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PREVALENCE AND CORRELATES OF ALCOHOL AND CANNABIS USE DISORDERS IN THE UNITED STATES: RESULTS FROM THE NATIONAL LONGITUDINAL STUDY OF ADOLESCENT HEALTH*

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Abstract

Background—Limited current information on the epidemiology of lifetime alcohol and cannabis use disorders in the United States is available.

Aims—To present detailed information about the prevalence and sociodemographic correlates of lifetime alcohol and cannabis use disorders rates in the United States. To examine gender differences in hazard ratios for the onset of alcohol and cannabis dependence.

Methods—Participants in Wave IV of the National Longitudinal Study of Adolescent Health (N=15,500, age range: 24–32) were interviewed between 2008 and 2009. Participants who exceeded screening thresholds were queried about lifetime DSM-IV alcohol and marijuana abuse and dependence symptoms. Age of substance dependence onset was queried.

Results—Lifetime rates of alcohol abuse and dependence were 11.8 and 13.2 percent. Lifetime rates of cannabis abuse and dependence were 3.9 and 8.3 percent. Lifetime alcohol and cannabis dependence onset peaks were 23 and 20. Correlates of lifetime alcohol abuse included being male (OR 1.4), African-American (OR 0.7), Income in the 2nd or 3rd quartile (OR 0.7 and 0.6). Correlates of lifetime alcohol dependence were: being male (OR 1.8), African-American (OR 0.5), and never being married (OR 1.5), and regions outside of the west (Midwest OR 0.7, South OR 0.6, Northeast OR 0.6). Correlates of cannabis abuse and dependence were being male (OR 1.8 and 1.4).

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Conclusions—Lifetime alcohol and cannabis use disorders are highly prevalent in the US population. Men are at higher risk for alcohol and cannabis use disorders. Alcohol use disorders demonstrated specific sociodemographic correlates while marijuana use disorders did not.

Keywords

Alcohol Dependence; Cannabis Dependence; Add Health; Marijuana; Alcohol Abuse

1. INTRODUCTION

Alcohol and cannabis use disorders (AUD, CUD) are among the most common psychiatric disorders in the population and are associated with substantial personal, societal, and economic costs including decreased work productivity, poor health outcomes, impaired role performance, human immunodeficiency virus (HIV) infection, violence, and crime (Alonso et al., 2010; Compton et al., 2007; Abram and Teplin, 1990; Teplin et al., 2005; Conway et al., 2006; Pulay et al., 2008). A number of ongoing surveys collect information about alcohol and drug use among the US population including the Monitoring the Future Study (MTF; Johnston et al., 2011), which surveys adolescents as well as the National Survey on Drug Use and Health (NSDUH; SAMHSA, 2010). These surveys provide a range of information regarding the prevalence of past year substance use patterns and associated attitudes, however, they do not ask about lifetime measures of substance use disorders (SUD). Major findings from ongoing annual surveys in recent years have been the substantial increase in prescription opiate abuse in the United States, increases in adolescent cannabis use (Compton et al., 2004; Swendsen et al., 2012; Fryar et al., 2009), as well as shifts in the epidemiology of methamphetamine dependence (Schulden et al., 2009).

Two national surveys that collect lifetime measures of SUD, for example, are the National Epidemiological Survey on Alcohol and Related Conditions (NESARC; Lopez-Quintero et al., 2011) and the National Comorbidity Study Replication (NCS-R; Kessler et al., 2012). These surveys provide the most comprehensive information about lifetime substance use patterns, however the most recent reports are from 2005–2006 (NESARC) and 2001–2003 (NCS-R). Previous studies of the U.S. epidemiology of lifetime substance use disorders date back to the 1990s (Goldstein et al., 2008). Recent reports about the lifetime epidemiology of SUD demonstrate the widespread prevalence of SUD, and report that lifetime rates of SUD are elevated in men, persons living in the west, younger cohorts, persons of low income, individuals who have never been married, and having Native American ancestry (Compton et al., 2007; Kessler et al., 2012; Kahn et al., 2013).

We report on the results of a recently completed population-based survey of young adults, the National Longitudinal Study of Adolescent Health. Wave IV of this survey was conducted in 2008–2009 and involved 15,500 young adults and asked detailed questions about lifetime alcohol and marijuana use disorders.

2. METHODS

2.1 Sample

The 2008–2009 Wave IV is the fourth wave of the National Longitudinal Study of Adolescent Health (Add Health; Harris et al., 2013). Add Health is an ongoing longitudinal study of a nationally-representative sample of more that 20,000 adolescents in grades 7–12 in the United States in 1994–1995 who have been followed through adolescence and their transition to adulthood with four in-home interviews in 1995 (Wave I), 1996 (Wave II), 2001–2002 (Wave III). A detailed description of the study design and the sampling strategy

utilized in Add Health is available elsewhere (Harris, 2012). Participants for the current study were drawn from the full sample at Wave IV.

2.2 Measures

RTI International carried out the Wave IV data collection under sub-contract to the University of North Carolina at Chapel Hill. At Wave IV, the Add Health sample was dispersed across the United States with respondent living in all 50 states. 92.5% of the targeted sample was located and 80.3% of eligible sample members were interviewed. Survey data was collected using a 90-minute CAPI/CASI (computer-assisted personal interview, or CAPI) instrument. Less sensitive questionnaire sections were administered with the assistance of an interviewer Substance Use measures were self-administered using CASI technology (computer-assisted-self-interview).

Substance use measures were collected as follows during Wave IV of Add Health. Subjects were queried about whether during the past 12 months or during the period in their life that they had drunk the most, how many alcoholic drinks per day they usually consumed. If men endorsed drinking usually 5 or more drinks per day and women 4 or more drinks per day they were then queried about lifetime symptoms of alcohol abuse and dependence. In addition, they were asked if the dependence criteria clustered so that 3 or more symptoms were present during one year. Finally, they were asked the age of onset of 3 or more symptoms of dependence. Similar questions were asked about marijuana use, with the skip-in question for marijuana use being using once per week or more. Questions were modeled after the structure used by the Composite-International Diagnostic Interview, Substance Abuse Module (CIDI-SAM; Cottler et al., 1989, 1990, 1991,1997; Ustun et al., 1997)

2.3 Analyses

Weighted lifetime prevalence estimates, cross-tabulations, and hazard rates for alcohol and cannabis abuse and dependence were determined using the software package STATA Version 11. Odds-Ratios (ORs) were derived from multivariate logistical regression analyses (Cox model) and indicated the association between lifetime DSM-IV abuse and dependence diagnoses and sociodemographic characteristics. Hazard rates were calculated using the life-table methods (Et, 1980). Hazard rates indicate the probability of experiencing an event by a given time on the condition that the event has not occurred prior to that time. From this we sought to obtain a picture of the peak periods of risk across adolescence and early adulthood for the onset of dependence on alcohol and cannabis for males and females. All estimates were obtained using Wave IV weights.

3. RESULTS

3.1. Sociodemographic characteristics

Sociodemographic characteristics of the study populations are shown in Table 1. Lifetime prevalence rates of alcohol and cannabis abuse were 11.8% and 3.9%, respectively. Lifetime prevalence rates for alcohol and cannabis dependence were 13.2% and 8.3%, respectively. Rates of alcohol abuse and dependence were higher among males ($\chi^2 = 11.45$, $p < 0.01$), White and Native American individuals $\chi^2 = 11.45$, $p < 0.001$), younger ages ($\chi^2 = 5.51$, $p = 0.02$), those with higher education ($\chi^2 = 43.89$, $p < 0.01$), never married ($\chi^2 = 33.32$, $p < 0.01$), had higher personnel income ($\chi^2 = 22.14$, $p < 0.01$), and among those living in the South and West ($\chi^2 = 56.59$, $df = 1$, $p < 0.01$). Rates of cannabis abuse and dependence were greater among males ($\chi^2 = 5.79$, $df = 1$, $p = 0.02$) and White and Native American individuals ($\chi^2 = 3.72$, $df = 1$, $p = 0.05$) and lower personnel income ($\chi^2 = 19.0$, $p < 0.01$). Overall, rates of dependence were higher than rates of abuse for both drugs.

3.2. Risks for lifetime alcohol abuse and dependence

Table 2 shows the risks of lifetime abuse and dependence in population subgroups via adjusted odds-ratios and 95% confidence intervals. For lifetime alcohol abuse and dependence, the odds were greater among males, White compared to Black respondents, and those living in the West relative to the Northeast. For lifetime abuse, the odds were greater among those in the highest income category. For lifetime dependence, the odds were greatest among those who had never married and living in the West relative to those living in the Midwest and South.

3.3. Risks for lifetime cannabis abuse and dependence

For lifetime cannabis abuse and dependence, the odds for meeting diagnostic criteria were greater among males, White compared to Black respondents, and those living in the West relative to the Northeast (Table 2). For lifetime abuse, the odds were greater among those in the highest income category. Those who had never married and living in the West relative to those in the Midwest and South had a greater odds of lifetime cannabis dependence.

3.4 Hazard ratios for age of onset of dependence

The adjusted hazard rates for the age of onset of first symptoms of alcohol and cannabis dependence indicated that cannabis dependence symptoms present earlier than alcohol dependence symptoms (Supplemental Figures 1 and 2[1]). For both alcohol and cannabis dependence the odds were greater among males relative to females. Further, alcohol and cannabis dependence exhibited an early adolescent onset with the greatest risk occurring during late adolescence and young adulthood. After age 27 the onset of dependence appears to be rare for males and females.

4. DISCUSSION

In this large prospective, community sample of US adults, rates of alcohol and cannabis abuse and dependence were greater among men than women; a finding that is consistent with previous epidemiologic surveys (Schulden et al., 2009; Compton et al., 2007; Hasin et al., 2007; Stinton et al., 2007; Kessler et al., 2012; Lev-Ran et al., 2013; Kahn et al., 2013). Previous studies have reported that persons living in the West had higher rates of SUD (Compton et al., 2007), however, in this study, only the Northeast region had lower rates of alcohol use disorders. Furthermore, in this sample, having family income in the lowest quartile was not associated with higher lifetime rates, although having an income in the second or third quartile was associated with an elevated rate of alcohol abuse.

Lifetime rates of marijuana abuse and dependence in the United States were reported by (Stinson et al, 2009) who used the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) general population survey. In that study, lifetime rates of marijuana abuse and dependence were respectively 7.2% and 1.3%. Among 18–29 year olds, the lifetime marijuana abuse and dependence rates were 9.5 and 2.5% respectively. Results from Wave IV (2008–2009) of Add Health, conducted approximately 9 years after the NESARC survey indicate the population reported enough psychosocial impairment at some point in their lifetime to meet dependence criteria. Furthermore, marijuana use disorders are spread throughout the country and population, with no particular sociodemographic correlates except being more prevalent among males.

One striking finding from this survey of young adults is the prevalence of marijuana use disorder that is higher than previous reports of population-wide surveys and indicates that in

[1]Supplementary material can be found by accessing the online version of this paper at http://dx.doi.org and by entering doi:...

young adults this disorder represents a substantial public health burden. This is of particular importance given the increasingly widespread legalization of marijuana in a number of states either through medical marijuana or recent efforts at outright legalization that may further encourage marijuana use. While the rates of onset of alcohol and marijuana dependence are similar to those reported in the NESARC sample (Stinson et al., 2009; Hasin et al., 2007), the adjusted hazard rates for the age of onset of first symptoms of alcohol and marijuana dependence in this sample demonstrate that marijuana dependence symptoms present earlier than alcohol dependence symptoms. As public policy shifts occur regarding marijuana legalization, it will be important to monitor emerging patterns of marijuana consumption in younger cohorts.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Lifetime prevalence of DSM-IV alcohol and cannabis use diagnosis by sociodemographic characteristics (weighted percentages).

Characteristic	Alcohol Abuse (%, N)	Alcohol Dependence (%, N)	Cannabis Abuse (%, N)	Cannabis Dependence (%, N)
Total	11.8 (1852)	13.2 (2068)	3.9 (614)	8.3 (1306)
Gender				
Males	13.8 (1015)	16.9 (1244)	5.6 (411)	10.9 (800)
Females	10.0 (837)	9.9 (824)	2.4 (203)	6.1 (506)
Ethnicity				
White, Non-Hispanic	15.4 (1315)	16.9 (1477)	4.5 (388)	9.1 (777)
Black, Non-Hispanic	6.2 (212)	6.4 (220)	3.5 (119)	7.8 (265)
Native American	14.2 (16)	21.2 (24)	3.5 (4)	10.4 (12)
Asian	6.9 (64)	11.4 (106)	2.1 (20)	6.5 (61)
Hispanic	9.2 (242)	10.1 (266)	3.1 (83)	7.1 (189)
Age				
24 to 28	12.1 (912)	14.6 (1096)	3.6 (294)	7.7 (630)
29 to 35	11.5 (940)	11.9 (972)	4.3 (320)	9.0 (676)
Education				
High School degree	9.1 (487)	12.1 (650)	4.1 (220)	9.7 (518)
Some College	11.9 (637)	15.1 (812)	4.5 (240)	9.4 (503)
College degree	14.7 (728)	12.2 (606)	3.1 (154)	5.8 (285)
Marital Status				
Never married	12.3 (969)	16.1 (1271)	4.6 (361)	10.4 (253)
Married 1+ times	11.3 (883)	10.2 (797)	3.3 (823)	6.2 (483)
Personal Income				
$0–$24,999	9.1 (163)	13.0 (233)	3.8 (68)	11.3 (203)
$25,000 to $49,999	12.0 (576)	13.6 (653)	4.0 (190)	8.7 (417)
$50,000 to $74,999	15.2 (598)	13.8 (544)	4.2 (167)	6.4 (252)
$75,000+	17.0 (170)	14.5 (137)	3.5 (33)	5.3 (50)
Region				
Midwest	10.9 (389)	14.0 (498)	4.2 (151)	8.6 (307)
South	15.3 (597)	15.7 (613)	4.5 (175)	9.6 (374)
Northeast	9.5 (559)	10.3 (607)	3.1 (182)	7.1 (420)
West	13.5[269]	15.2 (303)	4.5 (90)	9.1 (181)

Table 2

Lifetime DSM-IV alcohol and cannabis use diagnosis status by sociodemographic characteristics.[‡]

Characteristic	Alcohol Abuse (OR, 95% CI)	Alcohol Dependence (OR, 95% CI)	Cannabis Abuse (OR, 95% CI)	Cannabis Dependence (OR, 95% CI)
Gender				
Males	**1.4 (1.2 – 1.7)**	**1.8 (1.4 – 2.1)**	**1.8 (1.3 – 2.5)**	**1.4 (1.1 – 1.8)**
Females	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Ethnicity				
White, Non-Hispanic	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Black, Non-Hispanic	**0.7 (0.5 – 0.9)**	**0.5 (0.4 – 0.7)**	1.0 (0.6 – 1.5)	0.9 (0.7 – 1.2)
Native American	0.5 (0.1 – 1.7)	0.5 (0.2 – 1.4)	1.6 (0.4 – 7.4)	0.8 (0.2 – 3.3)
Asian	0.6 (0.2 – 1.0)	0.7 (0.5 – 1.2)	1.2 (0.5 – 2.8)	2.0 (1.0 – 3.9)
Hispanic	0.9 (0.6 – 1.2)	0.8 (0.6 – 1.1)	0.9 (0.6 – 1.5)	1.4 (0.9 – 2.0)
Age				
24 to 28	1.0 (0.9 – 1.3)	1.1 (0.9 – 1.4)	1.2 (0.9 – 1.6)	0.9 (0.8 – 1.2)
29 to 35	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Education				
High School degree	0.9 (0.7 – 1.1)	1.5 (1.2 –1.9)	1.3 (0.9 – 1.9)	1.3 (0.9 – 1.7)
Some College	0.9 (0.7 – 1.1)	1.3 (0.9 – 1.6)	1.0 (0.7 – 1.5)	1.1 (0.8 – 1.5)
College degree	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Marital Status				
Never married	1.2 (0.9 – 1.5)	**1.5 (1.2 –1.8)**	0.8 (0.8 – 2.5)	1.1 (0.9 – 1.4)
Married 1+ times	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Personal Income				
$0–$24,999	0.7 (0.5 – 1.0)	0.9 (0.7 – 1.4)	1.4 (0.8 – 2.5)	0.9 (0.5 – 1.5)
$25,000 to $49,999	**0.7 (0.5 –0.9)**	0.9 0.6 –1.3)	1.3 (0.7 – 2.3)	1.2 (0.7 – 2.0)
$50,000 to $74,999	**0.6 (0.4 –0.9)**	1.0 (0.7 –1.5)	1.3 (0.7 – 2.7)	1.5 (0.9 – 2.7)
$75,000+	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)
Region				
Midwest	1.0 (0.8 – 1.4)	**0.7 (0.6 –0.9)**	1.1 (0.7 –1.7)	1.3 (0.9 – 1.8)
South	0.8 (0.6 – 1.0)	**0.6 (0.5 –0.8)**	0.9 (0.6 –1.4)	1.2 (0.8 – 1.6)
Northeast	**0.6 (0.4 –0.8)**	**0.6 (0.4 –0.8)**	0.8 (0.5 –1.3)	1.1 (0.8 –1.6)
West	1 (Reference)	1 (Reference)	1 (Reference)	1 (Reference)

[‡]OR, Odds Ratios; CI, Confidence Interval. **Bolded** indicate Odd Ratios with confidence intervals that do not include zero.