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ORIGINAL ARTICLE

Program Capacity to Eliminate Outcome Disparities in Addiction Health Services

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Abstract We evaluated program capacity factors associated with client outcomes in publicly funded substance abuse treatment organizations in one of the most populous and diverse regions of the United States. Using multilevel cross-sectional analyses of program data ($n = 97$) merged with client data from 2010 to 2011 for adults ($n = 8{,}599$), we examined the relationships between program capacity (leadership, readiness for change, and Medi-Cal payment acceptance) and client wait time and treatment duration. Acceptance of Medi-Cal was associated with shorter wait times, whereas organizational readiness for change was positively related to treatment duration. Staff attributes were negatively related to treatment duration. Overall, compared to low program capacity, high program capacity was negatively associated with wait time and positively related to treatment duration. In conclusion, program capacity, an organizational indicator of performance, plays a significant role in access to and duration of treatment. Implications for health care reform implementation in relation to expansion of public health insurance and capacity building to promote health equities are discussed.

Keywords Program capacity · Leadership · Readiness for change · Racial and ethnic disparities · Treatment outcomes

Introduction

Addiction health services (AHS) organizations in the United States confront an unprecedented challenge to reduce health disparities among racial and ethnic minority populations (Alegría et al. 2006; Amaro et al. 2006; Marsh et al. 2009). Community-based treatment programs may be organizationally unprepared to contend with the new payment and service delivery changes precipitated by health care reform (Jarvis 2010; Rawson and McLellan 2010); therefore, it is critical to identify program capacity factors that may help reduce disparities. Emerging models of capacity building to improve service delivery and engage clients in AHS have highlighted the role of program leaders (Edwards et al. 2010), staff readiness for change (Simpson and Flynn 2007), and generation of different revenue sources. However, there is limited knowledge of what program factors may represent capacity to affect client outcomes, namely wait time and treatment duration. To help address this gap, the present study examined the association between program capacity—defined as effective leadership, organizational readiness for change, and acceptance of Medi-Cal (California's Medicaid program) reimbursement for services—and two client outcomes

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critically important to AHS programs: wait time (i.e., access) and treatment duration (i.e., engagement).

Our focus on identifying program capacity factors among outpatient AHS providers related to serving hard-to-reach racial and ethnic minorities who would be most affected by the Affordable Care Act (ACA) increases this study's significance. This study used county administrative data on client outcomes merged with program-level survey data to identify gaps in access and quality of care. This information is critical to federal and state insurance administrators, policy makers, local addiction treatment authorities, and community-based providers seeking to differentiate between high-capacity and low-capacity programs in relation to client outcomes (Blue Ribbon Task Force on NIDA Health Services Research 2010; NIATx 2011). The present study examined AHS programs located in low-income and minority communities in Los Angeles (L.A.) County during a period characterized by a critical need to respond to ACA legislation by increasing capacity to bill Medi-Cal and handle an increase in Medi-Cal eligibility in 2014 for an estimated 1 million people—mainly Latinos (40 %) and Blacks (34 %; California Health Interview Survey 2009).

Conceptual Framework

Our conceptual framework (see Fig. 1) outlines how key factors of the AHS organizational context may play a significant role in enhancing access to and engagement in care in underserved minority communities in relation to the expansion of public health insurance. As the ACA's Medicaid expansion is implemented, an increasing number of uninsured clients will gain access to public health insurance and outpatient AHS provider organizations will experience a shift from primarily contract-based payment to an increasing dependence on public insurance reimbursement. To develop capacity to enhance treatment access and duration, program managers may need to use various mechanisms to develop strategic organizational climates and leadership (e.g., tailor organizational structures and processes, support staff development and motivation), invest in program readiness for change, and develop a billing and reporting system to transition from block grants to individual Medi-Cal reimbursement (Aarons et al. 2014).

This study extended structural neoinstitutional theory with actor-oriented organizational development frameworks (i.e., leadership and organizational readiness for change) that are particularly relevant for community-based organizations. Neoinstitutional theory emphasizes that shifts in service provision result from mandates from the state, elite groups, and the professions, which incentivize or coerce organizations to adopt new practices using funding resources, policies, licensing, and other forms of capital and legitimacy (DiMaggio and Powell 1983; Meyer and Rowan 1977). Research has established that outpatient substance abuse treatment (OSAT) organizations are highly dependent on external funding and regulation to shape health and social services and culturally responsive practices (Gotham et al. 2010; Guerrero 2010; Simpson et al. 2007). Organizational capacity to respond to policy mandates and related opportunities in a timely fashion is contingent on how leaders interpret their funding and regulatory environments and decide to strategically invest scarce resources (Oliver 1991; Peyrot 1991; Pfeffer and Salancik 1978; Simpson et al. 2007). Effective implementation of ACA's client-centered provisions will likely rely heavily on leadership, strategic and proactive investment in program and staff development,

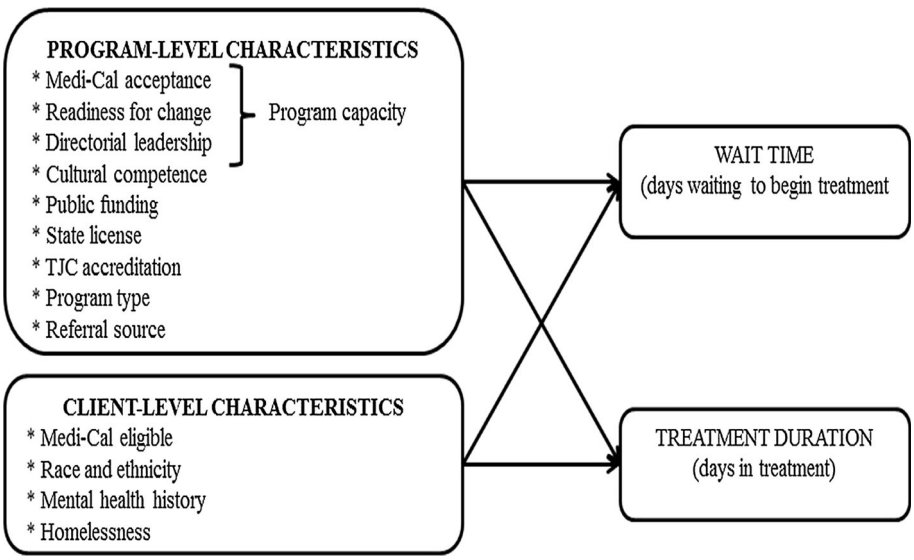

Fig. 1 Conceptual framework of the effect of program capacity on client engagement among publicly funded outpatient treatment programs. *TJC* The Joint Commision

and organizational readiness to adapt to a new payment and service delivery environment. As such, expansion of insurance may provide the resources and service delivery expectations necessary for leaders to increase financial and service delivery readiness, which is expected to increase access to and duration of OSAT (Guerrero 2010).

Organizational Capacity Factors

Leadership

Leadership is an emerging focal point in efforts to develop organizational capacity and improve treatment services (Aarons 2006; Aarons et al. 2014; Broome et al. 2007; Garner et al. 2012; Guerrero 2010; Guerrero and Andrews 2011). Leadership styles in particular, such as transactional (guiding performance) and transformational (leading by example and motivating self-growth) leadership, are essential for fostering change (Avolio et al. 1999). In OSAT organizations, these leadership styles have been associated with staff satisfaction (Broome et al. 2007; Edwards et al. 2010). Emerging research in health care also has highlighted the role of leadership in supporting strategic initiatives such as evidence-based practice implementation (Aarons et al. 2014) and efforts to leverage funding resources to foster an organizational process that improves both organizational capacity and client outcomes (Kaynak 2003; Lozeau et al. 2002; McConnell et al. 2009; Shortell et al. 2007).

Organizational Readiness for Change

Organizational processes associated with the implementation of new technologies or knowledge to successfully engage clients in OSAT has been described by the Texas Christian University (TCU) program change model (Simpson 2004; Simpson and Flynn 2007) and tested using the TCU Organizational Readiness for Change instrument (Lehman et al. 2002). Staff training and positive climate have been linked with increased treatment duration (Greener et al. 2007; Simpson et al. 2007). Treatment organizations will low readiness for change may be less able to enhance the delivery of care to improve client engagement (Fixsen et al. 2005; McConnell et al. 2009; McLellan et al. 2003; Sloboda and Schildhaus 2002).

Medi-Cal Payment Acceptance

Because OSAT programs have historically been supported primarily by public funding (e.g., service contracts; D'Aunno 2006) and health care reform shifted funding source from block grants to individualized Medi-Cal reimbursement, Medi-Cal payment acceptance is becoming a critical component of program capacity. By developing capacity to accept Medi-Cal payments, OSAT programs may increase their revenue, decrease funding uncertainty, and increase their investment in efforts to enhance treatment processes (Jarvis 2010; Rawson and McLellan 2010), such as client access to and duration in treatment. The present study expanded on previous research showing that client Medi-Cal eligibility and programs that offer culturally responsive services are associated with shorter wait times and increased treatment duration (Guerrero 2013). By testing a model of program capacity to serve individuals primarily from low-income and racial and ethnic minority backgrounds, this study can inform health care policies to reduce disparities among urban Black and Latino clients.

Program Capacity, Wait Time, and Treatment Duration

Among individuals seeking help for substance abuse issues, waiting to enter treatment is one of the most commonly cited barriers (Appel et al. 2004; Claus and Kindleberger 2002; Farabee et al. 1998), whereas treatment duration (i.e., days in treatment) is a critical process outcome and robust predictor of reduced posttreatment substance use Simpson et al. (1997); Zhang et al. 2003). It is well established that members of racial and ethnic minority groups are more likely than Whites to experience difficulty entering and staying in OSAT beyond 90 days and deriving subsequent benefits from treatment (Amaro et al. 2006; Marsh et al. 2009; Tonigan 2003; Zhang et al. 2003). However, some studies have showed that this may not be the case when minorities are referred by the criminal justice system. In Los Angeles, Latinos report shorter wait to start treatment when referred by drug courts compared to other source of referrals (Grella and Joshi 1999; Guerrero et al. 2013).

Overall, leadership and readiness for change are key components to adjusting service delivery to ensure disparities in treatment access and retention are minimized. This may include leaders who use "embedding mechanisms" to establish buy-in among staff to quickly implement service improvements, build the readiness of the program (infrastructure, computer systems, staff training, enhance motivation), and generate a culture of readiness (Aarons et al. 2014; Schein 2010). Medi-Cal payment acceptance has become a key component of generating revenue for AHS programs because more than 30 % of the client population attending publicly funded programs is Medi-Cal eligible. Although these programs may still rely on block grants to serve eligible Medi-Cal clients, block grant funding is becoming more limited and restrictive in terms of billable services, whereas Medi-Cal is increasing its billable services. Thus, we posited that these components may help programs located in minority communities

decrease client wait time and increase treatment duration. Hence, we formulated the following hypotheses.

Hypothesis 1 OSAT program leadership, organizational readiness for change, and Medi-Cal payment acceptance will be negatively associated with client wait time.

Hypothesis 2 OSAT program leadership, readiness for change, and Medi-Cal payment acceptance will be positively associated with client treatment duration.

Beyond individual indicators of program capacity, emerging analytic frameworks have highlighted the importance of using program performance metrics to distinguish between high- and low-capacity programs (Garnick et al. 2009; Greener et al. 2007; McCarty et al. 2007), particularly based on client outcomes as advocated by health care reform (Andrulis et al. 2010). Because the extant literature has highlighted leadership, organizational readiness for change, and public insurance payment acceptance as sources of capacity building in OSAT, programs with high capacity may be able to expand service delivery (Guerrero et al. 2014) and improve access to and duration of care. In contrast, low-performing OSAT programs may not be as responsive to clients' immediate need for treatment, turning them away, putting them on a waiting list, or not providing evidence-based engagement approaches to improve treatment duration. Using latent profile methods to test a program capacity measure represented by leadership, organizational readiness for change, and Medi-Cal acceptance, we hypothesized the following.

Hypothesis 3 High-capacity OSAT programs, characterized by more positive leadership, greater readiness for change, and Medi-Cal acceptance, would be associated with shorter wait times relative to low-capacity programs.

Hypothesis 4 High-capacity OSAT programs, characterized by strong leadership, greater readiness for change, and Medi-Cal acceptance, would be associated with longer treatment duration relative to low-capacity programs.

Limited empirical research has assessed the effect of program capacity factors and quality-of-care standards on client outcomes (D'Aunno 2006), particularly treatment engagement among members of racial and ethnic minority groups (Guerrero et al. 2012a). Although a program's degree of cultural competence is related to shorter wait time and increased treatment duration (Guerrero 2013; Guerrero and Andrews 2011), it is conceptually logical to expect that programs with the highest capacity and highest degree of cultural competence would be associated with the shortest wait time and longest treatment duration among minority clients. Thus, we hypothesized the following.

Hypothesis 5 (a) A negative relationship between high-capacity OSAT programs and wait time would be moderated by degree of cultural competence and (b) a positive relationship between high-capacity OSAT programs and treatment duration would be moderated by degree of cultural competence.

Methods

Sampling Frame and Data Collection

This study used a fully concatenated program and client data set collected in 2010–2011. The sampling frame included all 408 nonprofit substance abuse treatment programs funded by the Department of Public Health in L.A. County, California. The client data were drawn from the Los Angeles County Participant Reporting System (LACPRS). These system-wide evaluation data, collected by each provider on an ongoing basis, capture the treatment experience and immediate outcomes of a racially and ethnically diverse client population in the largest treatment system in the United States. Of the 141 items in the LACPRS survey, more than half comprise standardized scales with questions related to client admission, discharge, and health derived from state (California Outcome Measure System) and federal (Treatment Episode Data Set) measurement systems. Client data used in this study included 15,100 client treatment episodes collected from July 1, 2010, to December 30, 2011.

Data were also collected from a random sample of 147 publicly funded and nonprofit OSAT programs from the 350 programs located in communities with a population of 40 % or more Black or Latino residents or both in L.A. County. Programs involving inpatient or residential treatment, the criminal justice system, or single practitioners were excluded from this sample because they have different length-of-stay criteria than OSAT programs.

We relied on a key-informant approach to collect program survey measures from clinical supervisors, in addition to other sources of data to cross-validate survey measures during follow-up site visits with 91 % of the sample. To reduce the effect of upward reporting bias associated with managers' reports on program context (Adams et al. 1999; Lee and Cameron 2009), we used a systematic approach to validate their responses. More specifically, we relied on counselors (89 % of respondents) to provide qualitative data via semistructured interviews during site visits. During site visits, we used a matrix (Excel sheet) with key program features (e.g., staff training, services rendered, equipment) to cross-check consistency of supervisor reports on survey measures and our investigative team's in vivo observations, and systematically collected qualitative reports from counselors related to those measures (e.g., staff attributes,

resources during site visits). Programs were selected at random for site visits and the selection of counselors was based on a convenience sampling approach. Consistency was established when programs reported high or low organizational readiness for change scores and Medi-Cal billing and the investigative team confirmed that program met (high) or did not meet (low) at least two of the following three conditions: (a) adequate facilities and resources, (b) provision of indicated services, (c) and listed on the L.A. County Medi-Cal providers website. Inconsistency was represented by programs with high or low organizational readiness for change scores and reporting of Medi-Cal billing, but a visual inspection that found at least two inconsistent areas. Ten programs had such inconsistent reporting and a significant amount of missing data. Hence, these programs were not included in the final analytic sample.

Analytic Sample

The final analytic sample consisted of 97 programs and 8,599 client treatment episodes with full and verified information. Ninety-two percent of clinical supervisors responded to the online program survey. The final analytic sample decreased from 147 to 97 programs because 12 programs did not respond to the survey, 10 programs reported inconsistent data, 17 programs did not serve county clients in 2010–2011, and 11 programs had closed prior to survey data collection. The 50 excluded programs did not differ from the analytic sample in terms of main independent variables ($p > .05$). Rates of missingness were less than 16 % across all survey measures.

Study Variables

We examined two dependent variables: (a) wait time to enter treatment and (b) treatment duration (i.e., days in treatment; see Table 1 for descriptive statistics). Wait time was measured at client intake and represented the client-reported number of days spent on a waiting list before starting treatment (78 % of clients reported no wait). Treatment duration was measured at discharge and represented the number of days between admission and discharge dates as noted by counselors. Although the actual discharge date may vary by programs for unsuccessful cases, most programs consider two missed appointments as a criterion for discharge. Both variables were count measures that represented estimates of number of days. As analytic measures, they have been successfully used in several analyses (Friedmann et al. 2003; Guerrero et al. 2012a, b).

Independent variables of interest included Medi-Cal acceptance, four composite measures of organizational readiness for change, and a measure of directorial leadership. The TCU Organizational Readiness for Change (ORC-D4 version) instrument was used to measure program readiness to implement new practices using 68 out of the 101 items from the full version of the ORC-D4. These items are divided into four domains with 18 subscales: motivation for change (three subscales: program needs, training needs, and pressure for change; average $\alpha = .80$), resources (five subscales: offices, staffing, training, equipment, and Internet access; average $\alpha = .74$), staff attributes (four subscales: growth, efficacy, influence and adaptability; average $\alpha = .86$), and organizational climate (six subscales; mission, cohesion, autonomy, communication, stress, and change; average $\alpha = .78$; Gotham et al. 2010; Simpson et al. 2007). Informed by previous studies on components of the ORC measure (Greener et al. 2007; Lehman et al. 2002; Simpson et al. 2007) and to avoid overlap with similar concepts measured in the study, 33 items across the four domains were not included in the survey. The abbreviated subscale measures had Cronbach alpha values within the same range of the full version published elsewhere (Lundgren et al. 2011; Simpson et al. 2007). In addition, the subscale of organizational climate was not included in the final model due to collinearity issues. All items were rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree); higher scores represented greater readiness. The full scale is available online (http://ibr.tcu.edu/wp-content/uploads/sites/2/2013/10/ORC-S-sg.pdf).

The leadership scale consisted of nine items assessing agency or program director leadership. This measure included two subscales associated with implementation of evidence-based practices: transformational leadership characterized by intellectual stimulation, support for innovation, and integrity (seven items), and transactional leadership related to delegation and job expectations (two items; $\alpha = .96$; Edwards et al. 2010). Clinical supervisors rated their directors' leadership on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*) and scores were totaled as suggested by the measure's authors (Edwards et al. 2010). Higher scores represented higher levels of leadership among directors as reported by clinical supervisors.

To examine the interaction between program capacity and quality of care, which is generally associated with client engagement in treatment (Guerrero 2013), we assessed programs' degree of cultural competence for services delivered to Black and Latino clients. We relied on the Cultural Competence Self-Assessment Questionnaire (Mason 1995). This measure of culturally competent practices is composed of six subscales with 57 items total. These subscales measured (1) knowledge of, (2) outreach to, and (3) personal involvement in racial and ethnic minority communities; (4) development of resources and linkages to serve racial and ethnic minorities; (5) development of policies and procedures to effectively respond to the service needs of racial and ethnic minority patients; and (6) hiring and duration of employees with racial and ethnic

Table 1 Program (N = 97) and Client (N = 8,599) variables in addiction health services

Variables	n	M (SD) or n (%)	Response format
Program characteristics			
Medi-Cal acceptance	95	72 (76 %)	Accepts Medi-Cal payment reimbursement
Readiness for change[a]	96	135.94 (21.60)	Sum of four measures
Motivation for change	87	30.99 (5.74)	21 items, e.g., Your program needs more training for effective implementation of EBPs
Resources	89	38.05 (4.97)	12 items, e.g., Your office and equipment are adequate.
Staff attributes	95	40.41 (4.09)	19 items, e.g., You are able to adapt quickly when you have to make changes
Organizational climate	90	34.77 (4.61)	16 items, e.g., You fell encouraged to try new and different techniques
Directorial leadership	95	39.39 (6.84)	9 items, e.g., Your director inspires others with plans for facility's future
Cultural competence	90	27.11 (4.19)	Overall cultural competence of 6 domains
Public funding	78	0.35 (0.43)	Percentage of public funding in total funding during previous fiscal year
Program license	96	92 (96 %)	Licensed by state
TJC accreditation	95	14 (15 %)	Accredited by TJC
Program type[b]	8,599		
Outpatient		8,104 (94 %)	Primarily outpatient services
Methadone		495 (6 %)	Primarily methadone maintenance services
Referral source[b]	8,599		
Self		2,917 (34 %)	Self-referred
Community		1,864 (22 %)	Referred by community-based organization
Proposition 36		1,676 (19 %)	Referred by court via Proposition 36 in lieu of incarceration
Drug court		565 (7 %)	Referred by drug court
Social services		1,577 (18 %)	Referred by social services or county agency
Client characteristics			
Medi-Cal eligible	8,599	4,531 (53 %)	Eligible for Medi-Cal
Race and ethnicity	8,599		
White		1,901 (22 %)	Self-identified as White
Black		1,968 (23 %)	Self-identified as Black
Latino		3,912 (45 %)	Self-identified as Latino
Other		818 (10 %)	Self-identified as Asian or other
History of mental health issues	8,599	1,983 (23 %)	Diagnosed with mental health issue in past
Homeless	8,599	885 (10 %)	Unstable housing status
Outcomes			
Wait time	8,599	1.18 (4.88)	Days waiting to start treatment
Treatment duration	8,599	114.99 (104.03)	Days in treatment

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[a] Client-reported characteristics

[b] The subscales are an abbreviated version of the original organizational readiness for change measure

minority backgrounds. Sample items for each scale are presented in Table 1 (for a full description of items, see Mason 1995). Reliabilities of the six subscales ranged from .69 to .85. Responses were rated on a 4-point Likert scale (1 = *not at all* to 4 = *often*) and averaged to create mean scores for each subscale. Higher scores indicated higher levels of program cultural competence in each subdomain as reported by supervisors.

Control variables were included at both the organizational and client level. Organizational characteristics included two program regulation measures associated with treatment outcomes in other research: (a) state licensure and (b) accreditation by the Joint Commission (Campbell and Alexander 2002; D'Aunno 2006; Guerrero and Andrews 2011). At the client level, we accounted for several characteristics associated with wait time and treatment duration in other research, including client-reported Medi-Cal eligibility, gender, race and ethnicity, mental health history, and homelessness status (Evans et al. 2009; Guerrero and Andrews 2011; Guerrero et al. 2012a;

Marsh et al. 2009; Tonigan 2003; Zhang et al. 2003). We also controlled for referral sources, particularly court referral and Proposition 36, which is a California initiative that refers individuals with less serious drug offenses to treatment in lieu of imprisonment (Guerrero et al. 2012b). See Table 1 for descriptive statistics and response formats.

Data Analysis

Stata/SE Version 12 was used to conduct all analyses. Two variables, accreditation by the Joint Commission and resources and linkages, had 16 % missing data, whereas missing data for other variables was less than 10 %. Multiple imputation was used to estimate missing values consistent with assumption of data missing at random (Rubin 1987). Each missing value was replaced with 20 plausible values using the Markov Chain Monte Carlo method (Schaefer 1997). Imputation was conducted for program and client variables independently. Twenty imputed data sets were developed, merged, and analyzed using Stata's MI IMPUTE and MI ESTIMATE commands.

We also relied on Stata for our multilevel negative binomial regression analyses, using MI ESTIMATE: NBREG with a log link function (Stata 2012). The CLUSTER option was used to account for the multilevel structure of the data (clients nested in programs) and obtain more accurate estimates of standard errors (Blakely and Woodward 2000), as suggested in other research (see Guerrero et al. 2012b; Marsh et al. 2009). In particular, negative binomial regression with robust standard errors was used to analyze overdispersed wait time and duration measures (i.e., their variance was much greater than their mean; Cameron and Trivedi 2009). Compared to Poisson regression, which is generally used to model count data, negative binomial analysis is more efficient at modeling overdispersed outcomes using the extra parameter of exposure to an event (Cameron and Trivedi 2009; Xiang et al. 2007). Client age was used to differentiate between event exposure (wait time and duration), consistent with other studies (see Guerrero 2013; von Sydow et al. 2002).

The parameters presented in negative binomial regression are expressed as incidence rate ratios (IRRs). IRRs can be interpreted as the estimated rate ratio for a 1-unit increase in the independent variable, given the other variables are held constant in the model. For example, if a score for personal involvement in minority communities (range 0–50) increased by 1 point, the ratio for number of wait days would be expected to decrease by a factor of IRR = 0.878.

We conducted four main models. The first two models tested individual components of program capacity (i.e., leadership, readiness for change, Medi-Cal acceptance) on wait time and treatment duration using two negative binomial regression models (see Table 2). The third and fourth models relied on two negative binomial regression models using a latent class variable as the main independent variable of interest representing high-capacity programs (see Table 3).

To develop the latent class variable, we relied on latent profile analysis to identify levels of program capacity. We relied on leadership, readiness for change, and Medi-Cal acceptance to develop latent classes. Latent profile analysis can incorporate continuous, ordinal, and categorical indicators, in contrast to latent class analysis, which can only accommodate categorical indicators. We determined latent classes that represented different levels of program capacity by considering different solutions for multiple latent profiles (e.g., two classes, three classes, etc.). Established procedures and statistics such as the Bayesian information criterion allowed us to determine the appropriate number of classes (Muthén 2001). Consistent with benchmarking methodologies used in NIATx (2011) studies, we relied on this latent class variable as a main independent variable in Table 3.

The relationship between program capacity and client outcomes was evaluated after controlling for program and client covariates. The fundamental equation (Lazarsfeld and Henry 1968) of the latent profile model (Eq. 1) was expressed as:

$$\sigma_{ij}^2 = \sum_{k=1}^{K} \pi_k (\mu_{ik} - \mu_i)^2 + \sum_{k=1}^{K} \pi_k \sigma_{ijk}^2 \quad (1)$$

In Eq. 1, i and j ($i \neq j$) are index-specific variables and k designates a specific latent class, such that μ_{ik} represents the mean and σ_{ijk}^2 represents the variance for variable i in group j, k is the total number of latent classes, and π_k indicates the proportion of cases belonging to each class $\left(\left(\sum_{k=1}^{K} \pi_k = 1\right)\right)$. After testing a series of competing models with different latent classes and comparing model estimates, we selected two as the appropriate number of latent classes. These two classes represented high- and low-capacity programs. This categorization represents differences in organizational resources and responsiveness and is consistent with the current literature that highlights two distinct type of AHS organizations: small, recovery-oriented and community-based treatment providers versus large providers that are part of a corporate parent health care organization (Chalk 2010; McLellan et al. 2003; Rawson and McLellan 2010).

Results

Findings partially supported Hypothesis 1. Medi-Cal acceptance was the only capacity factor negatively associated with wait time (IRR = 0.306, $p < .001$). Findings partially supported Hypothesis 2. Readiness for change measured by motivation for change was positively

Table 2 Multilevel negative binomial regression of program capacity factors on wait time and treatment duration

	Wait time			Treatment duration		
	IRR	*SE*	95 % CI	IRR	*SE*	95 % CI
Medi-cal acceptance	0.306***	0.100	0.161, 0.582	0.958	0.079	0.821, 1.119
Readiness for change						
Motivation for change	0.982	0.012	0.959, 1.006	1.011*	0.005	1.000, 1.021
Resources	1.050	0.039	0.974, 1.133	0.998	0.008	0.982, 1.014
Staff attributes	0.908	0.050	0.823, 1.003	0.979**	0.007	0.965, 0.993
Directorial leadership	0.983	0.045	0.899, 1.075	1.006	0.005	0.995, 1.016

Organizational climate, a subscale of readiness for change, was not included because it was correlated with staff attributes at 82 %. We adjusted for program-level variables (private insurance, organizational cultural competence, public health services, and public funding) and client-level variables (gender, mental illness, homeless, Medi-Cal eligibility, referral type, race, and treatment type)

* $p < .05$; ** $p < .01$; *** $p < .001$

associated with treatment duration (IRR = 1.011, $p < .05$). However, staff attributes were negatively associated with treatment duration (IRR = 0.979, $p < .01$). See Table 2 for results regarding Hypotheses 1 and 2.

Findings supported Hypothesis 3. The latent variable representing high-program capacity (high leadership, readiness for change, and having a Medi-Cal payment system) was negatively associated with wait time (IRR = 0.021, $p < .001$) after controlling for all other organizational and client factors (see Table 3).

Findings also supported Hypothesis 4. The latent variable representing high-program capacity was positively associated with treatment duration (IRR = 1.295, $p < .001$) after controlling for all other organizational and client factors.

Findings did not support Hypothesis 5, i.e., the degree of cultural competence did not moderate the relationship between high-capacity OSAT programs and wait time (Hypothesis 5a), nor did cultural competence moderate the relationship between high-capacity OSAT programs and treatment duration (Hypothesis 5b).

Table 3 also shows other statistically significant relationships. Consistent with other studies, a high degree of cultural competence was associated with longer treatment duration (IRR = 1.157, $p < .001$). Public funding (IRR = 0.990, $p < .001$) and licensed programs (IRR = 0.402, $p < .001$) were negatively associated with wait time. Compared to self-referral, all other referral sources were positively related to wait time. Compared with non-Latino Whites, Blacks (IRR = 0.811, $p < .05$) and Latinos (IRR = 0.771, $p < .001$) were negatively related to wait time. Finally, homelessness was also negatively associated with wait time (IRR = 0.702, $p < .001$).

Treatment duration was also positively associated with several program and client characteristics. Compared to a low degree of cultural competence, programs with high cultural competence were positively related to treatment duration (IRR = 1.157, $p < .001$). Licensed programs were also positively related to treatment duration (IRR = 1.148, $p < .05$), whereas methadone programs were associated with shorter treatment duration, as expected (IRR = 0.849, $p < .05$). Compared to self-referral, Proposition 36 (IRR = 0.826, $p < .001$) and social services referrals (IRR = 0.849, $p < .001$) were negatively related to treatment duration, as was homelessness (IRR = 0.925, $p < .05$). A positive relationship was found between treatment duration and Medi-Cal-eligible clients (IRR = 1.105, $p < .001$).

Discussion

Findings partially supported our organizational capacity framework, which posited that high-capacity community-based programs, those with greater leadership and readiness for change, and those that accepted Medi-Cal would report decreased client wait times (i.e., better access) and increased treatment duration (i.e., better engagement) than low-capacity outpatient treatment programs. When testing a latent class that measured program capacity to reduce disparities in care, clients in minority communities reported greater access to and duration in care. As latent measures, leadership, readiness for change, and Medi-Cal acceptance were related to decreased wait time and increased treatment duration, and some individual indicators of capacity were also related to these client process outcomes.

Medi-Cal acceptance was the most important single component of program capacity negatively associated with wait time. This is an important finding for building program capacity in an era of expanded public health insurance (Andrulis et al. 2010; Guerrero 2013; Rawson and McLellan 2010). Indeed, individuals eligible for Medi-Cal were more likely than ineligible clients to initiate treatment faster and stay in treatment longer, suggesting that both

Table 3 Multilevel negative binomial regressions of program capacity on wait time and treatment duration

	Wait time			Treatment duration		
	IRR	*SE*	95 % CI	IRR	*SE*	95 % CI
Program characteristics						
High program capacity	0.021***	0.009	0.009, 0.046	1.295***	0.074	1.159, 1.447
High cultural competence	1.016	0.089	0.856, 1.207	1.157***	0.040	1.081, 1.238
High capacity × high cultural competence	0.003	9.927	0.001, 0.006	0.930	0.123	0.716, 1.208
Public funding	0.990***	0.001	0.988, 0.991	1.000	0.000	0.999, 1.001
License	0.402***	0.108	0.238, 0.680	1.148*	0.081	1.000, 1.318
Accreditation	1.166	0.123	0.947, 1.434	1.050	0.043	0.970, 1.137
Methadone	0.533	0.213	0.243, 1.167	0.849*	0.055	0.749, 0.964
Referral source[a]						
Community	2.275***	0.257	1.823, 2.840	0.946	0.027	0.895, 1.000
Proposition 36	3.466***	0.360	2.828, 4.247	0.826***	0.027	0.775, 0.880
Drug court	1.537**	0.218	1.163, 2.031	1.009	0.040	0.934, 1.089
Social services	1.735***	0.185	1.408, 2.137	0.849***	0.026	0.799, 0.902
Client characteristics						
Medi-Cal eligible	0.496***	0.132	0.294, 0.835	1.105***	0.029	1.051, 1.163
Race						
Black	0.811*	0.072	0.681, 0.966	0.975	0.027	0.923, 1.029
Latino	0.771***	0.054	0.672, 0.884	0.989	0.024	0.943, 1.037
Other	0.808	0.105	0.627, 1.043	1.008	0.042	0.928, 1.094
Mental health issues	1.041	0.080	0.895, 1.210	1.004	0.024	0.959, 1.052
Homeless	0.702***	0.067	0.583, 0.847	0.925*	0.030	0.869, 0.985

Low program capacity, low cultural competence, outpatient, self-referral, and White served as reference categories for program capacity, program type, referral source, and race and ethnicity, respectively

* $p < .05$; ** $p < .01$; *** $p < .001$

[a] Measures at the client level

client eligibility and program capacity to accept Medi-Cal are important components of access to care in AHS.

Other important structural factors associated with access to care, namely public funding and program licensure, were associated with reduced wait times. These findings are consistent with the neoinstitutional theory argument that through funding resources, policies, and licensing, the state incentivizes or coerces organizations to meet goals with public cachet (DiMaggio and Powell 1983; Meyer and Rowan 1977), such as immediate access to care. Findings also support a growing body of empirical research suggesting that the dependence of OSAT organizations on external funding and regulation allow them to become responsive to client service needs (Gotham et al. 2010; Guerrero 2010; Simpson et al. 2007).

Wait time to access treatment was longer for most referrals sources compared to self-referral. This finding is concerning, because most referrals do not originate with the client (66 %). Findings in the literature regarding the role of referrals in access to AHS have been inconsistent (Greenfield et al. 2007). Yet referral by criminal justice sources plays an important role in treatment duration and completion, particularly for ethnic minorities (Grella and Joshi 1999; Guerrero et al. 2013). Thus, factors and processes related to criminal justice, public health, and social service referrals that enhance access to care require further investigation.

Black and Latino clients, compared to non-Latino Whites, had negative associations with wait time. In a publicly funded system in which minority clients account for more than 75 % of all clients served, it is critical to further investigate the enabling processes that improve access for all clients. In particular, after accounting for program capacity and quality of care (i.e., cultural competence), future research should consider identifying sociodemographic and racial and ethnic factors associated with selecting programs that rely on evidence-based practices to engage all clients.

In terms of treatment duration, motivation for change, a subscale of readiness for change, was positively associated with treatment duration, whereas staff attributes for change were negatively associated with treatment duration. Albeit

speculative, program and staff development in terms of satisfied program and training needs and pressure for change (subscales of motivation for change) may be a better measure of quality of care to engage clients compared to supervisor reports on staff attributes (i.e., growth, efficacy, influence, and adaptability). The negative relationship between staff attributes and treatment duration is puzzling. The assumption is that a well-trained and professional workforce may be better equipped to engage clients. However, the scale assessing staff attributes related to organizational readiness for change was not designed to capture specific skills to engage racial and ethnic minority clients, such as a direct measure of cultural competency. Consistent with emerging studies (Guerrero 2013; Guerrero et al. 2012a) and study findings, programs with high degree of cultural competence is associated with higher retention of minority clients in care.

Also consistent with other research, there was a positive association between program licensure and treatment duration, whereas compared to regular OSAT programs, methadone programs showed a negative association with treatment duration. As previously indicated, institutional resources may support program capacity to engage clients (Gotham et al. 2010; Guerrero 2010; Simpson et al. 2007). Reduced treatment duration in methadone maintenance programs may be expected because these programs are mainly detoxification and outpatient stabilization programs, which compared to regular OSAT may have shorter treatment duration rates. As for referral sources, compared to self-referral, Proposition 36 (i.e., probation and treatment rather than incarceration) and social services referrals were negatively related to treatment duration, potentially signaling that these clients move through their treatment episode more efficiently compared to self-referral. Finally, clients entering services via Proposition 36 referrals are more likely than self-referred clients to complete treatment (Guerrero et al. 2013), suggesting that criminal justice oversight may, on average, shorten clients' stay in any given treatment episode.

Limitations

Limitations associated with study data must be considered when interpreting findings. First, all measures were derived from cross-sectional data, preventing inference of causality or directionality. However, the large sample of programs and clients provided robust estimates. Second, program measures were provided by one manager per program, potentially leading to social desirability. Informed by large organizational studies (D'Aunno 2006; Knudsen et al. 2006; Roman et al. 2011), this study's key-informant model with cross-validation checks allowed collection of system data from a larger number of programs. Some studies have suggested relying on multiple informants to identify significant variability among staff members regarding organizational climate variables (Courtney et al. 2007) or reduce response bias from managers who are asked to rate implementation of evidence-based practices (e.g., Adams et al. 1999; Lee and Cameron 2009). However, other studies have found that the organizational readiness for change scales did not discriminate between responses of staff and supervisors, using aggregates in the final analysis (Saldana et al. 2007). We attempted to reduce response bias by completing validity checks (using funding data, counselor reports, and printed materials at program sites) with 91 % of the sample during site visits and excluded 10 programs that provided inconsistent data. Finally, findings regarding service delivery and client outcomes can be generalized only to the sampling frame: publicly funded OSAT programs serving communities with a population of 40 % or more Latino or Black residents or both, or approximately 7.7 million residents in L.A. County, California. However, this study provides a preliminary understanding of program capacity issues related to client outcomes in a large, urban, and diverse region of the United States.

Conclusion

Health care reform seeks to improve access to health care and improve population health though meaningful engagement in care. Findings from the current study highlight the importance of using program capacity to understand system performance in terms of client-centered outcomes. Development of a payment system that accepts public insurance reimbursement in programs located in low-income and minority communities is a critical step to improve access to OSAT. In addition, improving leadership and readiness for change in the current change environment (e.g., Aarons et al. 2014) are essential components of building capacity to eliminate disparities in access to and engagement in care. Future research should examine how these components of program capacity are affected by changes in public insurance coverage and billing and how they ultimately influence outcomes that may contribute to health equities.

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