

Injection Drug Use Among Stimulant Users in a National Sample

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ABSTRACT

Objective. This study examined the correlates of injection drug use (IDU) in a community sample of psychostimulant users. Factors related to the cessation of illicit drug use and substance abuse service utilization were also determined among a subsample of stimulant users who reported IDU. *Method.* The study sample consisted of 3408 lifetime psychostimulant users from the National Household Survey on Drug Abuse. Logistic regression procedures were used to estimate independent associations of correlates of IDU. *Results.* Approximately one in seven lifetime stimulant users reported IDU in their lifetime. Stimulant users with a lifetime history of IDU were more likely than those who did not

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inject to be African-American, not have received a high school diploma, have a history of multiple drug use, and report an onset of stimulant use before age 18. Among recent stimulant users, being aged 26 or older, using stimulants at least weekly, and getting drunk in the past year were associated with increased odds of recent IDU. Only one-half of all injection drug users reported having ever used substance abuse services. Cessation of illicit drug use among injectors with a history of stimulant use is common (44%). *Conclusions.* Further studies should clarify the natural history of IDU among stimulant users, including the cessation of drug use without participating in substance abuse treatment services.

Key Words: Alcohol use; Injection drug use; Methamphetamine; NHSDA; Stimulants.

Reports tracking U.S. drug use trends have suggested an increase in the use of methamphetamine or amphetamine and in the intravenous administration of these drugs (1–6). Both noninjection and injection users of methamphetamine engage in high rates of sexual risk behaviors (7–11). These behaviors and the increased prevalence of injection drug use (IDU) place stimulant users at increased risk for HIV and hepatitis virus infections (8,9,12,13). For instance, a study of 807 prison inmates found that 37% of methamphetamine users reported IDU in the 6 months preceding their current incarceration compared with 11% of other drug users (14). Methamphetamine-using injection drug users (IDUs) are more likely than injectors who do not use methamphetamine to inject drugs with used needles or syringes, to share needles, and to use unbleached injection equipment (9). Methamphetamine users who become IDUs tend to use methamphetamine heavily and have comorbid psychiatric problems (15). Other characteristics related to becoming injectors may include the use of multiple drugs, heavy alcohol use, and early onset of gateway drugs (16–18).

Both new and long-term IDUs exhibit a high level of current HIV risk behaviors (19). In particular, several subgroups of drug users deserve investigation because of their associations with new HIV infection. For example, the rate of new HIV infection is highest among injectors under age 30 (20). African-Americans and males continue to represent a high proportion of IDU-related HIV cases, 65% and 66%, respectively (21). In a sample of 600 IDUs, 30% of African-Americans and 19% of Hispanics were HIV-positive compared with only 5% of whites (19). Among new injectors, 16% of females were found to be HIV-positive compared with 12% of males (19). Between 1994 and 1998, the number



of IDU-related HIV diagnoses among young women aged 15–19 increased by 90% (22).

IDUs appear to represent a subgroup of long-term, chronic drug users. Those who reported ever receiving any drug abuse treatment started their drug use early and tended to continue using drugs for a long period of time (23,24). Many injectors, particularly those in drug abuse treatment, reported an injection history of more than 10 years (24,25). Liebman et al (23) found that the mean age of first injection was 20.7 years, with a mean of 14.3 years since their first injection. In a study of 1632 lifetime injectors, only 12% reported that they had stopped injecting drugs before the year of the interview (26). Recently, Henderson et al. (27) found that 30% of active injectors acknowledged their drug use as a problem and expressed the intention to quit.

Although studies have shown that drug abusers who enter and remain in drug abuse treatment reduce their drug use and HIV risk behaviors (10,28), most individuals who abuse drugs or are drug-dependent do not receive treatment services (29). Studies suggest that approximately 42% of IDUs had never received formal addiction treatment (23). A study of 1632 injectors reported that only 17% were currently in drug abuse treatment (26). Even when injectors are offered free treatment, 61% of opiate injectors and 52% of opiate-stimulant injectors enter treatment compared with 5% of those who only inject stimulants (25).

The likelihood of participating in drug abuse treatment among IDUs increases with the length of drug use or injection and is related to early onset of drug use and injection (23,30). Injectors who do not receive treatment tend to be younger, less educated, not receiving public assistance, and members of minority groups (23,26,30), while the association between gender and treatment utilization appear to be less clear (23,26).

Taken together, characteristics related to IDU among stimulant users, as well as correlates of cessation of drug use and of substance abuse service utilization among IDUs warrant investigation. Injection drug users who inject stimulants often have many concurrent treatment needs, including alcohol abuse problems and psychiatric disturbances (25). Unfortunately, many injectors do not receive drug abuse treatment even when it is offered for free (25). Studies of IDUs to date, however, have typically relied on convenience or volunteer samples, such as those who enroll in drug abuse treatment or participate in needle exchange programs, as well as drug users who are recruited from the street and community outreach (7,18–20,23–27,31–33). Yet investigators have found that the outreach and addiction treatment samples may be drawn from different segments of the injection drug-using population (34) and that nonwhite drug users and those who had ever been in



drug abuse treatment tend to be overrepresented in the community outreach samples (35).

In contrast, the present study used data from a representative national sample of Americans aged 12 or older. We examined the characteristics of stimulant users who became injectors. These characteristics may help prevention researchers identify stimulant users at high risk of becoming injectors before they start injecting. Additionally, we examined the subsample of stimulant users who became injectors in order to determine their injection practices, correlates of the cessation of illicit drug use, and utilization of substance abuse treatment services.

METHODS

Data Source

Study subjects were selected from the respondents to four independent, nationally representative cross-sectional surveys of the 1995–1998 National Household Surveys on Drug Abuse (NHSDAs) (36–39). The NHSDA was designed primarily to provide annual national estimates on the use of a variety of licit and illicit substances by the civilian, noninstitutionalized U.S. population aged 12 or older. Each year from 1995 to 1998, a total of about 18,000 to 25,000 individuals completed the NHSDA interview in their homes, with response rates ranging from 77% to 81%. Each year's cross-sectional sample is considered to be representative of the experience of Americans aged 12 or older. Respondents were surveyed about their use of licit and illicit drugs, problems associated with drug use, and substance abuse treatment service utilization, using self-administered answer sheets to maximize honest reporting of drug use behaviors. The NHSDA has been described in detail elsewhere (36–39).

Study Sample

The analysis sample consisted of all NHSDA respondents in 1995–1998 who reported lifetime nonmedical use of psychostimulants. Use of a stimulant was considered nonmedical when it was not prescribed for the respondent or when the respondent took it only for the experience or feeling it caused (i.e., not for a medical indication). The lifetime prevalence of nonmedical stimulant use among Americans aged 12 or older ranged from 4.4% to 4.9% between 1995 and 1998. Of all lifetime stimulant users in the 4 years (unweighted $N = 3408$), 63% were adults aged 35 or older, 61% were males, 87% were whites, 56% had attended college, 45% lived in large metropolitan areas, and 64% were from the South (31%) or West



(33%). More than one-fourth of users (29%) reported ever using a stimulant on more than 100 days, and approximately 40% initiated stimulant use before age 18. Surprisingly, 70% of stimulant users used at least four classes of illicit drugs in their lifetime.

Definition of Study Variables

Demographic characteristics that were examined included age group (12–17, 18–25, 26–34, 35 or older), gender, race/ethnicity (non-Hispanic whites, African-Americans, Hispanics, Asians or Pacific Islanders, and American Indians or Alaska Natives, as specified in the NHSDA), educational level (less than high school, high school graduates, and some college or more), population density, and residential region (North Central, Northeast, South, and West, as specified in the 1990 census). Population density included three categories defined according to the 1990 U.S. population census: large metropolitan [segment in a metropolitan statistical area (MSA) with a population ≥ 1 million], small metropolitan (segment in an MSA with population < 1 million), and nonmetropolitan (segment not in an MSA) areas.

Drug use variables included the frequency and onset of stimulant use, number of illicit drugs used, and past year drunkenness. Data for lifetime drunkenness were not available. Gateway drugs (40–42) that were examined included cigarette smoking, alcohol use, and marijuana use. Three categories of age of first use were defined: onset before the age of 13, between 13 and 17, and at 18 or older and never use.

In the NHSDA, stimulant use was defined as the nonmedical use of benzedrine, amphetamines, biphphetamine, Dexamyl, Dexedrine, Fastin, Ionamin, methamphetamine, methedrine, Methylphenidate, or Preludin. Frequency of stimulant use was operationalized as the total number of days of using stimulants in the lifetime. A nine-category, NHSDA-defined “past year drunkenness” variable was recoded into four groups: no alcohol use; use and no drunkenness; getting drunk less than weekly; and getting drunk weekly or more.

Individuals were considered “lifetime IDUs” if they answered “yes” to one or more of the following questions: 1) “Have you ever used a needle to inject a drug that was not prescribed for you, or that you took only for the experience or feeling it caused?” 2) “Have you ever used a needle to inject cocaine?” 3) “Have you ever used a needle to inject heroin?” 4) “Have you ever used a needle to inject a stimulant when it was not prescribed for you, or that you took only for the experience or feeling it caused?” Lifetime injectors who had not injected in the year preceding the survey were considered “former injectors,” and those who had injected in the last year were considered “recent injectors.” Thus, former and recent injectors are mutually exclusive categories.



Cessation of drug use was defined as reporting not using any illicit drug in the past year (including cocaine/crack, marijuana/hashish, inhalants, hallucinogens, or heroin, as well as any nonmedical use of prescription-type sedatives, tranquilizers, pain relievers, or stimulants). Substance abuse service utilization was defined broadly as having ever received inpatient or outpatient treatment or counseling for the use of alcohol or drugs (not counting cigarettes) at any of several listed locations (i.e., hospitals, residential rehabilitation facilities, mental health centers or facilities, emergency rooms, private doctor offices, prisons or jails, or self-help groups).

Among stimulant users who reported lifetime IDU, we examined injection practices known to increase the risk of HIV infection. Injection practices refer to the most recent practices and include sharing needles with other injectors, using bleach to disinfect needles, and reusing one's own needles.

Statistical Analysis

Because the NHSDA used a multistage survey design, analysis weights were used to adjust for variation in household selection and nonresponse. Data were weighted and analyzed by SUDAAN software (43). The prevalence of IDU was generated separately by survey year and in aggregate. Logistic regression equations were used to examine the relative odds of lifetime IDU among lifetime stimulant users ($N = 3408$), and the relative odds of recent (past year) IDU among recent stimulant users ($N = 1047$). Demographics and substance use characteristics were examined as covariates for IDU. Lifetime stimulant use and number of lifetime illicit drugs used were examined as covariates for lifetime IDU. Past year stimulant use, number of past year illicit drugs used, and past year drunkenness were examined as covariates for past year IDU.

Among lifetime stimulant users who reported IDU in the lifetime ($N = 440$), we first explored whether demographics, substance use characteristics, and substance abuse service utilization were associated with cessation of any illicit drug use in the past year. Second, we explored whether demographics and substance use characteristics were related to their utilization of substance abuse services.

A forward stepwise method was used to select variables to be included in the final logistic regression model. For all logistic regression analyses, age group, gender, race/ethnicity, and education were included in the final models for each outcome, regardless of their level of significance. P values less than or equal to 0.05 were considered statistically significant. We report odds ratios from final logistic regression models. An adjusted odds ratio indicates the strength of an association between an outcome (e.g., IDU) and a given variable while controlling for other potentially confounding characteristics in the model.



RESULTS

Prevalence of IDU and Injection Practices

Approximately one in seven (15%, $N=440$) lifetime stimulant users aged 12 or older had ever injected a drug for nonmedical reasons (14% were former injectors and 1% were recent injectors). The vast majority of all injectors reported having ceased their IDU in the past year. Only about one-tenth (9%) of lifetime injectors reported recent (past year) IDU. There was little variation in the prevalence of former and recent IDU and in the

Table 1. Prevalence of injection drug use, by survey year, among lifetime stimulant users, 1995 to 1998.

Survey year	1995	1996	1997	1998	Total
Sample size	739	715	1,029	925	3,408
Prevalence	% (s.e.)	% (s.e.)	% (s.e.)	% (s.e.)	% (s.e.)
Any injection drug use	15.1 (2.23)	13.4 (1.82)	14.1 (1.92)	17.9 (2.18)	15.1 (0.96)
Any injection drug use					
Former	13.9 (2.23)	12.3 (1.69)	12.5 (1.83)	16.3 (2.17)	13.7 (1.00)
Recent	1.2 (0.46)	1.1 (0.45)	1.6 (0.62)	1.6 (0.58)	1.4 (0.26)
Injecting stimulants					
Former	11.4 (2.07)	9.0 (1.76)	8.7 (1.51)	12.8 (2.14)	10.5 (0.87)
Recent	0.9 (0.45)	0.7 (0.36)	1.1 (0.54)	0.9 (0.37)	0.9 (0.22)
Injecting cocaine/crack					
Former	10.5 (2.04)	8.0 (1.46)	8.8 (1.64)	11.8 (1.89)	9.8 (0.85)
Recent	0.4 (0.17)	1.1 (0.44)	0.7 (0.32)	0.8 (0.35)	0.8 (0.17)
Injecting heroin					
Former	7.7 (1.80)	6.8 (1.62)	6.3 (1.29)	7.2 (1.43)	7.0 (0.83)
Recent	0.3 (0.15)	0.7 (0.34)	0.9 (0.54)	0.8 (0.44)	0.7 (0.20)

Note: s.e. = standard errors. "Former" refers to injection use prior to the past year. "Recent" refers to injection use in the past year.

Table 2. Prevalence of injecting drug use for nonmedical reasons among 3408 lifetime stimulant users.

Social and demographic characteristic	Sample size		Injection drug use			χ^2 (df) p values
	Column%		Recent injection	Former injection	Never injection	
Age, years						
12–17	4.8		3.0	5.6	91.5	28.3 (6)
18–25	11.1		1.6	7.5	90.9	<0.001
26–34	21.1		1.0	12.1	86.9	
35 +	63.0		1.3	16.0	82.7	
Gender						
Male	60.8		1.5	15.7	82.8	5.9 (2)
Female	39.2		1.1	10.7	88.2	0.054
Race/ethnicity						
African-American	4.8		4.5	17.7	77.7	23.0 (8)
Hispanic	5.4		1.5	11.6	86.9	0.005
Native American/Asian	2.4		0.02	9.8	90.2	
White	87.4		1.2	13.8	85.0	
Education						
Less than high school	17.4		2.4	21.3	76.3	21.8 (4)
High school graduate	27.0		1.9	14.8	83.2	<0.001
Some college or more	55.6		0.8	10.8	88.4	



type of drugs injected over the 4 survey years (Table 1). In aggregate, about one-tenth of stimulant users reported having ever injected a stimulant (11%) or cocaine/crack (11%). Less than one-tenth (8%) of stimulant users had ever injected heroin.

Among all lifetime IDUs ($N=440$), there was no significant gender variation in drugs injected and injection practices. Overall, unsafe needle use (sharing, 37%; reusing, 44%) was prevalent. Of all injectors, the majority had injected stimulants (75%) or cocaine (70%), and about one-half had injected heroin (51%) at some time in their lives.

Demographic Characteristics and Drug Use of Injectors

The prevalence of IDU among lifetime stimulant users varied by age group, gender, race/ethnicity, level of education, population density, frequency of stimulant use, age at first stimulant use, and number of illicit drugs used in the lifetime (Table 2). Recent IDU was more prevalent among youths aged 12–17, males, African Americans, those with less than a high school education, and among those residing in small metropolitan areas. The prevalence of recent and former IDU was positively associated with the frequency of stimulants used and the number of illicit drugs used in the lifetime, and was inversely associated with the age at first stimulant use.

Odds Ratios of Lifetime IDU Among Lifetime Stimulant Users

Adjusted odds ratios of lifetime IDU from the final logistic regression model are reported in Table 3. Gender was not associated with lifetime IDU. The odds of lifetime IDU were higher among lifetime stimulant users aged 26 or older, African-Americans (compared with whites), individuals without a high school diploma (compared with those who attended college), those residing in nonmetropolitan areas (compared with small and large metropolitan areas), those reporting lifetime use of four or more illicit drugs (compared with those who used one to three illicit drugs), those reporting using stimulants on more than 300 days in their lifetime, and those who had initiated stimulant use before age 18.

Odds Ratios of Recent IDU Among Past Year Stimulant Users

Among recent stimulant users ($N=1047$), age, frequency of past year stimulant use, and past year drunkenness were found to be significant in the



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Table 3. Adjusted odds ratios (AOR) of injection drug use (IDU) among stimulant users.

Lifetime IDU among lifetime users (N = 3408)		Past year IDU among past year users (N = 1047)	
Covariates	AOR ^a (95% CI)	Covariates	AOR ^a (95% CI)
Age, years		Age, years ^b	
35 +	6.32 (3.25–12.30) ^f	26 +	2.80 (1.19–6.62) ^d
26–34	2.93 (1.58–5.44) ^f	12–25	1.00
18–25	1.69 (0.88–3.23)		
12–17	1.00		
Gender		Gender	
Male	1.21 (0.79–1.84)	Male	1.32 (0.53–3.31)
Female	1.00	Female	1.00
Race/ethnicity		Race/ethnicity	
African-American	2.63 (1.35–5.12) ^e	African American	2.46 (0.82–7.33)
Hispanic	1.03 (0.62–1.71)	Hispanic/other ^c	0.41 (0.14–1.24)
Other ^c	0.56 (0.15–2.14)	White	1.00
White	1.00	Education	
Education		Less than high school	1.05 (0.30–3.71)
Less than high school	3.01 (1.87–4.84) ^f	High school graduate	1.52 (0.41–5.64)
High school graduate	1.39 (0.88–2.20)	Some college or more	1.00
Some college or more	1.00		
Population density		Past year stimulant use	
Large metro areas	0.54 (0.34–0.85) ^e	Daily use	5.88 (1.18–29.19) ^d
Small metro areas	0.55 (0.34–0.90) ^d	Weekly use	6.83 (1.96–23.84) ^e
Nonmetro areas	1.00	Monthly use	2.56 (0.46–14.15)
		Less than monthly	1.00
Number of lifetime illicit		Past year alcohol use	

(continued)

Table 3. Continued.

Lifetime IDU among lifetime users (N = 3408)		Past year IDU among past year users (N = 1047)	
Covariates	AOR ^a (95% CI)	Covariates	AOR ^a (95% CI)
drug used	31.89 (12.46–81.67) ^f	Got drunk ≥ weekly	7.12 (1.51–33.64) ^e
≥ 5 drugs		Got drunk < weekly	11.30 (2.74–46.576) ^f
4 drugs	6.37 (1.98–20.44) ^e	Use and not drunken	0.89 (0.11–7.30)
1–3 drugs	1.00	No use	1.00
Lifetime stimulant use > 300 days	3.20 (1.83–5.59) ^f	–	–
101–300 days	1.82 (0.98–3.39)	–	–
12–100 days	1.09 (0.61–1.98)	–	–
1–11 days	1.00	–	–
Age at first stimulant use Before 13	3.26 (1.47–7.23) ^e	–	–
13–17	1.88 (1.24–2.84) ^e	–	–
18 or older	1.00	–	–

^aThe adjusted logistic regression model included all the variables listed in that column. CI: confidence interval.

^bAge was combined into two groups because of small sample size.

^cOther included Asian, Pacific Islander, American Indian, and Alaska Native because of small sample size.

^d $p \leq 0.05$.

^e $p \leq 0.01$.

^f $p \leq 0.001$.

unadjusted logistic regression analysis. The adjusted logistic regression model showed that being 26 or older (relative to those aged 12–25), engaging in weekly or daily use of stimulants, and getting drunk at least once in the past year were associated with increased likelihood of recent IDU among recent stimulant users (Table 3).



**Cessation of Drug Use Among Lifetime Injectors
with a History of Stimulant Use**

Approximately 44% of all injectors reported no use of any illicit drug in the prior year (i.e., cessation). Logistic regression (Table 4) revealed that

Table 4. Adjusted odds ratios (AOR) of cessation of any illicit drug use and substance abuse service utilization among lifetime stimulant users who reported injection drug use ($N = 440$).

Covariates	Cessation of any illicit drug use	Substance abuse service utilization
	AOR ^a (95% CI)	AOR ^a (95% CI)
Age, years ^b		
26 +	4.79 (2.14–10.72) ^f	1.10 (0.55–2.20)
12–25	1.00	1.00
Gender		
Male	0.89 (0.46–1.74)	0.78 (0.42–1.46)
Female	1.00	1.00
Race/ethnicity		
African-American	0.64 (0.25–1.62)	2.91 (1.23–6.88) ^d
Hispanic	1.25 (0.46–3.83)	1.21 (0.61–2.40)
Other ^c	0.96 (0.14–6.67)	4.55 (0.95–21.80)
White	1.00	1.00
Education		
Less than high school	1.68 (0.77–3.65)	1.46 (0.69–3.06)
High school graduate	1.66 (0.70–3.94)	2.24 (1.13–4.45) ^d
Some college or more	1.00	1.00
Cleaning the needle before using it		
Yes	0.33 (0.15–0.72) ^e	2.27 (1.09–4.74) ^d
No	1.00	1.00
Age at first cigarette smoking		
Onset before 13	7.74 (2.37–25.31) ^f	–
13–17	12.18 (3.92–37.87) ^f	–
18 or older/never used	1.00	–

^aThe adjusted logistic regression model included all the variables listed in that column. CI: confidence interval.

^bAge was combined into two groups because of small sample size.

^cOther included Asian, Pacific Islander, American Indian, and Alaska Native.

^d $p \leq 0.05$.

^e $p \leq 0.001$.

^f $p \leq 0.01$.



being aged 26 or older (relative to being aged 12–15) and initiating cigarette smoking before age 18 (relative to an onset at age 18 or older) were associated with increased odds of having ceased drug use among IDUs. Cleaning injection needles with bleach before using them was associated with *decreased* odds of cessation among these injectors.

Substance Abuse Service Utilization by Injectors with a History of Stimulant Use

Of all former injectors ($N = 369$), 50% reported having ever used any substance abuse service. Of all recent injectors ($N = 71$), 62% had ever used any substance abuse service. There was no significant difference in service utilization between former and recent injectors. As shown in Table 4, increased odds of service use were evident among injectors who were African-American (compared with whites), high school graduates (compared with those who attended college), and those who cleaned their needles (compared with those who did not).

DISCUSSION

To the best of our knowledge, this is the first study of correlates of IDU among stimulant users in a nationally representative sample of Americans. The most salient findings in this study are the high prevalence of IDU among lifetime stimulant users, with approximately one in seven reporting IDU in their lifetime. Other investigators also reported a high prevalence of IDU among stimulant users. For example, a study of individuals seeking treatment for methamphetamine dependence revealed that 13% had injected methamphetamine (15). Given that injectors are at greater risk for HIV infection, even in the first year of injection (44), this is a major concern. For instance, Garfein et al (44) found a disturbingly high prevalence of hepatitis C (65%), hepatitis B (50%), and HIV (14%) infections among injectors who had injected for one year or less. Unsafe sexual or injection practices convey significant risk for these infections among young, short-term injectors (45,46).

Lifetime IDU

Stimulant users with a lifetime history of having used five or more drugs were about 32 times more likely to have a history of IDU than those who had used one to three drugs. Furthermore, the data suggest a dose-response relationship (i.e., the more drugs the individual used the more



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likely one was to become an injector). Previous reports concur with this finding. For example, Diaz et al (47). reported that most (71%) HIV-infected injectors injected multiple drugs and that 72% reported using more than one type of noninjected drugs.

Recent IDU

Recent IDU was associated with heavy drinking (getting drunk weekly or more) and frequent stimulant use (weekly or more) in the same year. Domier et al (15). found that stimulant users who became injectors used a stimulant more frequently for a greater number of years than those who did not. Findings of this study and other investigations suggest that stimulant use, heavy alcohol use, and IDU form a cluster (25,48). This cluster may also signal an elevated risk of engaging in unsafe risky behaviors (e.g., needle sharing and unsafe sexual practices) that further increase the risk for HIV infection and transmission (33,48–50).

Cessation of Illicit Drug Use

Notably, 91% of injectors with a lifetime history of stimulant use had ceased their IDU and 44% of injectors reported no use of any illicit drug in the past year. However, only 0.1% of injectors aged 12–17 reported cessation of any illicit drug use. The prevalence of cessation of illicit drug use was 26% for all injectors aged 18–25, 41% for those aged 26–34, and 48% for those aged 35 or older. These findings suggest that many stimulant users discontinued their drug use as they aged. Nonetheless, the reasons for the very high prevalence of injectors who stopped injecting and for a moderate proportion who ceased illicit drug use for a year or longer among lifetime injectors deserve further study.

Injectors who started cigarette smoking before age 18 were significantly more likely than those who started at age 18 or older to cease illicit drug use. The prevalence of ceasing illicit drug use was 43%, 54%, 11%, and 9%, respectively, for cigarette initiation before age 13, between 13 and 17, 18 or older, and never smoking. The Gateway theory (40–42) suggests that early use of cigarettes may lead to the use of “hard drugs.” Yet our data suggest that, among injectors, early cigarette users were more likely to stop using illicit drugs than late users or never users. A few studies have suggested that drug users do not always follow the typical sequence of drug use (i.e., from licit substances, then marijuana, to other illicit drugs) (51). They might have initiated the use of other illicit drugs earlier than the use of gateway substances. However, the finding with young injectors does show the need for early interventions.



Utilization of Substance Abuse Treatment Services

Lifetime use of substance abuse treatment services is not correlated with cessation of illicit drug use in the present study, and that many drug users who cease IDU do so without participating in substance abuse treatment. Other investigators have also noted that many drug users cease their use of illicit drugs without the benefit of treatment (52). These findings support the scarce but growing literature suggesting that recovery from substance abuse problems without treatment might be more prevalent than previously thought (53,54). Factors associated with recovery without receiving substance abuse treatment might include substance abuse-related health concerns or financial issues, influence from significant individuals, family-related reasons (e.g., positive family milieu or social support), and religious or legal reasons (53).

African-Americans are more likely than whites to use substance abuse services. The higher prevalence of IDU among African-American stimulant users—they are 2.6 times more likely than white stimulant users to inject drugs—might explain the difference in service use. The association between substance use service utilization and cleaning injecting needles suggests that, for some injectors, receiving substance abuse services might have increased the use of safe injection practices. Studies have shown that substance abuse treatment services or other community-based interventions (e.g., community-wide AIDS education) may reduce drug users' HIV risk behaviors (10,28,55). Alternatively, those who are concerned about becoming infected may clean their needles and seek substance abuse treatment. Unfortunately, many injectors who receive treatment or interventions continue injecting and engaging in HIV risk behaviors (55,56).

Strengths and Limitations

These findings should be interpreted within some methodological limitations. First, the cross-sectional nature of the NHSDA limits our ability to make causal inferences. Second, self-reports are subject to recall and reporting biases (e.g., underreporting). Nonetheless, to enhance honest responding, the NHSDA used self-administered answer sheets to collect information of a sensitive nature. Studies have found that trends of prevalence rates of substance use obtained from the NHSDA are generally comparable with those of other surveys of the general U.S. population (57). Third, some design features of the NHSDA precluded more detailed analyses of IDU. For example, the age at onset of IDU, the frequency and intensity of IDU, and the specific type of injecting stimulants used were not assessed.



Several strengths are noteworthy. Our data are from a national sample selected using a sophisticated methodology. The sample identified drug users who would not be found in treatment settings or recruited through street and community outreach. Most (87%) of this community sample of injectors are non-Hispanic whites, while many studies of injectors have consisted of primarily ethnic minorities (18,23,26,27,44,45,58).

Summary and Public Health Implications

This study revealed that about one in seven stimulant users transitioned to IDU at some point in their lifetime. In particular, African-American stimulant users had an increased likelihood of becoming injectors. This finding has major public health implications because young, African-American injectors are at greatest risk for HIV infection (59). Many injectors reported a high level of HIV risk behaviors, thus placing themselves at risk for contracting HIV and hepatitis C (19,60). In this study, more than one in three injectors reported needle sharing, while only one in five reported needle cleaning. Confirming the findings from studies of injectors in treatment samples and other convenience samples (47), our data suggest that injectors were likely to have initiated stimulant use before age 18 and to have used multiple drugs. Among injectors under age 26, few (18%) ceased illicit drug use. Young, recent onset injectors are at particularly high risk for HIV and hepatitis virus infections, even within the first 3 years of initiating injection (44–46,58,61). They deserve greater attention for both primary and targeted prevention efforts.

Finally, it is of concern that only 22% of all stimulant users had ever availed themselves of substance abuse treatment services, and only one-half of all injectors reported having ever used any substance abuse treatment services in their lifetime. This is an underserved population. Particularly, there has been an increasing rate of HIV infection among young people and ethnic minorities. Some drug users may perceive their illicit drug use, including IDU, as being “under their control,” and therefore they may not see themselves as needing substance abuse treatment (62). Other possible reasons for not receiving substance abuse services may include the stigma associated with illicit drug use and financial or cultural barriers that may hinder their access to services. Nonetheless, cessation of drug use for a year or longer was common. Longitudinal studies of community drug users would help clarify the natural history of drug use, including the cessation of drug use without receiving substance abuse treatment services. Further, it might seem imperative to develop interventions to target young injectors early in their addiction careers to thwart disease transmissions.



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