

Original article

Adolescents entering chemical dependency treatment in private managed care: ethnic differences in treatment initiation and retention

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Abstract

Purpose: There has been little research on adolescents of different ethnicities in chemical dependency (CD) treatment, despite a focus on ethnic disparities in health care in recent years. In particular, little is known about ethnic differences in utilization of adolescent CD services.

Methods: We examined treatment initiation and treatment retention in a sample of African American, Native American, Latino, Asian American, and Caucasian adolescents entering CD treatment in a private, managed care health plan ($n = 419$). Our conceptual framework included ethnicity as the main factor as well as measures of external pressure and internal motivation/readiness for treatment, family environment, psychiatric co-morbidities, and severity of alcohol and drug problems. Logistic and Poisson regression were used to examine differences.

Results: The study found ethnic differences in treatment initiation and treatment retention. Native American adolescents had lower odds of returning after intake to initiate treatment compared with Caucasians (odds ratio [OR] .35, $p = .009$), and African American youth spent less time in treatment than Caucasians (RR: .49, $p < .001$).

Conclusions: Study findings indicate differences in treatment initiation for Native Americans and in treatment retention for African Americans. Intake and orientation sessions offer an opportunity to intervene with Native American youth. Given their high psychiatric co-morbidity, they may also benefit from the availability of psychiatric services. Even after adjusting for severity, we found shorter treatment retention for African American adolescents and suggest that organizational factors, such as cultural competency, may play an important role. © 2006 Society for Adolescent Medicine. All rights reserved.

Keywords:

Chemical dependency; Adolescents; Ethnicity; Initiation; Retention; Treatment

Ethnic disparities in alcohol and drug problems have recently received increased attention as part of a larger focus on health disparities for ethnic minorities [1–3]. However, most research has focused on disparities in adults in chemical dependency (CD) treatment [2,3], whereas adolescent treatment disparities have been understudied. Existing adolescent studies primarily examine prevalence in non-

clinical samples drawn from community, juvenile justice, and school populations [4–6]. In such samples, African American youth report lower alcohol and drug use rates than Caucasians and Latinos, but disproportionately experience the negative consequences of use [4,6–8], which has implications for treatment. Disparities in utilization of CD services are a concern. Adolescents are reluctant to enter and remain in CD treatment, although research shows that treatment is effective and that longer treatment retention predicts better outcomes [9–11]. Understanding ethnic differences in treatment initiation and treatment retention for adolescents is critical.

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The current study addresses a gap in the literature by examining whether treatment initiation and treatment retention differ for African American, Native American, Latino, Asian American, and Caucasian adolescents entering CD treatment in a private managed care health plan. We examine both treatment initiation and retention to better identify the stage of treatment when ethnic differences emerge, as well as opportunities to address them. Ethnic disparities in treatment initiation suggest that programs are failing to engage some patients early. By examining retention (for those who initiated treatment), we can explore the factors that influence continuing care.

Theoretical framework

This study draws on the Treatment Process model developed by Simpson to study treatment retention (and other process components) in adults [12]. Because adolescents entering CD treatment differ from adults in substance use histories and social influences and typically have a shorter treatment experience [13], researchers have adapted the model to adolescents [12,13].

The Treatment Process framework classifies treatment into stages: induction, early engagement, and retention. We examine these two latter stages, as higher levels of early engagement and participation predict longer retention [12,14]. Several domains affect program participation and retention: patient attributes (e.g., internal and external motivation/pressure, severity of use, psychiatric disorders), program characteristics, cognitive strategies, family and friends, behavioral strategies, and social skills training [12,15,16]. Based on this model, our study examines how the domains of patient attributes and family factors relate to treatment initiation and treatment retention. We are primarily interested in the patient attribute of ethnicity, but to control for competing explanations of treatment initiation and retention we include a subset of other factors from the model: external pressure and internal motivation/readiness for treatment, family environment, psychiatric co-morbidities, and severity of alcohol and drug problems.

External pressure to enter treatment typically comes from parents or the legal system [17]. Those under greater pressure, such as from the legal system, may be more likely to stay in treatment [18]. African American adolescents are more often referred from the legal system and Native Americans from psychiatric providers [17]. Adolescents often believe they do not have an alcohol or drug problem, resulting in low internal motivation or readiness [19,20]. Low internal treatment motivation and readiness, in turn, is associated with shorter treatment retention [19]. Family environment is critical; greater family involvement is associated with higher engagement and treatment retention [21,22]. Co-existing psychiatric problems, common in adolescents with substance use disorders, can impede treatment response; adolescents with greater psychiatric severity are

more difficult to engage, spend less time in treatment [23,24], and experience poorer outcomes [23,25,26]. Greater alcohol and drug use severity is also associated with shorter retention [23]. African American and Asian American adolescents report lower problem severity than other ethnic groups [4,7,8], and Native American teens report greater alcohol and drug use severity and more psychiatric comorbidities [4,7,8].

Our study contributes to the literature in several ways. Few studies have examined adolescents in treatment, and even fewer have had a sufficiently large sample of ethnic minorities to examine ethnic differences. Moreover, Native Americans are often not studied. Most research has been conducted in public programs, although much of the CD treatment system is private [27]. We were able to study Native Americans and other ethnic groups in a commercially insured treatment sample in a managed care environment. This is a major form of adolescent CD treatment delivery but one that is understudied [28]. We examined the role of ethnicity in treatment initiation and treatment retention in a setting where insurance status is not a barrier to treatment, and with a sample with relatively small income disparity, thus controlling for income as it may contribute to initiation and retention. Finally, the use of health plan databases to assess utilization avoided potential self-report bias.

Methods

Sample and data sources

We studied 419 adolescents aged 13–18 years entering treatment at four CD treatment programs at Kaiser Permanente (KP) Northern California, a large, nonprofit integrated health care delivery system. It covers approximately 3.2 million members: 88% commercially insured, 10% insured through Medicare, and 2% through Medicaid. Of the membership, 78% has at least some college education [29], and approximately two-thirds of the families report annual household incomes between \$30,000 and \$75,000.

The four sites were selected for geographic and population diversity. The treatment programs were similar across sites in terms of staffing, treatment content and philosophy, but we sampled more than one site to obtain an ethnically diverse sample. Among sites, Latinos ranged from 12% to 28% of the sample, African Americans from 5% to 49%, Native Americans from 6% to 12%, and Asian Americans from 2% to 10%. The sample was 34% female, and had an average age of 16.

We approached patients aged 18 and under at intake to CD treatment. We recruited 64% of those who had an intake, regardless of whether they continued in the program, and 83% of those who had an intake and orientation session. On average, the four clinics had a 16.5% missed intake appointment rate. Patients were accompanied by a parent

and, after assessment by a clinician, a research assistant explained the study and obtained consent to participate from both adolescent and parent. Study participation was independent of receiving program services; staff did not know who was participating [17]. Recruitment occurred between May 2000 and June 2002. The study was approved by the institutional review boards of Kaiser Foundation Research Institute and the University of California, San Francisco [17].

Intake charts indicated no gender or age differences between those recruited and those not recruited. The same percentage of each group had a parent with an alcohol or drug problem (44%), and was enrolled in school (83%) [17]. The study sample had more Latinos (25% vs. 14%) and fewer Caucasians (49% vs. 65%) (both $p < .05$) than the nonrecruited group. Compared with those not recruited, more of the sample had diagnoses of Depression (24% vs. 13%), Anxiety (7% vs. 2%), Conduct Disorder w/oppositional defiant disorder (ODD) (16% vs. 3%) and attention-deficit hyperactivity disorder (ADHD) (10% vs. 3%) [17], and had used inhalants (13% vs. 7%), club drugs (e.g., MDMA/Ecstasy, Rohypnol, GHB, and ketamine) (21% vs. 6%), tobacco (75% vs. 57%), Ritalin (12% vs. .09%), and painkillers (25% vs. 8%) (all $p < .05$). Fewer of those recruited had used barbiturates (2% vs. 6%) than those not recruited [17].

At the baseline interview, adolescents completed a computerized, self-administered questionnaire and a paper-and-pencil questionnaire. To assess utilization, data were obtained from the KP administrative databases, which register all treatment visits.

Treatment programs

Each Kaiser treatment site offers a one-year adolescent CD treatment program for adolescent members that is provided internally rather than contracted out. The four programs offer similar treatment modalities (intensive, structured outpatient treatment) [30], which are the regional standard of care. Services include supportive group therapy, education, relapse prevention and family therapy. Individual counseling and medication is available as needed. All programs require the participation of a parent or guardian. Programs are abstinence-based, with breathalyzer and urine screening conducted randomly. No primary care referral is necessary to enter treatment. Regular attendance at NA/AA or other self-help groups is required [17].

Intended program length is approximately one year, although actual length varies based on individual needs and problem severity. It includes three treatment phases. Phase 1 begins with intake/assessment and orientation, followed by group treatment sessions, which meet three times per week for eight weeks. Phase 2 focuses on continuing recovery and relapse prevention, with two group sessions per week for eight weeks. The final phase is aftercare, which may last months and entails one group session per week

[17]. Parents are typically required to attend twice a week in the early phase of treatment and once per week during the later phases.

Measures—dependent variables

Treatment initiation. Patients begin with an intake appointment and then return to start the program. We define treatment initiation as two visits within two months after the intake visit. Because no standard definition exists in the literature, we used the program clinicians' and the regional Adolescent Chemical Dependency Coordinating Committee's (which coordinates the adolescent CD programs) definition of treatment initiation [17]. The measure was created by extracting CD service utilization data from the KP outpatient appointment registration system [31]. This is a dichotomous measure (1 = yes, had two visits within two months after the intake visit; 0 = no, did not have two visits within two months after the intake visit).

Treatment retention. Treatment retention was a count variable, measuring the number of days of participation in the program in the 12 months after intake without a six-week "clear period" of not attending the program. This measure was divided by seven to reflect retention in weeks [32], and essentially measures length of stay. The clear period was selected in consultation with regional clinicians (as described above) about appropriate criteria to determine program drop out. This measure used CD utilization data from the KP outpatient appointment registration system [31].

Predictors

Ethnicity. Five ethnic groups were represented: African American, Native American, Latino, Asian American and Caucasian (the referent group). Adolescents selected the ethnic group they felt best described them, and could choose more than one. In order to have mutually exclusive categories, we first selected African American responses, followed by Native American, Latino, Asian American, and Caucasian responses.

Psychiatric severity. Mental health status was assessed using the two scales from the Youth Self-Report (YSR), a structured self-report questionnaire that measures several domains of mental health problems, and has demonstrated solid psychometric properties across a variety of adolescent and child populations [17,26,33–35]. We used the Internalizing Scale, which includes the Withdrawn, Somatic Complaints, and Anxious/Depressed subscales. The Externalizing scale includes the Delinquent Behavior and Aggressive Behavior subscales. Our instrument excluded from the Anxious/Depressed scale two questions about suicidality, thus the mean score on the Internalizing scale is conservative [17,30]. Higher scores indicate greater severity.

Substance use problem severity. The baseline questionnaire included questions drawn from the Comprehensive Adoles-

cent Severity Inventory (CASI). The CASI is widely used with adolescent populations and measures alcohol and drug use, and other domains such as overall health, education, legal issues, and family relations [36,37]. We used the responses to alcohol and drug dependence and abuse symptom questions, including symptoms of withdrawal, consequences of use, loss of control, and physical dependence in the past six months. The measure was created by summing the number of ‘yes’ answers to these items. It ranged from 0 to 14, with a higher number indicating greater severity.

External pressure/legal referral. We asked whether the adolescent had been referred to treatment by the legal system. This was a dichotomous variable (yes = 1; no = 0).

Circumstances, Motivation, Readiness (CMR) scale. This scale was drawn from the *Adolescent Circumstances, Motivation, Readiness, and Suitability Scales for Substance Abuse Treatment (A-CMR)* instrument [38], and is a sum of three scales, representing adolescents’ circumstances, motivation, and readiness for treatment. The three scales include items measuring: fear of jail, ability to live at home, receiving pressure to leave treatment, outside problems that hinder completing treatment, coming to treatment without pressure, needing/not needing treatment, staying in treatment under pressure to leave, feeling that use is a problem, ability to live with drugs, liking self, needing to make life changes, ability to stop use, willingness to try other treatment, being tired of substance use, and willingness to start treatment soon. Higher scores indicate more motivation/readiness.

Family environment. This domain has two variables: the Family Conflict Scale from the Family Environment Scale (FES) [39] and Limit Setting Scale from the CASI. The Family Conflict Scale includes questions about open conflict, arguing, criticism, physical violence, and positive conflict resolutions, with a higher score indicating more family conflict. The Limit Setting Scale included questions about: family responsibilities, parent/guardian being unavailable or not listening, lack of rules or supervision, parents “covering” for adolescents, feeling loved, feeling safe, family receiving financial assistance, services, or therapy. Less limit setting is indicated by a higher score.

Age. We used a continuous variable self-reported by the adolescent at treatment intake (range 13–18 years).

Program location. There may be some organizational differences across programs such as proximity of CD treatment to mental health and medical care, which may affect treatment initiation and retention [40]. As a proxy for this and other potential organizational measures, we include site as a control. The programs are designated as Sites 1, 2, 3 and 4, in the interest of confidentiality. Site 4 is the referent.

Data analysis

Descriptive statistics were run for the dependent variables and predictors on both the full sample and the sub-sample of patients who initiated treatment. Significance was tested with analyses of variance (ANOVAs) and chi-square tests as appropriate. A multivariable logistic regression was conducted using the full sample for the dichotomous treatment initiation measure. For those who initiated treatment, we used Poisson regression for the treatment retention measure because it was count data [41], and corrected for over-dispersion. This method was appropriate because the distribution for the retention measure was right-skewed, resembling a Poisson distribution. In Poisson models, the exponent of the coefficient represents a rate ratio (RR) and gives a measure of the utilization rate for one group relative to the reference group. For example, in the treatment retention model, a ratio greater than one for an ethnic group variable indicates more weeks in treatment compared with the reference group.

We also conducted these analyses with interaction terms for each model predictor by ethnicity to assess how predictors varied by ethnic group. In addition, to examine site differences, we conducted post hoc analyses that included interaction terms of ethnicity by program site. For the ethnicity by site interaction models, the product terms included two categorical variables with more than two categories, so we conducted omnibus tests of the interaction terms to assess whether model fit significantly improved with the inclusion of the interaction terms [42]. Results are not reported for interaction terms if the omnibus tests did not indicate a significant improvement in model fit.

Results

Descriptive results

Table 1 presents means, standard deviations, and percentages for treatment initiation, patient attributes, and family factors for the full sample. Although not statistically significant, the distribution of those who returned to initiate treatment after intake was 79% of African Americans, 70% of Latinos, 72% of Asian Americans, 75% of Caucasians, and 59% of Native Americans.

Although not statistically significant, Native Americans ranked higher on severity measures at baseline, reporting the highest scores on the Internalizing (17.3) and Externalizing scales (21.7), and reporting higher alcohol and drug use severity (5.5). African Americans reported the lowest substance problem severity (3.9), but had received the most legal referrals to treatment (43%). They also reported the highest CMR score (48.8). Native American adolescents reported the highest scores on the Family Conflict (5.3) and Limit Setting scales (.46). Native Americans had the highest percentage of girls (44%) and Asian Americans had the lowest percentage of girls (28%). These differences were not statistically significant.

Table 1

Treatment initiation measure, patient attributes and family factors for full sample of adolescents by ethnicity (n = 419)

	Total sample (n = 419)	African American (n = 66)	Native American (n = 39)	Latino (n = 82)	Asian American (n = 25)	Caucasian (n = 206)
Dependent variable						
Initiation—two visits within two months after intake	67%	79%	59%	70%	72%	75%
Predictor						
YSR Internalizing Scale (mean, SD)	14.8 (10.2)	13.7 (10.0)	17.3 (11.0)	14.7 (10.2)	13.7 (10.1)	15.0 (10.2)
YSR Externalizing Scale (mean, SD)	20.0 (9.2)	20.0 (9.6)	21.7 (8.7)	20.3 (10.0)	20.0 (8.4)	19.6 (8.9)
Substance use severity (mean, SD)	4.6 (3.3)	3.9 (2.7)	5.5 (3.5)	4.6 (3.5)	4.6 (2.9)	4.6 (3.4)
Legal referral	33%	43%	31%	30%	40%	30%
CMR scale (mean, SD)	47.1 (9.5)	48.8 (10.0)	47.5 (8.6)	46.1 (8.1)	46.4 (9.4)	46.9 (10.0)
Family conflict (mean, SD)	4.7 (2.2)	4.6 (2.0)	5.3 (2.4)	4.7 (2.4)	5.3 (2.7)	4.6 (2.3)
Limit setting (mean, SD)	.4 (.3)	.3 (.3)	.5 (.3)	.4 (.3)	.3 (.3)	.4 (.3)
Age at baseline (mean, SD)	16.1 (1.3)	16.2 (1.2)	16.3 (1.2)	16.1 (1.3)	16.2 (1.4)	16.2 (1.3)
Female	34%	30%	44%	39%	28%	33%

ANOVA and chi-square tests were conducted to test significance.

Table 2 presents means, standard deviations, and percentages by ethnic group for treatment retention, patient attributes and family factors, for those who returned after intake to initiate treatment. On average, African Americans spent the fewest weeks in treatment (8.4) ($p < .05$), followed by Native Americans (12.8), Latinos (13.7), Asian Americans (15.1), and Caucasians (16.3), although only the association for African Americans was significant, compared to Caucasians. Overall, the sub-sample resembled the full sample on patient attributes and family factors.

Regression results for treatment initiation

Compared with Caucasian youth, Native American adolescents had lower odds of initiating treatment (odds ratio [OR] .35; $p = .009$) (Table 3). Adolescents with higher internalizing scores (OR .97; $p = .061$) showed a trend for slightly lower odds of initiating treatment, whereas those with higher CMR

scale scores (OR 1.03; $p = .086$) had a trend of slightly higher odds of initiating treatment. Compared with Site 4, adolescents at Site 2 (OR 2.13, $p = .016$) and Site 3 (OR 2.56; $p = .002$) had higher odds of initiating treatment.

Post hoc tests of ethnicity by site interactions for initiation suggest that African Americans (OR 6.20; 95% confidence interval [CI] .72–53.23; $p = .045$) had higher odds of initiating treatment than Caucasians at Site 2. At Site 4, African Americans (OR .32, 95% CI .08–1.2; $p = .10$) had a trend of lower odds of initiating treatment, and Native Americans (OR .13; 95% CI .04–.47; $p = .001$) had lower odds of initiating treatment compared with Caucasians.

Regression results for treatment retention

African American adolescents spent fewer weeks in treatment than Caucasians (RR: .49; $p < .001$) (Table 4) after adjusting for other differences, but there were no

Table 2

Treatment retention measure, patient attributes and family factors by ethnicity for adolescents who returned after intake to initiate treatment (n = 303)

	Initiated Tx. sample (n = 304)	African American (n = 52)	Native American (n = 23)	Latino (n = 57)	Asian American (n = 18)	Caucasian (n = 154)	ANOVA F value
Dependent variable							
Retention—length of stay in weeks (mean, SD)	14.1 (12.2)	8.4 (6.4) $p < .0001^a$	12.8 (10.0)	13.7 (12.8)	15.1 (6.5)	16.3 (13.6)	4.38 $p = .002$
Predictor							
YSR Internalizing scale (mean, SD)	14.6 (9.8)	13.3 (9.6)	17.2 (11.8)	14.7 (11.1)	14.2 (8.6)	14.7 (9.6)	
YSR Externalizing scale (mean, SD)	20.3 (9.2)	20.86 (9.8)	22.7 (9.7)	20.1 (9.8)	20.9 (9.1)	19.7 (8.8)	
Substance use severity (mean, SD)	4.7 (3.2)	3.5 (2.6)	5.8 (3.5)	5.0 (3.6)	4.8 (2.9)	4.7 (3.2)	
Legal referral	35%	39%	30%	35%	50%	32%	
CMR scale (mean, SD)	47.7 (9.5)	48.1 (10.2)	48.9 (9.6)	47.2 (8.2)	46.1 (9.2)	47.7 (9.9)	
Family conflict (mean, SD)	4.7 (2.2)	4.7 (1.9)	5.4 (2.5)	4.8 (2.3)	5.4 (2.8)	4.6 (2.2)	
Limit setting (mean, SD)	.4 (.3)	.3 (.3)	.5 (.3)	.4 (.3)	.4 (.3)	.4 (.3)	
Age at baseline (mean, SD)	16.1 (1.3)	16.2 (1.3)	16.1 (1.2)	16.1 (1.3)	16.1 (1.2)	16.1 (1.3)	
Female	33%	33%	43%	33%	33%	31%	

ANOVA and chi-square tests were conducted to test significance.

^a Compared with Caucasians using Tukey multiple comparison test.

Table 3
Logistic regression of ethnicity and treatment initiation (n = 419)

Predictor	Odds ratio	95% CI	p Value
Female	.99	(.58, 1.68)	.009
African American	1.26	(.57, 2.79)	
Native American	.35	(.16, .76)	
Latino	.61	(.33, 1.11)	
Asian American	.59	(.22, 1.54)	
Caucasian	referent		
YSR Internalizing score	.97	(.95, 1.00)	.061
YSR Externalizing score	1.01	(.98, 1.05)	
Substance use severity	1.07	(.98, 1.16)	
Legal referral	1.06	(.62, 1.81)	
CMR scale	1.03	(1.00, 1.05)	
Family conflict	1.04	(.93, 1.16)	.086
Limit setting	.73	(.33, 1.62)	
Age	.96	(.80, 1.16)	
Site 1	.97	(.44, 2.15)	
Site 2	2.13	(1.14, 4.00)	
Site 3	2.56	(1.38, 4.73)	.002
Site 4	referent		

significant differences for other ethnic groups. Given that the percent change in the odds is small and therefore may not be clinically meaningful, adolescents with greater substance use problem severity had longer treatment retention (RR: 1.04; $p = .017$). There was a trend for older adolescents to have shorter treatment retention (again, potentially not clinically meaningful given the small percentage change in the odds), for each additional year (RR: .94, $p = .080$). Compared with Site 4, adolescents at Site 1 had a trend for longer retention (RR: 1.34, $p = .073$); those at Site 2 (RR: .67; $p = .001$) and Site 3 (RR: .69, $p = .001$) had shorter retention.

Interaction tests suggest that African Americans with higher internalizing scores (RR: 1.03; 95% CI 1.01–1.06; $p = .026$) and with higher family conflict scores (RR: 1.20; 95% CI 1.03–1.38; $p = .016$) had longer retention, compared with Caucasians with those characteristics. Trends were suggested for African Americans with higher externalizing scores (RR: 1.03, 95% CI 1.0–1.06; $p = .086$) and with higher CMR scores (RR: 1.03; 95% CI 1.0–1.06; $p = .069$) to have longer retention, compared with Caucasians with those characteristics.

Post hoc tests of interactions suggest African Americans at Site 1 (RR: .29; 95% CI .15–.53; $p < .001$) and African Americans at Site 4 (RR: .29; 95% CI .12–.70; $p = .001$) had shorter retention, and Hispanics at Site 4 (RR: 1.63; 95% CI .42–.99; $p = .039$) had longer retention compared with Caucasians at those sites. Asian Americans had a trend for shorter retention than Caucasians at Site 2 (RR: .65; 95% CI .95–2.82; $p = .092$).

Discussion

Findings suggest important differences by ethnicity in treatment initiation and treatment retention, consistent with

the disparities literature, and raise concerns that adolescents of some ethnic groups may not receive adequate treatment. Native Americans and African Americans may be particularly vulnerable.

Identifying and addressing barriers to utilization, including motivational and structural barriers, is critical. Native Americans were least likely to return after intake to initiate treatment, suggesting the importance of addressing barriers during intake and treatment orientation sessions. In addition, Native American youth reported higher (although not statistically significant) substance use and mental health severity, which may complicate their ability to return for treatment. Previous work has found that CD and psychiatric services located near each other, or “co-located,” are associated with higher treatment initiation compared with these services located far apart [17]. Although the mechanisms of this association are not clear, co-location facilitates staff interaction and communication, and psychiatric services provided in conjunction with CD services may be particularly important for Native American youth with substance use problems.

Multivariable analyses showed that African Americans spent significantly less time in treatment than Caucasians, potentially missing important treatment phases. Lower severity is one possible explanation, because African American teens reported lower substance problem severity and mental health severity. However, this does not fully explain our findings given that we controlled for severity, and that bivariate analyses revealed a trend of all ethnic groups spending less time in treatment than Caucasian youth, including Native Americans who had the greatest severity (although these were not statistically significant associations).

Table 4
Poisson regression of ethnicity and treatment retention (weeks in treatment) (n = 304)

Predictor	Rate ratio ^a	95% CI	p Value
Female	.94	(.77, 1.15)	< .001
African American	.49	(.35, .67)	
Native American	.74	(.50, 1.10)	
Latino	.85	(.67, 1.07)	
Asian American	1.02	(.70, 1.47)	
Caucasian	referent		
YSR Internalizing score	1.00	(.99, 1.01)	.017
YSR Externalizing score	1.00	(.98, 1.01)	
Substance use severity	1.04	(1.01, 1.08)	
Legal referral	1.15	(.95, 1.40)	
CMR Scale	1.00	(.99, 1.01)	
Family conflict	1.01	(.97, 1.06)	.080
Limit setting	.85	(.64, 1.14)	
Age	.94	(.87, 1.01)	
Site 1	1.34	(.97, 1.85)	
Site 2	.67	(.53, .85)	
Site 3	.69	(.55, .86)	.001
Site 4	referent		

^a RR = ratio rate, the exponent of the estimate.

African Americans with higher psychiatric severity were at greatest risk for shorter retention, and may also benefit from psychiatric services. However, African Americans with greater motivation/readiness and, unexpectedly, greater family conflict, had longer retention. Greater family conflict may serve as a motivator, or the source of conflict may exert pressure to stay in treatment. Identifying what motivates these teens is key to encouraging them to stay in treatment.

Cultural competency is important in reducing health disparities [1,43], and may be important to CD treatment initiation and retention. Native American youth were less likely to return after intake to initiate treatment, and possibly elements of intake and orientation procedures, including the cultural competency of staff or of educational materials, might better address their needs [44]. African Americans' shorter retention may also be influenced by cultural competency. In addition, some sites appeared to do less well at initiating and retaining ethnic minority patients. Staff ethnic composition, language congruency, and having a critical mass of patients of similar ethnic backgrounds can influence quality of health care [44], and possibly these factors varied across sites. We are conservative in drawing conclusions from our tests of site and ethnicity interactions given the small sample sizes for Native Americans and Asian Americans, and given some of the results' trend-level significance levels. Results should be viewed as tentative, as they may not hold with larger sample sizes. But they point to the importance of future research on cultural competency in CD treatment, ideally with larger samples.

Limitations

The sample is privately insured and treated in a non-profit, managed care health plan, which limits its generalizability to public populations. However, managed care is a major setting for the delivery of behavioral health services for both public and private populations and is understudied. We acknowledge also that our Internalizing scale may be conservative because two items were not asked at the baseline interview. Finally, we were unable to include measures of cultural competency or of acculturation, and acknowledge these to be important factors. Caution is advised in interpreting these results given the small sample sizes for Native Americans and Asian Americans. Nevertheless, the study is among the first to look at treatment initiation and retention in a sample of ethnically diverse adolescents entering CD treatment in managed care. A study advantage is that we can control for insurance access, because the sample is stably insured and adolescent members have the same benefit levels for CD treatment. The sample's range of income is also more constrained than in the general population. Income in the multivariable models was not significant and was dropped.

Future research

Given the similarity of these programs to other programs in the country, further research on ethnicity in adolescent alcohol and drug treatment is needed. Poorer treatment initiation and treatment retention by ethnic minorities raises a crucial question: are they getting adequate care and experiencing the maximum benefit of treatment services? African American and Native American adolescents may be particularly vulnerable, even when they have no insurance barriers to chemical dependency services. Adolescents should be followed over time to see whether additional differences emerge. For example, do readmission rates differ for African Americans, given the differences in treatment retention? It is also crucial to look at outcomes in other life areas, such as school performance, legal problems, and employment.

Developing and testing specific hypotheses for the role of cultural competency in the treatment process is critical. What are the elements of culturally competent care for CD patients, and how could treatment programs implement them? Given the larger workforce issues of recruiting ethnic minority staff in the health and CD fields [45], making CD treatment culturally relevant remains a challenge.

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