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Alcohol, Tobacco, and Non-Medical Drug Use Disorders in U.S. Adults Aged 65 and Older: Data from the 2001-2002 National Epidemiologic Survey of Alcohol and Related Conditions

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Abstract

Objectives—To examine the prevalence, sociodemographic, and health-related correlates of substance use disorders, including alcohol, tobacco, and non-medical drug use among adults aged 65 years and older.

Design—The 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a cross-sectional survey of a population-based sample.

Setting—United States.

Participants—Eight thousand two hundred and five adults aged 65 years and older.

Measurements—Prevalence of lifetime and past 12-month DSM-IV determined alcohol, tobacco, and non-medical drug use disorders.

Results—Prevalence of any substance use disorder was 21.1% over the lifetime and 5.4% in the past 12-months. Lifetime and past 12-month alcohol use disorders were 16.1% and 1.5%; tobacco use disorders were 8.7% and 4.0%; non-medical drug use disorders were 0.6% and 0.2%. Younger age was associated with greater odds of any lifetime or past 12-month substance use disorders. Men and those who were divorced or separated had greater odds of both lifetime alcohol and tobacco use disorders. Very good or excellent self-rated health was associated with lower odds of lifetime and past 12-month tobacco use disorders. Younger age and being divorced or separated were associated with greater odds of lifetime non-medical drug use disorder.

Conclusions—More than 1 in 5 older adults ever had a substance use disorder and more than 1 in 20 had a disorder in the past 12 months, primarily involving alcohol or tobacco. Older adults

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have increased comorbidities and use of medications, which can increase risks associated with substance use.

Keywords

Substance use disorder; alcohol; tobacco; non-medical drug use

Introduction

Older adults have lower rates of substance use disorders than younger adults;[1-9] however, older adults currently comprise 12.4% of the population and are rapidly increasing in numbers and proportion. It is estimated that persons aged 65 years and older will make up 19.6% of the U.S. population and number more than 71 million by 2030.[10] Furthermore, the Baby Boomer cohort (individuals born from 1946 to 1964) has higher rates of substance use than earlier cohorts,[11] and the projected prevalence of substance use disorders in the population of those aged 50 years and older is likely to double from 2.8 million in 2002 to 5.7 million in 2020.[12, 13]

Aside from the expanding size of the older population affected by substance use, another reason that substance use disorders are concerning in this population is the increased number of comorbidities and medications used by older adults as they age.[14-18] These factors, combined with age-related physiological changes that increase sensitivity to effects of alcohol and drugs, amplifies the risks associated with use and abuse of substances in later life.[19-22] Also, studies have shown that older adults with alcohol use disorder are better compared to younger adults in treatment attendance, compliance, and response, which further heightens the importance of early detection and treatment.[23-25]

Understanding correlates of substance use disorders are helpful in targeting efforts to identify and treat those who may be at higher risk of having a substance use disorder. Generally, men and younger persons are more likely to have substance use disorders compared to women and older persons. However, such correlates are poorly documented among older adults as prior studies have described such correlates among adult populations as a whole, and such samples include far greater percentages of younger adults than older adults.[1, 5, 6, 8, 26] This study presents data from the U.S. on the prevalence, overlap, sociodemographic, and health-related correlates of alcohol, tobacco, and non-medical drug use disorders among a non-institutionalized nationally representative sample of adults aged 65 years and older, using data from the 2001-2002 National Institute on Alcohol Abuse and Alcoholism (NIAAA) National Epidemiologic Survey on Alcohol and Related Conditions (NESARC).[27]

Methods

Study Sample

The sample was taken from the 2001-2002 NESARC, a population-based survey sponsored by the NIAAA.[27] NESARC included a representative sample of the civilian, non-institutionalized adult population 18 years and older in the U.S. Face-to-face interviews were conducted with 43,093 respondents, and the overall response rate was 81%. Among respondents, 8,205 (19%) were aged 65 years and older. Blacks, Hispanics, and young adults aged 18-24 were oversampled. Weighted data were adjusted to be representative of the U.S. civilian population based on the 2000 Census. The research protocol received ethical review and approval from the U.S. Census Bureau and U.S. Office of Management and Budget.

Substance Use Disorders

The NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV Edition (AUDADIS-IV) was administered to determine lifetime and past 12-month diagnoses of substance use disorders, including alcohol, tobacco, and non-medical use of selected drugs.[28] Non-medical use of drugs was defined as use "without a prescription, in greater amounts, more often, or longer than prescribed, or for a reason other than a doctor said you should use them." The drugs included sedatives, tranquilizers, opioids, amphetamines, cannabis, crack cocaine, hallucinogens, inhalants, and heroin.

Sociodemographic and Health-Related Variables

The sociodemographic and health-related variables examined included age (65-74 years, 74-84 years, and 85 years and older), gender, race/ethnicity (Whites, Hispanics or Latinos, Asians or Pacific Islanders, American Indians or Alaskan Natives, and Blacks or African Americans), marital status (married or living with someone, widowed, divorced or separated, and never married), education (less than 12^{th} grade, high school graduate or GED, and some college or higher), employment status (currently employed, not currently employed), annual family income ($1-19,999, $20,000-34,999, $35,000-69,999, $70,000 or more), and self-perceived current health (excellent or very good, good, fair, and poor).

Statistical Analyses

Sociodemographic, health-related, and substance use characteristics of the sample were described using numbers of respondents and weighted percentages. Cross-tabulations were used to derive prevalence estimates of lifetime and past 12-month substance use disorders (including alcohol, tobacco, and drugs) and then separately for each of the three substance types. Prevalence estimates of the overlap among the three types of substance use disorders were also ascertained.

Adjusted odds ratios (AOR) and 95% confidence intervals (CI), derived from multiple logistic regression analyses, were used to study associations of sociodemographic and health-related factors with both lifetime and past 12-month alcohol and tobacco use disorders, and lifetime non-medical drug use disorder. For non-medical drug use, we restricted our multiple logistic regression analyses to lifetime disorder because only 13 people reported past 12-month disorder. Furthermore, for the analyses on lifetime non-medical drug use disorder, we collapsed the two age categories, 74-84 years and ≥ 85 years, into one category and collapsed the two income categories, $35,000-69,999 and ≥ $70,000, into one category. Hosmer-Lemeshow χ^2-tests were computed for goodness-of-fit on all final multiple logistic regression models.[29] All analyses were done with SUDAAN, which adjusts for design characteristics of complex sample surveys.[30]

Results

Sample Sociodemographic and Health-Related Characteristics

The sample was predominantly younger than 75 years of age, female, White, married or living with someone, and retired. The sample was quite evenly distributed among the three education categories. Most of the sample had annual family incomes of less than $70,000, and reported good or better health (Table 1).

Prevalence of Alcohol, Tobacco, and Non-Medical Drug Use Disorders

More than 20% of the sample had a substance use disorder during their lifetimes and approximately 5% of older adults had a substance use disorder during the past 12 months (Table 1). Approximately 16% had a lifetime diagnosis of alcohol use disorder but fewer

than 2% had a past 12-month diagnosis of alcohol use disorder. Almost 9% had a lifetime tobacco use disorder and 4% had a tobacco use disorder in the past 12 months. Less than 1% of older adults had ever had a non-medical drug use disorder, including cannabis (0.21% ± standard error of 0.05%), opioids (0.16% ± 0.05%), tranquilizers (0.13% ± 0.06%), amphetamine (0.11% ± 0.05%), and sedatives (0.07% ± 0.03%).

Examining combinations of substance use disorders in their lifetimes, 12% of older adults had a disorder involving alcohol only, 4.8% had a disorder involving tobacco only, and 3.7% had disorders involving both alcohol and tobacco. In the past 12 months, 1.2% had a disorder involving alcohol only, 3.8% had disorder involving tobacco only, and 0.2% had a disorder involving both alcohol and tobacco. For drug use disorders involving either particular drugs or in combination with other substances, the prevalence was less than 0.25% for both lifetime and past 12 months.

Sociodemographic and Health-Related Correlates of Alcohol, Tobacco, and Non-medical Drug Use Disorders

Sociodemographic and health-related correlates of lifetime and past 12-month alcohol and tobacco use disorders were similar in some respects. Men and those aged 65 to 74 years were more likely than women and those aged 75 years and older to have lifetime alcohol and tobacco use disorders and past 12-month alcohol use disorder. Those aged 65 to 74 years were also more likely to have past 12-month tobacco use disorder than those aged 75 years and older. No correlates between alcohol or tobacco use disorder were seen with income or employment status.

Several correlates were associated with alcohol use disorder. Asian/Pacific Islanders were less likely than Whites to have lifetime alcohol use disorder. Those who were divorced or separated were more likely than married persons to have a lifetime use disorder. No correlates were observed between alcohol use disorder and education or self-perceived health status (Table 2).

In terms of tobacco use disorder, those who were divorced or separated were more likely to have lifetime and past 12-month use disorders than those who were married. Several correlates were associated with tobacco use disorder but not with alcohol use disorder. Hispanics/Latinos were less likely than Whites to have a lifetime tobacco use disorder. Comparing to those who rated their current health as poor, those who rated their current health as very good or excellent were less likely to have both lifetime and past 12-month tobacco use disorders (Table 2).

Similar to findings for lifetime alcohol and tobacco use disorders, lifetime non-medical drug use disorder was more likely among those aged 65 to 74 years than those aged 75 years and older, as well as among those who were divorced or separated compared to those who were married (Table 3).

Discussion

More than 20% of persons aged 65 years and older in 2001-2002 reported having a substance use disorder during their lifetimes and most of them had an alcohol use disorder. Alcohol, tobacco, and non-medical drug use disorders were more likely in those who were younger, male, or divorced or separated. More than 5% reported having any substance use disorder in the past 12 months, and most of them had a tobacco use disorder. Less than 1% reported having a disorder involving non-medical use of drugs. Other individual or combined disorders occurred in less than 0.5% in this population. These rates are similar but higher than the prevalence rates observed in the 2002 National Survey on Drug Use and

Health (NSDUH), another large nationally representative survey on overall substance use patterns and correlates.[31] Among the sample of 2,019 adults aged 65 years and older surveyed in the 2002 NSDUH, the past 12-month prevalence rate of alcohol abuse or dependence was 1.1%, past 12-month illicit drug abuse or dependence was <0.1%, and past month nicotine dependence was 3.9%. The discrepancies between the two data sets have been attributed to factors related to privacy and anonymity, and differences in substance use disorder diagnostic instrumentation.[32]

Consistent with other studies, the prevalence rates of these disorders in older adults were lower compared to the general adult population.[1-9] Among general U.S. adult population, lifetime prevalence of alcohol use disorder was approximately 18%,[6, 33] tobacco dependence was 25%,[34, 35] and drug use disorders were reported to be 8%.[8, 36] Rates of past year alcohol use disorder among U.S. adults ranged from 5-7%,[6, 37] tobacco dependence ranged from 15-20%,[35, 38] and drug use disorders were approximately 2%.[8, 36] In terms of the overlap of disorders involving different substances, other studies have found that combined past year alcohol and tobacco disorders occurred in approximately 3% of the adult population,[4] and combined past year alcohol and drug use disorders occurred in approximately 1% of the population.[7, 39]

Our analyses highlighted that alcohol and tobacco were the two most common substance use disorders among older adults in 2001-2002, and although alcohol use disorder was the most common lifetime substance use disorder, tobacco use disorder was the most common substance use disorder in the past year for older adults. Although the prevalence of substance use disorders among older adults are lower than the younger adult population, a recent study using the 2005-2006 NSDUH found that among older adults ≥65 years, 13% of men and 8% of women reported at-risk drinking (≥2 drinks per day), and 14% of men and 3% of women reported binge drinking (≥5 drinks on one occasion).[40] These results suggested a much higher prevalence of risky alcohol use among older adults, which could potentially lead to future development of abuse and dependence.

The prevalence of substance use disorders declines with increasing age, likely in part due to maturing out of abuse and dependence, but also due to increased mortality among those who had substance use disorders compared to those without such disorders.[5, 41-43] Another reason for reduced prevalence of substance use disorders in older adults, compared to the younger population, is that such disorders are often under-detected or reported.[44-46] Symptoms of substance abuse may be attributed to other problems common in older adults such as cognitive impairment, depression, weight loss, and gastrointestinal conditions. Older adults are also more likely than younger adults to conceal substance abuse problems and fail to seek help.[22]

Older adults are the group most prescribed psychoactive drugs with abuse potential, including sedatives and opioids,[17, 47] which makes non-medical drug use disorder a potential concern in this group. However, our study found a low prevalence of drug use disorder among older adults. A study using 2005-2006 NSDUH to evaluate drug use in older adults also found only 0.33% met criteria for drug abuse or dependence; however, almost 4% of those in the 50-64 age group used marijuana, suggesting the prevalence of illicit drug use among older adults may increase in the future as the younger cohort ages.[48]

While we observed relatively few sociodemographic correlates of each of the substance use disorders examined, there were some consistent findings. The strongest correlates of substance use disorders among older adults were younger age, male gender, and being divorced or separated. Younger persons were more likely than older persons, and divorced or separated persons were more likely than married persons to report having an alcohol,

tobacco, or non-medical drug use disorder over their lifetimes. Furthermore, men were more likely than women to have lifetime alcohol and tobacco use disorders and past 12-month alcohol use disorder, and those with very good or excellent health status were less likely than those with poor health to have both lifetime and past 12-month tobacco use disorders. Similar correlates have also been observed in general adult populations.[4, 6-8, 34, 36, 39, 49]

Limitations of this study included our restricted ability to fully examine the sociodemographic and health-related correlates of non-medical drug use disorder due to small sample sizes. Also, it is possible that rates of all three substance use disorders reported in this older cohort may be lower than expected because of premature mortality among those who had these disorders. The ability to examine associations of substance use disorders and sociodemographic and health-related correlates among older adults will likely increase as the Baby Boomer generation ages and the number of persons reporting substance use disorders increases.[13] Recall bias and social undesirability of reporting a substance use disorder, particularly among women and some ethnic groups, may also have contributed to under-reporting. The cross-sectional design of this study was another limitation, but data from the 3-year follow-up of NESARC participants will enable us to evaluate longitudinal patterns and sociodemographic and health-related correlates of substance use disorders in future studies. Also, longitudinal data will enable future evaluation of patterns of relapse and remission of substance use problems among older adults. Finally, these findings were only descriptive of the non-institutionalized U.S. older adult population in 2001-2002, and other studies need to examine the rates and correlates of substance use disorders in older populations in more recent years, in other countries, and among those who are institutionalized including those in prison, where substance use disorders are likely to be higher, and assisted living and skilled nursing facilities where they are likely to be lower.

In summary, data from NESARC, a large population-based study of older adults addressing substance use disorders, indicated that more than 1 in 5 older adults had a substance use disorder in the past, primarily involving alcohol or tobacco. In addition, 5% of older adults met DSM-IV criteria for a past 12-month substance use disorders, primarily due to tobacco followed by alcohol. Very few older adults endorsed criteria for non-medical drug use disorders. Similar to findings in the general adult population, younger persons in this older cohort were more likely than older persons to report any type of substance use disorders. Furthermore, men were more likely than women to report alcohol or tobacco use disorders, a finding also observed in younger populations.

These data contribute to our understanding of alcohol, tobacco, and non-medical drug use disorders in the growing population of older adults in the U.S., and suggest that healthcare providers should ask older adults more regularly about use and be aware of clinical signs and symptoms of substance use disorders. If older adults who use these substances in a harmful way are more frequently identified, they can be offered interventions to reduce substance-associated morbidity, thereby improving overall quality of life and reducing health care costs.

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Table 1

Sociodemographic, Health-Related Characteristics, and Substance Use Disorders of Adults Aged 65 Years and Older (n=8205)

	Sample size, n	Percentage
Age		
65-74 years	4301	54.5
75-84 years	2973	35.4
≥ 85 years	931	10.1
Gender		
Male	3104	42.1
Female	5101	58.0
Race/Ethnicity		
White	5706	82.2
Black	1363	8.0
American Indian/Alaskan Native	113	1.8
Asian/Hawaiian/Pacific Islander	128	2.6
Hispanic/Latino	895	5.5
Marital Status		
Married/Living with someone	3478	57.1
Widowed	3358	31.4
Divorced/Separated	940	7.6
Never married	429	3.9
Education		
Less than 12th grade	2645	27.8
High school graduate/GED	2665	34.5
Some college and higher	2895	37.7
Family Income (in dollars)		
$1-19,999	4064	39.8
$20,000-34,999	2028	26.8
$35,000-69,999	1536	23.6
≥ $70,000	577	9.8
Employment		
Employed	984	12.4
Retired	6533	79.5
Homemaker	401	5.3
Not employed	287	2.9
Self-perceived current health		
Excellent	983	13.1
Very good	1749	22.5
Good	2580	32.2
Fair	1938	21.8
Poor	915	10.4

	Sample size, n	Percentage
Any substance use disorder		
Lifetime	1577	21.1
Past 12-month	415	5.3
Alcohol use disorder		
Lifetime	1202	16.1
Past 12-month	109	1.5
Tobacco use disorder		
Lifetime	663	8.7
Past 12-month	324	4.0
Non-medical drug use disorder		
Lifetime	52	0.6
Past 12-month	13	0.2

Sample sizes are un-weighted numbers; percentages are weighted to be representative of the U.S. civilian population based on the 2000 census.

Table 2

Adjusted Odds Ratios (AOR) and 95% Confidence Intervals (CI) of Lifetime and Past 12-Month Alcohol and Tobacco Use Disorders by Sociodemographic and Health-Related Characteristics (n=8165)

	Alcohol Use Disorder		Tobacco Use Disorder	
	Lifetime[a]	Past 12-month[b]	Lifetime[c]	Past 12-month[d]
	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
Age				
65-74 years	1.0	1.0	1.0	1.0
75-84 years	0.55 (0.46 – 0.64)†	0.37 (0.21 – 0.65)†	0.46 (0.38 – 0.57)†	0.37 (0.27 – 0.50)†
85 years and older	0.42 (0.29 – 0.62)†	0.05 (0.01 – 0.41)*	0.24 (0.15 – 0.38)†	0.13 (0.07 – 0.27)†
Gender				
Male	6.91 (5.82 – 8.21)†	5.86 (3.50 – 9.82)†	1.67 (1.35 – 2.06)†	1.38 (1.02 – 1.86)
Female	1.0	1.0	1.0	1.0
Race/Ethnicity				
White	1.0	1.0	1.0	1.0
Black	0.95 (0.76 – 1.20)	1.18 (0.70 – 2.02)	0.95 (0.70 – 1.28)	1.30 (0.88 – 1.93)
Native American	1.38 (0.72 – 2.67)	2.90 (0.64 – 13.2)	1.72 (0.91 – 3.24)	1.73 (0.70 – 4.25)
Asian/Pacific Islander	0.20 (0.07 – 0.53)*	‡	0.43 (0.11 – 1.62)	0.42 (0.10 – 1.79)
Hispanic/Latino	0.71 (0.47 – 1.08)	1.28 (0.55 – 2.93)	0.43 (0.27 – 0.70)†	0.53 (0.28 – 1.00)
Marital Status				
Married/Living with someone	1.0	1.0	1.0	1.0
Widowed	0.77 (0.52 – 1.14)	0.92 (0.35 – 2.45)	0.91 (0.55 – 1.52)	0.99 (0.42 – 2.31)
Divorced/Separated	1.90 (1.50 – 2.41)†	1.70 (0.89 – 3.28)	2.09 (1.62 – 2.71)†	2.46 (1.73 – 3.50)†
Never married	0.93 (0.75 – 1.14)	1.84 (1.10 – 3.08)	1.30 (1.01 – 1.66)	1.45 (1.05 – 1.99)
Education				
Less than 12th grade	0.94 (0.74 – 1.18)	1.09 (0.58 – 2.05)	1.23 (0.94 – 1.60)	1.69 (1.19 – 2.40)*
High school graduate/GED	0.87 (0.72 – 1.05)	1.16 (0.61 – 2.20)	0.89 (0.70 – 1.13)	1.33 (0.93 – 1.91)
Some college and higher	1.0	1.0	1.0	1.0
Family Income (in dollars)				

	Alcohol Use Disorder		Tobacco Use Disorder	
	Lifetime[a]	**Past 12-month[b]**	**Lifetime[c]**	**Past 12-month[d]**
	AOR (95% CI)	**AOR (95% CI)**	**AOR (95% CI)**	**AOR (95% CI)**
<$20,000	0.85 (0.62 – 1.17)	0.73 (0.33 – 1.60)	0.72 (0.48 – 1.08)	0.73 (0.37 – 1.44)
$20,000-34,999	0.96 (0.70 – 1.31)	0.99 (0.43 – 2.27)	0.84 (0.57 – 1.23)	0.79 (0.43 – 1.45)
$35,000-69,999	0.91 (0.66 – 1.26)	0.95 (0.44 – 2.06)	0.80 (0.55 – 1.16)	0.74 (0.41 – 1.34)
≥$70,000	1.0	1.0	1.0	1.0
Employment				
Employed	0.95 (0.75 – 1.19)	1.31 (0.77 – 2.23)	0.93 (0.70 – 1.24)	0.92 (0.59 – 1.42)
Not employed	1.0	1.0	1.0	1.0
Self-perceived current health				
Excellent/Very good	0.81 (0.60 – 1.09)	1.21 (0.49 – 2.99)	0.56 (0.40 – 0.79)*	0.36 (0.23 – 0.56)†
Good	0.92 (0.67 – 1.26)	1.16 (0.45 – 2.99)	0.87 (0.64 – 1.17)	0.64 (0.43 – 0.96)
Fair	1.03 (0.77 – 1.37)	0.99 (0.37 – 2.63)	0.80 (0.58 – 1.10)	0.66 (0.43 – 1.00)
Poor	1.0	1.0	1.0	1.0

Notes: Significance level was set to p=0.01 due to multiple comparisons. The denominator *df* for the above logistic regression models is 65.

Hosmer-Lemeshow χ^2-test:

[a] *df*=8; p=0.03;

[b] *df*=8, p=0.59;

[c] *df*=8, p=0.76;

[d] *df*=8, p=0.66

Wald t-test:

* p≤0.01;

† p≤0.001

‡ Unable to estimate due to too few persons with the disorder

Table 3

Adjusted Odds Ratios (AOR) and 95% Confidence Intervals (CI) of Lifetime Non-Medical Drug Use Disorder by Sociodemographic and Health-Related Characteristics (n=8165)

	Lifetime Non-Medical Drug Use Disorder[a]
	AOR (95% CI)
Age	
65-74 years	1.0
≥75 years	0.27 (0.11-0.66)*
Gender	
Male	2.29 (0.91 – 5.74)
Female	1.0
Race/Ethnicity	
White	1.0
Black	1.60 (0.71 – 3.60)
Native American	0.73 (0.09 – 6.13)
Asian/Pacific Islander	‡
Hispanic/Latino	0.64 (0.21 – 1.92)
Marital Status	
Married/Living with someone	1.0
Widowed	2.66 (0.97 – 7.33)
Divorced/Separated	2.99 (1.41 – 6.37)*
Never married	1.00 (0.33 – 3.06)
Education	
Less than 12th grade	1.02 (0.33 – 3.19)
High school graduate/GED	1.65 (0.72 – 3.79)
Some college and higher	1.0
Family Income (in dollars)	
<$20,000	0.84 (0.37 – 1.93)
$20,000-34,999	1.06 (0.41 – 2.77)
≥$35,000	1.0
Employment	
Employed	0.97 (0.44 – 2.14)
Not employed	1.0
Self-perceived current health	
Excellent/Very good	0.43 (0.16 – 1.11)
Good	0.83 (0.35 – 1.95)
Fair	0.50 (0.16 – 1.56)
Poor	1.0

Notes: Significance level was set to p=0.01 due to multiple comparisons. The denominator *df* for the multiple logistic regression model is 65.

Hosmer-Lemeshow χ^2-test:

[a] df=8, p=0.42

Wald t-test:

[*] p≤0.01

[‡] Unable to estimate due to too few persons with the disorder