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ARTICLES

Examination of Treatment Episodes Among Women and Racial and Ethnic Minorities in Addiction Treatment

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Women and racial and ethnic minorities face significant challenges to successfully completing substance abuse treatment. There is limited knowledge about factors that affect women and minorities' treatment careers over several treatment episodes. Survival Cox regression was used to model time and episodes to treatment completion. Using multiyear (2006–2009) data, the sample consisted of 52,799 clients from 276 treatment programs in Los Angeles County, California. Findings supported the role of homelessness and mental health status and their association with more episodes to complete treatment. Results also showed that the rate of completion was 41% lower among African Americans and 17% lower among Latinos compared to Whites. With each additional treatment episode, the rate of treatment completion increased by 73% for all groups. Compared to minorities, Whites and men were more likely to complete treatment throughout their treatment career trajectories. Implications for social work interventions to enhance treatment adherence and reduce disparities are discussed.

KEYWORDS *gender disparities, racial and ethnic disparities, survival analysis, treatment completion, treatment episodes*

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It is generally recognized that individuals facing substance abuse and dependence issues might require more than one treatment episode to fully engage in their recovery. Addiction to substances has been acknowledged as a chronic condition that requires a maintenance approach, and thus it is important to understand individual patterns of engagement (Dennis, Scott, Funk, & Foss, 2005; McLellan, Lewis, O'Brien, & Kleber, 2000). Research on treatment engagement has indicated there is significant variation based on gender, ethnicity, and mental health status (Brown, Vik, & Creamer, 1989; Greenfield et al., 2007; Hillhouse & Fiorentine, 2001; Laudet, 2007; Luoma et al., 2007; Moos, Finney, Ouimette, & Suchinsky, 1999; Polinsky, Hser, & Grella, 1998; Stark, 1992; Stark & Campbell, 1988). However, there is limited understanding of the individual and program factors that might allow women and racial and ethnic minority groups to meet recovery goals during initial exposure to treatment. This study advanced emerging research on first-time treatment completers (Arndt, 2010; DeVall & Lanier, 2012; Guerrero et al., 2013) by identifying their treatment trajectories and potential gender and racial and ethnic disparities in number of treatment episodes. Using data from one of the largest publicly funded treatment systems (Los Angeles County) in the United States, we relied on survival analysis of multiyear data (2006–2009) to identify individual and program factors associated with helping minority clients achieve their treatment goals. Findings from this study are particularly relevant to efforts to reduce health disparities by tailoring social work interventions that consider the treatment careers of women and racial and ethnic minority clients.

REVIEW OF PREVIOUS RESEARCH

Research on treatment episodes has demonstrated that critical engagement factors need long-term examination beyond a single treatment episode (Dennis et al., 2005). Studying the course of an individual's treatment career provides a unique framework to understand barriers to access and factors that promote remaining in treatment for individuals at different points in time, rather than simply exploring duration in treatment for one episode (Dennis et al., 2005).

Studies on exposure to treatment have largely examined the treatment process during one intervention, rather than client exposure to treatment at different times (McKay & Weiss, 2001). Treatment episodes have been widely used to study posttreatment outcomes, particularly those related to sobriety, mental health, social and family functioning, and employment status (McKay & Weiss, 2001). According to McKay and Weiss (2001), number of episodes was correlated with posttreatment substance use in 86% of cases, in which 53% reported poorer outcomes and 33% reported better outcomes.

Experts have argued that although addiction is increasingly acknowledged as a chronic condition, substance abuse treatment professionals expect clients to recover from a single treatment episode, a false hope that is not supported by research (McKay & Weiss, 2001; McLellan et al., 2000). The empirical literature has suggested that meeting treatment goals at any level of patient care (e.g., outpatient, inpatient) depends on several factors, including severity of substance use, support factors, pre- and posttreatment context, and number of treatment episodes (Simpson & Sells, 1982). Some have argued that it is best to evaluate the effects of substance abuse treatment on patients at or after 90 days of treatment exposure, which is the standard dosage generally associated with changes in client behaviors (McLellan et al., 2000).

Overall, studies have suggested that patients who receive extended treatment achieve better recovery outcomes than those with limited exposure to treatment (Greenfield et al., 2007; Moos et al., 1999). It also appears that more exposure to treatment at different intervals (episodes) for individuals with a longer history of substance use leads to greater benefits from treatment (Finney, 1995; McKay & Weiss, 2001). Specifically, a study conducted on a 12-step cognitive-behavioral treatment among 3,018 patients from 15 Veterans Affairs programs also indicated that more treatment episodes led to longer periods of abstinence among chronic patients (Moos et al., 1999).

In any treatment study, outcomes are influenced by several factors, including access to treatment when needed. Reporting several treatment episodes can be conceptualized as either a lack of readiness of the client to engage in treatment or poor efforts by the program to engage with and help individuals maximize their potential. Both areas likely contribute to failure to complete treatment during the first treatment episode (Finney, 1995; Lehman & Simpson, 1990), particularly for vulnerable populations such as homeless individuals, those with cooccurring mental health conditions, and members of racial and ethnic minority groups (Guerrero et al., 2013).

Concern about deficiencies in the delivery of substance abuse treatment services to gender and racial and ethnic groups in the United States has led to efforts to identify active components of treatment engagement, which might differ across groups. Research has indicated that although substance abuse treatment is beneficial across racial and ethnic groups, there is significant variability in terms of duration and completion of treatment, specifically regarding time spent in treatment, a strong predictor of completion (Price, 1997; Simpson, 1979; Simpson, Joe, & Brown, 1997; Zhang, Friedmann, & Gerstein, 2003). Members of different racial and ethnic groups differ in treatment duration; African Americans and Latinos report shorter treatment duration compared to Whites (Agosti, Nunes, & Ocepeck-Welikson, 1996;

Guerrero et al., 2013; Marsh, Cao, Guerrero, & Shin, 2009; McCaul, Svikis, & Moore, 2001; Substance Abuse and Mental Health Services Administration [SAMHSA], 2009; Tonigan, 2003). Unmet service needs and shorter treatment duration are generally associated with a lower likelihood of treatment completion for African Americans and Latinos (Bluthenthal, Jacobson, & Robinson, 2007; SAMHSA, 2009).

Studies on gender disparities have shown that women are less likely to enter substance abuse treatment compared to men; however, gender is not a consistent predictor of completion or posttreatment substance abuse outcomes (Brady & Ashley, 2005; Dawson, 1996; Greenfield et al., 2007; Pelissier & Jones, 2005; Schober & Annis, 1996; Swift & Copeland, 1996; Weisner, 1993; Weisner & Schmidt, 1992; Wu & Ringwalt, 2004). However, gender-specific predictors of treatment have been identified (e.g., receipt of child care, women's health services), and individual characteristics and treatment approaches can substantially affect treatment completion based on gender (Greenfield et al., 2007). Findings also suggested inconsistencies in the examination of gender differences in treatment duration and completion. For instance, five studies revealed that men are more likely to complete treatment (Arfken, Klein, di Menza, & Schuster, 2001; King & Canada, 2004; McCaul et al., 2001; Petry & Bickel, 2000; Sayre et al., 2002). However, two other studies demonstrated that women are more likely to complete treatment (Hser, Huang, Teruya, & Anglin, 2004; Maglione, Chao, & Anglin, 2000), another study showed that women are more likely to drop out, particularly in programs with poor quality of care (Albrecht, Lindsay, & Terplan, 2011), and four studies showed no gender differences (Fiorentine, Anglin, Gil-Rivas, & Taylor, 1997; Green, Polen, Dickinson, Lynch, & Bennett, 2002; Mertens & Weisner, 2000; Veach, Remley, Kippers, & Sorg, 2000). Overall, studies have provided evidence of differences in treatment engagement based on gender and race and ethnicity. However, this research was limited to one instance of treatment engagement, rather than considering how many treatment episodes are generally necessary for vulnerable populations to achieve their treatment goals. Based on the literature, we posited the following exploratory hypotheses:

Hypothesis 1: Homelessness, history of mental health issues, and higher levels of drug use severity will be associated with a higher number of treatment episodes to successfully complete treatment.

Hypothesis 2: Compared to White clients, African American and Latino clients will report a higher number of treatment episodes to successfully complete treatment and a higher likelihood of treatment dropout.

Hypothesis 3: Compared to men, women clients will report a higher number of treatment episodes to successfully complete treatment and a higher likelihood of treatment dropout.

METHODS

Data Collection and Procedures

This study used data from Los Angeles County, one of the most populous and racially and ethnically diverse counties in the United States, providing unparalleled opportunities for examining treatment disparities. More specifically, we analyzed a subset of data collected via the Los Angeles County Participant Reporting System (LACPRS). This database includes data from all publicly funded substance abuse treatment programs in the county (Crèvecoeur, Finnerty, & Rawson, 2002). This ongoing system-wide evaluation captures the treatment experiences and immediate outcomes of low-income, racially and ethnically diverse clients. Of the 141 items in the LACPRS, more than half are standardized scales and questions related to admission, discharge, and health derived from state (California Outcome Measure System) and federal (Treatment Episode Data Set) measurement systems.

Client data in LACPRS are collected during personal interviews at intake and discharge for most individuals. Using standardized instruments, counselors collect information on five major domains: employment status, legal status, substance use profile, substance use history, and medical and psychological status. The collection form includes 10 items from the Addiction Severity Index (McLellan, Arndt, Metzger, Woody, & O'Brien, 1993) and the Drug Abuse Reporting Program (Simpson, 1984; Simpson & Sells, 1982). These scales have been shown to be reliable measures of substance abuse severity (Weisner, McLellan, & Hunkeler, 2000), particularly among diverse populations (Longabaugh, 1991), allowing for assessment of client reports from intake to discharge.

Analytic Sample

The survival data set ($n = 52,799$) was constructed from the full sample ($N = 87,719$) using the following procedures. First, we identified participants who received multiple episodes of treatment based on their unique patient ID and counted the total number of treatment episodes they experienced. Second, for each unique participant, we used the admission date for the first treatment episode and the discharge date for the last treatment episode as the start and stop time to calculate treatment duration. Finally, we used the discharge status of the last treatment episode as the final treatment completion status. We limited our sample to clients reporting their first successful treatment completion. This study included participants who self-reported as African American, Latino, and non-Latino White. Participants who self-identified as other ethnicities were excluded due to small sample size (less than 5% total). Adolescents were also excluded due to differing treatment procedures. Our analytic sample consisted of 52,799 clients

from 276 treatment programs, including 13,316 African Americans (25%), 21,298 Latinos (40%), and 18,185 non-Latino Whites (34%). The sample was represented by 34,319 men (65%) and 18,479 women (35%).

Measures

DEPENDENT VARIABLE

Time to treatment completion was the outcome of interest. It was determined using each participant's first admission date and final discharge date between 2006 and 2009. We considered clients' first successful treatment completion. Treatment completion status was dichotomously defined as successful or unsuccessful using nine discharge codes contained in participant records at the end of their last treatment episode. Clinicians were instructed to enter the code that best described the status of participants at time of discharge. Clients were considered successful completers if they (a) completed a treatment or recovery plan (referred or transferred) or (b) completed a treatment or recovery plan (not referred or transferred). Referred or transferred represents were moving to continuing care, in most cases. In contrast, clients were considered unsuccessful completers if they (a) left before completing a treatment or recovery plan with progress (referred or transferred), (b) left before completing a treatment or recovery plan with satisfactory progress (not referred or transferred), (c) left before completing a treatment or recovery plan with unsatisfactory progress (referred or transferred), (d) left before completing a treatment or recovery plan with unsatisfactory progress (not referred or transferred), (e) died, (f) were incarcerated, or (g) did not complete a treatment or recovery plan for other reasons. This measure of treatment completion is congruent with recent regional (Guerrero et al., 2013; Jacobson, Robinson, & Bluthenthal, 2007a, 2007b) and national (SAMHSA, 2009) studies.

EXPLANATORY VARIABLES

Individual demographics included client age, gender, race, and education (highest school grade completed). Respondents also reported psychosocial characteristics, including homelessness status (stable housing or homeless), history of mental disorder (diagnosed with any mental disorder prior to treatment), age at first alcohol or drug use, and primary substance problem (heroin, methamphetamine, cocaine, marijuana, alcohol, or other). The "other" category represented drugs such as inhalants, LSD, and psilocybin. White racial background and alcohol use served as reference categories when comparing effects between race or ethnicity and primary drug problem.

Respondents were also asked to describe program factors, including variables related to patient care options (outpatient, residential, or medication-assisted, commonly referred to as methadone treatment).

Outpatient treatment served as the reference category when comparing effects between patient care options. Service factors included the number of treatment episodes.

Analytic Plan

Mean and standard deviation values were calculated for continuous variables, whereas proportions were calculated for categorical variables. Differences among race and ethnicity groups were evaluated using one-way analysis of variance for continuous variables, such as duration, age, and treatment episodes. Chi-square tests were conducted to assess the relationship between race or ethnicity and each qualitative variable (see Table 1).

We used Cox proportional hazards regression models to analyze the effects of individual factors on the rate of treatment completion. Variables with significant influence in the univariate analysis were further considered in the multivariate Cox regression analysis. Hazard ratios and 95% confidence intervals (CIs) were reported for the final model. Statistical significance was represented by $p < .05$. Statistical analysis was conducted using SAS version 9.2.

TABLE 1 Client Characteristics by Race and Ethnicity Using 2006–2009 Data

Variable	African American ^a		Latino ^b		Non-Latino White ^c	
	% or <i>M</i>	<i>SD</i>	% or <i>M</i>	<i>SD</i>	% or <i>M</i>	<i>SD</i>
Duration*	116.1	213.5	116.6	216.7	124.0	234.0
Completion*	21.2		24.0		37.2	
Number of episodes*	1.3	0.7	1.4	0.9	1.5	1.1
Individual factors						
Age*	39.3	13.2	31.3	12.0	37.5	12.1
Male	64.4		69.3		65.5	
Education level*	11.2	2.7	10.5	2.6	11.8	2.6
Homelessness*	28.7		19.2		28.7	
Mental disorder diagnosis*	24.4		12.7		28.4	
Age at first drug use*	20.8	8.8	18.7	7.4	19.8	8.5
Primary substance problem*						
Alcohol	20.7		19.2		27.7	
Cocaine	44.8		9.8		8.2	
Heroin	5.5		14.6		20.2	
Marijuana	21.0		19.3		7.1	
Methamphetamine	4.3		34.0		28.8	
Other	3.8		3.1		8.1	
Program factors*						
Outpatient	57.9		60.8		35.5	
Medication-assisted	2.6		2.4		4.0	
Residential	39.5		36.9		60.5	

^a $N = 13,316$. ^b $N = 21,298$. ^c $N = 18,185$.

*Means or frequencies are different across racial and ethnic groups at $p < .05$.

RESULTS

Findings partially supported Hypothesis 1, which posited that homelessness status, poor mental health status, and higher levels of drug use severity would be associated with a higher number of treatment episodes to successfully complete treatment (see Table 2). Being homeless and being diagnosed with a mental health disorder were associated with a lower rate of treatment completion, whereas drug use severity was not statistically significant. Compared to participants who primarily used alcohol, the rate of successful treatment completion was reduced by 32% for cocaine (CI [27%, 36%]), 32% for marijuana (CI [27%, 36%]), and 42% for methamphetamine (CI [39%, 45%]) users. All results were calculated after adjusting for all other covariates in the final model.

Support was found for Hypothesis 2, which posited that compared to White clients, African American and Latino clients would report a higher number of treatment episodes to successfully complete treatment and a higher likelihood of treatment dropout. Whites had significantly longer treatment duration and a higher number of treatment episodes compared to African Americans and Latinos. African Americans reported the lowest

TABLE 2 Cox Regression on Rate of Treatment Completion Using 2006–2009 Data

Variable	Hazard Ratio	95% CI
Ethnicity		
Non-Latino White ^a		
African American	0.593*	[0.564, 0.623]
Latino	0.835*	[0.803, 0.867]
Individual factors		
Number of episodes	0.272*	[0.263, 0.281]
Age	1.007*	[1.005, 1.009]
Male	1.081*	[1.042, 1.212]
Education level	1.028*	[1.021, 1.035]
Homelessness	0.761*	[0.733, 0.791]
Mental disorder diagnosis	0.828*	[0.795, 0.864]
Age at first drug use	1.007*	[1.005, 1.009]
Primary substance problem		
Alcohol ^a		
Cocaine	0.680*	[0.643, 0.720]
Heroin	1.003	[0.952, 1.058]
Marijuana	0.685*	[0.638, 0.735]
Methamphetamine	0.580*	[0.551, 0.610]
Other	1.272*	[1.184, 1.366]
Program factors		
Outpatient ^a		
Medication-assisted	0.475*	[0.395, 0.570]
Residential	3.915*	[3.751, 4.085]

^aReference category.

* $p < .05$ based on confidence interval that does not bound 1.

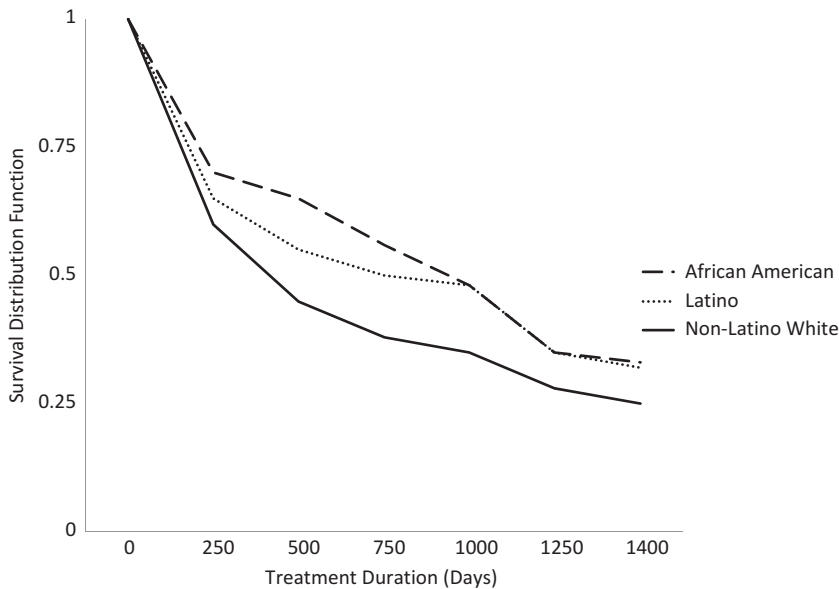


FIGURE 1 Survival distribution by race and ethnic group using data collected from 2006 to 2009.

percentage of treatment completion (21.2%), compared to Latinos (24.0%) and Whites (37.2%).

All explanatory factors had significant univariate effects on treatment completion and remained statistically significant in the multivariate Cox regression model. The model parameter estimates with regard to these factors are presented in Table 2. Traditional Cox regression models the time to a failure event, whereas in this case we were modeling time to a success event (treatment completion). Therefore, it should be noted that “hazard” indicates rate of treatment completion and “survival” represents failure to complete treatment.

The results showed that the rate of treatment completion was reduced by 41% among African Americans (CI [38%, 44%]) and by 17% among Latinos (CI [13%, 20%]), compared to Whites (see Figure 1). For each additional treatment episode, the rate of treatment completion increased by 73% (CI [72%, 74%]) for all racial and ethnic groups. In particular, the completion rate increased by 63% for African Americans, by 88% for Latinos, and by 73% for women. But, as evidenced in Figure 1, Whites reported a very distinct treatment trajectory compared to African American and Latino clients. Odds of treatment dropout were significantly lower for Whites throughout their treatment careers.

Support was found for Hypothesis 3, which posited that women would require more treatment episodes to successfully complete treatment and will be more likely to drop out of treatment compared to men. Men reported a

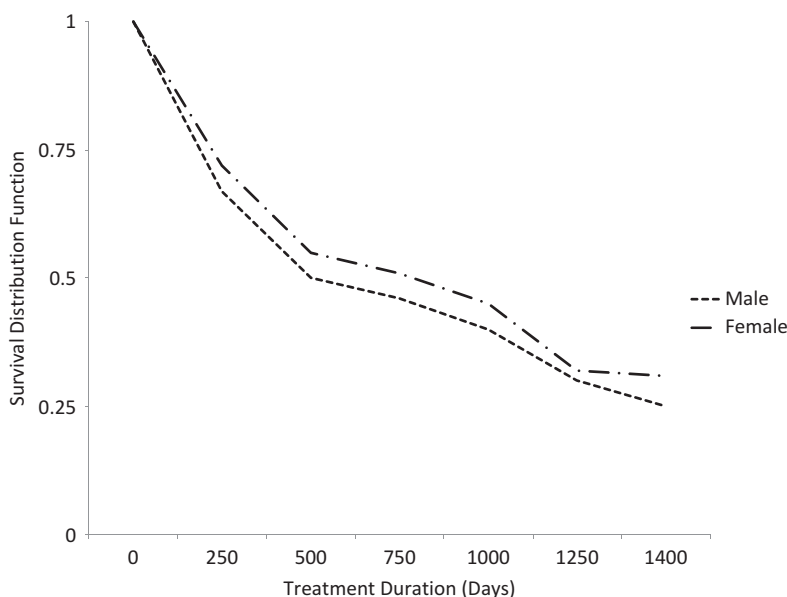


FIGURE 2 Survival distribution by gender using data collected from 2006 to 2009.

greater likelihood to complete treatment. In particular, with each additional treatment episode, male clients reported an 80% increase in their likelihood to complete treatment compared to women. Further, the survival rate of men, demonstrated in Figure 2, indicated how quickly their treatment trajectories differed from those of women in terms of treatment duration and completion.

DISCUSSION

The results of this study indicate disparities in the number of treatment episodes necessary for women and racial and ethnic minorities to achieve their treatment goals. Although all groups reported low completion rates overall (maximum of 37%) and few treatment episodes (average of two), African Americans and women faced the most significant risks of dropping out of treatment, particularly during their first experience in treatment. Although White clients reported a higher number of treatment episodes on average, they were more likely to complete treatment. This was not the case with women, Latino, and African American clients, who were more likely to drop out of treatment during their first episode. Whites ease to reengage in treatment might play a significant role in increasing their ability to complete treatment.

These main findings suggested a potential interaction effect between race and ethnicity and gender in explaining the number of treatment

episodes needed for successful completion. However, our post-hoc analysis of interaction effects by African American and female and Latino and female did not provide statistically significant effects ($p > .05$). Because gender is not a consistent predictor of treatment completion (Brady & Ashley, 2005; Greenfield et al., 2007; Pelissier & Jones, 2005; Wu & Ringwalt, 2004), its interaction with race and ethnicity needs to be examined further in other samples.

Latinos, the youngest group in this sample and the group with the lowest rates of homelessness and mental health issues, reported fewer treatment episodes and a higher likelihood of treatment dropout than Whites. Readiness to engage in treatment because of young age and the quantity and quality of services received by Latinos might account for these findings. The literature has indicated that compared to Whites, Latinos generally receive fewer services (Jerrell & Wilson, 1997; Wells, Klap, Koike, & Sherbourne, 2001) and are less likely to report overall satisfaction with treatment (Tonigan, 2003; Wells et al., 2001). Also, when care is provided to Latinos, it has been found to be lower in quality and influenced by a lack of cultural sensitivity (Alegría et al., 2006; Marsh et al., 2009; Quist & Law, 2006). Although we did not account for quantity and quality of care in this study, findings from other studies using a sample of programs from the same region have suggested that programs with culturally responsive policies and assessment and treatment practices are positively associated with retention in treatment among mainly Latinos and African Americans, after controlling for individual and program characteristics (Guerrero, in press).

Another key finding was that compared to those in outpatient programs, clients attending residential treatment were more likely to complete treatment. As noted in the literature, racial and ethnic minorities drawn from the same region as this study face significant barriers to accessing residential care (Bluthenthal et al., 2007; Grella & Stein, 2006). However, if these groups access residential care, disparities in terms of likelihood of completing treatment are reduced for African Americans and eliminated for Latinos, compared to Whites (Bluthenthal et al., 2007). We concur that racial and ethnic disparities in treatment completion can be reduced by increasing access to residential treatment for African American and Latinos in Los Angeles County.

This study identified disparities in treatment completion and the treatment careers of women, African Americans, and Latinos. This enhanced understanding of treatment disparities can inform policies and the design of social work interventions for minorities that focus on stronger treatment adherence during the initial treatment episode. Tailored practices might be necessary to serve African American and Latino women, who are likely to face significant psychosocial stressors and other concrete barriers to attending treatment. The literature has clearly documented barriers to treatment among women, which might be related to stigma, child care, and poor access

and engagement that negatively affects their ability to enter, remain in, and benefit from treatment (Brady & Ashley, 2005; Greenfield et al., 2007; Marsh et al., 2009; Pelissier & Jones, 2005).

These findings extended the literature on treatment completion by using multiyear administrative data of actual treatment episodes in the most populous and culturally diverse county in the United States. As such, these findings can inform policy for large systems of care that seek to use current program utilization and evaluation data to determine treatment effectiveness among publicly funded substance abuse treatment programs. Overall, study findings highlight the need for the application of evidence-based engagement treatment practices (e.g., motivational interviewing, assertive community case management, housing first approaches) for specific racial and ethnic groups during the early stages of their treatment careers (Grella & Stein, 2006). By understanding the unique services needs of racial and ethnic minority clients with different treatment careers, we can develop tailored pathways to recovery with the goal of eliminating health disparities.

Study Limitations

Our findings based on survival analysis of current data offered insights about client characteristics associated with dropout over time. These insights could inform the design of long-term recovery programs for racial and ethnic minority clients. Yet, there are limitations associated with the LACPRS data set and this analysis. First, these data did not include service and program performance measures, which prevented analysis of the intensity and quality of treatment received. Program factors beyond number of episodes and patient care options could help us further examine whether certain aspects of treatment increase or decrease the rate of success. Second, client measures of history of mental health issues were likely to underreport prevalence because counselors are generally not trained to verify this information. This issue was mitigated by using auxiliary variables, such as use of psychiatric medication and hospitalization. Our study was also limited to examining trajectories of clients reporting their first successful treatment completion, not considering relapses and reentry into treatment despite their initial successful episode. Another shortcoming was that the survival data used in this analysis were reconstructed from multiyear cross-sectional data, a reasonable method to obtain survival data. Future study designs that incorporate strict longitudinal and survival measures and follow-up between episodes would provide more informative and reliable data for analysis. Despite these limitations, this study is the only examination of number of treatment episodes and other risk factors associated with treatment completion using survival data from one of the largest and ethnically diverse publicly funded treatment systems in the United States.

Future Research

Future research should explore program factors that account for the differences observed in these distinct racial and ethnic groups. In particular, because this analysis indicated that members of various racial and ethnic groups respond more favorably to substance abuse treatment with different types of support (e.g., residential vs. outpatient care), future studies should further examine the factors that enable greater access to appropriate levels of care to influence treatment effectiveness.

Future research on treatment outcomes should also focus on developing integrated health services interventions for Latinos, a highly represented population in substance abuse treatment that is difficult to engage, is often bilingual and bicultural, and generally requires social services delivered within a culturally and linguistically responsive environment. In addition, exploring challenges faced during the initial engagement phase by clients with unstable housing situations and mental health issues could help social work researchers develop and test the efficacy of on-demand culturally responsive housing and psychiatric interventions delivered within intensive outpatient substance abuse treatment.

REFERENCES

- Agosti, V., Nunes, E., & Ocepeck-Welikson, K. (1996). Patient factors related to early attrition from an outpatient cocaine research clinic. *American Journal of Drug and Alcohol Abuse, 22*, 29–39. doi: 10.3109/00952999609001643
- Albrecht, J., Lindsay, B., & Terplan, M. (2011). Effect of waiting time on substance abuse treatment completion in pregnant women. *Journal of Substance Abuse Treatment, 41*, 71–77. doi: 10.1016/j.jsat.2011.01.015
- Alegría, M., Page, J. B., Hansen, H., Cauce, A. M., Robles, R., Blanco, C., . . . Berry, P. (2006). Improving drug treatment services for Hispanics: Research gaps and scientific opportunities. *Drug and Alcohol Dependence, 84*, S76–S84. doi: 10.1016/j.drugalcdep.2006.05.009
- Arfken, C. L., Klein, C., di Menza, S., & Schuster, C. R. (2001). Gender differences in problem severity at assessment and treatment retention. *Journal of Substance Abuse Treatment, 20*, 53–57. doi: 10.1016/S0740-5472(00)00155-0
- Arndt, S. (2010). *Minority clients entering substance abuse treatment for the first time: 10 year trends*. Iowa City, IA: Iowa Consortium for Substance Abuse Research and Evaluation.
- Bluthenthal, R. N., Jacobson, J. O., & Robinson, P. L. (2007). Are racial disparities in alcohol treatment completion associated with racial differences in treatment modality entry? Comparison of outpatient treatment and residential treatment in Los Angeles County, 1998 to 2000. *Alcoholism: Clinical and Experimental Research, 31*, 1920–1926. doi: 10.1111/j.1530-0277.2007.00515.x
- Brady, T. M., & Ashley, O. S. (Eds.). (2005). *Women in substance abuse treatment: Results from the Alcohol and Drug Services Study (ADSS)* (DHHS Publication No.

- SMA 04-3968, Analytic Series A-26). Rockville, MD: Office of Applied Studies, Substance Abuse and Mental Health Services Administration. Retrieved from <http://www.drugabusestatistics.samhsa.gov/womenTX/womenTX.htm>
- Brown, S. A., Vik, P. W., & Creamer, V. A. (1989). Characteristics of relapse following adolescent substance abuse treatment. *Addictive Behaviors, 14*, 291–300. doi: 10.1016/0306-4603(89)90060-9
- Crèvecoeur, D., Finnerty, B., & Rawson, R. A. (2002). Los Angeles County Evaluation System (LACES): Bringing accountability to alcohol and drug abuse treatment through a collaboration between providers, payers, and researchers. *Journal of Drug Issues, 32*, 865–879. doi: 10.1177/002204260203200309
- Dawson, D. A. (1996). Gender differences in the probability of alcohol treatment. *Journal of Substance Abuse, 8*, 211–225. doi: 10.1016/S0899-3289(96)90260-6
- Dennis, M. L., Scott, C. K., Funk, R., & Foss, M. A. (2005). The duration and correlates of addiction and treatment careers. *Journal of Substance Abuse Treatment, 28*, S51–S62. doi: 10.1016/j.jsat.2004.10.013
- DeVall, K. E., & Lanier, C. L. (2012). Successful completion: An examination of factors influencing drug court completion for White and non-White male participants. *Substance Use & Misuse, 47*, 1106–1116. doi: 10.3109/10826084.2012.680171
- Finney, J. W. (1995). Enhancing substance abuse treatment evaluations: Examining mediators and moderators of treatment effects. *Journal of Substance Abuse, 7*, 135–150. doi: 10.1016/0899-3289(95)90310-0
- Fiorentine, R., Anglin, M. D., Gil-Rivas, V., & Taylor, E. (1997). Drug treatment: Explaining the gender paradox. *Substance Use & Misuse, 32*, 653–678. doi: 10.3109/10826089709039369
- Green, C. A., Polen, M. R., Dickinson, D. M., Lynch, F. L., & Bennett, M. D. (2002). Gender differences in predictors of initiation, retention, and completion in an HMO-based substance abuse treatment program. *Journal of Substance Abuse Treatment, 23*, 285–295. doi: 10.1016/S0740-5472(02)00278-7
- Greenfield, S. F., Brooks, A. J., Gordon, S. M., Green, C. A., Kropp, F., McHugh, R. K., . . . Miele, G. M. (2007). Substance abuse treatment entry, retention, and outcome in women: A review of the literature. *Drug and Alcohol Dependence, 86*, 1–21. doi: 10.1016/j.drugalcdep.2006.05.012
- Grella, C. E., & Stein, J. A. (2006). Impact of program services on treatment outcomes of patients with comorbid mental and substance use disorders. *Psychiatric Services, 57*, 1007–1015. doi: 10.1176/appi.ps.57.7.1007
- Guerrero, E. G. (in press). Enhancing access and retention in substance abuse treatment: The role of Medicaid payment acceptance and cultural competence. *Drug and Alcohol Dependence*. doi: 10.1016/j.drugalcdep.2013.04.005
- Guerrero, E. G., Marsh, J. C., Duan, L., Oh, C., Perron, B., & Lee, B. (2013). Disparities in completion of substance abuse treatment between and within racial and ethnic groups. *Health Service Research, 48*, 1450–1467. doi: 10.1111/1475-6773.12031
- Hillhouse, M. P., & Fiorentine, R. (2001). 12-step program participation and effectiveness: Do gender and ethnic differences exist? *Journal of Drug Issues, 31*, 767–780.
- Hser, Y.-I., Huang, Y.-C., Teruya, C., & Anglin, M. D. (2004). Gender differences in treatment outcomes over a three-year period: A path model analysis. *Journal of Drug Issues, 34*, 419–440. doi: 10.1177/002204260403400208

- Jacobson, J. O., Robinson, P., & Bluthenthal, R. N. (2007a). A multilevel decomposition approach to estimate the role of program location and neighborhood disadvantage in racial disparities in alcohol treatment completion. *Social Science & Medicine*, *64*, 462–476. doi: 10.1016/j.socscimed.2006.08.032
- Jacobson, J. O., Robinson, P. L., & Bluthenthal, R. N. (2007b). Racial disparities in completion rates from publicly funded alcohol treatment: Economic resources explain more than demographics and addiction severity. *Health Services Research*, *42*, 773–794. doi: 10.1111/j.1475-6773.2006.00612.x
- Jerrell, J. M., & Wilson, J. L. (1997). Ethnic differences in the treatment of dual mental and substance disorders: A preliminary analysis. *Journal of Substance Abuse Treatment*, *14*, 133–140. doi: 10.1016/S0740-5472(96)00125-0
- King, A. C., & Canada, S. A. (2004). Client-related predictors of early treatment drop-out in a substance abuse clinic exclusively employing individual therapy. *Journal of Substance Abuse Treatment*, *26*, 189–195. doi: 10.1016/S0740-5472(03)00210-1
- Laudet, A. B. (2007). What does recovery mean to you? Lessons from the recovery experience for research and practice. *Journal of Substance Abuse Treatment*, *33*, 243–256. doi: 10.1016/j.jsat.2007.04.014
- Lehman, W. E. K., & Simpson, D. D. (1990). Prediction of Year 12 outcomes. In D. D. Simpson & S. B. Sells (Eds.), *Opioid addiction and treatment: A 12-year follow-up* (pp. 203–220). Malabar, FL: Krieger.
- Longabaugh, R. (1991). Monitoring treatment outcomes. *Alcohol Health & Research World*, *15*, 189–200.
- Luoma, J. B., Twohig, M. P., Waltz, T., Hayes, S. C., Roget, N., Padilla, M., & Fisher, G. (2007). An investigation of stigma in individuals receiving treatment for substance abuse. *Addictive Behaviors*, *32*, 1331–1346. doi: 10.1016/j.addbeh.2006.09.008
- Maglione, M., Chao, B., & Anglin, D. (2000). Residential treatment of methamphetamine users: Correlates of drop-out from the California Alcohol and Drug Data System (CADDs), 1994–1997. *Addiction Research & Theory*, *8*, 65–79. doi: 10.3109/16066350009004410
- Marsh, J. C., Cao, D., Guerrero, E., & Shin, H.-C. (2009). Need-service matching in substance abuse treatment: Racial/ethnic differences. *Evaluation and Program Planning*, *32*, 43–51. doi: 10.1016/j.evalprogplan.2008.09.003
- McCaul, M. E., Svikis, D. S., & Moore, R. D. (2001). Predictors of outpatient treatment retention: Patient versus substance use characteristics. *Drug and Alcohol Dependence*, *62*, 9–17. doi: 10.1016/S0376-8716(00)00155-1
- McKay, J. R., & Weiss, R. V. (2001). A review of temporal effects and outcome predictors in substance abuse treatment studies with long-term follow-ups: Preliminary results and methodological issues. *Evaluation Review*, *25*, 113–161. doi: 10.1177/0193841X0102500202
- McLellan, A. T., Arndt, I. O., Metzger, D. S., Woody, G. E., & O'Brien, C. P. (1993). The effects of psychosocial services in substance abuse treatment. *Journal of the American Medical Association*, *269*, 1953–1959. doi: 10.1001/jama.1993.03500150065028
- McLellan, A. T., Lewis, D. C., O'Brien, C. P., & Kleber, H. D. (2000). Drug dependence, a chronic medical illness: Implications for treatment, insurance,

- and outcomes evaluation. *Journal of the American Medical Association*, 284, 1689–1695. doi: 10.1001/jama.284.13.1689
- Mertens, J. R., & Weisner, C. M. (2000). Predictors of substance abuse treatment retention among women and men in an HMO. *Alcoholism: Clinical and Experimental Research*, 24, 1525–1533. doi: 10.1111/j.1530-0277.2000.tb04571.x
- Moos, R. H., Finney, J. W., Ouimette, P. C., & Suchinsky, R. T. (1999). A comparative evaluation of substance abuse treatment: I. Treatment orientation, amount of care, and 1-year outcomes. *Alcoholism: Clinical and Experimental Research*, 23, 529–536. doi: 10.1111/j.1530-0277.1999.tb04149.x
- Pelissier, B., & Jones, N. (2005). A review of gender differences among substance abusers. *Crime & Delinquency*, 51, 343–372. doi: 10.1177/0011128704270218
- Petry, N. M., & Bickel, W. K. (2000). Gender differences in hostility of opioid-dependent outpatients: Role in early treatment termination. *Drug and Alcohol Dependence*, 58, 27–33. doi: 10.1016/S0376-8716(99)00058-7
- Polinsky, M. L., Hser, Y.-I., & Grella, C. E. (1998). Consideration of special populations in the drug treatment system of a large metropolitan area. *Journal of Behavioral Health Services & Research*, 25, 7–21. doi: 10.1007/BF02287496
- Price, R. (1997). What we know and what we actually do: Best practices and their prevalence in substance abuse treatment. In J. A. Egertson, D. M. Fox, & A. I. Leshner (Eds.), *Treating drug abusers effectively* (pp. 125–158). Malden, MA: Blackwell.
- Quist, R. M., & Law, A. V. (2006). Cultural competency: Agenda for cultural competency using literature and evidence. *Research in Social and Administrative Pharmacy*, 2, 420–438. doi: 10.1016/j.sapharm.2006.07.008
- Sayre, S. L., Schmitz, J. M., Stotts, A. L., Averill, P. M., Rhoades, H. M., & Grabowski, J. J. (2002). Determining predictors of attrition in an outpatient substance abuse program. *American Journal of Drug and Alcohol Abuse*, 28, 55–72. doi: 10.1081/ADA-120001281
- Schober, R., & Annis, H. M. (1996). Barriers to help-seeking for change in drinking: A gender-focused review of the literature. *Addictive Behaviors*, 21, 81–92. doi: 10.1016/0306-4603(95)00041-0
- Simpson, D. D. (1979). The relation of time spent in drug abuse treatment to posttreatment outcome. *American Journal of Psychiatry*, 136, 1449–1453.
- Simpson, D. D. (1984). National treatment system evaluation based on the Drug Abuse Reporting Program (DARP) followup research. In F. M. Tims & J. P. Ludford (Eds.), *Drug abuse treatment evaluation: Strategies, progress, and prospects* (pp. 29–41). Rockville, MD: National Institute on Drug Abuse.
- Simpson, D. D., Joe, G. W., & Brown, B. S. (1997). Treatment retention and follow-up outcomes in the Drug Abuse Treatment Outcome Study (DATOS). *Psychology of Addictive Behaviors*, 11, 294–307. doi: 10.1037/0893-164X.11.4.294
- Simpson, D. D., & Sells, S. B. (1982). Effectiveness of treatment for drug abuse: An overview of the DARP research program. *Advances in Alcohol & Substance Abuse*, 2(1), 7–29. doi: 10.1300/J251v02n01_02
- Stark, M. J. (1992). Dropping out of substance abuse treatment: A clinically oriented review. *Clinical Psychology Review*, 12, 93–116. doi: 10.1016/0272-7358(92)90092-M

- Stark, M. J., & Campbell, B. K. (1988). Personality, drug use, and early attrition from substance abuse treatment. *American Journal of Drug and Alcohol Abuse, 14*, 475–485. doi: 10.3109/00952998809001565
- Substance Abuse and Mental Health Services Administration. (2009). *The TEDS report: Predictors of substance abuse treatment completion or transfer to further treatment, by service type*. Rockville, MD: Office of Applied Studies, Substance Abuse and Mental Health Services Administration.
- Swift, W., & Copeland, J. (1996). Treatment needs and experiences of Australian women with alcohol and other drug problems. *Drug and Alcohol Dependence, 40*, 211–219. doi: 10.1016/0376-8716(95)01209-5
- Tonigan, J. S. (2003). Project Match treatment participation and outcome by self-reported ethnicity. *Alcoholism: Clinical and Experimental Research, 27*, 1340–1344. doi: 10.1097/01.ALC.0000080673.83739.F3
- Veach, L. J., Remley, T. P., Jr., Kippers, S. M., & Sorg, J. D. (2000). Retention predictors related to intensive outpatient programs for substance use disorders. *American Journal of Drug and Alcohol Abuse, 26*, 417–428. doi: 10.1081/ADA-100100253
- Weisner, C. (1993). Toward an alcohol treatment entry model: A comparison of problem drinkers in the general population and in treatment. *Alcoholism: Clinical and Experimental Research, 17*, 746–752. doi: 10.1111/j.1530-0277.1993.tb00833.x
- Weisner, C., McLellan, A. T., & Hunkeler, E. M. (2000). Addiction Severity Index data from general membership and treatment samples of HMO members: One case of norming the ASI. *Journal of Substance Abuse Treatment, 19*, 103–109. doi: 10.1016/S0740-5472(99)00103-8
- Weisner, C., & Schmidt, L. (1992). Gender disparities in treatment for alcohol problems. *Journal of the American Medical Association, 268*, 1872–1876. doi: 10.1001/jama.1992.03490140080039
- Wells, K., Klap, R., Koike, A., & Sherbourne, A. (2001). Ethnic disparities in unmet need for alcoholism, drug abuse, and mental health care. *American Journal of Psychiatry, 158*, 2027–2032. doi: 10.1176/appi.ajp.158.12.2027
- Wu, L.-T., & Ringwalt, C. L. (2004). Alcohol dependence and use of treatment services among women in the community. *American Journal of Psychiatry, 161*, 1790–1797. doi: 10.1176/appi.ajp.161.10.1790
- Zhang, Z., Friedmann, P. D., & Gerstein, D. R. (2003). Does retention matter? Treatment duration and improvement in drug use. *Addiction, 98*, 673–684. doi: 10.1046/j.1360-0443.2003.00354.x