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Treatment outcome disparities for opioid users: Are there racial and ethnic differences in treatment completion across large US metropolitan areas?

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ABSTRACT

Background: The present study examined racial/ethnic disparities in initial treatment episode completion for adult clients reporting opioids as their primary problem substance in large US metropolitan areas.

Methods: Data were extracted from the 2013 TEDS-D dataset (Treatment Episode Dataset-Discharge) for the 42 largest US metropolitan statistical areas (MSAs). Fixed effects logistic regression controlling for MSA was used to estimate the effect of race/ethnicity on the likelihood of treatment completion. The model was repeated for each individual MSA in a stratified design to compare the geographic variation in racial/ethnic disparities, controlling for gender, age, education, employment, living arrangement, treatment setting, medication-assisted treatment, referral source, route of administration, and number of substances used at admission.

Results: Only 28% of clients completed treatment, and the results from the fixed effects model indicate that blacks and Hispanics are less likely to complete treatment compared to whites. However, the stratified analysis of individual MSAs found only three of the 42 MSAs had racial/ethnic disparities in treatment completion, with the New York City (NYC) MSA largely responsible for the disparities in the combined sample. Supplementary analyses suggest that there are greater differences between whites and minority clients in the NYC MSA vs. other cities on characteristics associated with treatment completion (e.g., residential treatment setting).

Conclusion: This study underscores the need for improving treatment retention for all opioid using clients in large metropolitan areas in the US, particularly for minority clients in those localities where disparities exist, and for better understanding the geographic context for treatment outcomes.

1. Introduction

1.1. Background

Illicit opioid use represents one of the most harmful drug problems globally, responsible for an estimated 70% of the world's burden of disease attributable to drug use disorders as well as 66% of the 63,632 US drug overdose deaths in 2016 (Seth et al., 2018; United Nations Office on Drugs and Crime (UNODC, 2017). Although the US is the global leader in both absolute numbers (one quarter of the world's total) and rates of overdose deaths, other nations such as Canada, Australia, Ireland, Turkey, England, Wales, and Scotland have all seen recent substantial increases in overdose mortality, primarily due to opioids (European Monitoring Centre for Drugs and Drug Addiction (EMCDDA, 2017a; United Nations Office on Drugs and Crime (UNODC, 2017). An important pillar for policy strategies to address the current opioid overdose crisis has been to provide increased access and capacity for treatment for those with opioid use disorders (OUDs) (Evans and Farrelly, 2017; Franklin et al., 2015; Murphy et al., 2016). One of the most widely used proximal measures of treatment effectiveness for substance use disorders (SUDs) is treatment completion (Brorson et al., 2013), generally defined as successfully completing treatment goals (Greenfield et al., 2007). Despite evidence showing sustained recovery may involve multiple episodes over time (Guerrero, 2013; McKay and Weiss, 2001), individual treatment completion episodes can serve as an important indicator associated with longer term abstinence, fewer relapses, higher levels of employment, higher wages, fewer readmissions, less future criminal involvement, and better health (Brorson et al., 2013).

Black and Hispanic people in the US tend to have lower treatment utilization rates, greater barriers to receiving treatment, and poorer outcomes, including treatment completion, compared to white clients (Alegría et al., 2006, 2011; Arndt et al., 2013; Guerrero et al., 2013a; National Research Council, 2003; Saloner and Le Cook, 2013). Similarly, in Europe, there has been a recent recognition that ethnic minorities, migrants, refugees, and asylum seekers who have substance

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use problems may be particularly vulnerable to barriers in accessing needed treatment services (European Monitoring Centre for Drugs and Drug Addiction (EMCDDA, 2017b). Evidence suggests that race/ethnicity also interacts with other factors, such as drug of choice and treatment modality, to produce disparities in treatment completion (Mennis and Stahler, 2016; Stahler et al., 2016), and these differences in outcomes vary considerably across different areas of the country (Arndt et al., 2013; Cummings et al., 2011; Guerrero et al., 2013a). The use of aggregate national level data may therefore mask geographic variations that may have important implications for SUD treatment policies that are generally implemented at the regional or municipal level in the US. This is particularly important when examining treatment outcomes for OUDs because of geographic variations in demographic characteristics, prevalence, overdose incidence, treatment systems, illicit opioid availability, and insurance coverage that exist in the US (Cummings et al., 2014; Hand et al., 2017; Martins et al., 2017; Rossen et al., 2014; Substance Abuse and Mental Health Services Administration (SAMHSA, 2017). Even in nations with more centralized national treatment systems, geographic variations in prevalence patterns and treatment access may be substantial (Morley et al., 2017; United Nations Office on Drugs and Crime (UNODC, 2017). While epidemiologic research has found important geographic and demographic differences in patterns of opioid use cross nationally (United Nations Office on Drugs and Crime (UNODC, 2017), among rural and urban users (Rigg and Monnat, 2015), across regions (Hand et al., 2017; Martins et al., 2017), and across different metropolitan areas (Roberts et al., 2010), few studies have focused on the geographic variation in racial/ethnic treatment outcome disparities (Arndt et al., 2013).

1.2. Present study

The present study examined racial and ethnic disparities in successfully completed treatment episodes for first time adult clients reporting opioids as a primary substance of use across the largest US metropolitan areas (populations greater than one million) using data extracted from the 2013 Treatment Episode Dataset-Discharge (TEDS-D) (Substance Abuse and Mental Health Services Administration (SAMHSA, 2015). We limited our sample to large metropolitan areas because there are considerable differences between urban and rural drug use patterns, treatment systems, and demographic characteristics, especially regarding opioid use (Wang et al., 2013). In addition, there are particularly large concentrations of minority groups in the largest metropolitan areas, and many smaller metropolitan areas have few OUD treatment discharges for certain racial/ethnic groups in the TEDS-D dataset, limiting statistical analyses for these areas.

Our major research questions were: (1) Are there racial/ethnic disparities in first time treatment episode completion for clients reporting opioid use as their primary substance of use in large metropolitan areas in the US? Based on prior research demonstrating racial/ethnic disparities (e.g., Guerrero et al., 2013a, b; Mennis and Stahler, 2016), we hypothesize that black and Hispanic opioid users will have a lower likelihood of treatment completion compared to whites. (2) If there are racial/ethnic disparities in first time treatment episode completion for clients reporting opioid use as their primary substance of use, do these disparities vary across large metropolitan areas in the US? Based on prior research showing geographic variation in disparities in treatment completion (Arndt et al., 2013; Saloner et al., 2014), we hypothesize that metropolitan areas will vary significantly in their level of racial/ethnic disparity.

2. Methods

2.1. Data source and sample

The data used for this study were extracted from the 2013 TEDS-D dataset (Substance Abuse and Mental Health Services Administration (SAMHSA, 2015). This dataset is compiled from an annual survey conducted by the federal government of state agencies concerning SUD treatment programs. It includes most publicly funded treatment admissions in the US during a given year and is considered generally representative of a national sample (Substance Abuse and Mental Health Services Administration (SAMHSA, 2015).

For the present study, we limited our sample to adults (18 and over) whose primary substance use was opioids (including heroin, non-prescription methadone, and synthetic and other opioids) living in a metropolitan statistical area (MSA) with a population greater than one million (according to the US Census Bureau). We included residential and outpatient treatment settings, but detoxification was excluded since it is generally regarded as only an initial stage of treatment (NIDA, 2018). This exclusion is consistent with other studies on treatment completion using the TEDS-D dataset (e.g., Krawczyk et al., 2017a; Sahker et al., 2015; Saloner et al., 2014; Stahler et al., 2016). Because the dataset is based on discharges and not individuals, we limited our sample to only those records that had “no prior admissions,” ensuring that each case is a unique individual, an approach consistent with our own and others’ prior research (Arndt et al., 2013; Krawczyk et al., 2017a; Sahker et al., 2015; Stahler et al., 2016). Our final sample comprised 34,380 cases located in 42 MSAs.

2.2. Independent and dependent variables

Our primary dependent variable was treatment episode completion, defined in the dataset as “all parts of the treatment plan or program were completed,” and where non-completion included the designations of “left against professional advice” and “terminated by the facility” (Substance Abuse and Mental Health Services Administration (SAMHSA, 2015). We use the term “treatment completion” here to refer to completion of a single treatment episode. As in previous research (Mennis and Stahler, 2016), we excluded cases with other discharge outcomes including “transferred to another treatment program or facility,” “incarcerated,” “death,” “other,” and “unknown” to create the strongest possible contrast between successful and unsuccessful treatment completion outcomes. In addition, we note that the dataset includes only clients who are discharged from treatment during the particular year; data for clients admitted but currently receiving treatment would not be included in the dataset. Our primary independent variable was race/ethnicity, coded using five mutually exclusive categories: non-Hispanic white, non-Hispanic black, Hispanic, Asian (including Pacific Islanders), and Other race/ethnicity, where Hispanics of any race or ethnic origin were included in the Hispanic category (Mennis and Stahler, 2016; Sahker et al., 2015; Saloner and Le Cook, 2013). Control variables were derived from prior research (Mennis and Stahler, 2016; Stahler et al., 2016) and included: gender, age, education, employment, living arrangement, treatment setting, medication-assisted treatment, referral source, primary route of administration, and number of substances used at admission.

2.3. Analytic plan

To investigate the unadjusted effect of each of our independent variables on treatment completion, we used the chi-squared statistic to test for significant differences for each independent variable categorical value. We employed logistic regression to estimate the effect of race/ethnicity on the probability of treatment completion while controlling for the confounding variables listed above. We then tested a second analogous model using a fixed effects logistic regression to control for the effect of the MSA within which the treatment discharge occurred. To investigate whether the effect of race/ethnicity on treatment completion differs by MSA, we employed a stratified design to calculate the treatment completion percentage for each race/ethnicity category within each MSA. We then estimated separate logistic regression equations of race/ethnicity on the likelihood of treatment completion

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