Published in final edited form as:
Alcohol Clin Exp Res. 2011 March ; 35(3): 387–388. doi:10.1111/j.1530-0277.2011.01433.x.

Disaggregating the Burden of Substance Dependence in the United States

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The primary purpose of substance use epidemiology is to determine the magnitude of the problem with a view towards establishing public health and research priorities and anticipating treatment needs. One way to characterize the magnitude of substance problems in the U.S. is to estimate the annual prevalence of the use of each specific substance and its associated conditional probability of dependence, i.e., the percentage of 12-month users with 12-month dependence. Substance dependence reflects one of the most severe substance use problems, often indicating a need for treatment. Substance-specific estimates of prevalence and conditional probability of dependence also illustrate each substance's contribution to the overall number of Americans affected by substance dependence. Data from the Wave 1 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions (Grant et al., 2001) provide unique evidence of the contributions of various substances to the overall burden of substance dependence in the United States.

Table 1 shows the 12-month prevalence estimates and conditional probabilities of dependence for alcohol, tobacco and nine types of illicit drugs, including prescription drugs used without or beyond the limits of a prescription. Also included in Table 1 are the associated population estimates, i.e., the numbers of U.S. adults who used each substance in the past 12 months and who met the criteria for DSM-IV (American Psychiatric Association, 1994) 12-month substance-specific dependence. Alcohol is by far the most prevalent substance used in the U.S. (65.4%). Its conditional probability of 5.82% represents 7,911,600 adult Americans -- a number almost five times as great as the number of adults with dependence on all illicit drugs combined (1,625,000). Although some illicit drugs have higher conditional probabilities of dependence than alcohol, including heroin (26.96%), cocaine (23.91%), amphetamines (14.34%), cannabis (7.96%) and opiates (6.30%), it is the significantly higher prevalence of alcohol use relative to other drugs that uniquely determines its contribution to substance problems in the U.S. In contrast, tobacco's contribution to the overall magnitude of U.S. substance problems is driven by its extremely

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Disclaimer: The views and opinions expressed in this paper are those of the authors and should not be construed to represent the views of any of the sponsoring organizations, agencies or the U.S. government.

Financial disclosure: The study on which this paper is based, the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), is sponsored by the National Institute on Alcohol Abuse and Alcoholism, National Institutes of Health, U.S. Department of Health and Human Services, 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. All authors are Federal government employees, and none of the authors has any financial conflict of interest to report.

high conditional probability, 46.13%, despite a lower prevalence of use compared to alcohol (27.66% versus 65.44%). Similarly, although the rates of comorbid mood and anxiety disorders are higher among individuals with 12-month drug dependence than among those with 12-month alcohol dependence, e.g., 39.99% versus 20.48% for comorbid major depression (Grant et al., 2004), the far larger number of individuals with alcohol dependence (Table 1) results in its being associated with more cases of comorbid psychopathology than are associated with drug dependence (data not shown).

These findings are analogous to Kreitman's application of the preventive paradox (Rose, 1985) to alcohol problems. Kreitman (1993) demonstrated that whereas low-to-moderate volume drinkers had lower risks of alcohol-related harm than heavy drinkers at the *individual* level, at the *aggregate* level, it was the low-to-moderate volume drinkers who accounted for the majority of harm. Simply put, the aggregate level of harm in a specified subpopulation is a function of not only of the likelihood of harm among its members, but also of the size of the subpopulation. Likewise, as reflected in Table 1, the contribution of any substance to the overall magnitude of substance dependence is determined not only by its conditional probability of dependence, but also by the size of the risk population of individuals who use the substance. When both of these factors are considered, it is evident that illicit drugs, despite their high conditional probability of dependence, account for only a small portion of substance problems in the U.S. Likewise, they are associated with only a small proportion of psychiatric comorbidity. Thus, public health policies that promote the prevention and treatment of alcohol dependence have the potential to affect far more American lives than those with a narrow focus on illicit drugs.

References

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 4. American Psychiatric Association; Washington, DC: 1994.

Grant BF, Stinson FS, Dawson DA, Chou SP, Dufour MC, Compton W, Pickering MS, Kaplan K. Prevalence and co-occurrence of substance use disorders and independent mood and anxiety disorders. Arch Gen Psychiatry. 2004; 61:807–816. [PubMed: 15289279]

Grant, BF.; Kaplan, K.; Shepard, J.; Moore, T. Source and Accuracy Statement for Wave 1 of the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions. National Institute on Alcohol Abuse and Alcoholism; Bethesda, MD: 2001.

Kreitman N. Alcohol consumption and the preventive paradox. Br J Addiction. 1986; 81:353–363.

Rose G. Strategy of prevention: lessons from cardiovascular diseases. Br Med Journal. 1981; 282:1847–1851. [PubMed: 6786649]

Table 1

Prevalence and population estimates of past-year substance use and past-year substance dependence among users: U.S. adults 18 years of age and older

Substance	Prevalence (%)of past-year use	Number of past-year users	% of past-year users with past-year dependence	Number with past-year dependence
Alcohol	65.44	136,035,000	5.82	7,911,600
Tobacco	27.66	57,503,000	46.13	26,525,000
Cannabis	4.07	8,468,000	7.96	673,900
Opiates	1.81	3,756,000	6.30	236,500
Sedatives	1.24	2,583,000	5.42	139,900
Tranquilizers	0.93	1,940,000	5.04	97,700
Hallucinogens	0.57	1,192,000	2.67	31,800
Cocaine	0.56	1,169,000	23.91	279,500
Amphetamines	0.49	1,019,000	14.34	146,000
Solvents/inhalants	0.11	231,000	1.04	2,400
Heroin	0.03	64,000	26.96	17,300