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Racial and Ethnic Differences in Substance Abuse Service Needs, Utilization, and Outcomes in California

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Abstract

Objective—This study examined differences in service needs and treatment utilization, retention, and outcomes between African-American, Hispanic, and white substance abusers in community-based treatment programs.

Methods—Data were collected from 2,401 African Americans, 3,222 Hispanics, and 7,980 whites who were admitted to 43 drug treatment programs across California from 2000 to 2001. The Addiction Severity Index (ASI) was administered at intake to assess clients' problem severity in a number of domains (alcohol use, drug use, employment, family and social relationships, legal, medical, and psychological), and treatment retention and arrest data were obtained from administrative records. A subsample was followed up at three months to assess service utilization (N=2,145) and again at nine months to readminister the ASI (N=2,566).

Results—All three groups had similar severity levels of drug and legal problems upon treatment entry. Upon entry to treatment, white clients had the highest severity levels of alcohol, family, and psychiatric problems and African Americans had the highest severity levels of employment problems compared with the other two groups. Treatment retention did not differ between the three groups, but whites received a greater number of alcohol treatment services than did African Americans or Hispanics, and African Americans received a greater number of employment services than did Hispanic and white clients. All three groups showed significant improvement in all outcome domains except for medical outcomes. At the nine-month follow-up, whites had worse outcomes in the alcohol domain compared with the other two groups, and whites had worse outcomes in the legal domain compared with Hispanics. Compared with whites, African Americans were significantly less likely to be charged with driving under the influence in the year after treatment admission.

Conclusions—All three groups improved after treatment, although benefits from treatment can be further enhanced if services underscore different facets of the psychosocial problems of each racial and ethnic group.

Racial and ethnic disparities in the availability and quality of substance abuse treatment are of interest to both policy makers and treatment service providers. A number of studies have indicated greater unmet needs for health services and poorer health outcomes for persons from racial or ethnic minority groups across a range of disease areas, including cardiovascular disease, mental disorders, diabetes, and other chronic and infectious diseases (1). However, there has been little research on the service needs, utilization, and outcomes of African Americans and Hispanics in substance abuse treatment.

Few studies have examined the service needs of persons from racial or ethnic minority groups in substance abuse treatment. Some studies have indicated that among persons in drug treatment, Hispanics have more severe substance use (2) and employment problems (2,3) than do African Americans or whites. Legal difficulties upon treatment admission have received more attention in the literature. Although some studies have found no ethnic differences in the severity of legal problems between Hispanic and white clients upon treatment admission (3, 4), others have reported that Hispanics enter treatment with a greater number of prior arrests and more prior jail time than whites (5). Similarly, another study found that Hispanics and African Americans were more likely than whites to have criminal justice involvement and to have been referred by the legal system (6). Additional research is needed to improve our understanding of individuals' clinical and psychosocial functioning upon entry into treatment so that care can be improved.

Previous studies indicate that compared with non-Hispanic whites, African Americans and Hispanics report less access to mental health and substance abuse treatment services and less utilization of and satisfaction with such services (7-11). Among methamphetamine abusers in community treatment, compared with Hispanics, whites received a greater number of services overall and, in particular, a greater number of services addressing their alcohol and psychiatric problems (3). Another study also reported Hispanics' infrequent use of psychiatric services, as well as African Americans' reduced likelihood to utilize legal services despite greater need in this area (12).

The findings regarding substance abuse treatment retention are less consistent. Both African Americans and Hispanics have been found to have shorter treatment retention and less likelihood of completing treatment compared with whites (13,14), and African Americans were more likely than whites to be unfavorably discharged from an outpatient program (that is, they quit or were expelled from treatment) (15). Other studies, however, report no ethnic differences in regard to treatment retention (3,16,17).

Compared with white clients, narcotic-dependent Hispanics have consistently shown poor outcomes, including a more severe course of drug addiction, less likelihood of abstinence, and greater likelihood of daily drug use and incarceration (18-21). Few studies have examined racial and ethnic differences in outcomes of individuals who abuse drugs other than narcotics, and most have found no significant racial or ethnic differences in alcohol, drug, legal, or psychiatric outcomes (3,4,12,22). The exceptions have been findings that compared with whites, Hispanics were more likely to have better family and social outcomes (3) and to have a shorter time to relapse following treatment for methamphetamine abuse (23). Also, in a study of drug offenders, African Americans had poorer employment outcomes compared with Hispanics and whites (12). There is a notable lack of research examining African American and Hispanic substance abuse outcomes.

The study presented here is based on a large treatment outcome study completed in California. Previous cost-benefit analysis based on these data has shown overall cost-effectiveness of treatment. Specifically, every dollar invested in treatment was associated with \$7 returned to society (24). Prior publications have also examined ethnic and gender differences among methamphetamine users (3,25) and treatment utilization and outcomes among Native Americans and Asian Americans (26,27).

The goal of this study was to examine racial and ethnic differences in service needs, treatment utilization, and outcomes among African-American, Hispanic, and white clients. In this article, we use the term Hispanic to include Mexican Americans, Puerto Ricans, Cubans, and South and Central Americans, and we use the terms whites and African Americans to refer to non-Hispanic whites and African Americans. We hypothesized that compared with whites, African

Americans and Hispanics would receive fewer services and have poorer treatment outcomes. Our study objective was to contribute empirical data on how race-ethnicity is related to alcohol, drug, and psychosocial outcomes and, in turn, to help in determining whether treatments need to be adapted to improve outcomes among different racial and ethnic groups.

Methods

Study design

CalTOP (California Treatment Outcome Project) is a multisite, multicounty, prospective treatment outcome study that is part of the national Treatment Outcomes and Performance Pilot Studies Enhancement (28). 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 covered wide geographic locations (for example, the northern, central, and southern regions of California), included both urban and rural areas, and consisted of the following treatment modalities: 25 outpatient drug-free (nonmethadone), 11 residential, four methadone maintenance, and three multiple modality. All study procedures were approved by the institutional review board at the University of California, Los Angeles (UCLA), and at the California Health and Human Services Agency, and informed consent was obtained at intake.

All participants were assessed at intake, and a subsample was assessed at three months and nine months after treatment admission. Individuals who entered CalTOP treatment between April 1, 2000, and May 31, 2001, were targeted for follow-up. 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 three-month interview and \$15 for the nine-month interview. Administrative records were obtained for the entire sample covering the 12 months after treatment admission.

Participants

The study included 2,401 African-American, 3,222 Hispanic, and 7,980 white participants who entered treatment in a participating CalTOP treatment program. Demographic characteristics of the sample are presented in Table 1. Among those targeted for the three-month follow-up, the follow-up rate was 83% (N=441 of 531) for African Americans, 79% (N=487 of 616) for Hispanics, and 82% (N=1,217 of 1,484) for whites. Among those targeted for the nine-month follow-up, the follow-up rate was 84% (N=515 of 613) for African Americans, 78% (N=571 of 732) for Hispanics, and 84% (N=1,480 of 1,762) for whites. Attrition analyses of those who did and did not complete the follow-up interviews revealed no significant differences in primary drug or employment status. However, men were less likely than women to complete both the three- and nine-month interviews, and those who had legal problems at baseline were less likely to complete the nine-month interview. There were no racial or ethnic differences in attrition at three months, but Hispanics were less likely than African Americans and whites to complete the nine-month interview.

Measures

Addiction Severity Index (ASI)—The ASI (29), which was administered at both intake and the nine-month follow-up, 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. Possible scores range from 0 to 1, with higher scores indicating greater problem severity (30). The validity of the ASI has been demonstrated in racially and ethnically diverse populations, and it is the most commonly used instrument in the substance abuse field (29,31).

Treatment services review (TSR)—The TSR (32) was administered at the three-month follow-up and assessed services received during treatment. The TSR documents the number of services received in the past three months in each of the seven domains of the ASI. Both services within and outside of the treatment program were included in this assessment.

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 nine-month follow-up interview.

Arrests and driving under the influence (DUI) charges—Official records on arrests and charges of driving while under the influence of alcohol or drugs were obtained from the California Department of Justice and the California Department of Motor Vehicles.

Analytic approach

Group differences in pretreatment characteristics, treatment utilization, and treatment retention were examined with chi square tests for categorical variables and analysis of variance for continuous variables. Pairwise post hoc comparisons were conducted if the main group effect was significant. To further examine treatment retention, analysis of covariance (ANCOVA) was used to control for demographic variables, treatment modality, and baseline problem severity. In regard to outcome data, paired t tests were first used to examine changes in ASI composite scores from admission to follow-up. ANCOVA was used to examine differences between groups on ASI composite scores while controlling for covariates (demographic characteristics, treatment modality, baseline problem severity, and treatment retention). Finally, we used logistic regression analyses to examine the occurrence of arrest and DUI charges after treatment admission. To control for type I error, the significance level was set at $p < .01$.

Results

Demographic and pretreatment characteristics

Demographic variables and pretreatment characteristics were compared across the three ethnic groups by utilizing ANOVAs and chi square analyses (Table 1). There were significant age differences between the three groups, with Hispanics being the youngest, followed by whites and then African Americans. Hispanics were more likely than the other two groups to be male and to have less education. There were significant employment differences between the groups, with Hispanics most likely to be employed full-time, followed by whites and then African Americans. Hispanics were the most likely to be married, whereas a greater proportion of whites were previously married and a greater proportion of African Americans had never married.

Differences in treatment setting were found between the three groups, with African Americans and whites more likely than Hispanics to be in residential treatment. There were significant differences in the primary drug used, with a greater proportion of African Americans using crack or cocaine, a greater proportion of Hispanics using opiates and methamphetamine, and a greater proportion of whites using alcohol and methamphetamine. Whites began using their primary drug at a younger age than the other groups, followed by Hispanics and then African Americans. In regard to alcohol treatment, white clients rated the importance of receiving alcohol treatment higher than the other two groups. They had also received treatment for alcohol a greater number of times, followed by African Americans and then Hispanics. In regard to drug treatment, the three groups did not differ in how important drug treatment was

to them or the number of times they had previously experienced drug detoxification. However, African Americans had received a greater number of prior drug treatments.

In terms of legal status, African Americans and Hispanics were more likely than whites to be on parole, but a greater proportion of whites had charges pending. The three groups did not differ in regard to the number of lifetime convictions that they had, but there were differences in the number of months that they had been incarcerated, with African Americans having been incarcerated for the longest period of time, followed by Hispanics and then whites.

All three groups had similar severity of drug and legal problems upon treatment entry. Whites entered treatment with greater severity of alcohol and family problems, compared with the other two groups. In regard to employment, African Americans had the greatest problem severity, followed by Hispanics and then whites. Patterns of severity were similar for medical and psychiatric problems, with whites reporting the greatest problem severity, followed by African Americans and then Hispanics.

Treatment retention and service utilization

Data on treatment retention were available for the whole sample as they were based on administrative records. Hispanics remained in treatment for a significantly greater number of days (mean $\pm$ SD=125.7 $\pm$ 102.6 days) than did African Americans (mean=108.0 $\pm$ 94.7 days) or whites (mean=107.0 $\pm$ 100.7 days) ($F=7.42$, $df=2$ and $2,525$, $p<.001$). Because the three groups differed on several demographic variables and baseline problem severity, ANCOVA was used to determine whether there were differences in treatment retention after controlling for age, gender, employment and marital status, treatment modality, and baseline severity of alcohol and drug problems. With these covariates in the model, there were no racial or ethnic differences in treatment retention.

Table 2 shows the total number of services received in different domains of treatment by racial and ethnic group. ANCOVA was used to determine whether there were differences in service utilization after controlling for age, gender, employment and marital status, treatment modality, and baseline problem severity in the respective domain. Compared with the other two groups, whites tended to receive a significantly greater number of alcohol treatment services and African Americans tended to receive a significantly greater number of employment services. The three groups did not differ in regard to service use for drug, family, legal, medical, or psychiatric problems.

Treatment outcomes

Paired t tests were used to assess changes in ASI composite scores from admission to follow-up at nine months (Table 3). All three groups showed significant reductions in severity of alcohol, drug, employment, family, legal, and psychiatric problems. Whites were the only group to significantly improve in the medical problem domain. Racial and ethnic differences in treatment outcomes were analyzed by using ANCOVA while controlling for age, gender, employment and marital status, treatment modality, treatment retention, and baseline ASI score. Significant differences were found in scores in the alcohol domain, with whites having poorer alcohol outcomes than African Americans and Hispanics ($F=5.3$, $df=2$ and $2,498$, $p<.01$). Whites also had less favorable legal outcomes compared with Hispanics ($F=4.67$, $df=2$ and $2,493$, $p<.01$). There was also a trend for whites to have worse outcomes in the psychiatric domain ($F=4.02$, $df=2$ and $2,464$, $p=.02$) and better outcomes in the employment domain ($F=3.78$, $df=2$ and $2,485$, $p=.02$) compared with the other two groups. There were no group differences in drug, family, or medical outcomes.

Arrest rates for the year after treatment admission were 23.1% (N=119) for African Americans, 23.5% (N=134) for Hispanics, and 19.1% (N=283) for whites. Logistic regression controlling for age, gender, employment and marital status, and treatment modality indicated a trend for African Americans to have a greater likelihood of being arrested, compared with whites (odds ratio [OR]=1.3, 95% confidence interval [CI]=1.1–1.7, $p=.02$). DUI rates for the year after treatment admission were .9% for African Americans, 1.7% for Hispanics, and 2.5% for whites. Logistic regression controlling for the same variables as the prior analysis indicated that African Americans were significantly less likely than whites to be charged with a DUI (OR=.36, CI=.22–.58, $p<.001$) and that Hispanics were less likely than whites to get a DUI, although the latter finding was not significant (OR=.69, CI=.49–.96, $p=.03$).

Discussion

This study examined the pretreatment client characteristics, service utilization, and treatment retention and outcomes of African-American, Hispanic, and white clients in community substance abuse programs in California. Compared with whites, persons from racial and ethnic minority groups entered substance abuse treatment with significantly less problem severity in a number of domains, including alcohol, family, medical, and psychiatric. They were also less likely to have legal charges pending. Employment was the one area in which African Americans and Hispanics had greater problem severity than whites, perhaps reflecting broader community employment difficulties in these groups. Despite similarity in severity of alcohol and drug problems among African Americans and Hispanics in this sample, Hispanics were the least likely to receive residential treatment services. This is similar to prior observations of drug offenders in community-based treatment and individuals in treatment for alcohol and methamphetamine (3,12,33). This disparity in placement in outpatient versus residential treatment, which may be a result of cultural values, should be further investigated in future studies.

Although treatment retention did not differ between the three groups, significant differences were found in the degree to which some services were accessed. The only area of discrepancy between problem severity and service utilization for Hispanics was in the domain of employment. Although Hispanics had greater employment problems than whites at treatment admission, they did not differ from whites in the number of employment-related services that they received and had poorer employment outcomes than whites. It is unclear what factors may have contributed to Hispanics' lower use of employment services and poorer outcomes. Possible hypotheses include client factors (for example, lower education and job skills, language barriers, perceived stigma, and legal concerns of undocumented immigrants), treatment factors (for example, shortage of Spanish-speaking employment specialists), or exterior barriers such as inaccessibility (for example, cost and transportation).

Other differences in service utilization were also found. White clients received more alcohol treatment services than did African Americans or Hispanics, and African Americans received a greater number of employment services than did white or Hispanic clients. Both of these findings appear to be a reflection of service needs, as whites had the greatest alcohol problem severity and African Americans had the greatest employment problem severity at treatment admission.

Contrary to our hypotheses, whites had poorer alcohol outcomes than African Americans and Hispanics, poorer legal outcomes than Hispanics, and a greater likelihood of getting a DUI than African Americans. There was also a trend for whites to have poorer psychiatric outcomes and better employment outcomes than the other two groups. However, they attained outcomes comparable to those of African Americans and Hispanics in terms of ASI composite scores on drug, family, and medical outcomes. Because the effectiveness of treatment did not differ

across race or ethnicity in these domains, it is possible that all three groups are responding to treatment in similar ways. Alternatively, the mechanisms by which patients reach a common endpoint may differ by race or ethnicity. Testing of mediational models would be valuable in identifying group differences in the pathway to recovery. Overall, the findings indicate that upon entering substance abuse treatment, African Americans and Hispanics seem to fare just as well, if not better, than whites on subsequent treatment outcomes in publicly funded, community-based programs.

Strengths of this study include the large, racially and ethnically diverse sample and the use of community-based treatment seekers. The inclusion of numerous treatment programs across California also increases the generalizability of our findings. Although the counties and treatment programs that participated in CalTOP were not randomly selected, the characteristics of the sample resemble those of the statewide treatment population in terms of gender, race and ethnicity, age, employment status, primary drug type, and legal status (28). It is important to note, however, that Hispanic participants were less likely than African-American and white participants to complete the nine-month follow-up assessment of treatment outcomes, and therefore the results for this group may be biased in some way. Attrition analyses also indicated that women were more likely than men to complete the three- and nine-month follow-up interviews, possibly limiting the generalizability of our findings on treatment utilization and outcomes to women.

Another limitation of the study is that the sample was based on persons 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. Given potential disparities in access to care, it is possible that community treatment programs may serve as the only treatment option for some persons from racial or ethnic minority groups and a last resort for whites. There is some evidence for this in that whites in this study entered treatment with the greatest problem severity in four of the seven domains examined.

Categories, such as Hispanic, comprise a heterogeneous group of people with potentially different outcomes. By combining these groups, it is possible that we masked the severity of problems experienced by some of these subgroups. The identification of socio-cultural constructs that are more clinically meaningful is important. For example, studies have shown the effect of acculturation and immigration status on the prevalence of substance use disorders among Hispanics. However, their impact on service utilization and outcomes has not been examined.

Conclusions

Despite the study limitations, we believe that this study contributes important information regarding racial and ethnic differences among substance abusers treated in community-based programs. The data suggest that all three groups improved after treatment, and contrary to our hypothesis, persons from racial and ethnic minority groups did not experience poorer treatment outcomes, compared with whites. However, benefits from treatment can be further enhanced if services underscore different facets of clinical and psychosocial problems of individual racial and ethnic groups. Specifically, African Americans and Hispanics may benefit from increased employment services, and whites may benefit from increased alcohol, legal, and psychiatric services.

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Table 1
 Characteristics of sample at treatment admission into substance abuse treatment, by race and ethnicity

Variable	African American (N=2,401)		Hispanic (N=3,222)		White (N=7,980)		Test statistic	df
	N	%	N	%	N	%		
Age (mean±SD)	39.1±9.6 ^a		33.9±9.6 ^b		36.3±9.9 ^c		F=190.3 *	2, 13,602
Male	1,335	55.6 ^a	2,030	63.0 ^b	4,431	55.5 ^a	$\chi^2=55.9 *$	1
Education (mean±SD years)	12.0±1.8 ^a		11.0±2.2 ^b		12.1±2.0 ^a		F=331.8 *	2, 13,600
Employment							$\chi^2=154.2 *$	3
Full-time	393	16.4 ^a	858	26.6 ^b	1,746	21.9 ^c		
Part-time	245	10.2	381	11.8	924	11.6		
Unemployed	508	21.2	791	24.5	1,933	24.2		
Not in the labor force	1,255	52.3	1,192	37.0	3,377	42.3		
Marital status							$\chi^2=132.7 *$	2
Married	432	18.0 ^a	757	23.5 ^b	1,449	18.2 ^c		
Previously married	781	32.5	916	28.4	3,079	38.6		
Never married	1,186	49.4	1,542	47.9	3,429	43.0		
Treatment setting							$\chi^2=277.4 *$	2
Methadone maintenance	142	5.9 ^a	268	8.3 ^b	413	5.2 ^c		
Outpatient	1,447	60.3	2,263	70.2	4,582	57.4		
Residential	812	33.8	691	21.4	2,985	37.4		
Primary drug							$\chi^2=3,374.3 *$	5
Alcohol	497	20.7 ^a	775	24.1 ^b	2,458	30.8 ^c		
Cocaine or crack	1,031	42.9	193	6.0	322	4.0		
Marijuana	318	13.2	396	12.3	854	10.7		
Heroin or other opiates	352	14.7	601	18.7	1,084	13.6		
Methamphetamine	165	6.9	1,145	35.5	3,159	39.6		
Other	38	1.6	112	3.5	103	1.3		
Age at first use of primary drug (mean±SD)	21.2±8.1 ^a		18.8±6.8 ^b		18.4±7.2 ^c		F=141.1 *	2, 13,579

Variable	African American (N=2,401)		Hispanic (N=3,222)		White (N=7,980)		Test statistic	df
	N	%	N	%	N	%		
Importance of alcohol treatment (mean±SD score) ^d	1.1±1.6 ^a		1.0±1.6 ^a		1.3±1.7 ^b		F=41.1 [*]	2, 13,560
Number of prior alcohol detoxification programs (mean±SD)	.3±1.6 ^a		.2±.9 ^b		.4±1.9 ^c		F=26.2 [*]	2, 13,204
Number of prior alcohol treatments (mean ±SD)	.9±2.6 ^a		.6±2.1 ^b		1.2±4.3 ^c		F=34.1 [*]	2, 13,592
Importance of drug treatment (mean±SD score) ^d	2.2±1.8		2.0±1.8		2.0±1.8		F=7.3	2, 13,570
Number of prior drug detoxification programs (mean±SD)	.7±2.0		.7±2.2		.7±2.5		F=.4	2, 13,223
Number of prior drug treatments (mean±SD)	2.0±3.4 ^a		1.6±3.4 ^b		1.7±4.2 ^b		F=9.2 [*]	2, 13,593
On parole	1,469	61.2 ^a	1,977	61.4 ^a	4,388	55.0 ^b	$\chi^2=51.8^*$	1
Charges pending	211	8.8 ^a	369	11.5 ^b	1,117	14.0 ^c	$\chi^2=50.3^*$	1
Number of lifetime convictions	3.6±5.7		3.8±7.6		3.4±6.2		F=4.7	2, 13,570
Months incarcerated over the lifetime (mean ±SD)	23.2±32.2 ^a		18.4±29.9 ^b		14.0±25.7 ^c		F=109.6 [*]	2, 13,583
ASI composite score (mean±SD) ^e								
Alcohol	.17±.24 ^a		.15±.23 ^a		.20±.27 ^b		F=45.6 [*]	2, 13,511
Drug	.13±.12		.12±.12		.12±.12		F=3.1	2, 13,480
Employment	.77±.28 ^a		.69±.31 ^b		.65±.31 ^c		F=144.9 [*]	2, 13,574
Family	.16±.21 ^a		.16±.21 ^a		.18±.22 ^b		F=17.2 [*]	2, 13,354
Legal	.15±.19		.16±.19		.16±.20		F=.3	2, 13,537
Medical	.19±.32 ^a		.14±.27 ^b		.20±.31 ^a		F=43.9 [*]	2, 13,538
Psychiatric	.18±.23 ^a		.16±.22 ^b		.23±.24 ^c		F=114.7 [*]	2, 13,487

^{a-c} Pairwise post hoc comparisons were performed. Different letters indicate significant difference between groups.

^d As measured by the importance of treatment items on the Addiction Severity Index. Possible scores range from 0 to 4, with higher scores indicating greater importance.

^e As measured by the composite scores on the Addiction Severity Index. Possible scores range from 0 to 1, with higher scores indicating greater problem severity.

* p<.001

Table 2

Number of services received three months after entering a substance abuse treatment program in California, by race and ethnicity^a

Type of service	Total (N=2,145)		African American (N=441)		Hispanic (N=487)		White (N=1,217)		F	df
	M	SD	M	SD	M	SD	M	SD		
Alcohol	50.9	76.2	45.2 ^b	71.9	38.7 ^b	64.0	57.9 ^c	81.3	7.1 *	2, 2,139
Drug	64.0	71.1	69.9	63.1	54.9	60.3	65.5	77.2	2.2	2, 2,139
Employment	11.1	16.8	14.6 ^b	27.3	8.9 ^c	9.3	10.6 ^c	13.7	6.7 *	2, 2,143
Family	6.0	16.0	6.7	18.1	5.9	14.3	5.8	15.8	.6	2, 2,141
Legal	2.2	7.2	2.5	7.3	1.9	5.7	2.3	7.7	.9	2, 2,142
Medical	3.8	12.3	4.2	11.6	2.9	9.3	4.1	13.5	.7	2, 2,144
Psychiatric	21.8	32.7	23.3	32.8	17.0	26.4	23.1	34.9	.9	2, 2,141

^a Only patients who had data at admission and at the three-month follow-up were included in these analyses. Analysis of covariance was used to determine whether there were differences in treatment utilization after controlling for age, gender, employment and marital status, treatment modality, and respective baseline Addiction Severity Index score.

^b, ^c Pairwise post hoc comparisons were performed. Different letters indicate significant difference between groups.

* p<.001

Table 3

Addiction Severity Index (ASI) composite scores at admission and nine-month follow-up, by race and ethnicity^a

Domain	African American (N=515)						Hispanic (N=571)						White (N=1,480)					
	Baseline			Follow-up			Baseline			Follow-up			Baseline			Follow-up		
	M	SD		M	SD	Change in score	M	SD		M	SD	Change in score	M	SD		M	SD	Change in score
Alcohol	.15	.24		.03	.09	.12*	.15	.22		.04	.10	.11*	.20	.27		.05	.14	.15*
Drug	.12	.12		.03	.07	.09*	.11	.12		.02	.06	.09*	.12	.13		.03	.07	.09*
Employment	.76	.28		.62	.32	.14*	.70	.31		.58	.34	.12*	.66	.30		.53	.33	.13*
Family	.18	.21		.09	.15	.09*	.19	.22		.07	.14	.12*	.20	.23		.08	.15	.12*
Legal	.15	.19		.04	.11	.11*	.15	.18		.03	.08	.12*	.17	.20		.04	.11	.13*
Medical	.18	.31		.14	.29	.04	.15	.28		.12	.26	.03	.20	.31		.15	.30	.05*
Psychiatric	.18	.23		.12	.20	.06*	.17	.22		.11	.19	.06*	.26	.25		.16	.22	.10*

^aPossible scores range from 0 to 1, with higher scores indicating greater problem severity. Only patients who had data at admission and at the nine-month follow-up were included in these analyses. Analysis of covariance was used to determine whether there were differences in treatment outcomes after controlling for age, gender, employment and marital status, treatment modality, treatment retention, and respective baseline ASI score.

* Paired t test on mean change was significantly different from zero ($p < .001$).