Drug use prevalence among former SSI DA&A recipients

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This paper examines illegal drug use prevalence among former recipients of Supplemental Security Income (SSI) disability benefits for drug addiction and alcoholism (DA&A) in Chicago, Los Angeles, and Seattle, based on urinalysis and self-report data. It presents estimates of current prevalence (past three days) for four categories of illegal drugs—opiates, cocaine, marijuana, or any use—at 12 and 24 months after termination of the DA&A program. Data were obtained as part of a longitudinal study of 1,764 former SSI DA&A recipients in nine sites. Analyses indicate that a substantial number of former DA&A recipients, probably 45%–55%, were engaged in active drug use after termination of the program. Among users, cocaine and opiate use were extensive. Although there were high rates of underreporting by self-reported non-users, underreporting was not systematically associated with age, gender, ethnicity, criminal justice involvement, recent substance abuse treatment, or SSI benefit status.

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This paper provides an overview of illegal drug use prevalence among former drug addiction and alcoholism (DA&A) recipients of Supplemental Security Income (SSI) in Chicago, Los Angeles, and Seattle, based on urinalysis and self-report data from the SSI Study. We examine estimates of current or point prevalence (past three days) for four categories of illegal drugs at 12 and 24 months after the termination of the DA&A program in January 1997. We also examine correlates of self-report accuracy. These analyses serve several purposes. First, by presenting a more accurate estimate of study participants' drug use during the follow-up period, they provide additional context for interpreting the findings in this issue of *Contemporary Drug Problems*. Second, they may inform interpretation of drug use rates among respondents in study sites where comparable data are not available. Third, given the national context of welfare reform, these estimates shed light on drug use in a largely unstudied subset of the population affected by welfare reform.

Methods

Data for these analyses were obtained as part of a longitudinal study of 1,764 SSI DA&A recipients in nine county or metropolitan areas in five states. The sites, identified by the name of the largest city within each area, are Chicago, Detroit, Seattle, Portland (OR), and, in California, San Jose, Los Angeles, Stockton, Oakland, and San Francisco. All of the analyses are based on these data, weighted to reflect the SSI DA&A population in each site (see Choudhry and Helba, this issue). Five waves of data were collected at six-month intervals over a two-year period, with the baseline (first-wave) data corresponding to the six months prior to the January 1, 1997, termination of the DA&A program. Follow-up response rates subsequent to the baseline interview averaged about 90%. Elsewhere in this issue, Swartz et al. provide a detailed description of the study design and methods.

In this paper we focus on data from Chicago, Los Angeles, and Seattle, the three sites that systematically collected both self-report and objective measures of drug use.[1]

Measures

To improve the validity of estimates of illegal drug use, we used both self-report data and urine test results based on the enzyme-multiplied immunoassay technique (EMIT). Although both types of measures have limitations and may be subject to error, together they provide a more accurate range of use estimates than does either method alone (Harrison, 1997; Cone, 1997; Wish et al., 1997).

Self-report data

We examined self-report data for three specific drugs (opiates,[2] cocaine, marijuana) and a summary measure defined as any use of one or more of five drugs (opiates, cocaine, marijuana, PCP, or amphetamines).[3] We constructed the summary variable, hereafter referred to as "any use," by combining responses to five separate items on use of a specific drug.[4] For all types of drugs, we based self-report measures on use in the three days before the interview. All study sites collected data on past-three-days use at the 12-, 18-, and 24-month follow-up interviews.[5]

Urinalysis results

Urine specimens were tested for the presence of opiates, cocaine, marijuana, amphetamines, and PCP. (For a description of the collection and testing protocols, see Swartz et al., this issue.) The sites used similar testing protocols with the notable exception of the cutoff level for canabinoids (marijuana). In Seattle the cutoff level was 20 ng/ml; in Chicago, 50 ng/ml; and in Los Angeles, 100 ng/ml. Although the data are useful for prevalence estimation, the differences in cutoff levels limit the comparability of marijuana prevalence estimates across the three sites.

Analyses

We divided our analyses into two parts. First, we estimated drug use prevalence rates in Los Angeles, Seattle, and Chicago based on self-report and urinalysis data. Second, we examined the relationship between underreporting of drug use and several potentially associated variables to determine whether the prevalence estimates could be improved by adjusting for reporting discrepancies by certain subgroups of respondents.

Prevalence rates

We computed descriptive statistics on self-report data to obtain rate estimates of current drug use prevalence for four categories of drugs in Los Angeles, Seattle, and Chicago. We analyzed 12- and 24-month interview data separately to determine if findings were replicable across follow-up interview waves. Because of site differences, including variation in regional drug use patterns and lack of full comparability across testing protocols, we analyzed each site separately.

We estimated three different prevalence rates for each site: low, intermediate, and high. Each estimate was based on a different scenario or assumption. Figure 1, which depicts a cross-tabulation between self-reported drug use and urinalysis test data, assists in the description of the three estimation methods. The first method, the base (low) rate in our analysis, is the percentage of respondents who reported use of a particular substance (Figure 1, cells A, B, and C). The second and third methods build on the base measure by adjusting the self-report estimate upward to include persons who reported no use but tested positive for a particular drug (Figure 1, cell D). These two methods differ, however, in their assumptions about rates of underreporting among participants who reported no use and did not provide a specimen (Figure 1, cell F). Method 2, called the intermediate estimate, assumes that the proportion of users and non-users in the no-reported-use/no-test subgroup (Figure 1, cell F) is the same as the pro-

portion of users and non-users among those who reported no use and did provide a specimen (Figure 1, cells D and E). This estimate is probably the best estimate of the true prevalence rate. Method 3, the high estimate, assumes that all participants in cell F were underreporting and are therefore included in the prevalence rate. The assumption that persons who decline to provide a specimen are positive is often made in treatment-outcome studies. Although it probably leads to an overestimate of current drug use, we apply it here to indicate an upper limit of the prevalence rate. Taken together, these estimates provide a range within which the actual rate of prevalence is likely to fall.

FIGURE 1
Cross-tabulation of self-report by test result measures

		Urinalysis Test Result		
		Positive	Negative	No Test
Self Report	Use	A	B	C
	No Use	D	E	F

Adjusters for underreporting

To explore potential predictors of underreporting among participants who reported no use, we tested for statistically significant associations between underreporting and five variables found to be related to the validity of self-reported drug use (Hser, 1997; Fendrich and Vaughn, 1994; Wish et al., 1997; Magura and Kang, 1997): age (35 and under/over 35), gender (male/female), ethnicity (white/other), criminal justice involvement (*yes* meant that a respondent was on parole or probation, awaiting trial or sentencing, or had been arrested in the last 30 days), and receipt of formal substance-abuse treatment in the last six months (yes/no). We also examined the association between underreporting and SSI status (requalified/not requalified). To be considered significant, a variable had to be associated with underreporting at

$p <= .05$ in at least one of the two follow-up waves and had to trend in the same direction in the other follow-up, even if the relationship was not significant.

Results

Prevalence estimates

Table 1 presents prevalence estimates for the four drug measures at the 12- and 24-month follow-up interviews for the three sites with both self-report and urinalysis data. In all three sites for all categories of drug use, incorporation of urinalysis results increases prevalence rates substantially. Within sites, the rates for each type of use are consistent across the two time points, suggesting that the findings are reliable. The magnitude of the difference in rates across the two waves averages +/– 3.5% in Los Angeles, +/– 1.1% in Seattle, and +/– 2.6% in Chicago. The single largest difference is a 6.9% drop in self-reported use of opiates in Los Angeles at the 24-month follow-up.

Overall, the intermediate estimate (Method 2), our presumed best estimate of the true prevalence rate, indicates that about 50% of participants in each site were engaged in recent substance use at each of the two follow-up periods. The rates are similar across sites notwithstanding the differences in self-reported use among the three sites. The high estimate (Method 3) is about 55%–60% in each site for use of one or more of the five drugs for which we tested.

Opiate and cocaine use were common among former DA&A recipients. The intermediate estimates (Method 2) for opiate use were around 20% in all three sites.[6] In Seattle, rates of cocaine use and opiate use were similar. In Los Angeles and Chicago, the intermediate prevalence rates for cocaine were higher, about 29% and 38%, respectively. In a sample in which an estimated 50% of respondents were engaged in active substance use, these estimates suggest that cocaine and/or opiate use was pervasive among drug users. Differ-

ences in the test thresholds for marijuana make it difficult to compare the prevalence rates for that category across sites. The seemingly high rates in Seattle may reflect the low threshold relative to the other sites, but it may also reflect generally higher use in that locale. Similarly, the lower prevalence estimate for marijuana use in Los Angeles is probably attributable to the relatively high threshold used there.

Table 2 presents rates of underreporting among self-reported non-users who provided both self-report and urinalysis data. These rates were applied to the self-report data from their respective sites to derive the intermediate prevalence estimates. Rates of underreporting were generally higher in Los Angeles than elsewhere, although among the individual drug categories, rates of underreporting for cocaine were similar in all three sites. As noted, differences in the underreporting of marijuana are difficult to interpret because of the disparities in testing protocols, but results are given for descriptive purposes. The relatively higher rate of underreporting on the summary measure, any drug use, probably results, in part, because the measure was constructed by combining responses to multiple items. If respondents had instead been presented with a single item asking if they had used any of the five substances, we suspect that underreporting would have been lower.[7]

Adjustments for underreporting for the high-prevalence estimate (Method 3) are sensitive not only to rates of underreporting but also to the percentage of participants who provided specimens for testing. The high estimate assumes that all self-reported non-users who did not provide a specimen were positive for use of the type of drug being estimated. In Chicago, where voluntary participation in specimen collection was extensive, the percentage of reported non-users who did not provide a sample averaged about 5.9% of all cases. In Los Angeles and Seattle, the percentage of reported non-users who did not provide specimens averaged 15.3% and 23.4%,

TABLE 1

Current drug use prevalence rates—heroin, cocaine, marijuana, and any use—based on alternate measures: Los Angeles, Seattle and Chicago

	Opiates†		Cocaine		Marijuana§		Any Use*	
	12 Mos.	*24 Mos.*	*12 Mos.*	*24 Mos.*	*12 Mos.*	*24 Mos.*	*12 Mos.*	*24 Mos.*
Los Angeles**	(n=261)	(n=251)	(n=252)	(n=247)	(n=249)	(n=244)	(n=264)	(n=252)
Self-reported use[1]	10.5%	4.5%	12.7%	8.2%	7.8%	7.2%	23.6%	17.2%
Reported use or tested positive: Intermediate[2]	25.6%	18.7%	29.5%	28.8%	13.0%	13.5%	56.2%	52.1%
Reported use or tested positive: High[3]	38.3%	32.3%	42.3%	40.5%	26.8%	27.8%	65.1%	61.3%
Seattle**	(n=294)	(n=287)	(n=283)	(n=275)	(n=268)	(n=267)	(n=297)	(n=288)
Self-reported use[1]	10.4%	7.3%	7.9%	8.0%	11.3%	12.6%	21.8%	20.9%
Reported use or tested positive: Intermediate[2]	19.3%	16.5%	21.5%	21.3%	24.4%	24.9%	48.9%	48.8%
Reported use or tested positive: High[3]	40.5%	38.0%	40.9%	41.7%	44.5%	44.3%	62.2%	61.9%

Chicago**	(n=230)	(n=191)	(n=223)	(n=188)	(n=214)	(n=189)	(n=231)	(n=192)
Self-reported use[1]	13.4%	11.1%	24.4%	22.0%	16.9%	12.6%	36.9%	31.2%
Reported use or tested positive: Intermediate[2]	18.8%	21.3%	37.2%	39.5%	20.3%	17.6%	51.3%	59.8%
Reported use or tested positive: High[3]	23.8%	27.4%	41.4%	44.9%	23.9%	22.9%	54.3%	54.2%

† Opiates = heroin or other opiates, excluding methadone.
§ Urine test cutoff levels for marijuana differed across sites: Los Angeles=100 ng/ml, Seattle=20 ng/ml, and Chicago=50 ng/ml.
* Any use of five drugs: cocaine, opiates, marijuana, PCP, and amphetamines.
** All sample sizes (n) are weighted. Ns may vary slightly due to missing data.
1 Self-reported use in the last three days.
2 Self-reported use in the last three days or positive urine test result. The intermediate method (Method 2) assumes that the rate of underreporting by those who reported no use and did not provide a urine specimen was the same as that for self-reported nonusers who did provide a urine specimen.
3 Self-reported use in the last three days or positive urine test result. The high method (Method 3) assumes that all self-reported nonusers who did not provide a urine specimen were recent users.

TABLE 2

Percentages testing positive among self-reported nonusers:[1] Los Angeles, Seattle and Chicago

	Opiates[†]		Cocaine		Marijuana[§]		Any Use*	
	12 Mos.	*24 Mos.*	*12 Mos.*	*24 Mos.*	*12 Mos.*	*24 Mos.*	*12 Mos.*	*24 Mos.*
	(n=193)	(n=200)	(n=179)	(n=190)	(n=194)	(n=190)	(n=160)	(n=190)
Los Angeles**	16.9%	14.9%	19.2%	22.4%	5.7%	6.8%	42.7%	42.2%
	(n=193)	(n=199)	(n=197)	(n=190)	(n=175)	(n=174)	(n=171)	(n=170)
Seattle**	9.9%	10.0%	14.8%	14.5%	14.8%	14.0%	34.7%	35.2%
	(n=187)	(n=155)	(n=157)	(n=133)	(n=170)	(n=154)	(n=137)	(n=119)
Chicago**	6.3%	11.4%	17.0%	22.4%	4.1%	5.6%	22.8%	27.0%

[1] Percentages of respondents who reported no recent use but tested positive for a particular substance.
† Opiates = heroin or other opiates, excluding methadone.
§ Urine test cutoff levels for marijuana differed across sites: Los Angeles=100 ng/ml, Seattle=20 ng/ml, and Chicago=50 ng/ml.
* Any use of five drugs: cocaine, opiates, marijuana, PCP, and amphetamines.
** All sample sizes (n) are weighted. Ns may vary slightly due to missing data.

respectively. Because of the different rates in the three sites, the differences between the intermediate- and high-prevalence estimates are smaller for Chicago than for the other two locales.

Adjusters for underreporting

Our examination of the bivariate relationships between underreporting by self-reported non-users and six potential predictors of underreporting—age, gender, ethnicity, criminal justice involvement, recent substance-abuse treatment, and SSI status—found no consistent patterns of association either within calibration sites or within drug categories. Rather, the few significant relationships we did find tended to be isolated and inconsistent and therefore are not reported. These results suggest that the prevalence estimates determined above are unlikely to be greatly improved by further adjustment to account for differential rates of underreporting among participants, at least for the six subgroups of self-reported non-users we examined.

Discussion

The above analysis of the estimated prevalence of illegal drug use among former SSI DA&A recipients in Los Angeles, Seattle, and Chicago suggests that a substantial number in those sites, probably 45%–55%, were engaged in active drug use during the period following the termination of the DA&A program. Among substance users, cocaine and opiate use was extensive. These estimates reflect only recent use (last three days). If we consider weekly or monthly use, rates are likely to be even higher (Reuter, 1993). These estimates are what might be expected in a population with a history of disabling substance dependence. The consistency in use patterns at the 12- and 24-month follow-up periods adds support to these estimates.

Our finding of substantial underreporting of use in each of the three sites for which both objective and self-report mea-

sures are available suggests that rates of reported drug use in the other SSI Study sites are also probably low. Indeed, if we apply the intermediate correction rates used in our analyses to the other six sites, the average overall rate of use in those sites would be 45.9% instead of 17.1% per the self-reports.[8] However, it is difficult to estimate the precise level of underreporting in any given locale. First, although synthetic estimation techniques can be used to project prevalence rates from one site (a calibration site) to another (Rhodes, 1993; Anglin, Shen et al., 1999; Maxwell, 2000), it is not clear how best to select the most appropriate calibration site. Based only on geographic region, for example, one might argue that Chicago is the best calibration sample for Detroit, that Seattle is the best for Portland, and that Los Angeles is the best for the other California locales. However, not enough is known about variation in local prevalence patterns, especially among high-risk population subgroups, to support these assumptions (Anglin et al., 1993). Moreover, other factors may play a role. Nurco (1985) suggests, for example, that the mere fact of specimen collection may result in higher rates of self-report. If such is the case, rates of underreporting may be higher in sites that collected no specimens than in those that did.

From a comparative standpoint, using the intermediate method, the average drug use prevalence rates for former DA&A recipients in Chicago, Los Angeles, and Seattle are similar in magnitude to those for various arrestee populations, which range from about 50% to 65% (Hser, Prendergast et al., 1998; Anglin, Shen et al., 1999). The type of drug used tends to differ, however, although the reasons for this are uncertain. Our intermediate prevalence estimates for cocaine use among former DA&A recipients tend to be lower than those for arrestees, except for Chicago, where the rates are similar. By contrast, the estimates for opiate use are almost twice as high as the average arrestee population. Compared with two other populations at high risk for illegal drug use—emergency department admissions and patients at a clinic for the treat-

ment of sexually transmitted diseases (Hser, 1997)—the estimated prevalence of any use for former DA&A beneficiaries was higher.

The rates we estimated for former DA&A recipients are certainly not representative of those for the welfare population overall. Recipients were selected into the DA&A classification because of their drug use, and the high prevalence estimates reflect this fact. We speculate that the groups most similar to former DA&A recipients would be non-criminal justice-coerced-treatment populations, especially those mandated to treatment by state and county General Assistance (welfare) programs.

While our analysis identified high rates of underreporting by self-reported non-users, we did not find systematic relationships between underreporting and any of the six potential correlates of underreporting that we examined. In part, this may be because reporting incongruities can be measured in different ways (e.g., sensitivity, specificity, positive and negative predictive values). While much of the literature on response validity focuses on underreporting among those who test positive for substance use, our concern here was to adjust self-report estimates for underreporting by persons who report no use rather than to examine issues related to the validity of self-reported use per se. The correlates of these different measures may differ (Hser, 1997).

From a policy standpoint, the data from Chicago, Los Angeles, and Seattle suggest that using self-report-based prevalence estimates alone is likely to lead to an underestimation of the substance-abuse treatment need among former DA&A recipients. Certainly there are significant differences among drug use, abuse, and dependence, and use alone does not generally signify treatment need. However, as noted above, given the history of past substance-abuse impairment in this population, and given the high rates of heroin and cocaine use among those who tested positive, there is a much greater like-

lihood that any use within this group is problematic. Moreover, many former DA&A beneficiaries requalified for SSI on the basis of disabling physical and/or mental health problems. This suggests a greater need for specialized treatment services than self-reports alone would suggest. Finally, it is important to note that the above analyses relate only to the use of illegal drugs. While analysis of alcohol use and combined alcohol and other drug use in this population would be helpful to better assess the broader substance-use treatment needs of this population, we do not have objective measures of alcohol use to compare with the self-report data.

Notes

1. Portland collected urine specimens from a subset of participants, but the data were collected as part of a site-specific methodological experiment and are not well suited to this analysis.

2. Opiates includes heroin and other opiates, excluding methadone.

3. Because 3% or fewer of respondents in the three sites tested positive for either amphetamines or PCP, we do not perform separate analyses of these substances.

4. The summary measure was based on all available data. For example, if a specimen tested negative for four drugs and the presence of the fifth drug was not determinable, the specimen was assumed to be negative for any use.

5. Los Angeles also collected three-day self-reported use and urine specimens at the baseline and six-month follow-up interviews. While these data are useful for site-specific prevalence estimates, the lack of comparable data from other sites limits their applicability to this particular analysis.

6. Rates of opiate use were not adjusted to take into account use of prescribed medications and thus may be somewhat inflated. However, supplemental data on use of medications collected in Los Angeles at the 24-month follow-up suggest that any overestimate is likely to be small. The Los Angeles data indicate that none of the respondents who reported no use of illegal opiates, but who tested positive, reported using any of the following drugs that can result in a false-positive test result for opiate use: morphine, Demerol, Dilaudid, fentanyl, imipramine, Percodan, Percocet, Tylenol III, codeine, Vicodin, or amitriptyline. Respondents were permitted to list up to five medications prescribed for a physical health problem and up to four medications prescribed for a psychiatric problem.

7. Another common measure of the validity of self-reported drug-use data is the percentage of persons who tested positive for a substance but reported no use. Using this measure, in Chicago the percentages, at the 12- and 24-month follow-ups, respectively, were: opiates 30.7% and 51.3%; cocaine 35.4% and 43.5%; marijuana 24.7% and 43.2%. In Seattle they were: opiates 44.3% and 53.1%; cocaine 65.2% and 60.9%; marijuana 53.7% and 58.3%. The percentages in Los Angeles were: opiates 58.4% and 73.4%; cocaine 54.4% and 68.1%; marijuana 48.1% and 66.8%. Because the purpose of this paper is to improve prevalence estimates rather than to examine issues related to the validity of self-reported use, we do not further consider these numbers or their implications.

8. To obtain this measure we used Chicago, Los Angeles, and Seattle as calibration samples to adjust self-reported substance-use rates in the other six sites upward for possible underreporting by persons who reported no use. We computed three estimates for each of the six sites, one each based on rates of underreporting in Chicago, Los Angeles, and Seattle, and calculated the average. We applied the intermediate (Method 2) adjustment rates presented in Table 2. This estimate is based on the 24-month follow-up data; rates of use at the 12-month follow-up were similar in magnitude.

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