ORIGINAL ARTICLE

Prevalence, Correlates, Disability, and Comorbidity of *DSM-IV* Alcohol Abuse and Dependence in the United States

Results From the National Epidemiologic Survey on Alcohol and Related Conditions

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Context: Epidemiologic information is important to inform etiological research and service delivery planning. However, current information on the epidemiology of alcohol use disorders in the United States is lacking.

Objectives: To present nationally representative findings on the prevalence, correlates, psychiatric comorbidity, and treatment of *DSM-IV* alcohol abuse and dependence.

Design, Setting, and Participants: Face-to-face interviews with a representative US adult sample (N=43 093).

Main Outcome Measures: Lifetime and 12-month *DSM-IV* alcohol abuse and dependence.

Results: Prevalence of lifetime and 12-month alcohol abuse was 17.8% and 4.7%; prevalence of lifetime and 12-month alcohol dependence was 12.5% and 3.8%. Alcohol dependence was significantly more prevalent among men, whites, Native Americans, younger and unmarried adults, and those with lower incomes. Current alcohol abuse was more prevalent among men, whites, and younger and unmarried individuals while lifetime rates were highest among middle-aged Americans. Significant disability was particularly associated with alcohol dependence. Only 24.1% of those with alcohol dependence were ever treated, slightly less than the treatment rate found 10 years earlier. Strong associations between other substance use disorders and alcohol use disorders (odds ratios, 2.0-18.7) were lower but remained strong and significant (odds ratios, 1.8-7.5) when controlling for other comorbidity. Significant associations between mood, anxiety, and personality disorders and alcohol dependence (odds ratios, 2.1-4.8) were reduced in number and magnitude (odds ratios, 1.5-2.0) when controlling for other comorbidity.

Conclusions: Alcohol abuse and dependence remain highly prevalent and disabling. Comorbidity of alcohol dependence with other substance disorders appears due in part to unique factors underlying etiology for each pair of disorders studied while comorbidity of alcohol dependence with mood, anxiety, and personality disorders appears more attributable to factors shared among these other disorders. Persistent low treatment rates given the availability of effective treatments indicate the need for vigorous education efforts for the public and professionals.

Arch Gen Psychiatry. 2007;64(7):830-842

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ALCOHOL USE DISORDERS (alcohol abuse and dependence) are maladaptive patterns of alcohol consumption manifested by symptoms leading to clinically significant impairment or distress.[1] Alcohol abuse and dependence are associated with car crashes,[2] domestic violence,[3] fetal alcohol syndrome,[4] neuropsychological impairment,[5] poor medication adherence,[6-8] economic costs and lost productivity,[9] and psychiatric comorbidity.[10,11] The descriptive epidemiology of alcohol use disorders provides important evidence on treatment and prevention needs and informs hypotheses on biological and psychosocial causes of alcohol use disorders. Thus, epidemiologic information must be accurate and up-to-date.

Large-scale US and international surveys conducted in the early 1980s[12-14] using *DSM-III* criteria[15] showed current prevalence of alcohol abuse and dependence of 1.9% to 2.1% and 2.8%, lifetime prevalence of 4.4% to 14.0% and 8.8% to 23.0%, and lifetime prevalence of any alcohol use disorder (abuse or dependence) of 12.6% to 27.5%. Using *DSM-III-R*[16] criteria, surveys showed current prevalence of alcohol abuse and dependence of 1.0% to 4.7% and 3.0% to 7.2%, lifetime prevalence of 3.5% to 23.7% and 4.1% to 14.1%, and lifetime prevalence of any alcohol use disorder of 8.5% to 32.8%.[17-21] In surveys using *DSM-IV* cri-

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teria,[22-25] prevalence of current alcohol abuse and dependence was 1.9% to 4.3% and 3.6% to 4.4%, lifetime prevalence was 4.5% to 13.2% and 3.8% to 13.3%, and lifetime prevalence of any alcohol use disorder was 8.3% to 18.2%. The range of rates over time, location, and diagnostic criteria[26,27] leave unclear the relative influence of true variation and methodological differences, although certain risk factors (eg, male sex, younger age) remain consistent throughout. These studies contributed valuable information on alcohol use disorders toward the end of the 20th century, but less is known about the epidemiology of alcohol disorders since then. The National Household Survey on Drug Abuse[25] began assessing alcohol disorders in 2000 but does not address lifetime diagnoses, disability, psychiatric comorbidity, or separate information on alcohol abuse and dependence despite differences between abuse and dependence in symptoms, prevalence, and correlates.[1,24]

Given the seriousness of alcohol use disorders, current data on the prevalence, correlates, disability, comorbidity, and treatment of alcohol use disorders are needed using a reliable, valid, and uniform data source. Currently, several aspects of the epidemiology of alcohol use disorders are unknown. First, potential health disparities in disadvantaged groups and in birth cohorts now aging (eg, "baby boom" and "generation X" cohorts) require determining the prevalence of alcohol abuse and dependence in these age and race/ethnic groups. Second, accurate information on the distinct comorbidity of alcohol abuse and dependence with other specific mental disorders is important.[28,29] These aspects require larger samples than were previously available. Further, the comorbidity of alcohol abuse or dependence with other disorders controlling for the comorbidity of these disorders with each other has not been addressed, which is important information in understanding the unique relationship of alcohol abuse and dependence to other psychiatric disorders. Third, recent US[30,31] and international[32] surveys deviated from *DSM-IV* criteria by skipping alcohol dependence criteria if respondents did not endorse alcohol abuse criteria.[33-35] This caused about one third of 12-month cases and about 15% of lifetime cases of alcohol dependence (disproportionately women and minorities) to be missed.[34] Fourth, determining whether treatment needs that were unmet in the early 1990s are now better served is important.

The present study was designed to provide this knowledge, using data from the 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), sponsored by the National Institute on Alcohol Abuse and Alcoholism.[10,36] The richness, representativeness, and size of the NESARC enabled us to address *DSM-IV* alcohol abuse and dependence in minorities not previously studied on a national basis, as well as the comorbidity of *DSM-IV* alcohol abuse and dependence with specific, often rare, psychiatric conditions, disability, and treatment rates among those with alcohol use disorders. Importantly, all symptoms of alcohol abuse and dependence were asked of all drinkers, resulting in complete coverage of both *DSM-IV* alcohol abuse and dependence.

Table 1. Characteristics of NESARC Respondents

Characteristic	% (SE)[a]	Total No.[b]
Sex		
Male	47.92 (0.31)	18 518
Female	52.08 (0.31)	24 575
Race/ethnicity		
White	70.89 (1.59)	24 507
Black	11.07 (0.64)	8245
Native American	2.12 (0.16)	701
Asian	4.36 (0.53)	1332
Hispanic	11.56 (1.23)	8308
Age, y		
18-29	21.80 (0.37)	8666
30-44	30.89 (0.32)	13 382
45-64	31.06 (0.30)	12 840
≥65	16.25 (0.33)	8205
Marital status		
Married/cohabiting	61.62 (0.47)	22 081
Widowed/separated/divorced	17.46 (0.23)	11 117
Never married	20.92 (0.47)	9895
Education		
Less than high school	15.65 (0.49)	7849
High school	29.33 (0.55)	12 547
Some college or higher	55.02 (0.62)	22 697
Personal income, $		
0-19 999	47.25 (0.58)	21 075
20 000-34 999	22.65 (0.36)	9999
35 000-69 999	21.96 (0.38)	9031
≥70 000	8.14 (0.38)	2988
Urbanicity		
Urban	80.28 (1.61)	35 297
Rural	19.72 (1.61)	7796
Region		
Northeast	19.67 (3.41)	8209
Midwest	23.15 (3.18)	8991
South	35.21 (3.25)	16 156
West	21.97 (3.51)	9737

Abbreviation: NESARC, National Epidemiologic Survey on Alcohol and Related Conditions.
[a] Based on weighted data.
[b] Based on unweighted data.

METHODS

SAMPLE

The 2001-2002 NESARC is based on a US representative sample as described elsewhere.[10,36] The target population included those residing in households and group quarters who were aged 18 years and older. Face-to-face interviews were conducted with 43 093 respondents. The survey response rate was 81%. Blacks, Hispanics, and young adults (ages 18-24 years) were oversampled with data adjusted for oversampling and nonresponse. The weighted data were then adjusted to represent the US civilian population based on the 2000 census. (**Table 1** shows the weighted distribution of the NESARC sample.) Field methods included extensive home study and structured in-person training, supervision, and quality control, including random call-backs to respondents to verify data, described in detail elsewhere.[10,36-38]

DSM-IV DIAGNOSTIC INTERVIEW

The diagnostic interview was the National Institute on Alcohol Abuse and Alcoholism Alcohol Use Disorder and Associ-

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ated Disabilities Interview Schedule–*DSM-IV* Version (AUDADIS-IV).[39] This structured interview, designed for lay interviewers, was developed to advance measurement of substance use and mental disorders in large-scale surveys.[10,36] Computer diagnostic programs implemented the *DSM-IV* criteria for the disorders using AUDADIS-IV data.

ALCOHOL USE DISORDERS

Extensive AUDADIS-IV questions covered *DSM-IV* criteria for alcohol abuse and dependence. Consistent with *DSM-IV*, lifetime diagnoses of alcohol abuse required 1 or more of the 4 abuse criteria in the 12-month period preceding the interview or previously. AUDADIS-IV alcohol dependence diagnoses required 3 or more of the 7 *DSM-IV* dependence criteria in the last 12 months or during any previous 12-month period. For prior diagnoses of alcohol dependence, 3 or more criteria must have occurred within a 1-year period following the *DSM-IV* clustering criterion. AUDADIS-IV diagnoses of alcohol use disorders incorporate important improvements over other survey instruments, including the Diagnostic Interview Schedule (DIS),[40] the University of Michigan Composite International Diagnostic Interview (UM-CIDI),[41] and the World Mental Health-CIDI (WMH-CIDI).[42] First, to diagnose *DSM-IV* alcohol dependence, the AUDADIS-IV requires 3 or more criteria within a year in contrast to the DIS and UM-CIDI, which diagnose dependence criteria without requiring syndromal clustering of symptoms. Second, as noted, the WMH-CIDI skipped dependence questions among those with no abuse symptoms. By missing current dependence cases, especially among women and minorities,[33-35] the WMH-CIDI underestimates dependence prevalence (NESARC, 3.8% vs National Comorbidity Survey-Replication [NCS-R], 1.3%) and limits the study of comorbidity between alcohol dependence and other psychiatric disorders. In contrast, the NESARC provides complete coverage of *DSM-IV* alcohol dependence.

The reliability of the AUDADIS-IV alcohol diagnoses is documented in clinical and general population samples[43-46] with test-retest reliability ranging from good to excellent ($\kappa = 0.70$-0.84). Convergent, discriminant, and construct validity of AUDADIS-IV alcohol use disorder criteria and diagnoses were good to excellent,[47-51] including in the World Health Organization/National Institutes of Health International Study on Reliability and Validity,[52-57] where clinical reappraisals documented good validity of *DSM-IV* alcohol use disorder diagnoses ($\kappa = 0.60$-0.76).[52,58] No reliability data exist for the WMH-CIDI[42] used in the NCS-R.[30,31] Validity coefficients were similar for alcohol disorders in the WMH-CIDI ($\kappa = 0.56$, 0.70)[30] but lower for the DIS (≤ 0.50).[59]

MOOD, ANXIETY, AND PERSONALITY DISORDERS

Mood disorders included *DSM-IV* primary major depressive disorder, bipolar I, bipolar II, and dysthymia. Anxiety disorders included *DSM-IV* primary panic disorder with and without agoraphobia, social and specific phobias, and generalized anxiety disorder. AUDADIS-IV methods to diagnose these disorders are described in detail in the ARCHIVES[10,11] and elsewhere.[37,38,60-64] In *DSM-IV*, "primary" excludes substance-induced disorders or those due to medical conditions; AUDADIS-IV improvements over other measures in making the primary/substance-induced distinction for mood and anxiety disorders are presented elsewhere,[10,11,62-64] including the fact that specific AUDADIS-IV questions about the chronological relationship between intoxication or withdrawal and the full psychiatric syndrome implement *DSM-IV* criteria differentiating primary from substance-induced disorders. Major depressive disorder diagnoses also ruled out bereavement. Personality disorders (PDs), assessed on a lifetime basis, included *DSM-IV* avoidant, dependent, obsessive-compulsive, paranoid, schizoid, and antisocial personality disorders. *DSM-IV* PD diagnoses require long-term patterns of social/occupational impairment and exclusion of substance-induced cases; AUDADIS-IV PD diagnoses were made accordingly.[60-62]

Test-retest reliability for AUDADIS-IV mood, anxiety, and personality diagnoses in general population and clinical settings was fair to good ($\kappa = 0.40$-0.62).[44-46] Test-retest reliabilities of AUDADIS-IV personality disorders (not measured in prior surveys) compare favorably with those in patient samples using semistructured personality interviews.[65] Convergent validity was good to excellent for all affective and anxiety diagnoses, and selected diagnoses showed good agreement ($\kappa = 0.64$-0.68) with psychiatrist reappraisals,[11,46,58] similar to that of the NCS-R WMH-CIDI ($\kappa = 0.54$)[30] and better than the DIS ($\kappa = 0.20$).[66,67] Test-retest reliability data do not exist for the DIS in general population samples or for the NCS-R WMH-CIDI.

DISABILITY AND IMPAIRMENT

Disability among respondents was determined with the Short Form 12, version 2 (SF-12v2).[68] In contrast to other measures of functioning that incorporate information on premature mortality (disability-adjusted life years), the SF-12v2 is a reliable and valid measure of current impairment in psychosocial functioning widely used in population surveys.[68] The SF-12v2 scales included mental health, social functioning (limitations due to emotional problems), role emotional functioning (role impairment due to emotional problems), and mental component summary (MCS). Each SF-12v2 norm-based disability score is a continuous variable with mean of 50 in the general population, a standard deviation of ± 10, and a range of 0 to 100. Lower scores indicate more disability.

STATISTICAL ANALYSES

Weighted means, frequencies, and cross-tabulations were computed. Adjusted odds ratios (ORs) derived from multiple logistic regressions indicated associations between alcohol abuse or dependence and sociodemographic variables. Associations of alcohol use disorders with psychiatric comorbidity were calculated 2 ways. The first included control for sociodemographic characteristics comparable with other reports on comorbidity. The second way further controlled for all other substance use and psychiatric disorders. This analysis addresses the fact that tests of association controlling only sociodemographic characteristics do not yield information on the unique relationship of other disorders (that themselves have considerable comorbidity) to alcohol abuse and dependence. Analyses that control for other comorbidity test the hypothesis that an alcohol diagnosis is associated with the pure (noncomorbid) form of the other disorder.[69]

The relationship of 12-month alcohol abuse and dependence to disability as measured by the SF-12v2 disability scores was determined using multiple linear regression analyses controlling for sociodemographic characteristics and all other substance use, mood, anxiety, and personality disorders assessed in the NESARC. Hazard rates, reflecting lifetime alcohol abuse and dependence risk at specific ages among the population at risk at those ages, were calculated using standard life table methods.[70] Hazard rate curves were statistically smoothed by using rolling averages of 5-year age groups, a standard methodology. Standard errors and 99% confidence intervals were estimated using SUDAAN,[71] which adjusts for characteristics of complex sample surveys such as the NESARC.

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Table 2. Prevalences of 12-Month and Lifetime *DSM-IV* Alcohol Use Disorders by Sociodemographic Characteristics

Characteristic	12-Month, % (SE)			Lifetime, % (SE)		
	Alcohol Use Disorder (n = 3327)	Alcohol Abuse (n = 1843)	Alcohol Dependence (n = 1484)	Alcohol Use Disorder (n = 11 843)	Alcohol Abuse (n = 7062)	Alcohol Dependence (n = 4781)
Total	8.5 (0.24)	4.7 (0.18)	3.8 (0.14)	30.3 (0.77)	17.8 (0.52)	12.5 (0.35)
Sex						
Male	12.4 (0.36)	6.9 (0.28)	5.4 (0.21)	42.0 (1.00)	24.6 (0.70)	17.4 (0.50)
Female	4.9 (0.22)	2.6 (0.16)	2.3 (0.13)	19.5 (0.64)	11.5 (0.44)	8.0 (0.31)
Race/ethnicity						
White	8.9 (0.27)	5.1 (0.21)	3.8 (0.16)	34.1 (0.65)	20.3 (0.46)	13.8 (0.35)
Black	6.9 (0.40)	3.3 (0.30)	3.6 (0.29)	20.6 (0.85)	12.2 (0.58)	8.4 (0.43)
Native American	12.1 (1.60)	5.8 (1.02)	6.4 (1.17)	43.0 (2.62)	22.9 (1.97)	20.1 (1.99)
Asian	4.5 (0.62)	2.1 (0.46)	2.4 (0.38)	11.6 (1.18)	5.6 (0.76)	6.0 (0.75)
Hispanic	7.9 (0.58)	4.0 (0.30)	4.0 (0.44)	21.0 (1.19)	11.5 (0.70)	9.5 (0.73)
Age, y						
18-29	16.2 (0.59)	7.0 (0.39)	9.2 (0.41)	30.1 (0.94)	12.8 (0.58)	17.3 (0.64)
30-44	9.7 (0.40)	6.0 (0.31)	3.8 (0.23)	36.7 (1.01)	21.4 (0.68)	15.4 (0.53)
45-64	5.4 (0.29)	3.5 (0.25)	1.9 (0.15)	31.4 (0.92)	20.4 (0.69)	11.0 (0.45)
≥65	1.5 (0.16)	1.2 (0.15)	0.2 (0.06)	16.1 (0.60)	12.7 (0.55)	3.4 (0.27)
Marital status						
Married/cohabiting	6.1 (0.22)	4.0 (0.19)	2.1 (0.12)	30.4 (0.77)	19.5 (0.54)	10.9 (0.35)
Widowed/separated/divorced	8.1 (0.45)	4.4 (0.28)	3.7 (0.30)	28.8 (0.93)	16.5 (0.62)	12.3 (0.59)
Never married	15.9 (0.63)	6.9 (0.43)	9.0 (0.44)	31.2 (1.04)	14.0 (0.65)	17.2 (0.67)
Education						
Less than high school	7.0 (0.45)	3.1 (0.28)	4.0 (0.33)	23.7 (1.00)	13.5 (0.72)	10.2 (0.60)
High school	8.3 (0.37)	4.5 (0.26)	3.7 (0.24)	28.2 (0.87)	16.3 (0.58)	11.9 (0.48)
Some college or higher	9.0 (0.30)	5.2 (0.24)	3.8 (0.16)	33.2 (0.82)	19.8 (0.59)	13.4 (0.41)
Personal income, $						
0-19 999	7.6 (0.29)	3.2 (0.18)	4.5 (0.21)	23.9 (0.74)	12.6 (0.47)	11.3 (0.40)
20 000-34 999	9.5 (0.41)	5.5 (0.31)	4.0 (0.27)	32.3 (0.93)	18.6 (0.67)	13.8 (0.53)
35 000-69 999	9.0 (0.41)	6.2 (0.36)	2.9 (0.20)	37.8 (1.12)	23.7 (0.87)	14.1 (0.54)
≥70 000	8.8 (0.61)	6.6 (0.61)	2.2 (0.33)	41.4 (1.40)	30.0 (1.27)	11.4 (0.69)
Urbanicity						
Urban	8.4 (0.28)	4.6 (0.21)	3.8 (0.15)	29.6 (0.90)	17.4 (0.60)	12.2 (0.41)
Rural	8.8 (0.44)	4.8 (0.32)	4.0 (0.31)	33.3 (0.93)	19.4 (0.69)	13.8 (0.55)
Region						
Northeast	7.8 (0.59)	4.3 (0.50)	3.5 (0.29)	27.1 (2.25)	16.6 (1.68)	10.6 (0.71)
Midwest	10.6 (0.66)	5.9 (0.43)	4.6 (0.37)	35.3 (1.63)	20.7 (0.92)	15.0 (0.87)
South	7.3 (0.33)	4.2 (0.24)	3.1 (0.21)	27.0 (0.82)	16.7 (0.54)	10.3 (0.48)
West	8.8 (0.48)	4.5 (0.34)	4.3 (0.27)	32.6 (1.87)	17.6 (1.13)	15.1 (0.95)

RESULTS

PREVALENCE AND SOCIODEMOGRAPHIC CORRELATES OF *DSM-IV* ALCOHOL ABUSE AND DEPENDENCE

The 12-month prevalences of *DSM-IV* alcohol abuse and dependence (**Table 2**) were 4.7% and 3.8%; the 12-month prevalence of any alcohol use disorder was 8.5%. The lifetime prevalences of *DSM-IV* alcohol abuse and dependence were 17.8% and 12.5%, respectively; the total lifetime prevalence of any alcohol use disorder was 30.3%. **Table 3** shows the risks of 12-month and lifetime abuse and dependence in population subgroups via adjusted ORs and 99% confidence intervals.

For 12-month disorders, odds of alcohol abuse were greater among men; among whites compared with blacks, Asians, and Hispanics; and among respondents who were younger and unmarried. The odds of 12-month dependence were lower in the South than in the West and among Asians, blacks, and Hispanics than whites. The odds were also higher among men, younger and unmarried adults, and those in the lowest income group.

For lifetime abuse and dependence, the odds were higher among men and lower among blacks, Asians, and Hispanics compared with whites. The odds of lifetime alcohol abuse were greater among respondents aged 30 to 64 years and lower among never-married adults, those with a high school education, and lower income. The odds of lifetime dependence were greater in the youngest age groups, unmarried respondents, Native Americans, and those with lower incomes; odds were lower in the Northeast and South than in the West.

ASSOCIATIONS BETWEEN *DSM-IV* ALCOHOL USE DISORDERS AND OTHER PSYCHIATRIC DISORDERS, CONTROLLING FOR SOCIODEMOGRAPHIC CHARACTERISTICS

Comorbidity between *DSM-IV* alcohol abuse and dependence and other psychiatric disorders adjusted for so-

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Table 3. Adjusted Odds Ratios of 12-Month and Lifetime *DSM-IV* Alcohol Use Disorders by Sociodemographic Characteristics

	Adjusted Odds Ratios (99% Confidence Intervals)					
	12-Month			Lifetime		
Characteristic	Alcohol Use Disorder	Alcohol Abuse	Alcohol Dependence	Alcohol Use Disorder	Alcohol Abuse	Alcohol Dependence
Sex						
Male	2.7 (2.38-3.05)[a]	2.5 (2.11-2.97)[a]	2.5 (2.10-3.00)[a]	3.1 (2.81-3.35)[a]	2.3 (2.12-2.58)[a]	2.6 (2.31-2.91)[a]
Female	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]
Race/ethnicity						
White	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]
Black	0.6 (0.53-0.76)[a]	0.6 (0.47-0.79)[a]	0.7 (0.54-0.95)[a]	0.5 (0.45-0.57)[a]	0.6 (0.54-0.70)[a]	0.5 (0.45-0.61)[a]
Native American	1.4 (0.93-2.10)	1.2 (0.72-2.03)	1.6 (0.91-2.65)	1.4 (0.08-1.92)	1.2 (0.88-1.65)	1.4 (1.03-2.00)[a]
Asian	0.4 (0.26-0.60)[a]	0.4 (0.21-0.68)[a]	0.5 (0.30-0.75)[a]	0.2 (0.15-0.27)[a]	0.2 (0.15-0.32)[a]	0.3 (0.22-0.44)[a]
Hispanic	0.7 (0.53-0.87)[a]	0.7 (0.58-0.95)[a]	0.7 (0.48-0.91)[a]	0.4 (0.37-0.54)[a]	0.5 (0.46-0.66)[a]	0.5 (0.40-0.61)[a]
Age, y						
18-29	13.2 (9.44-18.50)[a]	6.3 (4.25-9.20)[a]	41.9 (20.66-85.04)[a]	2.8 (2.46-3.29)[a]	1.2 (0.98-1.47)	6.7 (5.12-8.81)[a]
30-44	8.1 (5.82-11.19)[a]	4.8 (3.34-6.91)[a]	22.1 (11.23-43.48)[a]	3.5 (3.03-3.95)[a]	1.8 (1.58-2.09)[a]	6.2 (4.85-7.92)[a]
45-64	4.1 (2.91-5.74)[a]	2.7 (1.80-3.95)[a]	10.3 (5.19-20.40)[a]	2.5 (2.17-2.77)[a]	1.6 (1.40-1.82)[a]	3.9 (3.13-4.96)[a]
≥65	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]
Marital status						
Married/cohabiting	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]
Widowed/separated/divorced	2.3 (1.94-2.75)[a]	1.8 (1.46-2.12)[a]	3.1 (2.30-4.07)[a]	1.4 (1.29-1.56)[a]	1.1 (0.97-1.18)	1.7 (1.50-2.00)[a]
Never married	1.8 (1.54-2.04)[a]	1.4 (1.14-1.73)[a]	2.1 (1.70-2.71)[a]	1.0 (0.89-1.10)	0.8 (0.69-0.93)[a]	1.2 (1.08-1.42)[a]
Education						
Less than high school	0.9 (0.76-1.18)	0.8 (0.60-1.10)	1.1 (0.85-1.47)	0.8 (0.74-0.96)[a]	0.9 (0.74-1.02)	0.9 (0.74-1.06)
High school	1.0 (0.83-1.11)	1.0 (0.81-1.18)	0.9 (0.76-1.15)	0.9 (0.78-0.94)[a]	0.9 (0.79-0.98)[a]	0.9 (0.78-1.00)
Some college or higher	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]
Personal income, $						
0-19 999	0.9 (0.71-1.14)	0.6 (0.42-0.79)[a]	1.8 (1.13-2.82)[a]	0.9 (0.75-1.02)	0.6 (0.53-0.74)[a]	1.6 (1.29-1.97)[a]
20 000-34 999	1.0 (0.83-1.29)	0.9 (0.66-1.15)	1.5 (0.98-2.39)	1.0 (0.85-1.12)	0.7 (0.64-0.88)[a]	1.6 (1.28-1.93)[a]
35 000-69 999	1.0 (0.79-1.27)	0.9 (0.71-1.24)	1.2 (0.76-1.92)	1.0 (0.87-1.16)	0.8 (0.71-0.98)[a]	1.4 (1.15-1.71)[a]
≥70 000	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]
Urbanicity						
Urban	0.9 (0.77-1.14)	0.9 (0.74-1.16)	0.9 (0.72-1.19)	0.9 (0.77-1.04)	0.9 (0.80-1.06)	0.9 (0.78-1.08)
Rural	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]
Region						
Northeast	0.9 (0.66-1.14)	0.9 (0.63-1.35)	0.8 (0.62-1.10)	0.7 (0.51-0.93)[a]	0.9 (0.63-1.16)	0.6 (0.51-0.79)[a]
Midwest	1.2 (0.89-1.50)	1.3 (0.93-1.73)	1.0 (0.76-1.33)	1.0 (0.74-1.25)	1.1 (0.87-1.33)	0.9 (0.68-1.08)
South	0.8 (0.64-1.00)	0.9 (0.71-1.24)	0.7 (0.52-0.89)	0.7 (0.56-0.85)[a]	0.9 (0.74-1.08)	0.6 (0.49-0.74)[a]
West	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]	1.0 [Reference]

[a] Odds ratio is significant.

ciodemographic characteristics is outlined in **Table 4** for 12-month and **Table 5** for lifetime disorders. Twelve-month alcohol abuse was significantly associated with other 12-month substance use disorders except drug dependence but unrelated to 12-month psychiatric disorders except antisocial PD. In contrast, 12-month alcohol dependence was strongly and significantly associated with all 12-month substance use and psychiatric disorders. Lifetime alcohol dependence comorbidity followed a similar pattern.

ASSOCIATIONS BETWEEN *DSM-IV* ALCOHOL USE DISORDERS AND OTHER PSYCHIATRIC DISORDERS, CONTROLLING FOR SOCIODEMOGRAPHIC CHARACTERISTICS AND OTHER COMORBIDITY

The associations of 12-month and lifetime *DSM-IV* alcohol abuse and dependence with other substance use and psychiatric disorders, controlling for sociodemographic characteristics and psychiatric comorbidity, are outlined in Table 4 and Table 5. Odds ratios were reduced when other comorbidity was controlled. Twelve-month alcohol abuse remained strongly and significantly associated with substance use disorders (OR≥1.8) but not with other Axis I disorders (and was negatively associated with schizoid PD). A similar pattern was observed for lifetime abuse with an additional negative association with bipolar I disorder. Twelve-month alcohol dependence remained strongly associated with substance use disorders (ORs=3.4-7.5) and bipolar disorders but with lower ORs (1.9, 2.0) and was significantly associated with only 2 Axis II disorders: histrionic and antisocial PD. Lifetime *DSM-IV* alcohol abuse followed a similar pattern of associations when comorbidity was controlled. Lifetime *DSM-IV* alcohol dependence remained positively although less strongly associated with substance use disorders; most mood and anxiety disorders; and paranoid, histrionic, and antisocial PDs.

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Table 4. Adjusted Odds Ratios of 12-Month *DSM-IV* Alcohol Use Disorders and Other Psychiatric Disorders Controlling for Sociodemographic Characteristics and Comorbid Psychiatric Disorders

	Adjusted Odds Ratios (99% Confidence Intervals)					
	Sociodemographic Characteristics[a]			Sociodemographic Characteristics and Other Psychiatric Disorders[b]		
Comorbid Disorder	Alcohol Use Disorder	Alcohol Abuse	Alcohol Dependence	Alcohol Use Disorder	Alcohol Abuse	Alcohol Dependence
Any drug use disorder	9.0 (6.96-11.72)[c]	2.8 (2.02-3.77)[c]	9.8 (7.19-13.24)[c]	5.5 (4.21-7.30)[c]	2.1 (1.48-2.90)[c]	5.0 (3.59-6.94)[c]
Any drug abuse	6.4 (4.76-8.69)[c]	3.2 (2.21-4.58)[c]	5.8 (3.99-8.37)[c]	4.9 (3.56-6.67)[c]	2.5 (1.72-3.72)[c]	4.1 (2.74-6.03)[c]
Any drug dependence	15.0 (8.44-26.52)[c]	1.6 (0.89-3.04)	18.7 (10.74-32.51)[c]	7.5 (4.14-13.70)[c]	1.2 (0.61-2.19)	7.5 (4.16-13.64)[c]
Nicotine dependence	3.5 (3.01-4.05)[c]	2.0 (1.62-2.44)[c]	4.9 (4.01-5.93)[c]	2.7 (2.34-3.21)[c]	1.8 (1.48-2.90)[c]	3.4 (2.78-4.19)[c]
Any mood disorder	2.2 (1.88-2.67)[c]	1.2 (0.98-1.59)	3.2 (2.51-4.00)[c]	1.4 (1.13-1.79)[c]	1.0 (0.79-1.36)	1.7 (1.23-2.29)[c]
Major depressive disorder	1.8 (1.44-2.26)[c]	1.3 (0.98-1.81)	2.1 (1.57-2.95)[c]	1.3 (1.01-1.67)[c]	1.2 (0.89-1.68)	1.3 (0.92-1.93)
Bipolar I	2.7 (1.99-3.73)[c]	1.1 (0.70-1.73)	4.0 (2.71-5.96)[c]	1.5 (0.98-2.11)	0.8 (0.49-1.32)	1.9 (1.13-3.01)[c]
Bipolar II	2.1 (1.33-3.38)[c]	0.9 (0.37-2.03)	3.1 (1.92-5.09)[c]	1.5 (0.91-2.36)	0.7 (0.30-1.65)	2.0 (1.22-3.41)[c]
Dysthymia	1.6 (0.95-2.77)	1.0 (0.49-2.11)	2.2 (1.10-4.24)[c]	0.8 (0.47-1.44)	0.9 (0.42-1.87)	0.9 (0.42-1.76)
Any anxiety disorder	1.9 (1.58-2.25)[c]	1.2 (0.93-1.46)	2.7 (2.15-3.31)[c]	1.3 (1.05-1.59)[c]	1.1 (0.82-1.36)	1.5 (1.16-1.99)[c]
Any panic disorder	2.3 (1.68-3.16)[c]	1.0 (0.63-1.70)	3.5 (2.42-5.18)[c]	1.2 (0.80-1.65)	0.8 (0.47-1.42)	1.4 (0.89-2.20)
Panic with agoraphobia	2.7 (1.55-4.79)[c]	1.5 (0.64-3.62)	3.6 (1.74-7.41)[c]	1.1 (0.60-2.22)	1.2 (0.47-3.12)	1.0 (0.47-2.32)
Panic without agoraphobia	2.1 (1.48-3.01)[c]	0.9 (0.46-1.60)	3.4 (2.18-5.25)[c]	1.1 (0.75-1.69)	0.7 (0.35-1.33)	1.5 (0.91-2.57)
Social phobia	1.6 (1.15-2.21)[c]	0.9 (0.59-1.47)	2.3 (1.50-3.46)[c]	0.9 (0.61-1.32)	0.8 (0.49-1.34)	1.0 (0.59-1.67)
Specific phobia	1.8 (1.42-2.19)[c]	1.2 (0.89-1.60)	2.3 (1.79-3.00)[c]	1.2 (0.93-1.52)	1.1 (0.78-1.45)	1.3 (0.94-1.71)
Generalized anxiety	2.1 (1.40-2.87)[c]	1.0 (0.56-1.71)	3.0 (2.00-4.61)[c]	0.9 (0.58-1.36)	0.8 (0.41-1.44)	1.0 (0.62-1.68)
Any personality disorder	2.1 (1.85-2.44)[c]	1.2 (1.00-1.53)	3.2 (2.68-3.76)[c]	1.4 (1.18-1.66)[c]	1.0 (0.82-1.31)	1.8 (1.45-2.20)[c]
Avoidant	1.8 (1.32-2.44)[c]	0.8 (0.44-1.33)	2.8 (1.97-3.94)[c]	0.9 (0.60-1.23)	0.6 (0.33-1.10)	1.1 (0.71-1.57)
Dependent	2.7 (1.37-5.24)[c]	0.6 (0.15-2.11)	4.3 (2.01-9.29)[c]	0.8 (0.34-1.82)	0.3 (0.09-1.20)	1.0 (0.39-2.39)
Obsessive-compulsive	1.6 (1.29-1.93)[c]	1.1 (0.84-1.52)	2.1 (1.61-2.63)[c]	1.0 (0.76-1.23)	1.0 (0.75-1.38)	1.0 (0.70-1.30)
Paranoid	2.4 (1.96-3.04)[c]	1.2 (0.82-1.85)	3.4 (2.67-4.38)[c]	1.3 (0.97-1.66)	1.0 (0.61-1.49)	1.4 (0.97-1.87)
Schizoid	1.5 (1.09-2.01)[c]	0.7 (0.46-1.11)	2.3 (1.61-3.31)[c]	0.7 (0.49-0.99)[c]	0.5 (0.34-0.88)[c]	0.9 (0.55-1.31)
Histrionic	3.4 (2.50-4.67)[c]	1.4 (0.85-2.22)	4.8 (3.46-6.66)[c]	1.7 (1.16-2.47)[c]	1.0 (0.59-1.65)	1.8 (1.22-2.73)[c]
Antisocial	2.9 (2.35-3.67)[c]	1.5 (1.06-2.02)[c]	4.1 (3.16-5.20)[c]	1.5 (1.18-2.01)[c]	1.1 (0.74-1.54)	1.7 (1.26-2.34)[c]

[a] Odds ratios adjusted for age, race/ethnicity, sex, education, income, marital status, urbanicity, and geographic region.
[b] Odds ratios adjusted for age, race/ethnicity, sex, education, income, marital status, urbanicity, geographic region, and other psychiatric disorders.
[c] Odds ratio is significant.

ONSET AND COURSE OF *DSM-IV* ALCOHOL USE DISORDERS

Mean ages at onset of alcohol abuse and dependence were 22.5 and 21.9 years, respectively. Hazard rates for onsets of both disorders (**Figure**) peaked at age 19 years, decreasing thereafter. Mean durations of longest episodes of alcohol abuse and dependence were 2.7 and 3.7 years. Of respondents with lifetime abuse or dependence, 72.0% had one episode; the mean number of episodes among respondents with multiple episodes of abuse and dependence was 5.2 and 5.1, respectively. Mean duration of dependence episodes differed significantly ($P<.01$) between those with one episode (3.4 years) vs multiple episodes (2.4 years). Mean duration of abuse episodes among respondents with a single episode (2.7 years) vs multiple episodes (2.4 years) did not differ significantly.

DISABILITY ASSOCIATED WITH *DSM-IV* ALCOHOL ABUSE AND DEPENDENCE

Mean (SE) SF-12v2 scores for those with current (12-month) alcohol abuse ranged from 48.8 (0.23) to 49.8 (0.26); corresponding scores for those with 12-month alcohol dependence ranged from 47.3 (0.37) to 48.2 (0.39) (**Table 6**). Adjusting for sociodemographic characteristics and other Axis I and II disorders, alcohol abuse was associated with lower social functioning ($b=-0.59$; $P<.05$) and role emotional functioning ($b=-0.96$; $P<.003$) while alcohol dependence was highly and significantly associated with lower MCS ($b=-2.52$; $P<.001$), mental health ($b=-1.39$; $P<.001$), social functioning ($b=-2.06$; $P<.001$), and role emotional functioning ($b=-2.07$; $P<.001$). Disability increased steadily and significantly with alcohol dependence severity (adjusted for sociodemographic characteristics and other Axis I and II disorders, $b=-0.92$ [SE=0.1], $P<.001$). The lowest quartile of MCS scores among respondents with alcohol dependence was 43.6 or less. For comparative purposes, mean (SE) MCS scores for respondents with 12-month drug abuse, drug dependence, any anxiety disorder, any mood disorder, and any (lifetime) personality disorder were 48.7 (0.54), 41.9 (1.15), 41.7 (0.27), 46.5 (0.22), and 47.3 (0.17), respectively. Thus, respondents with alcohol abuse manifested less disability than those with drug, anxiety, mood, or personality disorders. On average, respondents with alcohol dependence manifested less disability than those with drug dependence and anxiety disorders, but their disability was comparable with that among respondents who had drug abuse, mood, and personality disorders.

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Table 5. Adjusted Odds Ratios of Lifetime *DSM-IV* Alcohol Use Disorders and Other Psychiatric Disorders Controlling for Sociodemographic Characteristics and Comorbid Psychiatric Disorders

	Adjusted Odds Ratios (99% Confidence Intervals)					
	Sociodemographic Characteristics[a]			Sociodemographic Characteristics and Other Psychiatric Disorders[b]		
Comorbid Disorder	Alcohol Use Disorder	Alcohol Abuse	Alcohol Dependence	Alcohol Use Disorder	Alcohol Abuse	Alcohol Dependence
Any drug use disorder	10.4 (9.03-11.96)[c]	2.0 (1.75-2.28)[c]	7.6 (6.68-8.65)[c]	6.7 (5.79-7.77)[c]	1.7 (1.45-1.93)[c]	4.4 (3.81-5.03)[c]
Any drug abuse	7.6 (6.54-8.93)[c]	2.4 (2.10-2.79)[c]	4.4 (3.83-5.14)[c]	6.3 (5.35-7.40)[c]	2.1 (1.77-2.40)[c]	3.7 (3.14-4.33)[c]
Any drug dependence	15.9 (11.91-21.14)[c]	0.8 (0.63-1.10)	14.9 (11.78-18.84)[c]	8.9 (6.48-12.24)[c]	0.7 (0.50-0.91)[c]	8.0 (6.13-10.52)[c]
Nicotine dependence	4.9 (4.40-5.36)[c]	1.7 (1.55-1.94)[c]	5.4 (4.84-6.12)[c]	3.3 (2.96-3.62)[c]	1.5 (1.37-1.75)[c]	3.3 (2.94-3.75)[c]
Any mood disorder	2.4 (2.20-2.71)[c]	1.2 (1.03-1.30)[c]	3.4 (2.99-3.87)[c]	1.4 (1.24-1.59)[c]	1.0 (0.57-1.79)	1.7 (1.47-2.07)[c]
Major depressive disorder	1.9 (1.66-2.08)[c]	1.2 (1.03-1.34)[c]	2.2 (1.93-2.59)[c]	1.2 (1.09-1.41)[c]	1.1 (0.94-1.24)	1.4 (1.18-1.64)[c]
Bipolar I	3.5 (2.84-4.22)[c]	1.0 (0.77-1.32)	4.6 (3.72-5.79)[c]	1.5 (1.21-1.97)[c]	0.7 (0.54-0.97)[c]	2.1 (1.57-2.86)[c]
Bipolar II	2.6 (1.92-3.62)[c]	1.2 (0.82-1.68)	3.0 (2.13-4.31)[c]	1.6 (1.10-2.22)[c]	0.9 (0.64-1.39)	1.9 (1.30-2.78)[c]
Dysthymia	2.0 (1.63-2.38)[c]	1.0 (0.81-1.32)	2.6 (2.11-3.30)[c]	1.0 (0.80-1.25)	0.9 (0.70-1.19)	1.2 (0.90-1.51)
Any anxiety disorder	2.3 (2.11-2.61)[c]	1.2 (1.10-1.41)[c]	3.0 (2.68-3.35)[c]	1.5 (1.33-1.71)[c]	1.1 (0.99-1.31)	1.7 (1.43-1.92)[c]
Any panic disorder	2.4 (2.08-2.78)[c]	1.1 (0.92-1.37)	3.2 (2.76-3.71)[c]	1.1 (0.96-1.36)	0.9 (0.75-1.15)	1.3 (1.07-1.53)[c]
Panic with agoraphobia	2.5 (1.87-3.32)[c]	1.0 (0.64-1.45)	3.5 (2.56-4.92)[c]	0.8 (0.56-1.25)	0.7 (0.48-1.15)	1.0 (0.67-1.59)
Panic without agoraphobia	2.3 (1.95-2.71)[c]	1.2 (0.93-1.46)	2.9 (2.49-3.45)[c]	1.2 (1.03-1.49)[c]	1.0 (0.79-1.26)	1.3 (1.09-1.63)[c]
Social phobia	2.3 (1.94-2.76)[c]	1.2 (0.99-1.53)	2.7 (2.22-3.33)[c]	1.2 (1.03-1.50)[c]	1.1 (0.85-1.35)	1.2 (0.98-1.56)
Specific phobia	2.2 (1.90-2.47)[c]	1.2 (1.04-1.39)[c]	2.7 (2.32-3.13)[c]	1.3 (1.11-1.50)[c]	1.1 (0.90-1.23)	1.4 (1.16-1.68)[c]
Generalized anxiety	2.2 (1.80-2.63)[c]	1.1 (0.89-1.36)	2.8 (2.35-3.40)[c]	1.0 (0.77-1.22)	0.9 (0.74-1.16)	1.0 (0.81-1.32)
Any personality disorder	2.8 (2.52-3.11)[c]	1.3 (1.14-1.50)[c]	3.4 (3.05-3.82)[c]	1.5 (1.37-1.74)[c]	1.1 (0.93-1.25)	1.6 (1.40-1.90)[c]
Avoidant	2.0 (1.54-2.51)[c]	0.8 (0.53-1.09)	3.0 (2.33-3.93)[c]	0.7 (0.51-0.86)[c]	0.6 (0.39-0.83)[c]	1.0 (0.72-1.32)
Dependent	2.0 (1.22-3.40)[c]	0.7 (0.33-1.54)	3.1 (1.84-5.35)[c]	0.5 (0.23-1.02)	0.5 (0.21-1.10)	0.7 (0.35-1.33)
Obsessive-compulsive	2.1 (1.87-2.46)[c]	1.3 (1.06-1.48)[c]	2.5 (2.15-2.82)[c]	1.2 (1.04-1.42)[c]	1.1 (0.95-1.33)	1.1 (0.94-1.35)
Paranoid	2.8 (2.37-3.37)[c]	1.1 (0.87-1.33)	3.7 (3.07-4.56)[c]	1.1 (0.90-1.39)	0.8 (0.64-0.99)[c]	1.3 (1.04-1.70)[c]
Schizoid	2.3 (1.89-2.80)[c]	1.1 (0.88-1.49)	2.8 (2.25-3.50)[c]	0.9 (0.71-1.19)	0.9 (0.68-1.17)	0.9 (0.72-1.32)
Histrionic	3.9 (2.97-5.02)[c]	1.1 (0.84-1.57)	4.6 (3.52-6.08)[c]	1.5 (1.09-2.12)[c]	0.8 (0.57-1.13)	1.6 (1.17-2.32)[c]
Antisocial	6.5 (5.29-7.97)[c]	1.5 (1.20-1.88)[c]	5.4 (4.46-6.54)[c]	2.2 (1.73-2.90)[c]	1.0 (0.77-1.24)	1.7 (1.33-2.23)[c]

[a] Odds ratios adjusted for age, race/ethnicity, sex, education, income, marital status, urbanicity, and geographic region.
[b] Odds ratios adjusted for age, race/ethnicity, sex, education, income, marital status, urbanicity, geographic region, and other psychiatric disorders.
[c] Odds ratio is significant.

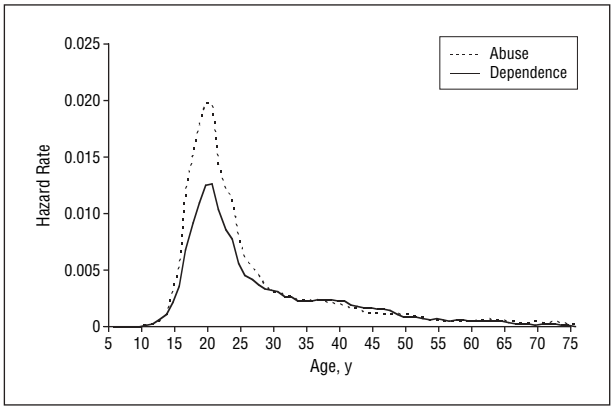

Figure. Hazard rates for age at onset of *DSM-IV* alcohol abuse and alcohol dependence.

TREATMENT FOR *DSM-IV* ALCOHOL USE DISORDERS

Of those with lifetime alcohol dependence, only 24.1% ever received treatment while of those with 12-month alcohol dependence, only 12.1% received alcohol treatment in the past year. Among those with lifetime and 12-month alcohol abuse, 7.0% and 3.1% received any alcohol treatment, respectively. These treatment rates are slightly lower than treatment rates 10 years earlier (dependence: 23.5% lifetime and 13.8% 12-month; abuse: 9.2% lifetime and 4.4% 12-month).[24] In the NESARC, the mean age of respondents' first treatment for dependence was 29.8 years, an 8-year mean lag between onset and treatment. The mean age of first treatment for abuse was 32.1 years, a 10-year mean lag between onset and treatment.

Among those with 12-month alcohol dependence, 7.4% received help from 12-step (self-help) groups; 10.0% from any health professional other than 12-step groups, employee assistance programs, or clergy; and 6.7% from physicians or other health professionals; with other treatment sources less frequent (**Table 7**). Of those with 12-month alcohol abuse, 2.0% received help from 12-step groups; remaining percentages ranged from 0.0% (halfway houses) to 1.9% (any professional other than 12-step groups, employee assistance programs, or clergy). Respondents with lifetime alcohol use disorders showed similar ranking of treatment patterns regarding prevalence by setting. Excluding 12-step programs, employee assistance programs, and clergy, lifetime professional treatment rates were 4.5% among respondents with alcohol abuse and 20.1% among respondents with alcohol dependence.

Among respondents with 12-month alcohol use disorders, few characteristics significantly ($P<.05$) predicted treatment. For 12-month alcohol dependence, the lowest

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Table 6. Mean Disability Scores (Short Form 12, version 2) and 12-Month Alcohol Use Disorders

Alcohol Category	Mean (SE)			
	Mental Health	Social Functioning	Role Emotional Functioning	Mental Component Summary
DSM-IV alcohol abuse	49.6 (0.32)[a]	48.9 (0.29)[a]	48.8 (0.23)[b]	49.8 (0.26)
DSM-IV alcohol dependence diagnosis	48.1 (0.34)[c]	48.2 (0.39)[c]	47.5 (0.36)[c]	47.3 (0.37)[c]
DSM-IV alcohol dependence criteria, No.				
3	49.1 (0.5)	50.8 (0.5)	50.3 (0.4)	49.3 (0.5)
4	48.2 (0.8)	49.9 (0.6)	47.8 (0.7)	47.4 (0.8)
5	45.9 (1.1)	48.6 (1.0)	47.4 (0.9)	46.2 (1.1)
6	43.5 (1.2)	45.9 (1.3)	44.2 (1.9)	43.3 (1.3)
7	43.2 (1.6)	43.2 (1.7)	42.9 (1.4)	42.3 (1.4)

[a] $P<.05$.
[b] $P<.01$.
[c] $P<.001$.

Table 7. Alcohol Treatment and Help-Seeking Settings Among Respondents With 12-Month and Lifetime *DSM-IV* Alcohol Use Disorders

Type of Alcohol Treatment/ Help Seeking	12-Month, % (SE)			Lifetime, % (SE)		
	Alcohol Use Disorder	Alcohol Abuse	Alcohol Dependence	Alcohol Use Disorder	Alcohol Abuse	Alcohol Dependence
12-step program	4.46 (0.43)	2.03 (0.39)	7.44 (0.79)	10.84 (0.41)	5.21 (0.38)	18.87 (0.72)
Family/social services	1.47 (0.25)	0.62 (0.19)	2.51 (0.49)	3.18 (0.20)	1.32 (0.17)	5.82 (0.39)
Detoxification	1.98 (0.30)	0.47 (0.14)	3.82 (0.62)	4.84 (0.26)	1.72 (0.19)	9.30 (0.53)
Outpatient clinic	1.78 (0.27)	0.64 (0.22)	3.18 (0.55)	4.11 (0.23)	1.35 (0.16)	8.03 (0.48)
Rehabilitation program	2.34 (0.32)	0.71 (0.23)	4.34 (0.65)	6.58 (0.29)	2.53 (0.24)	12.36 (0.60)
Other inpatient facility	1.35 (0.24)	0.34 (0.14)	2.58 (0.48)	3.45 (0.21)	1.11 (0.15)	6.79 (0.44)
Emergency department	1.35 (0.26)	0.24 (0.12)	2.71 (0.54)	3.77 (0.21)	1.16 (0.14)	7.49 (0.45)
Halfway house	0.29 (0.11)	0.00 (0.00)	0.65 (0.25)	1.21 (0.11)	0.49 (0.09)	2.23 (0.26)
Crisis center	0.16 (0.05)	0.03 (0.03)	0.32 (0.11)	0.53 (0.07)	0.11 (0.04)	1.13 (0.16)
Employee assistance program	0.32 (0.12)	0.04 (0.04)	0.65 (0.27)	1.10 (0.11)	0.44 (0.11)	2.03 (0.23)
Clergy	1.20 (0.22)	0.20 (0.15)	2.42 (0.45)	2.18 (0.16)	1.47 (0.09)	4.61 (0.36)
Physician or other health care professional	3.34 (0.36)	0.56 (0.18)	6.73 (0.77)	5.54 (0.27)	1.62 (0.18)	11.13 (0.56)
Any professional other than AA, EAP, or clergy	5.47 (0.44)	1.85 (0.33)	9.99 (0.88)	11.00 (0.36)	4.50 (0.32)	20.07 (0.68)
Other	0.65 (0.17)	0.53 (0.21)	0.80 (0.27)	1.80 (0.14)	0.74 (0.12)	3.31 (0.30)

Abbreviations: AA, Alcoholics Anonymous; EAP, employee assistance program.

income category predicted treatment (OR=2.8). For 12-month abuse, compared with married and cohabiting respondents, those widowed, separated, or divorced (OR=3.5) were more likely to receive treatment as were those with less than high school education (OR=4.0). For lifetime abuse and dependence, treatment likelihood increased among men, unmarried respondents, and those with lower education and incomes (ORs=1.5-2.3).

COMMENT

In the United States in 2001-2002, 8.5% of adults experienced alcohol use disorders in the prior 12 months (4.7% abuse, 3.8% dependence) while 30.3% experienced alcohol use disorders during their lifetimes (17.8% abuse, 12.5% dependence). The duration of alcohol disorders was often chronic with a mean of nearly 4 years for alcohol dependence. The disorders were associated with significant disability. Thus, alcohol use disorders continue to present a widespread and serious personal and public health problem in the United States.

Consistent with previous studies[17,20,22,23,25] and recent reviews,[72,73] men were at greater risk of alcohol use disorders than women. Younger cohorts also showed higher risk of alcohol dependence and current alcohol abuse. This could indicate a true cohort effect or, alternatively, an undercount among older cohorts due to differential mortality or poor recall of remote events. Longitudinal studies are needed to address this issue. In contrast, the highest risk for lifetime alcohol abuse was in the baby boom and generation X cohorts (aged 30-64 years). This is the first time such an age distribution in an alcohol use disorder has been identified in the United States, although it is consistent with the new age distribution found in the NESARC for major depressive disorder.[11] Investigation of the reasons for this changed age pattern is warranted.

Due to its size, the NESARC provides more precise information on the risk for alcohol disorders by ethnic group than any other source. The findings indicate higher risk for lifetime alcohol dependence among Native Americans, which is consistent with local studies of Native

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Americans showing high rates of alcohol-related morbidity and mortality.[74-77] The specific risk among Native Americans for alcohol dependence but not abuse warrants further research.

The NESARC is consistent with earlier studies showing African Americans and Asians at lower risk than whites for alcohol abuse and dependence.[23] Among Asians, genetic factors affecting alcohol metabolism likely influence the rates.[78-80] Lower socioeconomic status generally increases poor health indicators[81] and the mean socioeconomic level of African Americans is lower than many other US groups. Therefore, determining the protective factors decreasing African American risk for alcohol use disorders is of interest, both to better understand the overall etiology of alcohol disorders and to develop improved prevention and intervention for blacks who do develop alcohol abuse or dependence.

NESARC findings of lower risk for alcohol abuse and dependence among Hispanics contribute new information. The NESARC size, oversampling for Hispanics (20% of the sample), and cultural sensitivity of the survey[82] provide highly accurate findings on Hispanics. Further analyses are needed to understand potential protective factors in these groups (eg, family cohesiveness, social norms).[82-84] Such work should distinguish between Hispanic groups since these may differ. Note that lower rates among disadvantaged minority groups do not reduce the importance of providing treatment to those with alcohol use disorders when they occur.

While alcohol abuse showed comorbidity with drug abuse, nicotine dependence, and antisocial PD, associations with other disorders, even when significant, were weak (OR $\leq$1.3). Consistent with earlier reports,[17-25] alcohol dependence showed strong, significant associations with all other substance and psychiatric disorders, controlling only for sociodemographic characteristics. This indicates that alcohol dependence remains highly comorbid with other disorders and that better understanding of the causes and treatment implications of this comorbidity would serve important public health functions. The results also underscore the importance of examining alcohol abuse and dependence separately.

To also understand the unique relationships of other disorders to alcohol dependence, we additionally determined the associations controlling for all remaining disorders measured in the study. Associations with drug and nicotine use disorders were reduced but remained strong and significant. The drop in magnitude suggests common causal factors underlying alcohol and other substance use disorders (consistent with family,[69] twin,[85,86] and genetic association studies[87,88]). However, remaining associations of alcohol dependence with other substance disorders after controlling for comorbidity suggest unique factors leading to the disorder-specific associations, for example, that the specific factors underlying associations between alcohol and nicotine dependence are not necessarily the same as the specific factors underlying associations between alcohol and illicit drug use disorders. This finding, also consistent with twin studies,[85,86] suggests continued investigation of both common and specific factors leading to associations between alcohol and other substance use disorders.

With control for additional comorbidity, significant associations remained only between alcohol dependence and bipolar I, bipolar II, specific phobia, and histrionic and antisocial PDs, and these were considerably reduced. Thus, while some unique disorder-specific associations were found, much of the association of alcohol dependence with other affective, anxiety, and PDs appears due to factors common to these other disorders.

The mean length and number of alcohol dependence episodes (72% reporting 1, the remainder reporting a mean of about 5), indicate 2 important points: first, alcohol dependence is highly chronic, and second, recovery is possible (addressed in detail elsewhere[89,90]). The recovery rates provide an important empirical counterpoint to the belief that alcohol disorders are always lifelong with efforts at recovery always unsuccessful.

All measures of current disability from the SF-12v2 scales were strongly associated with *DSM-IV* alcohol dependence, controlling for sociodemographic characteristics and comorbidity, and were similar to impairment levels for drug abuse, mood disorders, and PDs. Further, as severity of alcohol dependence increased, impairment approached the more severe levels associated with other disorders. When untreated, impaired functioning may diminish life chances and increase stressful life conditions even after alcohol dependence remits, increasing the subsequent risk for other psychiatric disorders such as major depression.[91] The NESARC findings on disability underscore the seriousness of *DSM-IV* alcohol dependence, which largely occurs among those who never receive treatment. In fact, among those with lifetime alcohol dependence, less disability was found among treated compared with untreated respondents (mean [SE] MCS scores 48.1 [0.40] and 44.7 [0.78], respectively, $P<.02$). Further investigation of the determinants of disability among those with alcohol use disorders is warranted.

Compared with 1991-1992, treatment rates for alcohol use disorders in 2001-2002 reveal a disappointing lack of progress. Most excessive drinkers are insured and have regular medical contacts,[92] so lack of health insurance does not account for this problem. The lack of progress on treatment for alcohol disorders differs sharply from improvement in treatment rates for major depression in recent years.[93] In identifying ways to improve treatment rates for alcohol disorders, depression may offer instructive points to consider. These include availability of multiple medications and behavioral treatments with reasonable efficacy, few adverse effects and simple regimens, and rapid screening measures for routine practice.[94,95] Additional points include a National Institute of Mental Health campaign to destigmatize depression and educate the public and professionals about recognition and treatment[96] and vigorous pharmaceutical promotion of antidepressants to professionals and the public.[93]

In contrast, alcohol disorders remain highly stigmatized,[97,98] more so than mental illness.[99] Medical attention to alcohol problems has declined[100,101] for many reasons, including clinician lack of knowledge,[102] uncertainty that screening is warranted,[103] insufficient organizational support,[104] and low expectations of results.[105,106] Individuals with alcohol disorders also express lack of

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confidence in alcoholism treatment and stigmatization as reasons for not seeking treatment.[107]

Evidence on the effectiveness of alcohol treatment is inconsistent with these negative beliefs. Published NESARC findings indicate that treatment and participation in 12-step groups significantly and substantially increased the likelihood of recovery from alcohol dependence[89] with other characteristics influencing recovery in more complex ways.[90] Many randomized trials demonstrate the efficacy of brief drinking reduction interventions in medical or primary care settings for those whose problems are not yet chronic and severe.[108-112] For more severe alcohol disorders, reasonably effective medications include naltrexone[113-115] and possibly acamprosate[116-119] while evidence-based manualized behavioral treatments include 12-step facilitation,[120,121] motivational interviewing,[122] cognitive behavioral therapy,[123] and a combination of these.[124] A multisite randomized trial recently added evidence on the effectiveness of naltrexone and behavioral treatment, including medical management.[125] These interventions have efficacy comparable with many routine treatments for other diseases.[126] The NIAAA clinician's guide[127] provides brief, clear instructions on screening and intervention for alcohol problems, and training packages for these procedures are available.[128]

Thus, numerous factors identified as important in improving treatment rates for major depression[93-95] also exist for alcohol. What is lacking is a major effort to change public and professional attitudes toward treatment. In the absence of vigorous pharmaceutical marketing, an intensive government program and active work by other nonprofit agencies is urgently needed to educate the public and professionals about the signs and risks of alcohol dependence, to destigmatize the illness, and to promote understanding of the benefits of intervention.

Potential study limitations are noted. Similar to all prior epidemiologic studies, lifetime comorbidity associations may be subject to recall bias and pseudocomorbidity[129] (ie, estimated lifetime associations may be biased due to variation of the association by age at onset of the comorbid disorders). However, these issues are not relevant to comorbidity estimates of 12-month disorders. Most other psychiatric epidemiology studies have focused on lifetime comorbidity associations because samples were too small for stable 12-month comorbidity estimates.[14,19] However, the large sample size of the NESARC permitted comorbidity analyses for 12-month disorders at the same level of detail as lifetime disorders. These analyses indicated that the direction and magnitude of the comorbidity associations were very similar for 12-month and lifetime disorders, suggesting that any biases in the NESARC lifetime comorbidity estimates may not be strong enough for concern. Another potential limitation includes the cross-sectional design. Accordingly, when data from a 3-year follow-up of NESARC participants become available, they will offer a rich source of information to further investigate the relationships found and their stability in the general population.

In summary, the NESARC has shown that *DSM-IV* alcohol abuse and dependence are highly prevalent, disabling disorders that go largely untreated in the United States. The study identified population subgroups at particular risk and generated many findings that can lead to further, hypothesis-driven investigation. Further, the study showed that at this point, a call to action appears indicated to educate and update the public and policymakers about alcohol use disorders, to destigmatize the disorders, and to encourage help-seeking among those who cannot stop drinking despite considerable harm to themselves and others.

Submitted for Publication: May 10, 2006; final revision received September 26, 2006; accepted October 1, 2006.
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Financial Disclosure: None reported.
Funding/Support: The National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) is funded by the National Institute on Alcohol Abuse and Alcoholism with supplemental support from the National Institute on Drug Abuse. This research was supported in part by the Intramural Program of the National Institutes of Health, National Institute on Alcohol Abuse and Alcoholism. Support is also acknowledged from K05 AA 014223 and the New York State Psychiatric Institute (D.S.H.).
Disclaimer: The views and opinions expressed in this report are those of the authors and should not be construed to represent the views of any of the sponsoring organizations or agencies or the US government.

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