Drug and Alcohol Dependence 174 (2017) 128–136

Contents lists available at ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep

Full length article

Gender and race/ethnic differences in the persistence of alcohol, drug, and poly-substance use disorders

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ARTICLE INFO

Article history:
Received 19 September 2016
Received in revised form 9 January 2017
Accepted 14 January 2017
Available online 7 March 2017

Keywords:
Persistence of substance use disorders (SUD)
Race/ethnic differences
Gender differences
Population-level
Social determinants
National epidemiologic survey on alcohol and related conditions (NESARC)

ABSTRACT

Aims: To examine gender and racial/ethnic differences in the effect of substance use disorder (SUD) type on SUD persistence.
Methods: Data were provided by 1025 women and 1835 men from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) to examine whether gender and race/ethnicity (Non-Hispanic White, Black, Hispanic) moderate the effects of DSM-IV defined past-12 month SUD type (alcohol, drug, poly-substance) on SUD persistence at 3-year follow-up, controlling for covariates. Using gender-stratified weighted binary logistic regression, we examined predictors of SUD persistence, tested an SUD type by race/ethnicity interaction term, and calculated and conducted Bonferroni corrected pairwise comparisons of predicted probabilities.
Results: SUD persistence rates at 3-year follow-up differed for SUD type by gender by race/ethnicity subgroup, and ranged from 31% to 81%. SUD persistence rates were consistently higher among poly-substance users; patterns were mixed in relation to gender and race/ethnicity. Among women, alcohol disordered Hispanics were less likely to persist than Whites. Among men, drug disordered Hispanics were less likely to persist than Whites. Also, Black men with an alcohol or drug use disorder were less likely to persist than Whites, but Black men with a poly-substance use disorder were more likely to persist than Hispanics.
Conclusions: The effect of SUD type on SUD persistence varies by race/ethnicity, and the nature of these relationships is different by gender. Such knowledge could inform tailoring of SUD screening and treatment programs, potentially increasing their impact.

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1. Introduction

Substance use typically begins by early adulthood, and over the subsequent years it can dissipate or develop into a substance use disorder (SUD) (SAMHSA, 2013). Although few Americans who use alcohol and other substances ever develop SUD, SUD is among the most prevalent psychiatric disorders (SAMHSA, 2014, 2013). SUD is particularly harmful to health because it can persist, often for substantial periods of life, and cause or exacerbate other health conditions (Fleury et al., 2016; Hser et al., 2015). However, much of what is known about SUD persistence is provided by studies of predominately male, clinic-based samples (Brady et al., 2009). Only about 10% of individuals with SUD are ever treated (SAMHSA, 2014), and treated individuals are different than those not treated in ways that can impact the course of SUD (White, 2012). Thus, most research provides limited insight into understanding SUD at a population level, and the impact of social factors on SUD persistence.

Gender and race/ethnicity are important demographic characteristics associated with SUD. Studies generally find that women are less likely than men to develop an initial or persistent SUD (Brady et al., 2009; SAMHSA, 2014). Also, compared to Whites, Blacks generally have lower SUD risks; findings are more mixed for Hispanics

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http://dx.doi.org/10.1016/j.drugalcdep.2017.01.021
0376-8716/Published by Elsevier Ireland Ltd.

(Alvanzo et al., 2011; Breslau et al., 2005; Huang et al., 2006; Gilman et al., 2008; Grant et al., 2012a,b; Smith et al., 2006). Reasons for these differences are poorly understood, and have been attributed to variation by gender and race/ethnicity in several factors including (1) cultural meaning and social consequences of substance use (Hwang et al., 2008; Keyes et al., 2011; Mulia et al., 2009), (2) environmental substance exposures (Mennis et al., 2016), (3) substance type preferences (Wu et al., 2016), (4) protective factors (e.g., educational attainment and employment) (Arria et al., 2013; Huang et al., 2011), (5) stressors, stress reactivity, and coping styles/resources (Brady et al., 2009; Otiniano Verissimo et al., 2014), and (6) substance-specific physiological effects (SAMHSA, 2009). Moreover, findings are puzzling because SUD prevalence rates among several minority groups are less than what might be expected based on hypothesized health effects of discrimination and other stressors associated with minority racial/ethnic group status (Gee et al., 2012; Paradies et al., 2015; Williams, 1999). Although racial/ethnic minorities have lower risk of SUD occurrence than Whites, among those with SUD, some groups of Hispanics and Blacks have higher persistence risks (Arndt et al., 2010; Breslau et al., 2005; Grant et al., 2012b). It may be that race/ethnic differences in SUD onset and persistence are contingent on gender (Brady et al., 2009; SAMHSA, 2014).

Another complexity is that continued substance use has been associated with several risk factors, particularly childhood adversity, psychiatric conditions, lower socioeconomic status (SES), and poor social support (Crum et al., 2013; Evans et al., 2015; Hasin et al., 2002; Hser, 2007; McLaughlin et al., 2010a,b; McLellan et al., 2000; Tuithof et al., 2013). Moreover, an influential determinant of whether use dissipates or worsens is substance type (i.e., alcohol, illicit drugs, prescription drugs). Risky alcohol use is generally limited to adolescence and young adulthood, except for those few who develop a disorder (Brennan et al., 2011; Moos et al., 2004; Epstein et al., 2007). In comparison, more years of use has been associated with methamphetamine, cocaine, and heroin use (Brecht et al., 2008; Grella and Lovinger, 2011; Hser et al., 2008a,b), and poly-substance use (Moss et al., 2014; Nosyk et al., 2014). However, few studies have directly compared the course of alcohol with that of other substances (Johnson et al., 2011). Therefore, a critical knowledge gap is whether the effect of SUD type on SUD persistence is different for each race/ethnic group, and whether these relationships vary by gender. Such knowledge could inform tailoring of SUD prevention and treatment programs, which could potentially enhance program effectiveness.

2. Methods

2.1. Study sample

We used two waves of data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) (Grant et al., 2003, 2009) to investigate the interactive effects of SUD type, gender, and race/ethnicity on SUD persistence. NESARC is a longitudinal study designed to be representative of the US non-institutionalized adult population; Blacks and Hispanics were oversampled to ensure inclusion of racial/ethnic groups historically underrepresented in SUD research (Grant et al., 2003, 2009). Trained interviewers obtained informed consent and collected data using face-to-face computer-assisted personal interviews. Wave 1 was conducted with 43,093 respondents in 2001–2002. In 2004–2005, Wave 2 was conducted with 34,653 of the Wave 1 respondents, representing an 86.7% follow-up of the 39,959 eligibles (Grant et al., 2009).

The analytic sample included 2860 individuals, 1025 women [White (n = 693), Black (n = 176), Hispanic (n = 156)] and 1835 men [White (n = 1211), Black (n = 270), Hispanic (n = 354)] who completed a Wave 2 follow-up interview and who had an SUD in the 12-months prior to Wave 1. Individuals with an "other" race/ethnicity (e.g., Asian/Pacific Islander, Native American) were omitted because it was a small and racially heterogeneous sample. The present study was exempted from regulatory review by the institution's Institutional Review Board.

2.2. Measures

To measure SUD occurrence by type, NESARC used the Alcohol Use Disorder and Associated Disabilities Interview Schedule (AUDADIS-IV), which uses criteria for past-year alcohol and other drug use disorders based on the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) (Grant et al., 1995, 2003). Administered at both waves, the AUDADIS-IV includes an extensive list of symptom questions that separately operationalizes DSM-IV criteria for abuse and dependence on alcohol and 10 illicit or prescription drug classes (cannabis, hallucinogens, opiates, heroin, amphetamines, cocaine, sedatives, tranquilizers, solvents). AUDADIS-IV diagnoses of SUD required at least 3 of the 7 DSM-IV criteria for SUD be met. Numerous studies conducted with clinical and general population samples have demonstrated good-to-excellent reliability and validity of AUDADIS-IV SUD diagnoses (test-retest reliability kappa = 0.66–0.91) (Grant et al., 2003, 2009; Ruan et al., 2008).

The dependent variable was occurrence of any SUD in the 12-months prior to Wave 2. Of individuals with a persistent SUD, 77% had the same type of SUD at Wave 2 as at Wave 1 (e.g., AUD at both waves), and 23% switched from one SUD type to another (e.g., had DUD at Wave 1 and poly-SUD at Wave 2). To ensure enough statistical power for analysis, we created a dichotomous variable (0 = no, 1 = yes), with "yes" indicating persistence of any type of SUD.

As the key independent variable, SUD type, was indicated by SUD diagnosis in the 12-months prior to Wave 1 and coded into three mutually exclusive categories: alcohol-only abuse or dependence (alcohol use disorder, AUD); drug abuse or dependence without alcohol (drug use disorder, DUD); and drug and alcohol abuse or dependence (poly-substance use disorder, Poly-SUD).

Gender (0 = men, 1 = women) and race/ethnicity (0 = Non-Hispanic White, 1 = Black, 2 = Hispanic) were self-reported and coded as categorical variables.

Included as covariates were Wave 1 socio-demographic characteristics known to influence SUD occurrence: age, socioeconomic status, mental illness, region, and living in a metropolitan area (see Table 1 for details). Childhood adversity was indicated by the number of types of abuse, neglect and household dysfunction occurring before age 18 using an item subset from the Conflict Tactics Scale (Straus et al., 1996) and the Childhood Trauma Questionnaire (Bernstein et al., 1994) and defined as a categorical variable per extant research (Dube et al., 2003; McLaughlin et al., 2010a,b; Myers et al., 2014).

2.3. Statistical analysis

First, we examined bivariate gender and racial/ethnic differences in the characteristics and experiences of adults who had an SUD in the 12 months prior to Wave 1. Next, we conducted gender-stratified weighted binary logistic regression analysis of SUD persistence at Wave 2 in relation to SUD type at Wave 1 and race/ethnicity, controlling for covariates. Then we included in each gender-stratified model an SUD type by race/ethnicity interaction term, and tested it with an omnibus F-test. We conducted pair-wise comparisons corrected for multiple comparisons (Bonferroni's method) to test which specific interaction contrasts were statistically significant. We used the gender-stratified