Short Communication

Does the implementation of evidence-based and culturally competent practices reduce disparities in addiction treatment outcomes?

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ABSTRACT

Rationale: Research is limited on the extent to which implementation of evidence-based and culturally responsive practices reduces outcome disparities in substance use disorder treatment. We examined the role of contingency management treatment (CMT), medication-assisted treatment (MAT), and culturally competent practices on Mexican Americans' rate of successful completion of treatment.
Methods: We analyzed a concatenated dataset from 153 publicly funded substance use disorder treatment programs in Los Angeles County, California, in 2011 and 2013. These data were merged with data from 15,412 adult clients in both periods, of whom we selected only Mexican Americans (46.3%) and non-Latino Whites (53.7%). The outcome was successful treatment completion. The main independent variables were client demographics, drug use severity, mental health issues, and program license and professional accreditation.
Results: Less than half of the programs highly implemented CMT, MAT, and culturally competent practices. CMT and cultural competence were not associated with successful treatment completion. However, Mexican Americans in programs with high degree of implementation of MAT had higher odds of successfully completing treatment compared to non-Latino Whites and programs with low MAT (*OR* = 1.389; 95% CI = 1.018, 1.897).
Conclusions: Findings highlight the role of MAT in reducing the disparity in treatment completion between Mexican Americans and non-Latino Whites. Implications for health policy and the dissemination of MAT are discussed.

1. Introduction

Compare to non-Latino Whites, Latinos are more likely to drop out of substance use disorder (SUD) treatment (Guerrero & Andrews, 2011) and report lower rates of treatment completion (Guerrero, Campos, Urada, & Yang, 2012; Guerrero, Marsh, Duan, et al., 2013; Substance Abuse and Mental Health Services Administration [SAMHSA], 2009a, 2009b). Evidence-based practices (EBPs) and culturally responsive treatment are considered promising approaches to improving treatment outcomes among Latinos (Bridge, Massie, & Mills, 2008; SAMHSA, 2014). Most of this evidence, however, has been drawn from controlled clinical trials (Alegría et al., 2006; Guerrero, Marsh, Khachikian et al., 2013). EBPs and culturally competent practices are not widely delivered in SUD treatment settings (Bride, Abraham, & Roman, 2010; Guerrero, He, Kim, & Aarons, 2014; Knudsen, Ducharme, & Roman, 2006). Thus, there is a need to better understand the effect of

implementation of EBPs and culturally responsive treatment on outcome disparities between Latinos and non-Latino Whites receiving care in public treatment systems. To address this need, this study examined the role of contingency management treatment (CMT), medication-assisted treatment (MAT), and culturally competent practices in reducing treatment outcome disparities between Mexican Americans (i.e., the largest and fastest-growing Latino subgroup) and non-Latino Whites.

Meta-analyses have found CMT to be effective in promoting abstinence or reducing substance use by reinforcing positive behaviors to enact behavior change (Benishek et al., 2014; Prendergast, Podus, Finney, Greenwell, & Roll, 2006). Similarly, a strong evidence base supports MAT—acamprosate for alcohol dependence, buprenorphine for opioid dependence, and naltrexone for alcohol or opioid dependence—in conjunction with psychosocial interventions (Comer, Walker, & Collins, 2005; Fudala et al., 2003; Ling & Compton, 2005;

O'Malley, Krishnan-Sarin, Farren, Sinha, & Kreek, 2002). Cultural competence, defined as attitudes and behaviors that integrate into an organization or system appropriate for various cultural situations, has received increasing attention given that evidence indicates cultural competence in psychological interventions and treatments is highly valuable (see Sue, Zane, Nagayama Hall, & Berger, 2009, Brach & Fraser, 2000 for detailed description). However, previous studies have identified program practices, such as matching clients and providers based on language and cultural background (Guerrero & Andrews, 2011) and ensuring Spanish language proficiency (Guerrero, Khachikian, Kim, Kong, & Vega, 2013), and connections with minority communities (Guerrero, 2013) as associated with higher treatment access and retention, whereas translation of material has been associated with Latino treatment completion (Guerrero et al., 2012a). A meta-analysis also showed a small but significant treatment effect of culturally adapted interventions on substance use behaviors among Latinos (Smith & Trimble, 2016).

Considering the expected positive impact of delivering EBPs and culturally responsive care to Latinos (Guerrero, 2013; SAMHSA, 2009b; Sue et al., 2009), we hypothesized Mexican Americans accessing programs with high implementation of CMT would have higher odds of successfully completing SUD treatment compared to non-Latino Whites and programs with low implementation of CMT (Hypothesis 1). Additionally, we hypothesized Mexican Americans accessing programs with high implementation of MAT would have higher odds of successfully completing SUD treatment compared to non-Latino Whites and programs with low implementation of MAT (Hypothesis 2). Finally, we hypothesized Mexican Americans accessing programs with high implementation of cultural competence would have higher odds of successfully completing SUD treatment compared to non-Latino Whites and programs with low implementation of cultural competence (Hypothesis 3).

2. Methods

2.1. Sampling frame and data collection

Description of the data is provided elsewhere (Guerrero et al., 2015). Briefly, however, the sampling frame for program and client data included all SUD treatment programs funded by the Department of Public Health in Los Angeles County, California. This study used a concatenated dataset from 153 programs and 15,412 clients collected at two time points. These data included 100 programs in 2011 and 92 programs in 2013, with 39 programs in both waves. The program and client data were merged in both periods, of whom we selected only Mexican American (46.3%) and non-Latino White clients (53.7%). Most clients were male (64%), 36 years of age on average, and 27% reported having a mental illness. See Table 1 for additional details.

2.2. Measures

2.2.1. Dependent variables

Successful SUD treatment completion relied on three indicators based on official discharge codes indicating whether clients successfully completed the major goals set forth in their recovery plan for that episode and whether clients reported sobriety at discharge. This dichotomous measure was coded 1 if clients met the following criteria: (a) the client reported no alcohol or drug use during the 30 days prior to discharge, (b) the clinician reported client sobriety at discharge, and (c) the clinician coded treatment episode as successful based on the client meeting treatment goals for that episode. Using three indicators of success, this measure of treatment completion is more comprehensive than other studies that have relied on a single variable (Jacobson, Robinson, & Bluthenthal, 2007; SAMHSA, 2009a).

Table 1
Substance use disorder treatment program (*N* = 153) and client (*N* = 15,412) characteristics.

	2011 % or *M* (*SD*)	2013 % or *M* (*SD*)
Program		
CMT**	43.0	15.2
MAT**	16.0	6.5
Cultural competence	33.7	29.0
Licensed	96.0	94.6
Accredited**	16.0	23.9
Client		
Mexican American**	44.5	49.7
Female*	36.7	35.2
Age*	36.4 (12.5)	36.0 (13.8)
Education level**	2.2 (0.5)	2.7 (0.9)
Primary drug**		
Heroin	26.1	36.8
Alcohol	25.0	16.9
Methamphetamine	25.3	21.8
Marijuana or hashish	10.5	13.6
Other	13.2	10.8
Days of primary drug use**	13.8 (13.1)	16.7 (13.3)
Age at first use*	20.1 (8.2)	19.8 (8.1)
Medicaid eligibility**	27.1	24.4%
Mental illness	27.2	27.0%
Treatment type**		
Outpatient	49.5	42.7%
Methadone	4.4	5.9%
Residential	46.1	51.4%
No. of programs[a]	100	92
No. of clients	7305	8107

CMT = programs reporting high implementation of contingency management treatment; MAT = Programs reporting high implementation of medication-assisted treatment.

[a] Some programs were operating in both 2011 and 2013, therefore the total sample of programs was 153.

* Statistically significant differences at *P* < 0.05.
** Statistically significant differences at *P* < 0.01.

2.2.2. Independent variables

Program staff rated implementation of CMT and implementation of MAT on 5-point Likert scales (1 = *never* to 5 = *always*) according to how often they were used in their program. Given its positively skewed distribution, we dichotomized this variable to indicate programs reporting high implementation (i.e., 1 = *75th percentile or greater*). Table 1 describes the included dependent and independent measures.

Cultural competence included six domains with 57 items total, representing culturally competent practices (Mason, 1995). Items measured supervisors' report on their program staff's (a) knowledge of racial and ethnic minority community needs; (b) personal involvement in racial and ethnic minority communities; (c) development of resources and linkages to serve racial and ethnic minorities; (d) reaching out to racial and ethnic minority communities; (e) hiring and retention of staff members from racial and ethnic minority backgrounds; and (f) development of policies and procedures to effectively respond to the service needs of racial and ethnic minority patients. All items were rated on a 4-point Likert scale (1 = *not at all* to 4 = *often*) and aggregated to determine degree of cultural competence. Cronbach's α coefficients ranged from 0.72 to 0.98. This measure was also dichotomized to select only programs reporting high degree of implementation (i.e., 1 = *75th percentile or greater*).

2.2.2.1. Mexican American.
This categorical measure featured a dummy variable representing whether Latino clients reported having a Mexican background regardless of generation in the United States (1 = *Mexican American*; 0 = *not Mexican American*).

2.2.2.2. Substance abuse and mental health.
These variables included primary drug used at intake, age at first drug use, and categorical measures of whether clients reported a history of mental health issues

at intake. The clinician also reported whether client received outpatient, methadone, or residential treatment.

2.2.2.3. Demographic covariates. Consistent with prior studies (Guerrero, 2013; SAMHSA, 2009a), client age, gender, education, and Medicaid insurance eligibility were included as covariates.

2.2.2.4. Program covariates. These covariates reported by program managers indicated (a) whether the program was (a) licensed by the state and (b) certified by the Joint Commission.

2.3. Analytic strategy

Multilevel logistic regression analysis, which accounted for the clustering of clients in treatment facilities, was used to examine the role of three interactions between ethnic group (Mexican American, non-Latino White) and program practice (low or high CMT, MAT, and cultural competence) relative to the outcome measure. Missing data, which were limited to < 4% in most variables, was handled using multiple imputation (Allison, 2002).

3. Results

High implementation of CMT decreased from 43% in 2011 to 15% in 2013 ($P < 0.05$). Similarly, high implementation of MAT decreased from 16% in 2011 to 6.5% in 2013 ($P < 0.05$).

Regarding hypothesis testing, we found no support for Hypothesis 1, which posited that Mexican Americans accessing programs with high implementation of CMT will have higher odds of successfully completing SUD treatment compared to non-Latino Whites and programs with low implementation of CMT. After further adjustment for individual and program factors in a multilevel logistic regression, there was no difference between high and low implementation of CMT in the odds of treatment completion among non-Latino Whites compared to Mexican Americans ($OR = 1.352$; 95% $CI = 0.956, 1.913$). See Table 2.

We found support for Hypothesis 2, which posited that Mexican Americans accessing programs with high implementation of MAT will have higher odds of successfully completing SUD treatment compared to non-Latino Whites and programs with low implementation of MAT. After further adjustment for individual and program factors in a multilevel logistic regression, Mexican Americans in programs with a high degree of implementation of MAT were associated with higher odds of successfully completing treatment compared to non-Latino Whites and programs with low MAT ($OR = 1.389$; 95% $CI = 1.018, 1.897$).

We found no support for Hypothesis 3, which posited that Mexican Americans accessing programs with high implementation of cultural competence will have higher odds of successfully completing SUD treatment compared to non-Latino Whites and programs with low implementation of cultural competence. The interaction between Mexican Americans and cultural competence was not statistically significant ($OR = 1.185$; 95% $CI = 0.834, 1.683$). See Table 2.

Other relationships that were statistically significant and relevant to understanding correlates of successful treatment completion in SUD treatment included primary drug used, mental health, and program license. Compared to individuals using heroin, individuals using other drugs had higher odds of completion, whereas those reporting history of mental health issues had lower odds of completing treatment. The few programs that were not licensed (< 5%) also reported lower odds of treatment completion.

4. Discussion

This study examined the relationship between implementation of EBPs and culturally competent practices and reduction of disparities between Mexican Americans and non-Latino Whites in successful SUD

treatment completion. Although high implementation of CMT and MAT significantly decreased from 2011 to 2013, findings suggest that high implementation of MAT in particular is associated with improved outcomes for Mexican Americans. This finding is consistent with MAT outcomes among other ethnic groups (Comer et al., 2005; Fudala et al., 2003) and addresses the relative paucity of research on Mexican Americans (Guerrero, Marsh, Khachikian et al., 2013). This finding is significant because it simultaneously advances Mexican American treatment outcome disparities research (Guerrero, Marsh, Khachikian et al., 2013) and extends findings primarily from controlled clinical trials (Ling & Compton, 2005; O'Malley et al., 2002).

Findings also highlight the importance of adjusting for clinical and program factors when considering how well a treatment system is helping minority individuals achieve treatment goals. Consistent with other studies (Guerrero et al., 2012a; Guerrero, Cepeda, Duan, & Kim, 2012b; SAMHSA, 2009a), results suggest clients' primary drug of choice and co-occurring substance use and mental health disorders play a role in successfully completing the goals of treatment. This suggests that beyond ethnicity, programs should tailor practices to respond effectively to the service needs of heroin users and those with co-occurring conditions.

4.1. Strengths and limitations

The main strength of this study is its reliance on unique and robust clinical and program data from a real-world health care system and the application of rigorous multilevel analyses with qualitative validity checks (i.e., triangulated site visits to verify degree of implementation of CMT, MAT, and cultural competence; Palinkas et al., 2011). However, limitations of the study should be considered when interpreting results. Key limitations include: (a) the outcome was limited to a single treatment episode; (b) implementation of CMT, MATm and cultural competence was based on program staff reports; (c) survey measures did not record client Spanish language proficiency or services in Spanish; and (d) it is unclear to what extent findings are generalizable to the wider addiction health services system.

4.2. Conclusion

The present study provided evidence supporting the relationship between a treatment program's high implementation of MAT and Mexican Americans' successfully completing treatment, especially in terms of having the potential to reduce important health disparities. Findings have significant implications for health policy and the dissemination of MAT. Future research should explore how changes to Affordable Care Act policies that increased access to SUD treatment may affect response to treatment among low-income Latino subgroups, while also examine the funding resources and regulation that may support the dissemination of MAT considering the current health care context of the United States.

Contributors

Drs. Guerrero and Garner designed the study and wrote the first draft of the manuscript. Dr. Cook contributed to the literature review and revised the methodology. Drs. Guerrero and Kong conducted the statistical analysis. All authors contributed to several drafts and have

Table 2
Multilevel logistic regression of successful treatment completion.

	OR	SE	95% CI	P
Program				
Wave 2[a]	0.615	0.090	0.462, 0.818	0.001
CMT	1.352	0.239	0.956, 1.913	0.088
MAT	0.709	0.140	0.482, 1.044	0.081
Cultural competence	1.185	0.212	0.834, 1.683	0.344
Licensed	1.443	0.270	1.000, 2.081	0.050
Accredited[b]	0.892	0.181	0.600, 1.328	0.574
Cross-level interaction				
CMT × Mexican American	0.790	0.111	0.600, 1.040	0.093
MAT × Mexican American	1.389	0.221	1.018, 1.897	0.038
Cultural competence × Mexican American	0.880	0.123	0.670, 1.156	0.359
Client				
Mexican American	0.847	0.063	0.732, 0.979	0.025
Female	0.946	0.075	0.810, 1.106	0.490
Age	1.004	0.004	0.997, 1.012	0.232
Education level	1.000	0.044	0.917, 1.090	1.000
Primary drug[c]				
Alcohol	1.993	0.312	1.466, 2.710	< 0.001
Methamphetamine	2.261	0.255	1.812, 2.821	< 0.001
Marijuana or hashish	2.102	0.280	1.620, 2.728	< 0.001
Other	1.937	0.204	1.575, 2.382	< 0.001
Days of primary drug use	0.953	0.007	0.940, 0.967	< 0.001
Age at first use	0.999	0.005	0.990, 1.008	0.848
Medicaid eligibility	0.795	0.096	0.628, 1.006	0.056
Mental illness	0.767	0.063	0.653, 0.901	0.001
Treatment type[d]				
Methadone	0.191	0.052	0.112, 0.328	< 0.001
Residential	0.826	0.118	0.623, 1.094	0.182

Note. CI = confidence interval; CMT = contingency management treatment; MAT = medication-assisted treatment; OR = odds ratio; SE = standard error.
[a] Wave 1 (2011) was reference.
[b] Accredited by the Joint Commission.
[c] Heroin was reference.
[d] Outpatient was reference.

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