DOI: 10.1111/j.1475-6773.2006.00530.x

Navigating Health Care Systems

Drug Treatment Service Utilization and Outcomes for Hispanic and White Methamphetamine Abusers

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Objective. To examine differences in drug treatment service needs, utilization, satisfaction, and outcomes between Hispanic and white methamphetamine (meth) abusers.
Data Sources. Intake assessments and follow-up interviews of 128 Hispanic and 371 non-Hispanic white meth abusers admitted during 2000–2001 to 43 drug treatment programs in 13 counties across California.
Study Design. A prospective longitudinal study comparing ethnic differences in problem severity during pre- and posttreatment periods, as well as in services received during treatment.
Data Collection/Extraction Methods. The Addiction Severity Index (ASI) was administered at both intake and the 9-month follow-up to assess clients' problem severity in a number of domains. Service utilization and satisfaction were assessed 3 months following treatment admission.
Principal Findings. Hispanics were less educated and reported more employment difficulties than whites. Whites were more likely to be treated in residential programs than Hispanics despite similar severity in drug and alcohol use, legal, medical and family/social problems, and psychiatric status. Significantly more whites than Hispanics received psychiatric services, likely because more of them were treated in residential programs. Whites also reported receiving greater numbers of total services and services addressing alcohol and psychiatric problems. While no ethnic differences were found in treatment satisfaction and several other outcomes, Hispanics demonstrated better family and social outcomes than whites.
Conclusions. Both Hispanic and white meth abusers improved after treatment, although benefits from treatment can be further enhanced if services underscore different facets of their psychosocial problems.

Key Words. Drug treatment outcome, ethnic differences, hispanic, methamphetamine, utilization

Ethnic disparities in the availability and quality of substance abuse treatment are of interest to both policy makers and treatment service providers. While there have been a number of studies indicating greater unmet needs for health services and poorer health outcomes for ethnic minorities across a range of disease areas (including cardiovascular disease, mental health, diabetes, and other chronic and infectious diseases) (IOM 2003), there has been little research on the service needs and treatment outcomes of Hispanics in substance abuse treatment. The lack of relevant data is particularly true for Hispanic methamphetamine (meth) abusers. Rates of meth abuse in California are among the highest in the country and continue to increase. Hispanics represent about 32 percent of the California population (California Department of Finance 2001). Yet we have limited information regarding service utilization and outcomes among Hispanic meth abusers receiving community-based drug treatment. In the present article, we use the term Hispanic to include Mexican Americans, Puerto Ricans, Cubans, and South and Central Americans living in California. Although there are little published data regarding ethnic disparities specifically among meth abusers, we review literature on drug treatment utilization and outcomes among Hispanics who abused other types of drugs that has relevance to the present study.

Earlier studies reported opposing findings documenting both the underutilization of drug treatment services by ethnic minorities and an overrepresentation of Hispanics in drug abuse programs (Little 1981; De La Rosa, Khalsa, and Rouse 1990). However, more recent studies showed that among individuals with a perceived or clinical need for psychiatric or substance abuse services, Hispanics were less likely to be receiving services and less satisfied with the services they did receive as compared with whites (Wells et al. 2001). Among drug using arrestees, fewer Hispanics than whites reported receiving prior drug treatment, and Hispanics were more likely to believe that they had no need for treatment (Longshore et al. 1992). Hispanics have also been shown to have less access to speciality mental health care services than non-Hispanic whites (Padgett et al. 1994; Alegria et al. 2002).

Few studies have examined the service needs of Hispanics in substance abuse treatment. Some studies have indicated more severe substance use and employment problems for Hispanics than blacks and whites in drug treatment

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(Kosten, Rounsaville, and Kleber 1985). Hispanics also entered treatment with a greater number of prior arrests and more time in jail than had whites (Anglin et al. 1988a, b). However, Morgenstern and Bux (2003) reported no ethnic differences in severity of legal problems between Hispanics and whites upon admission into treatment. An examination of mental health differences revealed that Hispanics who abused narcotics showed less psychopathology as compared to whites based on their multiphasic personality inventory (MMPI) scores (Penk et al. 1981). Clearly, additional research is needed to improve our understanding of Hispanic patients' clinical and psychosocial functioning upon entry into treatment so that improved care can be developed.

The findings regarding substance abuse treatment retention among Hispanics are also inconsistent. In studies of outpatient cocaine abusers, some have reported that Hispanics are more likely to drop out of treatment than whites (Agosti, Nunes, and Ocepeck-Welikson 1996), while others have found no differences between Hispanics and whites (Kleinman et al. 1992). The latter study reported that Hispanics did not differ from whites in drug treatment retention but were more likely to be retained than blacks.

Studies of narcotic-dependent individuals have consistently shown poor drug and legal outcomes for Hispanics. Following discharge from methadone maintenance, for example, Hispanics were less likely to be abstinent and were more likely to report daily drug use than whites (Anglin et al. 1988a, b). Approximately 12 years after entry into the California Civil Addict Program, more Hispanics (49 percent) than whites (31 percent) reported daily heroin use in the past 3 years (Brecht et al. 1987). An examination of legal outcomes showed that Hispanics in a methadone maintenance program were arrested more often and spent more time in jail than did whites during the year following treatment admission (Long and Demaree 1975). In a longitudinal study following narcotic-dependent men, Hispanics were more likely to be incarcerated or deceased than whites and had a more persistent and severe course of drug addiction (Prendergast, Hser, and Gil-Rivas 1998).

Few studies have examined ethnic differences in outcomes of individuals who abuse drugs other than narcotics. Morgenstern and Bux (2003) reported no ethnic differences in alcohol, drug, legal, or psychiatric outcomes of 252 patients receiving community-based substance abuse treatment. However, a study of meth users found that being Hispanic (compared with white) was a significant predictor of time to relapse following treatment (Brecht, von Mayrhauser, and Anglin 2000). There is a notable lack of recent research examining Hispanic substance abuse outcomes generally and among meth abusers specifically.

Based on a large treatment outcome study completed in California, we examined ethnic differences in service needs, treatment utilization, satisfaction, and outcomes between Hispanic and non-Hispanic white meth abusers. We hypothesized that Hispanics would receive fewer services, be less satisfied with the services they did receive, and have poor drug and psychiatric outcomes compared to whites. We also explored ethnic differences in alcohol, employment, family/social, medical, and legal outcomes because difficulties in these domains can be significant impediments to recovery. Our study objective was to contribute empirical data on how ethnicity is related to drug and psychosocial outcomes, and in turn, whether treatments need to be adapted to improve outcomes among different ethnicities.

METHODS

Study Design

CalTOP is a multisite, multicounty, prospective treatment outcome study (Hser et al. 2002), which is part of the national Treatment Outcomes and Performance Pilot Studies Enhancement (TOPPS II 2003). Data collection began in April 2000 from all adult patients consecutively admitted to 43 substance abuse treatment programs in 13 counties in California. The participating programs consisted of the following modalities: 25 outpatient drug-free (nonmethadone), 11 residential, 4 methadone maintenance, and 3 multiple modality. The programs were located in counties throughout California: Alameda, El Dorado, Kern, Lassen, Orange, Riverside, Sacramento, San Benito, San Diego, San Francisco, San Joaquin, San Luis Obispo, and San Mateo. These counties cover wide geographic locations (e.g., the northern, central, and southern regions of California) and include both urban and rural areas.

All patients were assessed at intake, and a subsample was assessed at 3 months and 9 months following treatment admission. Individuals targeted for follow-up were those who entered CalTOP treatment between April 1, 2000 and May 31, 2001. Intake assessments were completed by treatment staff at participating programs, and follow-up phone interviews were conducted by UCLA interviewers. Assessments took approximately 30 minutes, and patients were paid $10 for the 3-month interview and $15 for the 9-month interview.

Participants

The present study includes 499 meth abusers who completed the intake, 3-month, and 9-month assessments. To be considered in this study, patients had to be Hispanic or non-Hispanic white, and report meth as their primary drug problem. Participants included 128 Hispanic patients and 371 white patients. Table 1 presents demographic characteristics of the sample by ethnicity.

The focus of this study is on the Hispanic and white meth-abusing patients who had 3- and 9-month intake data available. Seventy-five percent ($n = 499$) of the Hispanic and white meth-abusing patients who were targeted for follow-up ($n = 663$), actually completed both follow-up assessments. A comparison between the 499 patients who had complete data and the 164 who were excluded from the analysis revealed that completers were more likely to be female. The two groups did not differ in other variables examined (ethnicity, age, employment status, marital status, legal status, and severity of baseline alcohol, drug, employment, family, and psychiatric problems).

Table 1: Demographics and Baseline ASI Scores by Ethnicity

Dependent Variable	*Hispanic (n = 128)*	*White (n = 371)*	*t-test or χ^2*
Age	32.31 (7.95)	33.79 (8.06)	1.79
Education	11.19 (1.95)	11.70 (1.62)	2.94**
Gender			
% male	54 (42.2%)	164 (44.2%)	0.16
Marital status			
% married	25 (19.7%)	67 (18.1%)	0.16
% not married	102 (80.3%)	303 (81.9%)	
Employment			
% employed	37 (28.9%)	118 (31.8%)	0.37
% not employed	91 (71.1%)	253 (68.2%)	
Treatment setting			
% outpatient	111 (86.7%)	258 (69.5%)	14.58**
% residential	17 (13.3%)	113 (30.5%)	
Frequency of meth use	1.75 (1.09)	1.90 (1.28)	1.22
Alcohol ASI score	0.08 (0.14)	0.09 (0.18)	0.77
Drug ASI score	0.11 (0.09)	0.13 (0.11)	1.34
Employment ASI score	0.73 (0.29)	0.65 (0.30)	2.43*
Family/social ASI score	0.20 (0.21)	0.18 (0.22)	0.83
Legal ASI score	0.18 (0.19)	0.17 (0.20)	0.39
Medical ASI score	0.10 (0.22)	0.14 (0.25)	1.33
Psychiatric ASI score	0.18 (0.21)	0.20 (0.24)	1.06

*$p < .05$;
**$p < .01$.

Measures

Addiction Severity Index (ASI) (McLellan et al. 1992a, b). The ASI is a structured interview that assesses problem severity in seven areas: alcohol use, drug use, employment, family and social relationships, legal, medical, and psychological. A composite score was calculated for each scale with a range of 0–1 with higher scores indicating greater problem severity (see McGahan, Griffith, and McLellan 1986 for details on composite score calculations). Sample items that contribute to the composite scores include *alcohol*—days of alcohol use in past 30 days, days of intoxication in past 30 days, money spent on alcohol in past 30 days; *drug*—days of heroin use in past 30 days, days of marijuana use in past 30 days, days of drug problems in past 30 days; *employment*—income from employment, days paid for working; *family and social*—conflict with mother past 30 days, conflict with spouse/partner past 30 days, patient rating of troubled by family problems; *legal*—awaiting charges/trial/sentencing, illegal activities for profit in past 30 days, patient rating of troubled by legal problems; *medical*—medical problems in past 30 days, patient rating of troubled by medical problems, importance of receiving medical treatment; and *psychiatric*—serious depression in past 30 days, hallucinations in past 30 days, patient rating of troubled by psychiatric problems. The ASI was administered at both intake and the 9-month follow-up. Frequency of meth use was measured on a 5-point Likert scale where 1 is *no use in the past month* and 5 is *daily use in the past month.* The ASI is the most commonly employed instrument in the substance abuse field, and its reliability and validity have been demonstrated in ethnically diverse populations (McLellan et al. 1985, 1992a, b).

Treatment Services Review (TSR) (McLellan et al. 1992a, b). The TSR was administered at the 3-month follow-up and assessed services received by the patient during treatment. The TSR documents the number of services received by the patient in the past 3 months in each of the seven problem areas of the ASI. Services included both medical services (e.g., medication, doctor's appointment), and psychotherapy (e.g., individual or group therapy, 12-step groups). For example, to assess the number of drug services received, participants would be asked "How many times in the past 3 months have you attended a drug education session? Attended a session of NA or CA? Attended a drug relapse prevention group or session? Had a significant discussion pertinent to your drug problem in an individual session? Had a significant discussion pertinent to your drug problem in a group session?"

Treatment Satisfaction (Hser et al. 2004). Patients' satisfaction was assessed at the 3-month follow-up. Specifically, we measured patients' overall satisfaction (seven items), satisfaction with their counselor (three items), and satisfaction with services received (12 items). Each item was rated on a 1–5 Likert scale, and a mean score was calculated for each domain with higher scores indicating greater satisfaction.

Treatment Retention. Treatment retention was defined as the number of days between treatment admission and treatment discharge and was based on treatment records provided by the state database. For individuals without discharge records, retention was calculated as the number of days between treatment admission and the last day receiving services or the date of the 9-month follow-up interview.

RESULTS

Pretreatment Characteristics

Demographic variables and service needs were compared across Hispanic and white meth abusers utilizing *t*-tests and χ^2 analyses (see Table 1). The two groups did not differ in terms of age, gender, marital status, or employment status. Hispanics were significantly less educated than whites ($t = 2.94$, $p < .01$) and presented with greater employment difficulties than white patients ($t = 2.43$, $p < .05$). There were no ethnic differences in frequency of meth use or in severity of alcohol, drug, family, legal, medical, and psychiatric status as indicated by the respective ASI scores.

While all meth-abusing patients were treated either in outpatient drug free or residential programs, the two ethnic groups differed significantly in the treatment setting they attended with 13.3 percent of Hispanics and 30.5 percent of whites receiving residential treatment ($\chi^2 = 14.58$, $p < .01$), and the remainder of patients attending outpatient drug-free programs. Controlling for baseline ASI alcohol and drug score, logistic regression with treatment modality as the dependent variable indicated that ethnicity was predictive of placement into residential or outpatient programs with Hispanics less likely to be in residential programs (odds ratio = 0.37; $p < .001$). The Hosmer and Lemeshow goodness-of-fit statistic implies that the model's estimates fit the data at an acceptable level ($\chi^2 = 13.04$, $p > .05$).

Treatment Satisfaction and Service Utilization

Treatment satisfaction data were collected at the 3-month follow-up (see Table 2 for means and standard deviations). Client satisfaction was generally high, and there were no significant ethnic differences in overall satisfaction with treatment ($t = 0.50$, NS), satisfaction with substance abuse treatment counselors ($t = 0.44$, NS), or satisfaction with services received ($t = 0.11$, NS).

Table 2 shows the percentage of individuals who received services in different domains by ethnicity. Chi-square analyses revealed that a greater percentage of whites than Hispanics received psychiatric services ($\chi^2 = 4.87$, $p < .05$). There were no group differences in regard to other types of services received. The mean numbers of various services received are presented in Table 2. White patients received significantly more alcohol services than did Hispanics ($p < .02$). They also received more psychiatric services and total services overall than did Hispanics ($p < .05$). The two groups did not differ in number of drug, employment, family, legal, or medical services received.

A series of logistic regression analyses were carried out to test the relationship between ethnicity and receipt of services, controlling for gender, age, education, employment status, marital status, treatment setting, and base-

Table 2: Treatment Satisfaction and Service Utilization by Ethnicity

Dependent Variable	*Hispanic (n = 128)*	*White (n = 371)*	*t-test or χ^2*
Overall satisfaction	4.05 (0.91)	4.01 (0.90)	0.50
Satisfaction with counselor	4.25 (0.89)	4.21 (0.95)	0.44
Satisfaction with services	4.36 (0.90)	4.37 (0.80)	0.11
% received alcohol services	83 (64.8%)	240 (64.7%)	0.00
% received employment services	63 (49.2%)	202 (54.4%)	1.05
% received family services	46 (35.9%)	111 (29.9%)	1.60
% received legal services	49 (38.3%)	139 (37.5%)	0.03
% received medical services	43 (33.6%)	147 (39.6%)	1.47
% received psychiatric services	78 (60.9%)	265 (71.4%)	4.87*
Alcohol service intensity	29.6 (44.4)	43.8 (79.2)	2.50**
Drug service intensity	64.1 (70.3)	73.5 (79.5)	1.19
Employment service intensity	3.9 (9.8)	3.6 (10.8)	0.27
Family service intensity	5.8 (13.3)	5.1 (14.8)	0.45
Legal service intensity	2.1 (5.6)	2.6 (6.7)	0.72
Medical service intensity	2.5 (7.3)	4.3 (19.6)	1.01
Psychiatric service intensity	14.4 (22.7)	20.3 (29.8)	2.33*
Total service intensity	122.4 (109.4)	153.2 (162.2)	2.00*

*$p < .05$;
**$p < .02$.

Table 3: Odds Ratios (95% CI) for Multivariate Logistic Regression Predicting Services Received in Different Domains

Dependent Variables	*Alcohol Services*	*Employment Services*	*Family Services*	*Legal Services*	*Medical Services*	*Psychiatric Services*
Ethnicity (ref: white)	1.10	1.34	1.42	1.13	0.88	0.71
	(0.71–1.70)	(0.88–2.05)	(0.91–2.22)	(0.73–1.74)	(0.56–1.37)	(0.45–1.11)
Gender (ref: female)	1.11	1.03	0.90	1.04	0.75	0.58**
	(0.75–1.66)	(0.70–1.50)	(0.60–1.36)	(0.70–1.53)	(0.50–1.13)	(0.38–0.88)
Age	1.00	0.99	0.99	1.01	1.02	1.00
	(0.97–1.02)	(0.96–1.01)	(0.96–1.01)	(0.99–1.04)	(0.99–1.04)	(0.97–1.02)
Education	0.98	1.05	1.13*	1.01	0.95	1.13*
	(0.88–1.10)	(0.94–1.17)	(1.00–1.27)	(0.91–1.13)	(0.85–1.06)	(1.00–1.28)
Employment status	1.28	0.96	0.85	1.00	0.80	0.83
(ref: not employed)	(0.84–1.97)	(0.59–1.57)	(0.55–1.33)	(0.66–1.52)	(0.52–1.24)	(0.53–1.28)
Marital status	0.63	0.81	1.15	0.93	1.00	0.80
(ref: not married)	(0.39–1.02)	(0.50–1.30)	(0.70–1.90)	(0.58–1.51)	(0.61–1.64)	(0.48–1.32)
Treatment setting	0.57*	0.56**	0.75	0.76	0.48	0.51**
(ref: residential)	(0.36–0.91)	(0.36–0.85)	(0.48–1.16)	(0.50–1.17)	(0.31–.73)	(0.31–0.84)
Baseline ASI score	2.58	1.76	2.55*	3.33**	5.05**	2.23
(score varies based on domain measured)	(0.75–8.95)	(0.80–3.90)	(1.05–6.19)	(1.29–8.60)	(2.28–11.16)	(0.90–5.52)

*$p<.05$;
**$p<.02$.
CI, confidence interval; ASI, Addiction Severity Index.

line problem severity. Odds ratios and 95 percent confidence intervals are presented in Table 3. Controlling for these variables, ethnicity was no longer significantly related to whether one received services of any type. Treatment setting was the only significant independent predictor of receiving alcohol treatment or employment services. Patients in outpatient programs were almost half as likely to get such services compared with those in residential programs (odds ratio for alcohol treatment = 0.57, $p<.05$; odds ratio for employment services = 0.56, $p<.01$). Education and baseline family problem severity were significant predictors of receiving family services (odds ratio = 1.13 and 2.55, respectively, $p<.05$). Baseline problem severity was the only significant predictor of receiving legal and medical services ($p<.02$). Lastly, gender, education, and treatment setting were significantly related to receiving psychiatric services. Men were less likely to receive psychiatric treatment than women (odds ratio = 0.58, $p<.01$), and education was positively associated with utilization of psychiatric services (odds ratio = 1.13, $p<.05$). Similar to alcohol and employment services, patients in outpatient programs were almost half as likely to receive psychiatric treatment than those

Table 4: Means and Standard Deviations of 9-Month Outcomes by Ethnicity

Dependent Variable	*Hispanic (n = 128)*	*White (n = 371)*	*F*
Treatment retention	123.59 (98.43)	112.80 (100.24)	0.12
Alcohol ASI score	0.04 (0.10)	0.03 (0.09)	2.78
Drug ASI score	0.02 (0.05)	0.03 (0.06)	1.02
Employment ASI score	0.60 (0.32)	0.52 (0.31)	1.11
Family/social ASI score	0.05 (0.11)	0.09 (0.15)	4.88*
Legal ASI score	0.03 (0.10)	0.03 (0.10)	0.53
Medical ASI score	0.11 (0.27)	0.11 (0.25)	0.68
Psychiatric ASI score	0.11 (0.19)	0.10 (0.18)	2.41

Note: All analyses control for gender, age, education, treatment setting, and baseline ASI scores.
*$p < .05$.
ASI, Addiction Severity Index.

in residential programs (odds ratio = 0.51, $p < .01$). The Hosmer and Lemeshow goodness-of-fit statistic was not significant for any of the logistic regressions indicating that the data fit the model well across all service domains.

Treatment Retention and Outcomes

Ethnic differences in treatment retention and outcomes were analyzed using ANCOVA controlling for gender, age, education, treatment setting, and baseline ASI scores (see Table 4). There were no group differences in number of days in drug treatment or 9-month drug ASI score, controlling for baseline drug ASI score. There were also no ethnic differences in alcohol, employment, legal, medical, and psychiatric outcomes. The only outcome difference was in family/social functioning with whites reporting significantly more family and social problems posttreatment after controlling for demographic variables, treatment setting, and baseline family/social ASI scores ($F = 4.88$, $p < .05$). Nevertheless, reductions in problem severity were observed in each of the ASI domains for both ethnic groups (all $p < .01$).

DISCUSSION

The study findings reveal both similarities and differences between Hispanic and non-Hispanic white meth abusers treated in community settings. The two ethnic groups were generally similar in their demographics, service needs and utilization, treatment satisfaction and retention, and most importantly, treatment outcomes. Some exceptions noted were, that compared to whites,

Hispanics were less educated, had greater employment difficulties upon treatment admission, were more likely to be placed in outpatient than residential treatment programs, received fewer alcohol and psychiatric services, and had better family and social outcomes. Below, we discuss these findings in greater detail as well as their implications for service improvement.

Hispanics and whites did not differ in regard to most demographic variables, including age, gender, marital status, or employment status. However, meth-abusing Hispanics entering drug treatment were less educated than whites, which is consistent with prior studies examining narcotic addicts (Prendergast, Hser, and Gil-Rivas 1998). Hispanics also reported more employment-related problems as indicated by greater ASI employment severity. The two groups were similar in problem severity in the areas of drug and alcohol, family/social, legal, medical, and psychiatric problems. Our findings differed from the Penk et al. (1981) study, which reported greater psychopathology for whites than Hispanics. The study by Penk et al. however, was based on narcotics addiction, using MMPI scores to indicate psychopathology. In spite of similarity in alcohol and drug problems, Hispanics in our sample were more likely to receive outpatient drug-free treatment than residential treatment as compared to whites, which is similar to prior observations based on individuals in treatment for alcohol abuse disorders (Gilbert and Cervantes 1987).

A greater percentage of whites than Hispanics received psychiatric services, and whites received more alcohol and psychiatric services despite similar alcohol and psychiatric problem severity upon treatment admission. Our design does not allow for an examination of whether services were withheld from Hispanic patients. However, our data indicate that Hispanics and whites did not differ in how subjectively troubled they were in the seven ASI domains measured or how important treatment was to them in those seven domains (data not shown, $p > .05$). After controlling for demographic variables, treatment setting, and baseline problem severity, ethnicity was no longer a significant predictor of whether an individual received alcohol, employment, family, legal, medical, or psychiatric services. As previously reported, those in outpatient drug treatment programs were almost half as likely to receive alcohol, employment, or psychiatric services as those in residential treatment programs (Hser, Evans, and Huang 2005). The fact that residential programs are more likely to provide psychiatric services compared with outpatient programs may account for the lack of ethnic differences in multivariate analyses where treatment modality was controlled. As mentioned earlier, our findings suggest that there is ethnic disparity in placement in outpatient versus

residential treatment, which should be further investigated in future studies. Furthermore, the study findings highlight the importance of proper diagnosis and referral for both alcohol use and psychiatric disorders by outpatient treatment providers, given that most meth abusers, and particularly Hispanic meth abusers, utilized or were placed in outpatient treatment programs.

Except for family problems, baseline problem severity in a particular domain was not predictive of receiving services in that domain. The lack of relationship between patient needs and services has been previously reported for the overall CalTOP sample (Hser et al. 2002). This service discrepancy raises the question of whether treatment programs are being appropriately responsive to the needs of their clients or whether these services are being offered but not utilized. Future research should investigate this lack of congruence between identified needs and receipt of services.

Treatment retention for the two groups did not differ, and both groups remained in treatment, on average, for greater than 3 months. Similarly, both Hispanics and whites reported high levels of satisfaction with their treatment program, the services they received, and their treatment counselor.

Contrary to our hypotheses, there were no ethnic differences in alcohol, drug, employment, legal, medical, or psychiatric outcomes. These findings are consistent with Morgenstern and Bux's (2003) study which also found no ethnic differences in alcohol, drug, legal, or psychiatric outcomes among individuals in substance abuse treatment. The lack of ethnic differences in employment outcomes is also consistent with data reported by the TOPPS-II Interstate Cooperative Study Group (2003). However, our results differ from prior findings that Hispanics have poor drug outcomes compared with whites (Brecht et al. 1987; Anglin et al. 1988a, b). This difference in findings may be a result of the drug studied (meth in the current study and narcotics in prior studies). Alternatively, drug treatment effectiveness for Hispanics may have improved since those early studies.

Family and social outcome was the only domain in which ethnic differences were statistically significant. After controlling for demographic variables and baseline severity, Hispanics had better family and social outcomes than did whites. This may be a result of Hispanic families being more supportive of the patient through the recovery process. Prior studies of individuals with schizophrenia showed that Hispanic relatives were more likely to view psychiatric symptoms and problem behaviors as outcomes of a legitimate illness, and therefore assigned less blame to the patient than did Anglo-Americans (Jenkins et al. 1986). According to attribution theory, this would lead to a greater tolerance and willingness to help their ill family member

(Weiner 1993), which in turn may improve family functioning. More research examining the role of familial and social support in substance abuse recovery is needed.

It is notable that employment problem severity was considerably high for both Hispanics and whites. Although both groups significantly progressed from baseline, there is clearly a need for improvement in vocational functioning. Employment has been associated with greater treatment retention (Maddux and McDonald 1973; Dole and Joseph 1978) and with improvements in mood and neuropsychological functioning among addicts in recovery (Braunstein et al. 1983). These effects, as well as the benefits to society at large, make employment an important, yet often ignored, treatment goal.

Strengths of this study include the large, ethnically diverse sample size, and the use of community-based treatment seekers. The inclusion of numerous treatment programs across California also increases the ability to generalize of our findings. It is important to note that the counties and treatment programs that participated in CalTOP were not randomly selected. However, we do not believe this has any significant bearing on our findings as our sample characteristics resemble those of the statewide treatment population in terms of gender, ethnicity, age, employment status, primary drug type, and legal status (Hser et al. 2002).

Other limitations of the study include the absence of standardized diagnostic instruments and measures of acculturation. Although the measures employed in this study have been extensively used with Hispanics, their psychometric properties in Hispanic populations have not been reported in the literature. Furthermore, ethnic categories, such as Hispanic and white, comprise a heterogeneous group of people with potentially different outcomes. The identification of sociocultural constructs that are more clinically meaningful is important. Our sample is based on those receiving publicly funded treatment, thus the results may not be applicable to those receiving services in the private sector; individuals receiving publicly funded treatment may have more severe disorders that interfere with their ability to obtain private insurance coverage. Finally, longer-term follow-ups should be conducted to reveal long-term patterns of service utilization and outcomes among Hispanic meth abusers.

Despite these study limitations, we believe that the present study contributes important information regarding ethnic differences among meth abusers treated in community-based programs. It has been frequently suggested that substance abuse treatment for ethnic minorities would be more effective if treatments were tailored to the special needs of these patients. Our

data suggest that both ethnic groups improved after treatment, and that the effectiveness of treatment for Hispanic and non-Hispanic white meth abusers does not vary, though with a couple of exceptions. Given the high rates of employment problems in this sample, all meth abusers are likely to benefit from employment services, but this emphasis may be particularly important among Hispanic patients who present to treatment with greater employment difficulties and lower levels of education. Additionally, outcome data indicate that white meth abusers may gain from additional family-focused interventions. As the effectiveness of drug treatment for meth abusers did not differ across ethnicity, it is possible that both Hispanics and whites are responding to treatment in similar ways. Alternatively, the mechanisms by which patients reach a common endpoint may differ by ethnicity. Testing of mediational models would be valuable in identifying group differences in the pathway to recovery. Finally, the general lack of relationships between needs and services suggest a need to enhance the match between the two, with particular attention to the different facets of psychosocial problems of individual ethnic groups.

ACKNOWLEDGMENTS

This study was supported in part by grant 1-UR1-TI11478-01 from the California Department of Alcohol and Drug Programs under the Center for Substance Abuse Treatment TOPPS II (Treatment Outcomes and Performance Pilot Studies Enhancement) (P.I.: Yih-Ing Hser) and by grant RO1-DA-15431 from the National Institute of Drug Abuse (P.I.: Yih-Ing Hser). Dr. Niv was also supported by a NIDA Institutional NRSA 5T32DA007272-15 (P.I.: Richard Rawson).

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