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Gender Differences in Illicit Substance Use among Middle-Aged Drug Users with or at Risk for HIV Infection

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Abstract

Objective—The objective of the present study was to examine gender differences and other factors associated with current heroin and cocaine use among middle-aged drug users.

Methods—Baseline data were merged from 2 studies of men and of women with or at risk for HIV infection. Analysis was restricted to study participants who had ever used heroin or cocaine and who were 49–60 years of age at the time that they were interviewed. HIV-antibody status, drug-use history, and psychosocial and sociodemographic data were examined. Logistic regression models were used to assess factors independently associated with current heroin and cocaine use.

Results—Of 627 persons who ever used heroin and/or cocaine, 250 (39.9%) reported using these drugs within 6 months of the study interview conducted at baseline. Men were more likely to be using drugs currently, compared with women (42.3% vs. 28.2%; $P = .007$). In multivariate analysis, men, unemployed persons, and HIV-seronegative persons were more likely to be using heroin or cocaine at the time of the interview. In addition, current marijuana users, persons drinking alcohol on a daily basis, and persons who had been homeless in the 6 months before the interview were also more likely to be using these drugs.

Conclusion—A relatively high proportion of middle-aged substance users with or at risk for HIV infection, especially men, may continue to use illicit drugs into the sixth decade of life. The differences noted between men and women who have used heroin and/or cocaine at some point in their lives suggest that special attention be given to aging and gender issues in framing HIV-prevention and drug-treatment programs.

Although HIV infection is still perceived predominately as an infection occurring in young adults, infection has been occurring among persons >50 years of age since the beginning of the HIV/AIDS epidemic [1]. Since 1990, the number of persons >50 years of age with HIV/AIDS in the United States has been increasing [2], with the steepest increases noted among women and drug users [3]. Although the majority of middle-aged and older persons have acquired HIV through sexual risk behavior, the infected contact is most often a drug user or a member of a social network of a drug user [4]. As survival into middle age and old age has increased among HIV-infected persons as a result of the use of HAART [5], studies of HIV risk behaviors in persons in older age groups have taken on increased importance.

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There has been limited research pertaining to older drug users, particularly heroin and cocaine users, partly because this group accounts for <2% of the general population [6]. The reductions in substance abuse that occur with age are thought to be the result of maturation or “aging out” of illicit substance use, drug treatment, and differential mortality [7]. However, there is evidence of a current increase in the numbers of middle-aged and older persons who abuse drugs and alcohol [8]. Most of this increase is projected to occur among men, who show consistently higher rates of illicit drug use, compared with women, in all age groups ≥ 18 years of age [9]. In a relatively recent study of persons who were actively using heroin and cocaine but who were not receiving treatment, greater substance use and increased behavior associated with a high risk of acquisition of HIV infection were noted among men, compared with women, among persons ≥ 50 years of age [10]. Gender-specific risk factors for drug use are not well understood. Physical and sexual abuse in childhood and adulthood have been reported to be higher among female substance abusers, and they are considered to be a factor in their addiction and relapse [11,12]. The contribution of gender-specific rates of physical and sexual abuse histories and other factors to gender differences in substance abuse rates in older age groups is largely unknown because of a paucity of studies.

We undertook a study of men and women 49–60 years of age in the Bronx, New York City, New York, to assess gender in relation to heroin and cocaine use, which may underlie a continuing risk of HIV transmission. The increasing numbers of persons who have or are at risk for HIV infection and who are entering older age, as well as the paucity of information about the patterns of illicit drug use among these persons, warrant increased attention to this issue.

METHODS

The present analysis used data from baseline interviews conducted in 2 cohort studies: the Cohort of HIV At-Risk Aging Men's Prospective Study, which evaluated men, and the Menopause Study, which evaluated women. Both studies used nearly identical interview and testing protocols, with the exception of gender-specific variables (e.g., menopause status or erectile dysfunction). For this cross-sectional analysis, we restricted the merged baseline data set to include 627 men and women (age, 49–60 years) who were interviewed in 2001–2003 and who had ever used heroin or cocaine alone or in any combination, by any route.

In both studies, recruitment of HIV-infected persons and at-risk HIV-uninfected persons in approximately equal numbers was done by advertisement in the community, through word of mouth to medical providers, through placement of flyers in medical and HIV clinics, and by presentations given by research staff at HIV community groups. Standardized interviews were administered by the same trained research staff for both studies. For persons with HIV infection, HIV-antibody status was determined and CD4⁺ lymphocyte counts were obtained. Participants were reimbursed for time spent in the research visit. Both studies were approved by the institutional review boards of the participating hospital and medical school; all participants provided written, informed consent.

Interview

A standardized interview gathered information about sociodemographic characteristics, personal and family medical history, use of antiretrovirals and other medications, and sexual and drug-use behaviors. Depressive symptoms were assessed using the Center for Epidemiologic Studies Depression Scale. A Center for Epidemiologic Studies Depression Scale score of ≥ 23 was used to suggest depressive symptoms, because this cutoff value has been used in studies of similar populations [13,14]. The central outcome variable for this study was heroin and/or cocaine use (by any route or in any combination) occurring in the 6 months before the interview (defined as “current drug use”). The years of first and last use of each drug

and limited quantitative data (past 6 months only) were available and were uniformly obtained. Data were further limited by lack of information on needle-sharing and hygiene, because the study was not originally focused on HIV risk behaviors.

Statistics

Initial analyses of the differences between men and women for a range of demographic, social, psychological, medical, and behavioral variables were performed using χ^2 or Wilcoxon tests. Logistic regression models, overall and stratified by gender, were used to identify factors associated with current heroin or cocaine use. Analyses were done using Stata software, version 8.0 (Stata).

RESULTS

The characteristics of the 627 study participants, by gender, are shown in table 1. More than one-half of the study participants were African-American, and more than one-quarter were Hispanic. Compared with women, men were more likely to have completed high school, to be employed, and to be sexually active at the time of the interview. Women were more likely to show depressive symptoms, to have been molested during childhood, and to have been raped and attacked during adulthood. Among HIV-infected study participants, the median CD4⁺ lymphocyte counts were 321 cells/mm³ (interquartile range [IQR], 208–529 cells/mm³) and 300 cells/mm³ (IQR, 224–540 cells/mm³) for women and men, respectively. There was a gender difference in terms of whether persons were receiving HAART at the time of the interview (38.6% of men and 29.8% of women were receiving HAART; $P = .01$).

Current use of heroin and cocaine, according to gender, is shown in table 2. At the time of the study interview, 250 (39.9%) of 627 study participants had been using some form of heroin and/or cocaine in the past 6 months, with use significantly more common among men. Only 18 (2.9%) of 627 participants had a lifetime history of single-drug use (in all cases, heroin); all others had used various drugs or drug combinations over their lifetime. Among current drug users, men were more likely to use cocaine and/or heroin (all uses combined) at a higher level than were women. The median number of occasions of heroin or cocaine use in the 6 months before the interview was 96 (IQR, 24–344 occasions) for men and 24 (IQR, 5–240 occasions) for women ($P = .003$).

Cessation of heroin and cocaine use by the time of enrollment was greatest among women, compared with men (78 [75.7%] of 103 women vs. 270 [51.5%] of 524 men; $P < .0001$). The median age of the study participants at cessation of heroin and cocaine use was higher for men (47 years; IQR, 40–49 years) than women (45.5 years; IQR, 40–49 years), with the overall number of years of use of these drugs significantly higher for men (29 years; IQR, 21.5–33 years) than women (26 years; IQR, 17–31 years) ($P < .0001$). Of the 447 participants who had ever injected drugs, 358 (80%) had stopped injecting before the study interview (median age at cessation, 38.5 years [IQR, 30–46 years]). When all sources of drug and alcohol treatment were considered, 523 participants (83.4%) reported a history of receiving some form of treatment, with no gender differences noted except for methadone treatment (table 2). There were no differences in age at cessation of injection, according to gender. Men generally initiated drug use at earlier ages than did women (table 3), for all drugs except crack cocaine.

In terms of HIV-infection status, overall heroin and cocaine use in the 6 months before the interview was somewhat greater for HIV-seronegative persons (44.1%), compared with HIV-seropositive persons (36.6%) ($P = .057$). All other drug-use, initiation, and cessation variables did not show significant differences for HIV-infection status.

Risk factors that were independently associated with current heroin and cocaine use are shown in table 4. Men, persons who were unemployed or working <20 h/week, and persons without HIV infection were more likely to be using these drugs at the time of the interview. In addition, participants who reported being homeless in the past 6 months, having smoked marijuana, and having used alcohol on a daily basis were more likely to be using heroin, cocaine, or combinations of heroin and cocaine. Risk factors were not found to be different by gender in stratified logistic regression analyses; thus, the results are presented as a single model. Risk factors that were not associated with current heroin and cocaine use included age, current cigarette smoking, years of education, stressful life events, Center for Epidemiologic Studies Depression Scale score, and drug treatment of any type (including methadone, levo- α -acetyl-methadol, drug-free, short-term narcotic and alcohol detoxification, and 12-step treatment programs).

DISCUSSION

In the present study, ~40% of middle-aged men and women who were current and former drug users and who either had or were at risk for HIV infection reported current use of heroin and/or cocaine. These findings contrast with the perception that the vast majority of drug users discontinue use of illicit substances as they age, whether through treatment or simply “aging out” [7]. Although many HIV-infected individuals are now living into middle age and beyond, physicians are relatively unaware of the continued risk behaviors of older adults [15]. Further complicating this picture, uninfected persons >50 years of age are less knowledgeable about HIV risk behaviors than are their younger counterparts [4]. HIV infection may remain undetected in persons who become infected at older ages, and the infected persons may unknowingly infect others and may fail to receive appropriate medical care. Even when persons are aware of their HIV-infection status, continued drug use may result in poor adherence to medication regimens [16] and relapses in risk behavior [17]. The social milieu of the aging drug user is apt to be one of increasing marginality, involving greater loneliness, stress, and fear of victimization [18,19], as well as less focus on risks for and treatment of HIV infection.

The attitudes and experiences of illicit drug users who are now reaching older age are likely to be considerably different from those of drug users who reached older age several decades ago. Today's middle-aged men and women are part of the first wave of the “baby boom” generation to enter this stage of life; it has been estimated that this generation will increase the size of the aged population by 20% [20]. There are higher proportions of illicit drug users and heavy alcohol users in the baby boom generation than in previous generations [21], and it is apparent that traditional views of the aging drug user may no longer be accurate. In a national sample of injection drug and crack cocaine users, investigators concluded that such drug users who were ≥ 55 of age showed levels of drug use and HIV risk behavior that were sufficiently high to warrant interventions targeted to this age group [22]. Additional evidence comes from a longitudinal study of drug users in Baltimore, Maryland, that showed patterns of persistent/chronic drug use, with intermittent relapses occurring in ~30% of that cohort over a 12-year period [23].

Gender differences in drug use

The National Survey on Drug Use and Health data show a predominance of drug dependence and rates of substance abuse among men in all age groups. Of persons ≥ 50 years of age in the US general population, 4.9% of men and 1.5% of women who were surveyed were dependent on illicit drugs and/or alcohol, and/or they abused prescription medications [9]. In our study of middle-aged heroin and cocaine users, we found strong gender differences in both the prevalence of current use and the quantity of heroin and cocaine used in the past 6 months. In general, age at initiation of heroin and cocaine use occurred later for women, compared with

men, whereas age at cessation of heroin and cocaine occurred earlier for women, compared with men. The overall number of years of use of these drugs was less for women. Female gender was a predictor of lower levels of current drug use, independent of sociodemographic data, medical conditions, history of abuse/violence in childhood and adulthood, drug-treatment history, and other substance-use variables (i.e., use of marijuana and alcohol). This finding is consistent with that of Lightfoot et al. [24], who found that older female drug users had a greater reduction in and cessation of illicit substance use.

The factors leading to gender differences in drug use are not well understood, but they may result in part from women's lack of access to drugs rather than from a greater vulnerability of men to substance abuse [25]. There is evidence that women may be more likely than men to become dependent on anxiolytics, sedatives, hypnotics, and stimulants, such as cocaine, when access to drugs is not a barrier. Kandel et al. [26] reported that, when the opportunity to use drugs is equal, cocaine dependency is 17.4% among women, compared with 4.7% among men. Some studies have shown that women have a shorter time to onset of dependency from first use of drugs, especially for cocaine [27,28]. The relatively low-level roles of women in drug-distribution networks are further restricted with age, as is the ability to exchange sex for money or drugs.

Multiple-substance use and drug treatment

The use of multiple drugs presents a complex treatment issue. Multiple-substance use has been reported to be common among heroin users receiving or not receiving treatment [29,30]. Co-use of stimulants and opioids is the most common pattern in the present analysis, as has been shown in a previous study of Hartel et al. [31]. Although >80% of our study participants reported receiving previous treatment for drug or alcohol use, and although many were still receiving treatment at the time of the present study, we were not able to discern an effect of drug treatment on current use of heroin and cocaine. This is mainly because of the limitations of our cross-sectional data, which did not include information on duration of treatment, reductions in use during and after treatment, and relapse periods because such data were unavailable. However, it may also reflect the fact that there are few methods of dealing effectively with the use of multiple illicit substances, especially when stimulants are a major part of the pattern of substance use [29,30]. Despite the generally higher rates of drug treatment for females reported in the literature, gender differences in drug-treatment successes have not shown a consistent pattern [28,32]; lack of attention to female-specific issues is potentially a barrier to effective drug and alcohol treatment. It should also be noted that drug users who reach their sixth decade are not representative of all drug users, because not all drug users survive to reach middle age. Therefore, our findings should not be generalized to other age groups.

HIV status, drug use, and risk behaviors

Social networks of drug-using, older, HIV-infected persons tend to diminish over time [18, 19], and reduction in drug use may partially result from the restricted access to drugs for both men and women, albeit to a greater degree for women, as discussed above. More heartening is evidence that HIV-seropositive persons consciously reduce drug use and HIV risk behavior [33]; this reduction has been demonstrated in studies comparing HIV-seropositive and HIV-seronegative drug users [34,24]. Our finding of somewhat lower heroin and cocaine use among HIV-seropositive persons, nearly all of whom have known their status for long periods, is consistent with these studies. However, not all studies have found an association between HIV status and reduction in drug use over time [35]. It is important to recognize that relapses to engagement in high-risk activities may occur in middle age [17,23], even among drug users receiving treatment, counseling, and education for HIV infection. A limitation of our data is the lack of information on needle-cleaning and -sharing practices, as well as the use of syringe

exchange in the past among former injection drug users and among persons still using injection drugs at the time of the study interview.

Sexual risk and sexual and/or physical abuse

In our present study, >70% of participants reported being sexually active in the past 6 months. Although most participants ceased using needles to inject drugs, sexual risk remains problematic, in part because of disinhibition and lifestyle instability [36]. In fact, the majority of persons with AIDS who are ≥ 50 years old acquired their HIV infection via sexual exposure, which most often involved sex with a drug-using partner or sex occurring in the context of drug use [37]. Compared with younger women, older women are less likely to ask a potential sex partner about their sexual and substance-abuse history [38]. In 2003, Kwiatkowski and Booth [10] reported that sexually active drug users >50 years of age, regardless of gender and the reduction in HIV-associated drug-risk behavior, were as likely as younger drug users to practice unsafe sex. This finding suggests that sexual risk behavior continues to be problematic and an important intervention issue into midlife.

High levels of physical and sexual abuse in both childhood and adulthood have been reported among female substance abusers, and they are considered to be a major factor in their substance-use and sexual risk behaviors [11,12,39]. In the present study, although female substance users were more likely than male substance users to have experienced sexual and physical abuse, we found no association between these variables and continued heroin and cocaine use. Despite finding an overall prevalence of depressive symptoms of 33%, with strong predominance of such symptoms in women in the present study, we also did not find depressive symptoms to be related to current heroin and cocaine use. Investigations of the complex relationships between sexual and/or physical abuse in childhood and adulthood, psychological conditions, and patterns of drug use/relapse are needed to better understand the treatment issues for aging drug users.

Sociodemographic and other factors

Unemployment and homelessness were associated with current heroin and cocaine use among the participants in this study. Similarly, homelessness was associated with injection drug use and relapse among drug users in Baltimore [40]. As drug users age, social networks and material resources are likely to further shrink, increasing the potential for greater homelessness and unemployment in this population [18]. This destabilization and increasing marginalization create challenges for drug treatment, medical care, and prevention of infectious diseases, including tuberculosis, among aging substance users.

CONCLUSIONS

We have found a relatively high prevalence of ongoing heroin and cocaine use in our study of middle-aged men and women. Gender differences occurred over a wide range of factors, with a clear predominance of substance use noted among men. Shrinking resources become additional burdens for these individuals who have struggled with addiction, sexual and/or physical abuse, losses of family and friends, and with HIV- and substance abuse-related diseases and treatments [41] for most of their adult life. Effective public health strategies that take gender-based needs into account are needed to improve the quality of life and reduce the risk of continuing drug use and its attendant HIV risk behavior in this disadvantaged population.

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Table 1

Selected characteristics of the 627 study participants, by gender.

Characteristic	Men, no. (%) (n = 524)	Women, no. (%) (n = 103)	P
Race/ethnicity			.265
African-American	286 (54.6)	55 (53.4)	
Hispanic	133 (25.4)	34 (33.0)	
White	68 (13.0)	10 (9.7)	
Other	37 (7.1)	4 (3.9)	
Completed high school	364 (69.5)	58 (56.3)	.009
Employed ^a	99 (18.9)	21 (20.4)	.724
Ever jailed	379 (72.3)	52 (50.5)	<.0001
Homeless			
In the past 6 months	39 (7.4)	5 (4.9)	.321
Ever	278 (53.1)	56 (54.4)	.989
Lacking basic resources ^b	128 (24.4)	30 (29.1)	.219
Current sex partner	151 (28.8)	34 (33.0)	.222
Sex in the past 6 months	393 (75.0)	51 (49.5)	<.0001
HIV positive	294 (56.1)	50 (48.5)	.159
CESD score ≥23	160 (30.5)	45 (43.7)	.010
Abused as a child	203 (38.7)	43 (41.8)	.568
Molested as a child	77 (14.7)	37 (35.9)	>.0001
Raped as an adult	23 (4.4)	51 (49.5)	>.0001
Attacked as an adult	193 (36.8)	62 (60.2)	>.0001

NOTE. CESD, Center for Epidemiologic Studies Depression Scale.

^aFor ≥20 h/week.^bParticipant's perceived lack of basic resources.

Table 2

Drug-use variables, by gender.

Variable	Men, no. (%) (n = 524)	Women, no. (%) (n = 103)	P
Drug and alcohol use in past 6 months^a			
Any drug	221 (42.2)	29 (28.2)	.007
Heroin	103 (19.7)	13 (12.6)	.093
Cocaine	172 (32.8)	23 (22.3)	.035
Marijuana	165 (31.5)	26 (25.2)	.204
Alcohol on a daily basis	91 (17.4)	11 (10.7)	.093
Drug use ever			
Injection drugs	377 (71.9)	70 (68.0)	.414
Cocaine	493 (94.1)	93 (90.3)	.155
Speedball	298 (56.9)	55 (53.4)	.516
Heroin	413 (78.8)	84 (81.6)	.531
Crack cocaine	323 (61.6)	71 (68.9)	.162
Alcohol treatment			
Now	57 (10.9)	10 (9.7)	.726
Ever	146 (27.9)	29 (28.2)	.961
Methadone treatment			
Now	207 (39.5)	47 (45.6)	.247
Ever	292 (55.7)	75 (72.8)	.001
Other drug treatment			
Now	255 (48.7)	52 (50.5)	.735
Ever	406 (77.5)	86 (83.5)	.175

^aIn the 6 months before the study interview.

Table 3

Age at initiation of drug use for 627 study participants, by gender.

Study participant age	Men, median years (IQR) (n = 524)	Women, median years (IQR) (n = 103)	P
At first use of cocaine	21 (18–21)	23 (19–28)	.185
At first use of heroin	18 (16–21)	20 (16–27.8)	.002
At first use of crack cocaine	40 (35–45)	37 (33–43)	.020
At first use of speedball	21.5 (18–28)	25 (20–32)	.017
At first use of injection drugs	18 (16–22)	20 (17.8–26.3)	.003

NOTE. IQR, interquartile range.

Table 4

Factors associated with current heroin or cocaine use, according to logistic regression analysis.

Factor	OR (95% CI)	P
Gender, male	1.779 (1.083–2.915)	.023
Employed <20 h/week	2.857 (1.730–4.717)	<.0001
HIV seronegative	1.629 (1.135–2.342)	.008
Daily alcohol use	2.569 (1.612–4.095)	<.0001
Marijuana use	3.034 (2.086–4.413)	<.0001
Homeless ^a	3.303 (1.673–6.522)	.001

^aIn the 6 months before the study interview.