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Short Communication

Predictors of buprenorphine treatment success of opioid dependence in two Baltimore City grassroots recovery programs

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ABSTRACT

Introduction: Despite evidence for the efficacy of buprenorphine treatment in primary care, few studies have identified factors associated with treatment success, nor have such factors been evaluated in community settings. Identifying correlates of treatment success can facilitate the development of treatment models tailored for distinct populations, including low-income communities of color. The current study examined client-level sociodemographic factors associated with treatment success in community-based buprenorphine programs serving vulnerable populations.

Methods: Data were abstracted from client records for participants (N = 445) who met DSM-IV criteria for opioid dependence and sought treatment at one of Behavioral Health Leadership Institute's two community-based recovery programs in Baltimore City from 2010 to 2015. Logistic regression estimated the odds ratios of treatment success (defined as retention in treatment for ≥ 90 days) by sociodemographic predictors including age, race, gender, housing, legal issues and incarceration.

Results: The odds of being retained in treatment ≥ 90 days increased with age (5% increase with each year of age; $p < 0.001$), adjusting for other sociodemographic factors. Clients who reported unstable housing had a 41% decreased odds of remaining in treatment for 90 or more days compared to clients who lived independently at intake. Treatment success did not significantly differ by several other client-level characteristics including gender, race, employment, legal issues and incarceration.

Conclusions: In vulnerable populations, the age factor appears sufficiently significant to justify creating models formulated for younger populations. The data also support attention to housing needs for people in treatment. Findings from this paper can inform future research and program development.

1. Introduction

Opioid addiction is a significant public health problem in the United States. According to the National Survey on Drug Use and Health, 32 million individuals reported lifetime abuse of prescription opioids, and > 1.9 million people aged 12 or older reported abusing prescription opioids in the past year (Substance Abuse and Mental Health Services Administration, 2013). Medication-assisted treatment (MAT)—which reduces opioid use by blocking its euphoric effects—has been found more effective than abstinence programs (Jerry & Collins, 2013; Timko, Schultz, Cucciare, Vittorio, & Garrison-Diehn, 2015). Buprenorphine[1] is increasingly utilized in MAT programs (Stein et al., 2012; Drago, 2015). Systematic reviews of studies evaluating buprenorphine MAT programs in primary care reported relatively high retention rates and significant reduction in opioid dependence (Mattick, Green, Kimber, & Davoli, 2014), and data suggest buprenorphine treatment involves fewer risks and greater convenience than methadone (Pinto et al., 2010; Bonhomme, Shim, Gooden, Tyus, & Rust, 2012).

To address the U.S. opioid addiction problem effectively, it is important to identify correlates of buprenorphine treatment success and failure to facilitate tailored delivery of MAT for individuals who need it. Few studies, however, have assessed factors associated with treatment success or failure (Ziedonis et al., 2009). The limited number of prior studies addressing this issue have suggested that buprenorphine treatment success is correlated with private insurance (Mintzer et al.,

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[1] Buprenorphine and naloxone, a medication used to prevent opioid overdose deaths, are used in combination in most MAT programs, including the BHLI program described in this paper.

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2007), older age (Dreifuss et al., 2013; Mintzer et al., 2007), first time treatment, and negative history of injection drug use (Dreifuss et al., 2013), whereas treatment failure was associated with younger age (Armenian, Chutuape, & Stitzer, 1999; Backmund, Meyer, Eichenlaud, & Schutz, 2001), being single (Armenian et al., 1999), having more severe drug problems (Franken & Hendriks, 1999), and history of incarceration (Backmund et al., 2001). These studies have not generally reported on the race or ethnicity of their participants and have not explored possible associations of race/ethnicity with treatment success. Moreover, researchers have primarily evaluated buprenorphine treatment in primary care and have not studied community populations–including low-income communities of color–who may experience barriers to treatment access, thereby limiting generalizability of previous findings.

To address the needs of low-income, predominantly African-American communities with limited MAT access, since 2010 the Behavioral Health Leadership Institute (BHLI) a Baltimore City-based nonprofit organization, has partnered with two, 24-h, community-based recovery centers located in East (Dee's Place) and West (Recovery in Community, RIC) Baltimore, to provide buprenorphine treatment. The program relies on peer outreach and engagement to build relationships in the community and improve participation in treatment. This study assessed client-level socio-demographic characteristics to identify factors associated with treatment success or failure in BHLI's community-based buprenorphine recovery programs.

2. Methods

2.1. BHLI program sites, study sample, and program approach

As noted above, BHLI's program sites (Dee's Place and RIC) are community-based recovery centers in Baltimore. The proximity of recovery centers to where clients live, in addition to ancillary services these centers offer, such as peer support, substance use counseling, and case management services, have potential to increase client engagement in the buprenorphine treatment program (Daniels, Salisbury-Afshar, Hoffberg, Agus, & Fingerhood, 2014).

The BHLI program provides the following services: On the first day of enrollment, each client meets with a physician, a nurse, and a peer counselor. In addition, the client meets with the team to provide a full medical, psychiatric, and social history, as well as a urine test. Clients call and speak with the nurse daily to support treatment compliance. During the weekly in-person visit with a physician and a nurse, an observed urine drug screen is administered. Clients that have a positive drug test are brought in for a team meeting and meet several times a week with the outreach counselor and the substance use counselor according to an individual plan. Each enrollee is also required to attend daily one-hour group meetings, which might be Narcotics Anonymous meetings or site-specific men/women groups. It is estimated that each enrollee spends 12–20 h on program activities depending on their individual needs. The only eligibility requirements are being in withdrawal and expressing willingness to participate. (See Daniels et al. (2014) for a more detailed description of the program).

Data for this study were abstracted from program records for client meeting DSM-IV criteria for opioid dependence and having sought treatment at one of Behavioral Health Leadership Institute's two community-based recovery programs in Baltimore City from June 2010 through November 2015. All clients across the two sites were self-referred, and participated in treatment voluntarily.

2.2. Assessment of treatment success and sociodemographic predictors

Information on client characteristics, including length of program participation and age, gender, race/ethnicity, housing, employment status, insurance status, history of legal issues, and incarceration history, was abstracted from client records.

Treatment Success was operationalized as program participation length. Although there is no consensus regarding the treatment length that constitutes "success," previous studies have defined treatment success as remaining in treatment at least 90 days (Dreifuss et al., 2013; Daniels et al, 2014; Schuman-Olivier, 2014; Drago, 2015). BHLI providers also reported observing greater treatment success for clients in program at least 90 days. Participation length was dichotomized as *short participation* (program stay < 90 days) and *long participation*, (stay ≥ 90 days).

Sociodemographic Correlates were reported as categorical variables. *Housing* included: independent, living with family/friends, homeless, recovery house, transition house, or other. *Employment status* was categorized as unemployed, employed, or disabled/other. *Insurance status* included Medicare, Medicaid, PAC,[2] other, or uninsured. *Legal history* was categorized as no history, parole, probation, or past history.

2.3. Data analytic strategy

Summary statistics, including frequencies and measures of central tendency, were assessed for all variables. A two-sample *t*-test was computed to compare mean BHLI-BP treatment length for discharged vs. transitioned clients. Discharged clients were clients for whom treatment was not working, such as clients who continued active opioid use. Transitioned clients were those who transitioned to a primary care provider since BHLI serves as an induction and stabilization program. Chi-squared tests for differences in group means and proportions by outcome status were also performed. Individuals leaving treatment due to incarceration, administratively withdrawn, or transferred to higher level of care were excluded. Logistic regression analyses were performed because the dependent variable, participation length, was dichotomous (≥ 90 days versus < 90 days). The results were reported as odds ratios. Analyses were conducted using STATA 13.0 (StataCorp, 2013).

3. Results

Table 1 shows the baseline characteristics of the analytic sample ($N = 445$). Most clients were African-American (84%), male (61%), and unemployed (74%), with a mean age of 49.0 years. Over half of clients (56%) reported past legal issues; 28% reported being on parole or probation. Housing, employment and legal status were statistically different comparing clients from the two BP sites ($p < 0.05$). Approximately 19% of RIC clients were in a recovery house compared to 4% of those in Dee's Place; over half of Dee's Place clients (55%) reported living with family/friends. The majority of clients relied on public forms of insurance (Primary Adult Care (PAC): 40%; Medicare and/or Medicaid: 32%), and 19% were uninsured. Insurance status was statistically different between the two sites ($p = 0.001$). The majority of RIC clients were enrolled in PAC at intake (56%), while 33% had PAC at Dee's Place.

Close to half the clients served across the two sites were between the ages of 45–54 (46.4%). Approximately 1 out of 5 clients (20.5%) was over age 55, and approximately 1 out of 6 clients (18.5%) was between 35 and 44 years old. Few individuals were younger than 35 (7.2%).

In terms of participation length, 37.5% ($n = 156$) of clients remained in the program at least 90 days. Participation length was unknown for 3.6% ($n = 16$) of the clients, as their end dates were not recorded. Clients no longer in the program as of December 1, 2015 had a median participation length of 49 days and a mean of 79.5 days ($SD = 87.15$).

The odds of being retained in treatment at least 90 days significantly increased with age (5% increase with each increase year of age;

[2] PAC ended in January 2015 after Medicaid expansion through the Affordable Care Act.

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