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Associations Between Polysubstance Use Patterns and Receipt of Medications for Opioid Use Disorder Among Adults in Treatment for Opioid Use Disorder

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Objective: To examine trends in polysubstance use among adults in treatment for opioid use disorder (OUD) and estimate associations between polysubstance use patterns and receipt of medications for OUD (MOUD).

Methods: We conducted a cross-sectional longitudinal analysis of treatment admissions for opioid use from 1992 to 2017 using the Treatment Episodes Data Set-Admissions ($N = 9{,}440{,}157$). We used multiple logistic regression to examine co-use patterns and estimate associations between receipt of MOUD and polysubstance use categories (opioid only, any methamphetamine, any cocaine, any alcohol, any benzodiazepine).

Results: Between 1992 and 2017, treatment admissions involving opioid/cocaine (−17.2 percentage points [PP]) and opioid/alcohol co-use (−12.5 PP) decreased while opioid/methamphetamine (10.1 PP) and opioid/benzodiazepine co-use (5.6 PP) increased. In 2016 to 2017, receipt of medications for OUD was significantly higher for those who used opioids only (38.5%; 95% confidence interval [CI] 38.4–38.6) compared with individuals who used opioids with cocaine (35.7%; 95% CI 35.6–35.9), methamphetamine (23.9%; 95% CI 23.7–24.2), alcohol (25.0%; 95% CI 24.8–25.2), or benzodiazepines (34.6%; 95% CI 34.3–34.9). If those who co-used opioids with other substances received MOUD at the same rate as those who used opioids only, 47,400 additional people would have received MOUD between 2016 and 2017.

Conclusions: Opioid/methamphetamine and opioid/benzodiazepine increased substantially between 1992 and 2017. Co-use of other substances with opioids was associated with significantly lower receipt of MOUD. Treatment facilities should increase access to MOUD for individuals who co-use opioids with other substances. This change would extend evidence-based treatment to thousands of individuals and save lives.

Key Words: medications for opioid use disorder, methamphetamine use, opioid use disorder, polysubstance use

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More than 47,000 individuals died from an opioid overdose in 2017.[1] According to preliminary data from 2018, more than half of opioid overdose deaths involved another substance like methamphetamine, cocaine, or benzodiazepines.[2] Those who co-use opioids with other substances are at a higher risk of fatal and nonfatal overdose, psychiatric diagnoses, HIV, and hepatitis.[3–5] Co-use of opioids and other substances has increased substantially in the last decade. For example, rates of opioid/methamphetamine co-use increased 15 percentage points from 2011 to 2017 among a sample of adults seeking treatment for opioid use disorder (OUD).[6]

Medications for opioid use disorder (MOUD), such as methadone and buprenorphine, decrease opioid cravings and substantially decrease overdose-related mortality.[7] Opioid agonist treatments are first line therapy for treatment of OUD, and evidence suggests that they may also decrease use of other substances.[8,9] Prior to 2017, the FDA advised caution when prescribing MOUD for individuals who co-used opioids with alcohol or benzodiazepines.[10] However, new guidelines indicate that MOUD can safely be prescribed independent of co-use with stimulants,[8] alcohol, or benzodiazepines.[11,12] Nonetheless, many clinicians are reluctant to prescribe agonist medications for OUD for patients who are actively using other substances.[13]

Given that opioids are frequently used with other substances, it is essential to understand patterns of co-use and their associations with receipt of MOUD. We examined longitudinal trends in the co-use of opioids with other

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substances and analyzed associations between co-use patterns and likelihood of receiving MOUD among US adults seeking treatment for opioid use. We hypothesized that substances co-used with opioids would change over time and that those who co-used opioids with other substance would receive MOUD at lower rates.

METHODS

Data Source and Sample

We used data from the Treatment Episodes Data Set-Admissions (TEDS-A) from the Substance Abuse and Mental Health Services Administration (SAMHSA).[14] SAMHSA requests that treatment centers who receive public funding report all admissions and the primary, secondary, and tertiary substances leading to admission to treatment. We restricted our sample to those who had an OUD by only including admissions that listed heroin, nonprescription methadone, or other synthetic opioids as the primary reason for treatment. We included admissions of adults (18 and older) to treatment from 1992 to 2017, inclusive of all years of available data.

Key Variables

Our primary outcome variable was receipt of MOUD while in treatment. TEDS-A includes one MOUD variable that includes methadone, buprenorphine, and naltrexone. We restricted this analysis to the most recent 2 years of data (2016–2017) to reflect current clinical practice and prescribing guidelines.

We examined longitudinal trends in co-use of opioids with other substances for all available years. Treatment facilities reported up to three substances that led to the patient's admission. We examined trends in co-use of opioids with any alcohol, cocaine (including crack cocaine), methamphetamine (including other psychostimulants; 84% of reported psychostimulant use was related to methamphetamine), and benzodiazepines. Categories were not mutually exclusive.

Statistical Analyses

We used STATA 15.1 for all analyses. We used logistic regression models to assess trends in use of opioids only and co-use of opioids with any alcohol, cocaine, methamphetamine, or benzodiazepines over time, adjusted for sociodemographic variables and treatment setting (see Table, Supplemental Digital Content 1, http://links.lww.com/JAM/A210). We also used a multiple logistic regression model to predict receipt of MOUD by co-use category in 2016 to 2017. We again adjusted for sociodemographic variables and treatment setting and included 4 binary co-use variables to examine independent relationships between each co-use category and MOUD. We used postestimation predictive margins with covariates held at observed sample values to generate the adjusted rate of MOUD for opioids only and each co-use category. We estimated the number of people who would have received MOUD if those who co-used opioids with other substances received MOUD at the same rate as those who used opioids alone by multiplying the number of people who co-used opioids with other substances in 2016/2017 by the difference in MOUD rates.

RESULTS

During the study period (1992–2017), 9,440,157 admissions had opioids as the primary substance leading to the treatment episode. There was a substantial increase in opioid-related admissions from 1992 ($N = 182,276$) to 2017 ($N = 680,612$). Approximately half of admissions were for opioids without other substances ($N = 4,728,081$, 50.1%). Opioid/cocaine co-use was the most common combination ($N = 2,666,971$, 28.3%), followed by opioid/alcohol co-use ($N = 1,915,751$; 20.3%), opioid/benzodiazepine co-use ($N = 683,340$; 7.2%), and opioid/methamphetamine co-use ($N = 464,951$; 4.9%).

Longitudinal Trends in Co-use

There were substantial changes in co-use trends across substances during the study period (Fig. 1). The percentage of admissions for co-use of opioids with other substances (vs. opioids alone) ranged from 44% to 55%. Opioid/cocaine co-use was the most common combination throughout the study period, but its prevalence decreased between 1992 and 2017 (**Percentage Points [PP]:** −17.2%, 95% confidence interval [CI]: −17.5, −17.0), as did opioid/alcohol co-use (**PP:** −12.5%, 95% CI: −12.7, −12.3). Opioid/benzodiazepine co-use increased during the study period (**PP:** 5.6%, 95% CI: 5.5, 5.7), as did opioid/methamphetamine co-use (**PP:** 10.1%, 95% CI: 10.0, 10.2). Over half of the increase in opioid/methamphetamine co-use occurred between 2012 and 2017 (**PP:** 6.3%, 95% CI: 6.2, 6.3).

Medications for Treating OUD

Across the 5 co-use patterns, admissions for opioids only were more likely to receive MOUD (38.5%, 95% CI: 38.4, 38.6) than those for co-use of opioids with other substances (Cocaine: 35.7%, 95% CI: 35.6, 35.9; Benzodiazepines: 34.6%, 95% CI: 34.3, 34.9; Methamphetamine: 23.9%, 95% CI: 23.7, 24.2; Alcohol: 25.0%, 95% CI: 24.8, 25.2) (Supplemental Digital Content 2: Table, http://links.lww.com/JAM/A211, Fig. 2). Adjusted differences between opioid use alone and each co-use category were statistically significant. If those who co-used opioids with other substances had received MOUD at the same rate as those who used opioids only, 47,400 additional admissions would have received MOUD across 2016 and 2017, a 27.5% relative increase.

DISCUSSION

From 1992 to 2017, trends in the substances co-used with opioids changed, despite the prevalence of co-use of opioids with any substance remaining stable. The prevalence of opioid/cocaine and opioid/alcohol co-use fell, while the prevalence of opioid/methamphetamine and opioid/benzodiazepine co-use increased. Admissions for co-use of opioids with other substances, particularly methamphetamine or alcohol, received MOUD at substantially lower rates. Because of disparities in MOUD between people who use opioids with and without other substances, 47,000 people who could have benefited from MOUD did not receive it in 2016 and 2017.

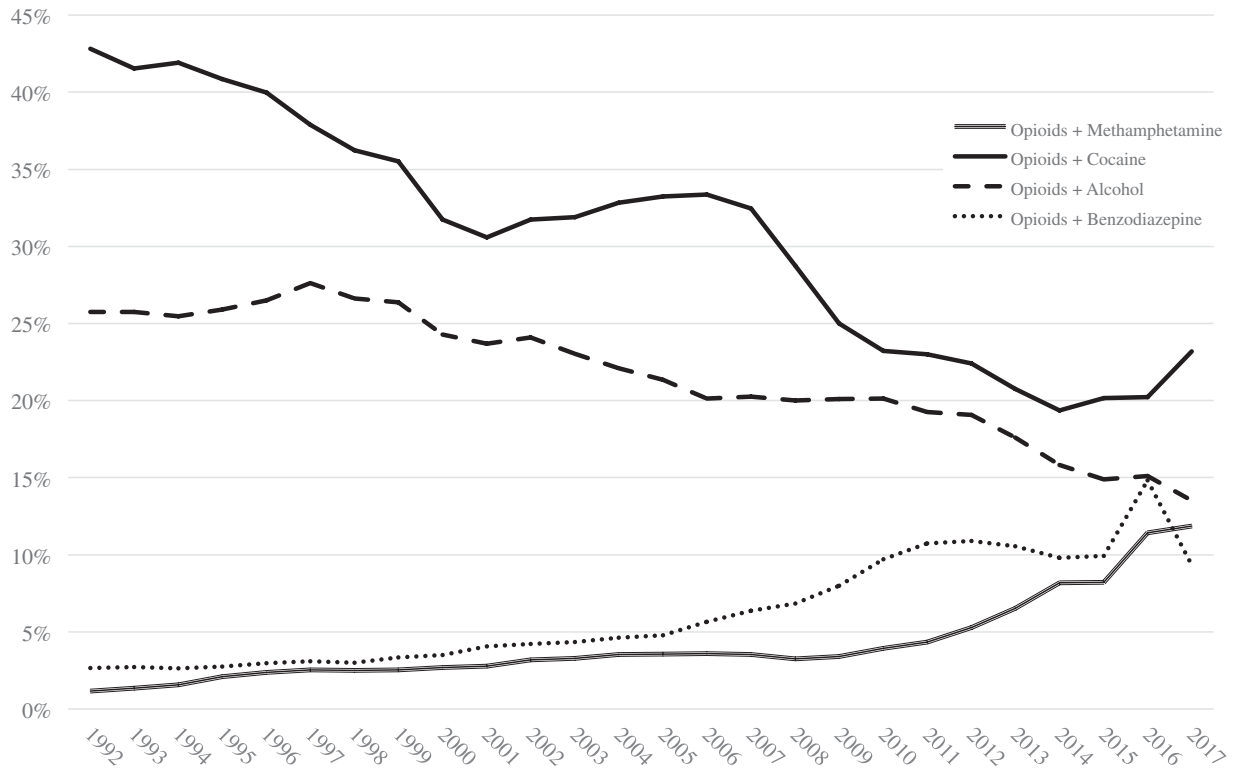

FIGURE 1. Adjusted rates of co-use of opioids with other substances (1992–2017).

Additional research is needed to identify key barriers and facilitators to providing MOUD to individuals who co-use opioids with other substances.

This study has important limitations. First, although many states report all admissions to facilities that accept public funding to SAMHSA, states are only obligated to report on admissions paid for with public funding. We do not have information on privately funded treatment facilities, which may provide MOUD at different rates, or whether barriers to MOUD were at the facility or provider level.[15] Second, we are

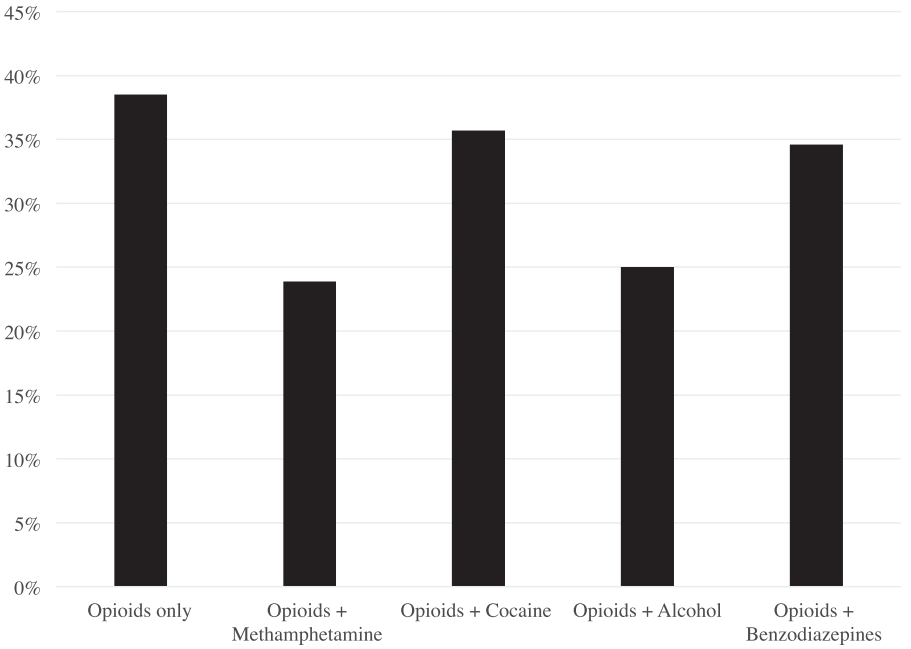

FIGURE 2. Adjusted rate of receipt of MOUD (2016–2017).

unable to draw causal conclusions about why those who co-use opioids with other substances receive MOUD at a lower rate than those who use opioids only. Third, MOUD is an aggregate variable and, therefore, we cannot differentiate between medications, nor do we know details of the MOUD administration, such as days of medication prescribed.

Improving access to MOUD has been a cornerstone of the nation's response to the opioid crisis, yet there are disparities in access. Patients who co-use opioids with other substances received MOUD at a lower rate, yet are at the highest risk of fatal and nonfatal overdose.[4] As the crisis becomes more complex with the rise of methamphetamine and other substances, barriers to MOUD for individuals who co-use opioids with other substances should be identified and removed.

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