicted to drugs have a more intensive criminal record: they have committed more serious offenses, committed their first offense at an earlier age, and act in ways that put them at a greater risk of HIV infection than other inmates.

Analysis of the onset of risky lifestyles and substance use shows that addicted inmates initiated these behaviors at an early age. The use of certain substances (inhalants, alcohol, cannabis, hallucinogens) was found to start before the first delinquent act and the use of harder drugs (cocaine and heroin) coincided with the first arrest, a finding consistent with those of Wellish et al. (1993). Over time, addiction and criminal lifestyle appear to reinforce each other to an increasing degree; as can be seen from the course of onset of addicted and non-addicted inmates, which increasingly diverge after the age of 18 (see Figure 1). This reciprocal reinforcement is also evidenced in the number and gravity of offenses committed by addicted inmates (see Table 2); compared to other inmates they have accumulated many more convictions for assault, fraud, theft, robbery, mischief, and prostitution. The type of substances consumed is also a relevant factor: the vast majority of addicted inmates (81%) have used cocaine, as against 53% of women in rehabilitation centers (Guyon & Landry, 1996) and 18% have used heroin, compared to 6% of women undergoing treatment.

There was no significant difference between the two groups with regard to convictions for drug trafficking, which might appear surprising given that previous studies (Kaplan & Sasser, 1996; Wellish, Anglin & Prendergast, 1993) had linked consumption and trafficking of drugs. This result may be

attributed to the drug-dealing subculture, in which men play a dominant role, while women are usually consumers and turn to other activities, such as nude dancing or prostitution, to be able to afford drugs (Fagan, 1994). This is consistent with the high proportion of convictions for sexual offenses (54%). A study conducted in 1993 among male inmates (Brochu & Guyon, 1995) showed that addicted men had significantly more convictions for drug dealing than did non-addicted men (46% as against 29%). Whereas female addicted inmates follow trajectories of substance use and criminality that differ significantly from those of non-addicted female inmates, the profiles of female–and male–addicted inmates are very similar with regard to age of initial and habitual use of all the different substances (Brochu & Guyon, 1997). On the other hand, the men embark upon a criminal career much earlier than the women, which suggests that in many cases, the latter's criminality may be a consequence of their substance use rather than a cause. Although data from the present study do not provide conclusive evidence of this relation, they are indicative of its existence, which could be tested in future studies.

Results concerning at-risk behaviors regarding HIV infection demonstrate that there is a clear link between exposure to serious health risks and criminal trajectories, as addicted inmates engage in a comparatively large number of such behaviors, both with regard to sexual behaviors and modes of substance use. One might assume that prostitution accounts for the high percentage of risks taken by addicted women, particularly risky sexual behavior. Only 8% of respondents were in prison for prostitution at the time they were interviewed (14% of the addicted inmates and 6% of the non-addicted inmates, $p < 0.01$). On the other hand, in the course of their lifetime, over half of the addicted inmates had at some time been convicted of offenses related to prostitution, or twice the rate for non-addicted inmates. This may suggest that there is indeed a link between this type of offense and at-risk behaviors. However, involvement in prostitution does not entirely account for these behaviors. The link between use of alcohol or drugs and sexual risk-taking must also be taken into account. The results of the present study highlight the degree to which addiction is associated with a higher prevalence of at-risk behaviors, independently of prostitution, which is an aggravating factor.

Addicted inmates who score high on the at-risk behavior index are more likely to have left home, dropped out of school, and committed their first delinquent act during the same period, age 15. We are aware now that the precocity of addiction influences the development of expertise or acquisition of skills, and therefore has effects on education and on interpersonal relationships. Thus, this group of women may be less equipped to understand and integrate the notions of ''risk'' and ''prevention.'' Furthermore, studies of adolescents (Biglan et al., 1990; Coulter, 1993) have shown that members of

this group are often emotionally dependent, and tend to join marginal peer groups and to adopt their values and attitudes (Amaro & Hardy-Fanta, 1995; Brooks, Zuckerman & Bramforth, 1994; Finkelstein, 1994; Wilsnack, Vogeltanz, Klassen & Harris, 1997).

CONCLUSION

The results of this study shed light on the dynamics of the interaction among addiction, criminality, and risk-taking, even if they are not conclusive as to causality. Addiction is associated with additional risks that may aggravate an already problematic situation for imprisoned women. Substance use and criminal behaviors become a part of their lives at an early age. Our findings provide food for thought, not only in terms of public health and of prevention, but also in terms of future research to be carried out. This study of women incarcerated at the Tanguay Detention Center has enabled us to establish links among all these phenomena, but only in descriptive terms. Further research is needed to more clearly identify the circumstances and environment conducive to risk-taking, to better understand the perceptions of the women, and to analyze the links with emotional and relationship issues, an area that lacks investigation. The dynamics of the interactions between deviant trajectories (addiction and criminality) and a whole series of attitudes and behaviors involving risks must be taken into account in order to develop effective approaches in assisting this population. This will require further research into the meaning of the links that we have described.

NOTES

1. Since we did not have access to the prison's files, we have no information on the non-respondents, with the exception of the mean age and the offense categories, for which we found no significant differences with our sample.

2. This statement is reported in several researches (Tyler et al., 1997; Young, 1997a, 1997b; Magura & Laudet, 1996).

REFERENCES

Addiction Research Foundation (1996). *A guidebook on alcohol and drug issues for Canadian women*. Toronto: Addiction Research Foundation.

Amaro, H. (1995). Love, sex and power: Considering women's realities in HIV prevention. *Annals of Psychology*, 50, 437-447.

Amaro, H. & Hardy-Fanta, C. (1995). Gender relations in addiction and recovery. *Journal of Psychoactive Drugs*, 27(4), 325-337.

Barré, M. D. (1996). Toxicomanie et délinquance: Relation et artefacts. *Déviance et Société*, 20(4), 1-15.

Bergeron, J., Landry, M., Ishak, I., Vaugeois, P. & Trépanier, M. (1992). *Validation d'un instrument d'évaluation de la gravité d'une toxicomanie*. Montréal: Cahier de recherche du RISQ.

Berman, J. D. & Brown, D. (1990). AIDS knowledge and risky behavior by incarcerated females: IV and non-IV drug users. *Sociology and Social Research*, 75(1), 816.

Biglan, A., Metzner, C. W., Wirt, A., Ary, D., Noell, J., Ochc, L., French, C., Hood, D. (1990). Social and behavioral factors associated with high-risk sexual behavior among adolescents. *Journal of Behavioral Medicine*, 13, 245-261.

Blumberg, M. (1990). Transmission of HIV: Exploring some misconceptions related to criminal justice. *Criminal Justice Policy Review*, 4(4), 288-305.

Bretteville-Jensen, A. L. & Sutton, M. (1996). The income-generating behavior of injecting drug-users in Oslo. *Addiction*, 91(1), 63-79.

Brochu, S. (1997). *Drogue et criminalité: une relation complexe*. Montréal et Bruxelles: Presses de l'Université de Montréal et De Boeck Université.

Brochu, S. & Guyon, L. (1995). An addiction severity index for inmates. *International Medical Journal*, 2(1), 5.

Brochu, S., Biron, L., Desjardins, L. (1996). Consommation de substances psychoactives chez les femmes détenues au Québec. *Criminologie*, 29(1), 121-139.

Brochu, S., Guyon, L., Desjardins, L. (in press). *Comparative Profiles of Addicted Adult Populations in Rehabilitation and Correctional Services*.

Brooks, C. S., Zuckerman, B., Bamforth, A. et al. (1994). Clinical issues related to substance-involved mothers and their infants. *Infant Mental Health Journal*, 15(2), 202-217.

Bucholz, K. K. & Robins, L. N. (1991). Recent epidemiological alcohol research. *Annual Review of Addictions Research and Treatment*, 3-14.

Chavkin, W., Paone, D., Friedman, P. & Wilets, I. (1993). Reframing the debate: Towards effective treatment for inner city drug-abusing mothers. *Bulletin of the New York Academy of Medicine*, 70(1), 50-68.

Cohen, J. B. (1991). Why women partners of drug users will continue to be at high risk for HIV infection. *Journal of Addictive Diseases*, 10(4), 99-110.

Collison, M. (1996). In search of the high life drugs, crime, masculanities and consumption. *British Journal of Criminology*, 36(3), 428-444.

Correctional Service Canada (1994). *HIV/AIDS in Prisons: Final Report of the Expert Committee on AIDS and Prisons*. Minister of Supply and Services Canada. Ottawa.

Coulter, R. (1993). *Gender socialisation: New Ways, New World*. Addiction Research Foundation, Working Group of Status of Women Officials on Gender in Education and Training.

Da Agra, C. (1996). *Droga e crime: Relatorio de sintese do programa de estudios interdisciplinares sobre a experiencia portuguesa*. Portugal: Porto.

Darrow, W. & The Centers for Disease Control Collaborative Group for the Study of HIV-1 in Selected Women (1991). Prostitution, intravenous drug use, and HIV-1

in the United States. In M. Plant (Ed.), *AIDS, drugs and prostitution*, 18-40. London and New York: Tavistock/Routledge.

Decker, S. & Rosenfeld, R. (1992). Intravenous drug use and the AIDS epidemic: Findings from a 20 city sample of arrestees. Special Issue: Drugs and Crime. *Crime and Delinquency*, 38(4), 492-509.

Dermen, R. H. & Cooper, M. L. (1998). Sex-related alcohol expectancies as moderators of the relationship between alcohol use and risky sex in adolescents. *Journal of Studies on Alcohol*, 59, 71-77.

Dufour, A., Alary, M., Poulin, C., Allard, F., Noël, L., Trottier, G., Lépine, D., & Hankins, C. (1996). Prevalence and risk behaviors for HIV infection among inmates of a provincial prison in Quebec City. *AIDS*, 10, 1009-1015.

Erickson, P. G., Cohen, J., & Allen, B. (1996). *Alcohol and other drugs in the criminal justice system*. Toronto: Addiction Research Foundation, 123.

Estebanez, E. P., Colomo, G. C., Zunzunnegui, P. M. V., Figueroa, M. R., Perez, M., Ortiz, C., Heras, P.,& Babin, F. (1990). Jails and AIDS. Risk factors for HIV infection in the prisons of Madrid. *Gaceta Sanitaria*, 4(18), 100-105.

Fagan, J. (1994). Women and drugs revisited: Female participation in the cocaine economy. *Journal of Drug Issues*, 24(2), 179-225.

Finkelstein, N. (1994). Treatment issues for alcohol and drug-dependent pregnant and parenting women. *Health and Social Work*, 19(1), 7-15.

Gossop, M., Griffiths, P., Powis, B., & Strang, J. (1993). Severity of heroin dependence and HIV risk: I. Sexual behavior. *AIDS Care*, 5(2), 149-157.

Grella, C., (1996). Background and overview of mental health and substance abuse treatment systems: Meeting the needs of women who are pregnant and parenting. *Journal of Psychoactive Drugs*, 28(4), 319-343.

Guyon L. & Landry, M. (1996). L'abus de substances psychoactives, un problème parmi d'autres: Portrait d'une population en traitement. *Psychotropes-R.I.T.E*, 1, 61-79.

Hammett, T. M. & Dubler, N. N. (1990). Clinical and epidemiological research on HIV infection and AIDS among correctional inmates: Regulations, ethics, and procedures. *Evaluation Review*, 14(5), 482-501.

Hankins, C. A., Gendron, S., Handley, M. A., Richard, C., Lai Tung, M.-T., & O'Shaughnessy, M. (1994). HIV infection among women in prison: An assessment of risk factors using a nonnominal methodology. *American Journal of Public Health*, 84(10), 1637-1640.

Harding, T. W. (1987). AIDS in Prison. *Lancet*, (November 28), 1260-1263.

Harding, T. W. & Schaller, G. (1992). HIV/AIDS policy for prisons or for prisoners? In J. M. Mann, D. J. M. Tarentola, & T. W. Netter (Ed.), *AIDS in the World*. Cambridge: Harvard University Press.

Heilpern, H. & Egger, S. (1989). *AIDS in Australian prisons–Issues and policy options*. Canberra: Department of Community Services and Health.

Inciardi, J. A., Lockwood, D., & Pottieger, A. E. (1993). *Women and crack-cocaine*. New York: Macmillan Publishing Company.

Inciardi, J. A. (1990). AIDS and drug use: Implications for criminal justice policy. In R. Weisheit (Ed.), *Drugs, crime and the criminal justice system* (pp. 303-327). Cincinnati: Anderson Publishing Company.

Kaplan, M. S. & Sasser, J. E. (1996). Women behind bars: Trends and policy issues. *Journal of Sociology and Social Welfare*, 23(4), 43-56.

Leigh, B. C. (1990). Venus gets in my thinking: Drinking and female sexuality in the age of AIDS. *Journal of Substance Abuse*, 2(2), 129-145.

Lévesque, M. (1994). La criminalité et la consommation de drogues: Une double problématique. In P. Brisson (Ed.), *L'usage des drogues et la toxicomanie* (pp. 255-272). Montréal: Gaëtan Morin.

Magura, S. & Laudet, A. (1996). Parental substance abuse and child maltreatment: Review and implications for intervention. *Children and Youth Services Review*, 18(3): 193-220.

Magura, S., Kang, S., Shapiro, J., & O'Day J. (1993). HIV risk among women injecting drug users who are in jail. *Addiction*, 88(10), 1351-1360.

McLellan, A., Luborsky, L., Woody, C.E., & O'Brien, C.P. (1980). An improved diagnostic evaluation instrument for substances abuse patients. The Addiction Severity Index. *The Journal of Nervous and Mental Disease*, 168(1), 26-33.

Mondanaro, J. (1987). Strategies for AIDS prevention: Motivating health behavior in drug dependent women. *Journal of Psychoactive Drugs*, 19(2), 143-149.

Morse, D. L. (1990). Epidemiology of HIV/AIDS in the New York State correctional system. *Criminal Justice Policy Review*, 4(4), 319-329.

Murphy, D. L. (1987). Heterosexual contacts of intravenous drug abusers: Implications for the next spread of the AIDS epidemic. *Advances in Alcohol and Substance Abuse*, 7(2), 89-97.

Nadeau, L. (1994). Les femmes et l'alcool: L'état de la question. In P. Brisson (Ed.), *L'usage des drogues et la toxicomanie* (pp. 231-254). Montréal: Gaëtan Morin.

Nadeau, L. & Harvey, K. (1995). Women's alcoholic intoxication: The origins of the double standard in Canada. *Addiction Research*, 2(3), 279-290.

Paquette, N. (1993). *Développement et pré-test d'un questionnaire à l'intérieur d'un projet de dépistage du VIH et de counseling auprès de femmes de la prison Tanguay.* Montréal: mémoire de maîtrise déposé à l'Université de Montréal.

Patel, K. K., Hutchison, C., & Sienko, D. G. (1990). Sentinel surveillance of HIV infection among new inmates and implications for policies of correction facilities. *Public Health Reports*, 105(5), 510-514.

Quadagno, D., Harrison, D. F., Wambach, K. G., Levine, P., Imershein, A., Byers, J., & Maddox, K. (1991). Women at risk for human immunodeficiency virus. *Journal of Psychology & Human Sexuality*, 4(3), 97-110.

Robbins, C. A. & Martin, S. S. (1993). Gender, styles of deviance and drinking problems. *Journal of Health and Social Behavior*, 34, 302-321.

Rothon, D. A., Mathias, R. G., & Schechter, M. T. (1994). Prevalence of HIV infection in provincial prisons in British Columbia. *Canadian Medical Association Journal*, 151(6), 781-787.

Saunders, B., Bailly, S., Phillips, M., & Allsops, S. (1993). Women with alcohol problems: Do they relapse for reasons different to their male counterparts? *Addiction*, 88, 1413-1422.

Singleton, J. A., Perkins, C. I., Trachtenberg, A. I., Hughes, M. J., Kizer, K. W., & Ascher, M. (1990). HIV antibody seroprevalence among prisoners entering the California correctional system. *Western Journal of Medicine*, 153(4), 394-399.

Taylor, A., Fricher, M., McKegany, N., Goldberg, D., Green, S., & Platt, S. (1993). HIV risk behaviors among female prostitute drug injectors in Glasgow. *Addiction*, 88, 1561-1564.

Tyler, R., Howard, J. Espinosa, M. et al. (1997). Placement with Substance-Abusing Mothers vs Placement with Others Relatives: Infant Outcome. *Child Abuse & Neglect*, 21(4): 337-349.

Vlahov, D. & Polk, B.F. (1988). Intravenous drug use and human immunodeficiency virus (HIV) infection in prison. *AIDS and Public Policy Journal*, 3(2), 42-46.

Vlahov, D., Brewer, T. F., Castro K. G., Narkunas, J. P., Salive, M. E., Ullrich, J., & Munoz, A. (1991). Prevalence of antibody to HIV-1 among entrants to US correctional facilities. *Journal of American Medical Association*, 265(9): 1129-1132.

Wellish, J., Anglin, M. D., & Prendergast, M. L. (1993). Numbers and characteristics of drug-using women in the criminal justice system: Implications for treatment. *Journal of Drug Issues*, 23(1), 7-30.

Wilke, D. (1994). Women and alcoholism: How a male-as-norm bias affects research assessment and treatment. *Health and Social Work*, 19(1), 29-35.

Wilsnack, C., Vogeltanz, N. D. I., Klassen A. D. & Harris (1997). Childhood sexual abuse and women's substance abuse: National Survey Findings. *Journal of Studies on Alcohol*, 58, 264-271.

Wilsnack, S. C. & Wilsnack, R. W. (1991). Epidemiology of women's drinking. *Journal of Substance Abuse*, 3, 133-157.

Young, N. K. (1997a). Alcohol and other drugs: The scope of the problem among pregnant and parenting women in California. *Journal of Psychoactive Drugs*, 29(1), 3-22.

Young, N. K. (1997b). Effects of alcohol and other drugs on children. *Journal of Psychoactive Drugs*, 29(1), 23-42.