The Epidemiology of *DSM*-5 Nicotine Use Disorder:
Results From the National Epidemiologic Survey on Alcohol and Related Conditions-III

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ABSTRACT

Objective: To present nationally representative information on the prevalence, correlates, psychiatric comorbidity, and treatment of *DSM-5* nicotine use disorder (NUD) and the public health burden of US cigarette consumption among adults with NUD and other psychiatric disorders.

Methods: Using data from the 2012–2013 National Epidemiologic Survey on Alcohol and Related Conditions-III (N = 36,309), we conducted weighted cross-tabulations and multivariate logistic regression analyses to estimate prevalences and examine comorbidity of NUD.

Results: Prevalences of 12-month and lifetime *DSM-5* NUD were 20.0% and 27.9%, respectively. Nicotine use disorder was more frequent among men, non-Hispanic whites, younger individuals, the previously married, those with less education and lower incomes, and those residing in rural areas. Adjusting for sociodemographic characteristics and additional psychiatric comorbidity, 12-month NUD and lifetime NUD were significantly associated with other substance use and antisocial personality disorders (odds ratios [ORs] = 1.5–5.1, 12-month; 1.5–5.6, lifetime). Twelve-month severe NUD was generally associated with major depressive, bipolar I, bipolar II, panic, generalized anxiety, posttraumatic stress, and schizotypal, borderline, and antisocial personality disorders (ORs = 1.3–2.5). Individuals with current NUD and at least 1 psychiatric disorder comprised 11.1% of US adults but smoked 53.6% of total cigarettes consumed. Treatment was utilized by 20.3% of respondents with 12-month and 18.8% with lifetime NUD.

Conclusions: Findings underscore the need to address nicotine use in clinical settings. Recognition of psychiatrically vulnerable subpopulations may inform etiologic research, prevention, and treatment of NUD.

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Tobacco use is the largest and most preventable cause of mortality and morbidity worldwide.[1–5] Globally, tobacco use has been linked to 6 million deaths each year and is projected to kill 8 million people annually by 2030.[1–3] This growing epidemic, especially in the developing world, has prompted urgent calls for action by the World Health Organization.[1–3] In the United States, half a million deaths annually are caused by tobacco, including those from cardiovascular and respiratory diseases, cancer, gastrointestinal ulcers, and diabetes.[6–9] Tobacco use adds $130 billion yearly to health care costs, plus indirect costs of $150 billion due to lost productivity.[5,6,10,11]

High rates of tobacco use have been observed among psychiatric patients.[12–15] Recent national surveys also found higher rates of tobacco use among adults with psychiatric disorders or serious psychological distress compared to those without these disorders.[10,16,17] However, few studies have examined the prevalence and psychiatric comorbidity of rigorously diagnosed *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*)–defined nicotine dependence among representative samples of the US general population. In the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), 12-month and lifetime *DSM-IV* nicotine dependence prevalences were 12.8%[18] and 17.7% (S.P.C., unpublished data, 2015), respectively. Elevated odds of comorbid mood, anxiety, other substance use, and personality disorders were observed among individuals with 12-month nicotine dependence.[18,19] Twelve-month and lifetime rates of *DSM-IV* nicotine dependence in the National Comorbidity Survey Replication were 4.0% and 8.3%, respectively[20]; past-month prevalence of nicotine dependence estimated in the National Survey on Drug Use and Health among adults 18 years and older in 2012 was 13.6%.[21]

Previous national estimates of nicotine dependence were all based on *DSM-IV* criteria. However, the *DSM-5*[22] made major changes to the definition of nicotine dependence. In the *DSM-5*, the new definition of nicotine use disorder (NUD) was aligned with other substance use disorders through the addition of craving, inclusion of *DSM-IV* abuse criteria other than legal problems, establishment of a diagnostic threshold of ≥ 2 criteria, and creation of a severity metric that is based on criteria counts.[23] Because of the seriousness of NUD, the lack of current epidemiologic data from a single, reliable uniform source represents a gap in critical knowledge for prevention and intervention. We, therefore, present national data on the prevalence, correlates, comorbidity, and treatment of *DSM-5* NUD from the 2012–2013 NESARC-III.[24] We also assessed *DSM-IV* criteria for nicotine dependence to examine changes in prevalences since 2001–2002. As is well known, the majority of nicotine consumption in the United States is in the form of cigarettes, and thus, the public health burden of nicotine use occurs almost entirely through cigarette smoking.[18] To gain an understanding of the

contribution of NUD and psychiatric disorders to this public health burden, we determined the percentage of all cigarettes in the United States that were consumed by individuals with NUD and psychiatric disorders.

METHODS

Sample

The target population of the 2012–2013 NESARC-III comprised the civilian, noninstitutionalized US population, 18 years and older, of households and selected group quarters.[24] Respondents were selected through multistage probability sampling. Primary sampling units were counties or groups of contiguous counties, secondary sampling units comprised groups of Census-defined blocks, and tertiary sampling units were households within sampled secondary sampling units, within which eligible adult respondents were selected. Hispanic, black, and Asian individuals were assigned higher selection probabilities than nonminority household members. In households with 4 or more eligible minority individuals (n = 1,661), 2 respondents were selected. The sample size was 36,309, reflecting a household response rate of 72%, a person-level response rate of 84%, and an overall response rate of 60.1%, comparable to other current US national surveys.[25,26]

Data were adjusted for nonresponse, then weighted to represent the US civilian population based on the 2012 American Community Survey.[27] Weighting adjustments compensated adequately for nonresponse.[24] Respondents did not differ from the total eligible sample, including nonrespondents, in percent Hispanic, black, or Asian; population density; vacancy rate; proportion of population in group quarters; or proportion of renters at the segment level. There were no differences between respondents and the total eligible sample in Hispanic ethnicity. Respondents included slightly higher percentages of men (48.1% vs 46.2%) and individuals aged 60–69 years (13.7% vs 12.6%) and smaller percentages of individuals aged 40–49 years (18.1% vs 18.3%) and 30–39 years (16.7% vs 17.4%) than the eligible sample.

Interviewer field methods, detailed elsewhere,[24] involved initial structured home study, in-person training, ongoing supervision, and random respondent callbacks to verify data. Respondents gave informed consent and received $90.00 for survey participation. Protocols were approved by the institutional review boards of the US National Institutes of Health and Westat, Inc.

Assessments

The diagnostic interview was the National Institute on Alcohol Abuse and Alcoholism (NIAAA) Alcohol Use Disorder and Associated Disabilities Interview Schedule-5 (AUDADIS-5),[28,29] designed to measure *DSM-5* NUD, alcohol use disorder, specific drug use disorders, and selected mood, anxiety, trauma-related, eating, and personality disorder diagnoses. The AUDADIS-5 also assessed *DSM-IV* nicotine dependence criteria to enable comparisons of

Clinical Points

- The prevalence of *DSM-5* nicotine use disorder in the United States is 20.0%.
- Nicotine use disorder was highly comorbid with other psychiatric disorders and largely goes untreated.
- Individuals with nicotine use disorder and psychiatric comorbidity bear the greater public health burden of US cigarette consumption, warranting greater prevention and intervention efforts.
- Integration of services for nicotine use disorder into primary care, mental health, and substance abuse treatment settings is warranted.

current NESARC-III findings with those from the previous 2001–2002 NESARC survey.

Nicotine Use Disorders

Consistent with *DSM-5*, lifetime NUD diagnoses required ≥ 2 of the 11 criteria in the 12 months before interview or previously. Prior-to-the-last-12-months diagnoses required clustering of ≥ 2 criteria in a single year. *DSM-5* NUD diagnoses were classified as mild (2–3 criteria), moderate (4–5 criteria), or severe (≥ 6 criteria). *DSM-IV* lifetime nicotine dependence required ≥ 3 criteria in the past year or previously. Prior-to-the-past-year *DSM-IV* diagnoses also required clustering of criteria within a single year. Concordances between 12-month and lifetime *DSM-IV* nicotine dependence and *DSM-5* NUD were high (κ = 0.79, 0.84, respectively; R.B.G., unpublished data, 2015). In the present study, NUD and nicotine dependence were assessed for any tobacco product including cigarettes, cigars, pipes, chewing tobacco, snuff, and e-cigarettes/e-liquid.

Reliability of *DSM-5* NUD diagnoses (κ = 0.50–0.87) and associated dimensional scales (intraclass correlation coefficient [ICC] = 0.83–0.84) was fair to excellent in a large general population sample.[29] Procedural validity was assessed by clinical reappraisal using the semistructured, clinician-administered Psychiatric Research Interview for Substance and Mental Disorders, *DSM-5* version (PRISM-5),[30] in a large general population sample. Concordances between AUDADIS-5 and PRISM-5 NUD diagnoses were fair to good (κ = 0.54–0.68), whereas concordances between the criteria scales were excellent (ICC = 0.80–0.84).[31] Test-retest reliability of 12-month and lifetime *DSM-IV* nicotine dependence diagnoses and symptom scales, and convergent validity of diagnoses, were fair to excellent in the general population.[18]

Other Psychiatric Disorders

Current and lifetime *DSM-5* alcohol use disorder and drug use disorder diagnoses were derived similarly to those for NUD. Specific drug use disorders included sedative/tranquilizer, cannabis, amphetamine, cocaine, non-heroin opioid, heroin, hallucinogen, and solvent/inhalant use disorders. These diagnoses were aggregated to yield a diagnosis of any drug use disorder. Test-retest reliabilities were good for alcohol use disorder (κ = 0.60–0.62) and fair for

drug use disorder (κ = 0.40–0.54) diagnoses and higher for their criteria scales (ICC = 0.83–0.85 for alcohol use disorder, 0.45–0.84 for drug use disorder).[29] Concordances between AUDADIS-5 and PRISM-5 diagnoses and dimensional scales for alcohol use disorder and drug use disorder were fair to good (κ = 0.35–0.62; ICCs > 0.68, except for past-year sedatives and stimulants [0.38, 0.44, respectively]).[31]

DSM-5 mood disorders included major depressive disorder, dysthymia, and bipolar I and bipolar II disorders. Anxiety disorders included *DSM-5* panic, agoraphobia, social and specific phobias, and generalized anxiety disorder. Consistent with *DSM-5*, primary mood and anxiety diagnoses excluded substance- and medical illness–induced disorders. In addition to mood and anxiety disorders, posttraumatic stress disorder, anorexia nervosa, bulimia nervosa, binge-eating disorder, and schizotypal, borderline, and antisocial personality disorders were assessed. Details on the psychometric properties of these diagnoses are reported elsewhere.[29,32]

Current Cigarette Smokers and Number of Cigarettes Smoked

Among lifetime smokers of ≥ 100 cigarettes, current use consisted of any smoking during the year before interview. Among current smokers, the number of cigarettes smoked in the past year was the product of answers to the questions: "On the days that you smoked in the past year, about how many cigarettes did you usually smoke?" and "About how often did you usually smoke in the past year?" (eg, daily, 5 to 6 days per week). Test-retest reliabilities of these measures were excellent (ICC = 0.74–0.84).[33]

Statistical Analysis

Weighted cross-tabulations estimated prevalences of NUD for the total sample and by sociodemographic characteristics. Multivariable logistic regression analyses estimated associations of NUD and sociodemographic variables controlling for all others. Logistic regressions of psychiatric comorbidity of NUD adjusted for (1) only sociodemographic characteristics and (2) sociodemographic characteristics and all other psychiatric and substance use disorders. Eating disorders were too rare to assess their comorbid associations with NUD but were included as covariates in comorbidity analyses of NUD with other disorders.

We multiplied the total number of cigarettes smoked in the past year by the weighted number of persons in the following 4 groups to arrive at the percentage of all cigarettes consumed in the past year in each group: (1) cigarette smokers with NUD and a comorbid psychiatric disorder, (2) cigarette smokers with NUD but without a comorbid psychiatric disorder, (3) cigarette smokers without NUD but with a psychiatric disorder, and (4) cigarette smokers without NUD or a psychiatric disorder. All analyses utilized SUDAAN, version 11.0 (Research Triangle Park, North Carolina),[34] which accounts for the complex sample design of the NESARC-III.

RESULTS

Current and Lifetime Nicotine and Cigarette Use

Prevalences of 12-month (27.2%) and lifetime (45.8%) any nicotine use observed in the NESARC-III were similar to those reported in the 2001–2002 NESARC (28.4% and 46.9%; S.P.C., unpublished data, 2015). Similarly, prevalences of 12-month and lifetime cigarette use in the NESARC-III (23.5%, 12-month; 42.0%, lifetime) remained virtually identical to rates reported in the 2001–2002 NESARC (24.9%, 12-month; 43.7%, lifetime; S.P.C., unpublished data, 2015).

Prevalence and Sociodemographic Characteristics of *DSM-5* Nicotine Use Disorder

As shown in Table 1, prevalences of 12-month and lifetime *DSM-5* NUD were 20.0% and 27.9%, respectively. Prevalences of 12-month mild, moderate, and severe NUD were 6.6%, 6.5%, and 6.9%, respectively. Rates of 12-month and lifetime *DSM-IV* nicotine dependence in the NESARC-III were 14.0% and 22.0%, respectively, which were somewhat higher than those in the 2001–2002 NESARC (12.8% and 17.7%, respectively; S.P.C., unpublished data, 2015). Table 2 shows the adjusted odds ratios of *DSM-5* NUD by sociodemographic characteristics. Odds of 12-month and lifetime *DSM-5* NUD were consistently greater among men, among the 3 youngest age groups, among individuals who were widowed/separated/divorced, and among those with lower education and lower incomes across all severity levels. The odds of 12-month NUD were generally lower among individuals who resided in urban areas, a result that generalized to respondents with any lifetime NUD and lifetime mild NUD. Odds of 12-month and lifetime mild NUD were greater in the South relative to the West.

Comorbidity of Nicotine Use Disorder

Associations between 12-month and lifetime NUD and psychiatric disorders are shown in Tables 3 and 4, respectively. When only sociodemographic variables were controlled, 12-month and lifetime any NUD, moderate NUD, and severe NUD were associated with virtually all other psychiatric disorders assessed in the NESARC-III, while mild NUD was positively associated with other substance use disorders, panic disorder, and schizotypal and antisocial personality disorders.

After adjustment for sociodemographic characteristics and other psychiatric comorbidity, other substance use disorders and antisocial personality disorder were significantly (*P* < .05) and positively associated with 12-month NUD across severity levels. Further, major depressive disorder, panic disorder, and borderline personality disorder were positively associated with any, moderate, and severe NUD whereas bipolar I, generalized anxiety, and posttraumatic stress disorders were positively associated with any and severe NUD. Schizotypal personality disorder was negatively associated with mild and moderate NUD, but positively associated with severe NUD. Bipolar II disorder was negatively associated with mild, but positively associated with severe NUD (Table 3).

Table 1. Prevalences of 12-Month and Lifetime *DSM-5* Nicotine Use Disorder (NUD) by Sociodemographic Characteristics

Sociodemographic Characteristic	12-Month NUD				Lifetime NUD			
	Mild	Moderate	Severe	Any NUD	Mild	Moderate	Severe	Any NUD
	% (SE)	% (SE)	% (SE)	% (SE)	% (SE)	% (SE)	% (SE)	% (SE)
Total	6.59 (0.18)	6.54 (0.20)	6.90 (0.22)	20.03 (0.41)	6.56 (0.16)	8.40 (0.24)	12.91 (0.33)	27.87 (0.52)
Sex								
Men	7.72 (0.30)	7.69 (0.25)	7.86 (0.32)	23.27 (0.54)	7.59 (0.24)	9.90 (0.33)	14.64 (0.51)	32.13 (0.70)
Women	5.53 (0.19)	5.48 (0.27)	6.01 (0.24)	17.03 (0.43)	5.61 (0.20)	7.01 (0.26)	11.30 (0.33)	23.92 (0.52)
Age, y								
18–29	7.27 (0.40)	8.05 (0.40)	8.45 (0.48)	23.76 (0.69)	6.31 (0.34)	8.38 (0.40)	11.79 (0.58)	26.49 (0.71)
30–44	7.40 (0.35)	7.70 (0.39)	8.30 (0.38)	23.40 (0.68)	6.68 (0.31)	9.22 (0.41)	14.15 (0.48)	30.05 (0.72)
45–64	7.19 (0.29)	6.58 (0.32)	7.27 (0.33)	21.05 (0.63)	7.29 (0.28)	8.59 (0.37)	14.90 (0.57)	30.79 (0.77)
65+	3.35 (0.29)	2.91 (0.23)	2.19 (0.19)	8.45 (0.41)	5.23 (0.41)	6.83 (0.41)	8.47 (0.39)	20.53 (0.74)
Race-ethnicity								
White	7.05 (0.25)	7.44 (0.27)	7.82 (0.27)	22.32 (0.53)	7.06 (0.22)	9.84 (0.31)	15.48 (0.45)	32.38 (0.68)
Black	7.54 (0.34)	6.27 (0.37)	6.26 (0.44)	20.07 (0.64)	7.55 (0.33)	6.98 (0.40)	9.07 (0.53)	23.60 (0.74)
Native American	7.08 (1.39)	9.58 (1.96)	12.92 (1.78)	29.59 (2.95)	6.35 (1.23)	11.05 (1.98)	21.02 (2.12)	38.43 (2.93)
Asian/Pacific Islander	5.01 (0.73)	2.82 (0.41)	3.32 (0.49)	11.15 (0.95)	4.69 (0.58)	3.36 (0.54)	5.04 (0.56)	13.09 (1.04)
Hispanic	4.29 (0.26)	3.86 (0.28)	4.01 (0.33)	12.16 (0.54)	4.25 (0.26)	4.76 (0.28)	6.63 (0.41)	15.64 (0.60)
Education								
< High school	9.25 (0.48)	8.07 (0.47)	10.63 (0.72)	27.95 (1.01)	8.76 (0.56)	9.28 (0.59)	15.31 (0.87)	33.35 (1.16)
High school	8.29 (0.41)	9.04 (0.43)	8.80 (0.40)	26.13 (0.66)	8.18 (0.41)	10.22 (0.40)	15.45 (0.60)	33.85 (0.84)
Some college	5.30 (0.20)	5.17 (0.21)	5.30 (0.18)	15.77 (0.38)	5.41 (0.18)	7.45 (0.25)	11.32 (0.29)	24.18 (0.46)
Marital status								
Married/cohabitating	5.68 (0.23)	5.57 (0.24)	5.48 (0.25)	16.73 (0.52)	6.00 (0.18)	7.97 (0.29)	11.87 (0.44)	25.84 (0.63)
Widowed/separated/divorced	8.24 (0.32)	8.34 (0.38)	8.61 (0.38)	25.18 (0.62)	8.18 (0.43)	10.04 (0.40)	15.95 (0.50)	34.16 (0.79)
Never married	7.47 (0.38)	7.47 (0.35)	9.06 (0.47)	24.00 (0.58)	6.59 (0.34)	8.08 (0.43)	12.92 (0.51)	27.58 (0.61)
Income								
$0–$19,999	8.40 (0.37)	8.76 (0.43)	11.35 (0.47)	28.51 (0.73)	8.05 (0.38)	9.52 (0.43)	16.51 (0.53)	34.08 (0.82)
$20,000–$34,999	8.42 (0.41)	7.57 (0.39)	7.31 (0.40)	23.30 (0.67)	7.65 (0.38)	9.18 (0.41)	13.30 (0.53)	30.13 (0.80)
$35,000–$69,999	6.57 (0.33)	6.71 (0.30)	6.40 (0.33)	19.69 (0.50)	6.31 (0.30)	8.79 (0.35)	13.13 (0.47)	28.22 (0.64)
$70,000 or more	4.15 (0.30)	4.14 (0.29)	3.82 (0.27)	12.11 (0.56)	5.02 (0.27)	6.76 (0.34)	9.83 (0.51)	21.62 (0.71)
Urbanicity								
Urban	6.09 (0.19)	6.14 (0.20)	6.40 (0.23)	18.64 (0.42)	6.09 (0.16)	7.89 (0.24)	12.05 (0.35)	26.03 (0.53)
Rural	8.41 (0.52)	8.02 (0.44)	8.74 (0.52)	25.17 (1.05)	8.28 (0.39)	10.30 (0.53)	16.06 (0.84)	34.65 (1.19)
Region								
Northeast	5.97 (0.36)	6.33 (0.51)	6.23 (0.43)	18.54 (0.71)	6.08 (0.31)	8.99 (0.65)	12.63 (0.68)	27.70 (1.21)
Midwest	7.38 (0.45)	7.49 (0.25)	7.83 (0.60)	22.70 (0.74)	7.50 (0.38)	8.95 (0.30)	14.94 (0.86)	31.39 (0.99)
South	7.43 (0.32)	6.81 (0.41)	7.31 (0.39)	21.54 (0.83)	7.26 (0.29)	8.62 (0.41)	12.45 (0.61)	28.33 (0.97)
West	4.99 (0.34)	5.40 (0.35)	5.91 (0.30)	16.31 (0.77)	4.95 (0.22)	7.07 (0.51)	11.97 (0.48)	23.99 (0.97)

Lifetime comorbidity results generally mirrored those found among 12-month disorders. However, unlike 12-month comorbidity findings, agoraphobia was positively associated with any and severe NUD, specific phobia was associated with any moderate and severe NUD, and posttraumatic stress disorder was associated with moderate NUD. Schizotypal personality disorder and generalized anxiety disorder were no longer related to lifetime severe NUD (Table 4).

Burden of Current US Cigarette Consumption

Individuals with current NUD accounted for 20.0% of all US adults but consumed 89.6% of all cigarettes. Adults with a current psychiatric disorder (with and without NUD) comprised 36.4% of US adults but consumed 56.4% of all cigarettes. Those with current NUD and at least 1 current psychiatric disorder constituted only 11.1% of US adults but smoked 53.6% of total cigarettes consumed.

Individuals without any NUD psychiatric disorder comorbidity accounted for lower percentages of cigarettes smoked. Those with current NUD but no psychiatric disorder smoked 36.0% of all cigarettes; those with a current psychiatric disorder but no NUD smoked 2.7% of total cigarettes; and individuals with neither NUD nor a current psychiatric disorder smoked 7.7% of all cigarettes.

Treatment Utilization for Nicotine Use Disorder

As shown in Table 5, overall treatment rates were 20.3% and 18.8% for 12-month and lifetime NUD, respectively. Treatment was positively associated with NUD severity, ranging from 9.4% to 29.1% for current and 6.7%–27.8% for lifetime NUD.

Among specific treatments, prescribed medications (eg, varenicline, bupropion) and nicotine replacements were used most commonly. Support groups, Internet chat rooms, and acupuncture or meditation were among the least utilized modalities.

DISCUSSION

In the NESARC-III, 12-month (27.2%) and lifetime (45.8%) prevalences of nicotine use remained virtually unchanged since 2001–2002 (12-month, 28.4%; lifetime, 46.9%; S.P.C., unpublished data, 2015). A similar trend was found for 12-month (23.5% vs 24.9% [S.P.C., unpublished data, 2015]) and lifetime (42.0% vs 43.7% [S.P.C., unpublished data, 2015]) cigarette use.

Prevalences of 12-month and lifetime *DSM-5* NUD in the NESARC-III were 20.0% and 27.9%, respectively, representing 47,147,599 and 65,599,467 American adults.

Table 2. Adjusted Odds Ratios (aORs) of 12-Month and Lifetime *DSM-5* Nicotine Use Disorder (NUD) by Sociodemographic Characteristics[a]

Sociodemographic Characteristic	12-Month NUD				Lifetime NUD			
	Mild aOR (95% CI)	Moderate aOR (95% CI)	Severe aOR (95% CI)	Any NUD aOR (95% CI)	Mild aOR (95% CI)	Moderate aOR (95% CI)	Severe aOR (95% CI)	Any NUD aOR (95% CI)
Sex								
Men	**1.61 (1.44–1.80)**	**1.62 (1.45–1.81)**	**1.51 (1.35–1.68)**	**1.58 (1.47–1.69)**	**1.63 (1.47–1.80)**	**1.70 (1.55–1.86)**	**1.56 (1.42–1.71)**	**1.62 (1.51–1.73)**
Women	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)
Age, y								
18–29	**3.88 (2.94–5.10)**	**5.54 (4.54–6.76)**	**6.93 (5.46–8.79)**	**5.21 (4.46–6.09)**	**1.86 (1.44–2.38)**	**2.03 (1.69–2.46)**	**2.19 (1.87–2.58)**	**2.05 (1.81–2.33)**
30–44	**4.49 (3.55–5.67)**	**5.79 (4.64–7.22)**	**8.74 (7.10–10.76)**	**6.01 (5.21–6.94)**	**2.25 (1.82–2.78)**	**2.44 (2.05–2.90)**	**3.16 (2.75–3.63)**	**2.68 (2.41–2.99)**
45–64	**3.61 (2.94–4.43)**	**3.90 (3.21–4.76)**	**6.06 (4.99–7.37)**	**4.34 (3.81–4.95)**	**2.14 (1.76–2.60)**	**1.93 (1.63–2.28)**	**2.81 (2.47–3.20)**	**2.34 (2.11–2.60)**
65+	1.0 (reference)	1.0 (reference)	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)	1.0 (reference)	1.0 (reference)
Black	**0.71 (0.62–0.82)**	**0.56 (0.48–0.65)**	**0.47 (0.39–0.56)**	**0.57 (0.51–0.64)**	**0.73 (0.63–0.84)**	**0.50 (0.43–0.58)**	**0.39 (0.33–0.46)**	**0.50 (0.45–0.56)**
Native American	0.87 (0.56–1.36)	1.09 (0.69–1.72)	1.24 (0.87–1.78)	1.09 (0.82–1.44)	0.84 (0.54–1.31)	1.06 (0.70–1.59)	1.16 (0.87–1.55)	1.07 (0.83–1.37)
Asian/Pacific Islander	**0.69 (0.50–0.95)**	**0.34 (0.25–0.46)**	**0.37 (0.27–0.50)**	**0.46 (0.37–0.56)**	**0.59 (0.45–0.78)**	**0.27 (0.19–0.39)**	**0.25 (0.20–0.32)**	**0.33 (0.27–0.40)**
Hispanic	**0.35 (0.29–0.42)**	**0.28 (0.23–0.34)**	**0.25 (0.20–0.31)**	**0.29 (0.26–0.33)**	**0.37 (0.30–0.44)**	**0.28 (0.24–0.33)**	**0.24 (0.20–0.28)**	**0.28 (0.25–0.31)**
Education								
<High school	**2.18 (1.88–2.54)**	**2.09 (1.79–2.44)**	**2.55 (2.13–3.06)**	**2.28 (2.05–2.53)**	**1.98 (1.67–2.36)**	**1.67 (1.41–1.96)**	**1.83 (1.58–2.12)**	**1.82 (1.64–2.01)**
High school	**1.61 (1.38–1.88)**	**1.87 (1.61–2.17)**	**1.74 (1.54–1.96)**	**1.74 (1.58–1.91)**	**1.60 (1.37–1.88)**	**1.51 (1.37–1.67)**	**1.51 (1.36–1.68)**	**1.53 (1.42–1.66)**
Some college	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)
Marital status								
Married/cohabitating	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)
Widowed/separated/divorced	**1.61 (1.43–1.82)**	**1.72 (1.50–1.98)**	**1.68 (1.47–1.91)**	**1.67 (1.52–1.83)**	**1.47 (1.27–1.69)**	**1.42 (1.26–1.59)**	**1.44 (1.30–1.60)**	**1.44 (1.33–1.56)**
Never married	1.06 (0.88–1.26)	0.96 (0.85–1.08)	1.21 (1.06–1.39)	1.08 (0.98–1.18)	0.98 (0.82–1.17)	0.88 (0.77–1.03)	1.02 (0.90–1.14)	0.97 (0.89–1.05)
Income								
$0–$19,999	**2.29 (1.83–2.86)**	**2.45 (2.00–3.01)**	**3.38 (2.84–4.02)**	**2.69 (2.36–3.05)**	**1.80 (1.50–2.15)**	**1.82 (1.56–2.11)**	**2.25 (1.95–2.59)**	**2.00 (1.81–2.21)**
$20,000–$34,999	**2.30 (1.88–2.81)**	**2.09 (1.68–2.60)**	**2.22 (1.82–2.69)**	**2.21 (1.91–2.55)**	**1.70 (1.41–2.05)**	**1.67 (1.42–1.96)**	**1.74 (1.50–2.03)**	**1.71 (1.52–1.93)**
$35,000–$69,999	**1.68 (1.40–2.01)**	**1.70 (1.42–2.04)**	**1.78 (1.49–2.12)**	**1.72 (1.54–1.92)**	**1.34 (1.14–1.58)**	**1.46 (1.28–1.66)**	**1.54 (1.34–1.77)**	**1.47 (1.34–1.61)**
$70,000 or more	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)
Urbanicity								
Urban	**0.79 (0.68–0.92)**	0.87 (0.76–1.00)	**0.82 (0.71–0.95)**	**0.83 (0.74–0.92)**	**0.82 (0.72–0.92)**	0.88 (0.76–1.01)	0.88 (0.76–1.01)	**0.86 (0.77–0.96)**
Rural	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)
Region								
Northeast	1.16 (0.93–1.44)	1.11 (0.89–1.38)	1.01 (0.83–1.23)	1.09 (0.93–1.27)	1.17 (0.99–1.38)	1.18 (0.94–1.50)	0.96 (0.83–1.17)	1.08 (0.92–1.27)
Midwest	**1.31 (1.07–1.61)**	1.16 (0.98–1.38)	1.13 (0.93–1.36)	**1.20 (1.04–1.38)**	**1.33 (1.14–1.56)**	1.06 (0.88–1.27)	1.03 (0.87–1.21)	1.10 (0.96–1.26)
South	**1.30 (1.08–1.56)**	1.08 (0.89–1.31)	1.05 (0.88–1.26)	1.14 (0.98–1.32)	**1.26 (1.10–1.45)**	1.06 (0.87–1.28)	0.90 (0.77–1.05)	1.02 (0.89–1.17)
West	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)	1.0 (reference)

[a]Significant (*P* <.05) odds ratios appear in bold font.

Table 3. Adjusted Odds Ratios (aORs) of 12-Month DSM-5 Nicotine Use Disorder (NUD) and Other Psychiatric Disorders[a]

Comorbid Disorder	Controlling for Sociodemographic Characteristics				Controlling for Sociodemographic Characteristics and Additional Comorbid Psychiatric Disorders			
	Mild aOR (95% CI)	Moderate aOR (95% CI)	Severe aOR (95% CI)	Any NUD aOR (95% CI)	Mild aOR (95% CI)	Moderate aOR (95% CI)	Severe aOR (95% CI)	Any NUD aOR (95% CI)
Any substance use disorder	**2.12 (1.88–2.32)**	**3.57 (3.16–4.03)**	**5.70 (5.06–6.43)**	**3.62 (3.32–3.93)**	**2.09 (1.84–2.38)**	**3.08 (2.72–3.50)**	**4.09 (3.60–4.65)**	**3.02 (2.76–3.31)**
Alcohol use disorder	**2.04 (1.79–2.42)**	**3.27 (2.88–3.70)**	**4.54 (4.01–5.14)**	**3.20 (2.93–3.49)**	**1.94 (1.69–2.22)**	**2.67 (2.33–3.06)**	**2.88 (2.52–3.29)**	**2.47 (2.25–2.71)**
Any drug use disorder	**2.32 (1.79–3.01)**	**4.49 (3.62–5.58)**	**10.97 (9.23–13.04)**	**5.69 (4.98–6.51)**	**1.88 (1.42–2.48)**	**2.73 (2.13–3.51)**	**5.08 (4.19–6.18)**	**3.29 (2.84–3.82)**
Any mood disorder	**1.16 (1.00–1.34)**	**1.91 (1.65–2.22)**	**3.80 (3.36–4.30)**	**2.18 (1.99–2.39)**	1.04 (0.88–1.23)	**1.31 (1.12–1.55)**	**1.87 (1.61–2.17)**	**1.41 (1.27–1.57)**
Major depressive disorder	1.15 (0.98–1.34)	**1.76 (1.49–2.08)**	**2.78 (2.42–3.19)**	**1.87 (1.69–2.06)**	1.05 (0.89–1.24)	**1.32 (1.10–1.57)**	**1.39 (1.15–1.69)**	**1.26 (1.12–1.42)**
Persistent depression (dysthymia)	1.10 (0.85–1.43)	**1.46 (1.11–1.91)**	**2.46 (2.00–3.04)**	**1.69 (1.44–1.98)**	0.99 (0.74–1.32)	0.93 (0.68–1.26)	0.98 (0.76–1.27)	0.97 (0.81–1.15)
Bipolar I	1.64 (0.99–2.72)	**2.58 (1.74–3.84)**	**7.88 (6.07–10.22)**	**4.03 (3.19–5.11)**	1.40 (0.83–2.37)	1.43 (0.95–2.15)	**2.53 (1.87–3.42)**	**1.93 (1.49–2.50)**
Bipolar II	0.31 (0.09–1.03)	0.87 (0.38–1.99)	**4.68 (2.78–7.88)**	**2.02 (1.29–3.18)**	**0.26 (0.08–0.86)**	0.52 (0.24–1.16)	**1.85 (1.07–3.21)**	1.05 (0.67–1.64)
Any anxiety disorder	1.12 (0.96–1.29)	**1.74 (1.53–1.98)**	**3.31 (2.94–3.73)**	**1.98 (1.82–2.16)**	1.00 (0.84–1.18)	**1.17 (1.01–1.36)**	**1.53 (1.33–1.75)**	**1.24 (1.13–1.36)**
Panic	**1.37 (1.06–1.78)**	**2.23 (1.74–2.84)**	**4.54 (3.69–5.57)**	**2.72 (2.34–3.15)**	1.22 (0.91–1.64)	**1.46 (1.12–1.90)**	**1.76 (1.39–2.23)**	**1.53 (1.28–1.82)**
Agoraphobia	0.90 (0.53–1.53)	**2.24 (1.64–3.05)**	**3.94 (2.88–5.39)**	**2.39 (1.83–3.13)**	0.77 (0.44–1.35)	1.40 (0.97–2.03)	1.32 (0.91–1.92)	1.22 (0.88–1.69)
Social phobia	0.85 (0.61–1.19)	**1.73 (1.30–2.30)**	**2.65 (2.07–3.38)**	**1.75 (1.45–2.12)**	0.72 (0.51–1.03)	1.11 (0.80–1.54)	0.92 (0.70–1.21)	0.93 (0.76–1.14)
Specific phobia	1.16 (0.89–1.50)	**1.39 (1.13–1.70)**	**2.45 (2.09–2.86)**	**1.66 (1.47–1.87)**	1.06 (0.81–1.40)	0.98 (0.79–1.23)	1.21 (0.99–1.47)	1.09 (0.95–1.25)
Generalized anxiety disorder	1.06 (0.86–1.30)	**1.80 (1.49–2.18)**	**3.59 (3.01–4.15)**	**2.12 (1.89–2.38)**	0.95 (0.75–1.20)	1.11 (0.89–1.39)	**1.29 (1.11–1.50)**	**1.15 (1.01–1.31)**
Posttraumatic stress disorder	1.13 (0.86–1.48)	**1.97 (1.59–2.44)**	**4.04 (3.41–4.78)**	**2.35 (2.03–2.73)**	0.98 (0.73–1.32)	1.20 (0.95–1.51)	**1.50 (1.27–1.78)**	**1.27 (1.09–1.49)**
Schizotypal personality disorder	0.97 (0.78–1.19)	**1.62 (1.34–1.97)**	**4.73 (4.06–5.50)**	**2.34 (2.06–2.65)**	**0.72 (0.58–0.90)**	**0.79 (0.63–0.99)**	**1.51 (1.22–1.86)**	1.06 (0.90–1.24)
Borderline personality disorder	**1.36 (1.11–1.65)**	**2.46 (2.12–2.85)**	**5.36 (4.70–6.10)**	**2.87 (2.58–3.19)**	1.25 (0.99–1.58)	**1.56 (1.31–1.86)**	**2.05 (1.75–2.41)**	**1.64 (1.43–1.88)**
Antisocial personality disorder	**1.69 (1.35–2.12)**	**2.82 (2.34–3.39)**	**5.31 (4.46–6.33)**	**3.22 (2.87–3.62)**	**1.52 (1.21–1.91)**	**1.84 (1.51–2.24)**	**2.39 (1.93–2.95)**	**1.96 (1.71–2.25)**

[a]Significant (P < .05) odds ratios appear in bold font.

Table 4. Adjusted Odds Ratios (aORs) of Lifetime DSM-5 Nicotine Use Disorder (NUD) and Other Psychiatric Disorders[a]

Comorbid Disorder	Controlling for Sociodemographic Characteristics				Controlling for Sociodemographic Characteristics and Additional Comorbid Psychiatric Disorders			
	Mild aOR (95% CI)	Moderate aOR (95% CI)	Severe aOR (95% CI)	Any NUD aOR (95% CI)	Mild aOR (95% CI)	Moderate aOR (95% CI)	Severe aOR (95% CI)	Any NUD aOR (95% CI)
Any substance use disorder	**2.37 (2.10–2.66)**	**4.75 (4.31–5.23)**	**8.70 (7.94–9.54)**	**5.23 (4.91–5.57)**	**2.39 (2.14–2.67)**	**4.30 (3.88–4.76)**	**6.29 (5.68–6.97)**	**4.34 (4.04–4.66)**
Alcohol use disorder	**2.22 (1.98–2.49)**	**4.36 (3.96–4.79)**	**7.04 (6.42–7.72)**	**4.62 (4.33–4.94)**	**2.08 (1.86–2.33)**	**3.52 (3.17–3.90)**	**3.96 (3.56–4.40)**	**3.23 (2.99–3.48)**
Any drug use disorder	**2.51 (2.06–3.06)**	**4.68 (4.01–5.45)**	**12.62 (11.19–14.23)**	**7.06 (6.35–7.84)**	**2.03 (1.67–2.48)**	**2.82 (2.38–3.34)**	**5.64 (4.94–6.46)**	**3.82 (3.39–4.30)**
Any mood disorder	1.07 (0.94–1.21)	**1.68 (1.48–1.92)**	**3.51 (3.24–3.81)**	**2.19 (2.05–2.35)**	0.94 (0.83–1.07)	**1.15 (1.00–1.32)**	**1.70 (1.55–1.88)**	**1.32 (1.22–1.42)**
Major depressive disorder	1.06 (0.93–1.20)	**1.61 (1.40–1.85)**	**2.62 (2.40–2.86)**	**1.88 (1.75–2.02)**	0.96 (0.84–1.09)	**1.22 (1.05–1.42)**	**1.38 (1.24–1.55)**	**1.22 (1.12–1.33)**
Persistent depression (dysthymia)	1.19 (0.98–1.45)	**1.53 (1.25–1.88)**	**2.84 (2.41–3.24)**	**2.04 (1.83–2.27)**	1.06 (0.84–1.33)	0.94 (0.74–1.18)	1.13 (0.95–1.34)	1.06 (0.92–1.22)
Bipolar I	1.41 (0.88–2.27)	**2.03 (1.44–2.86)**	**6.61 (5.41–8.07)**	**3.91 (3.25–4.71)**	1.15 (0.71–1.86)	1.06 (0.73–1.54)	**1.93 (1.55–2.40)**	**1.57 (1.29–1.90)**
Bipolar II	0.73 (0.31–1.72)	1.42 (0.78–2.61)	**4.36 (2.74–6.94)**	**2.61 (1.76–3.87)**	0.62 (0.26–1.47)	0.87 (0.48–1.60)	1.57 (0.87–2.84)	1.22 (0.77–1.94)
Any anxiety disorder	1.13 (0.98–1.30)	**1.81 (1.60–2.06)**	**3.46 (3.14–3.81)**	**2.29 (2.12–2.48)**	1.01 (0.87–1.18)	**1.26 (1.09–1.45)**	**1.57 (1.41–1.75)**	**1.34 (1.23–1.46)**
Panic	1.10 (0.84–1.45)	**2.02 (1.69–2.42)**	**3.97 (3.50–4.50)**	**2.66 (2.39–2.96)**	0.98 (0.72–1.33)	**1.35 (1.10–1.66)**	**1.60 (1.39–1.86)**	**1.41 (1.24–1.60)**
Agoraphobia	0.87 (0.52–1.44)	**2.21 (1.61–3.03)**	**4.18 (3.37–5.18)**	**2.80 (2.31–3.38)**	0.76 (0.46–1.26)	1.35 (0.97–1.88)	**1.37 (1.06–1.78)**	**1.27 (1.02–1.58)**
Social phobia	0.83 (0.58–1.18)	**1.63 (1.27–2.11)**	**3.24 (2.76–3.81)**	**2.17 (1.87–2.51)**	0.73 (0.50–1.08)	1.05 (0.81–1.38)	1.21 (0.98–1.49)	1.08 (0.90–1.29)
Specific phobia	1.11 (0.85–1.44)	**1.77 (1.49–2.09)**	**2.79 (2.41–3.24)**	**2.06 (1.83–2.32)**	1.01 (0.77–1.33)	**1.30 (1.08–1.56)**	**1.37 (1.16–1.62)**	**1.27 (1.12–1.45)**
Generalized anxiety disorder	1.16 (0.94–1.43)	**1.49 (1.24–1.80)**	**3.21 (2.83–3.65)**	**2.17 (1.96–2.40)**	1.09 (0.89–1.34)	0.92 (0.74–1.13)	1.16 (0.99–1.35)	1.07 (0.96–1.21)
Posttraumatic stress disorder	1.10 (0.87–1.38)	**2.01 (1.71–2.36)**	**4.32 (3.77–4.96)**	**2.77 (2.49–3.09)**	0.96 (0.73–1.25)	**1.23 (1.03–1.47)**	**1.56 (1.34–1.82)**	**1.35 (1.19–1.53)**
Schizotypal personality disorder	0.91 (0.71–1.17)	**1.58 (1.29–1.92)**	**4.05 (3.49–4.70)**	**2.45 (2.16–2.78)**	**0.71 (0.54–0.92)**	**0.79 (0.63–0.99)**	1.14 (0.96–1.36)	0.96 (0.84–1.10)
Borderline personality disorder	**1.26 (1.02–1.56)**	**2.30 (2.01–2.63)**	**5.32 (4.78–5.93)**	**3.22 (2.94–3.53)**	1.07 (0.83–1.38)	**1.33 (1.13–1.56)**	**1.73 (1.50–1.98)**	**1.47 (1.31–1.65)**
Antisocial personality disorder	**1.80 (1.35–2.40)**	**3.10 (2.54–3.77)**	**6.69 (5.81–7.69)**	**4.30 (3.81–4.86)**	**1.54 (1.16–2.03)**	**1.87 (1.54–2.27)**	**2.66 (2.26–3.15)**	**2.19 (1.92–2.50)**

[a]Significant (P < .05) odds ratios appear in bold font.

Table 5. Nicotine Treatment Settings Among Respondents With 12-Month and Lifetime *DSM-5* Nicotine Use Disorders (NUD)

Type of Tobacco/Nicotine Treatment Setting	12-Month NUD				Lifetime NUD			
	Mild % (SE)	Moderate % (SE)	Severe % (SE)	Any NUD % (SE)	Mild % (SE)	Moderate % (SE)	Severe % (SE)	Any NUD % (SE)
Any treatment services	9.44 (0.85)	22.08 (1.02)	29.09 (1.18)	20.34 (0.68)	6.67 (0.54)	14.31 (0.85)	27.78 (0.81)	18.75 (0.51)
Counseling, family services, and other social services	1.37 (0.28)	2.90 (0.34)	5.48 (0.52)	3.29 (0.24)	1.15 (0.24)	2.06 (0.29)	4.49 (0.34)	2.97 (0.20)
Support group, Internet chat room	0.63 (0.17)	2.44 (0.35)	4.59 (0.55)	2.59 (0.23)	0.43 (0.14)	1.37 (0.24)	3.90 (0.36)	2.32 (0.17)
Medication prescribed by health professionals	7.55 (0.74)	15.85 (0.89)	21.60 (0.98)	15.10 (0.57)	4.98 (0.45)	10.56 (0.69)	19.31 (0.71)	13.30 (0.44)
Nicotine patches, lozenges, or gum	5.50 (0.56)	16.68 (1.03)	22.47 (1.04)	15.00 (0.54)	3.91 (0.41)	9.97 (0.77)	20.69 (0.71)	13.51 (0.39)
E-cigarettes or e-liquid	2.31 (0.43)	5.61 (0.61)	9.32 (0.73)	5.80 (0.42)	1.47 (0.26)	2.78 (0.40)	6.72 (0.48)	4.30 (0.30)
Acupuncture or meditation	0.68 (0.22)	1.85 (0.29)	5.32 (0.65)	2.66 (0.26)	0.59 (0.21)	0.91 (0.17)	4.57 (0.45)	2.53 (0.22)
Any other methods	2.25 (0.42)	5.23 (0.58)	7.87 (0.74)	5.16 (0.37)	1.39 (0.26)	3.55 (0.35)	8.35 (0.63)	5.26 (0.32)

Corresponding *DSM-IV* rates in the NESARC-III were 14.0% (12-month) and 22.0% (lifetime), which were somewhat higher than those observed in the 2001–2002 NESARC (12-month, 12.8%; lifetime, 17.7%; S.P.C., unpublished data, 2015). While *DSM-IV* is no longer the current nomenclature, increases in disorder absent increases in use may still warrant investigation into possible contributors, including posttraumatic stress disorder related to the September 11, 2001, attacks and the impacts of 2 long wars in Afghanistan and Iraq, as well as severe economic downturn.[35–38]

Consistent with findings for current nicotine use[39] and other substance use disorders,[40–42] rates of NUD were higher among men. Nicotine use disorder, particularly 12-month moderate and severe disorders, was inversely related to age. Future prospective research is needed to identify mechanisms underlying these relationships. Nevertheless, together with findings on early onset of nicotine use,[43] these results reinforce the need for continued and expanded prevention targeting preadolescents and adolescents and intervention activities that are appropriate across the lifespan.

Findings on race or ethnicity identify lower risks among blacks, Asians/Pacific Islanders, and Hispanics, than non-Hispanic whites. Nevertheless, lower rates among these minority groups do not negate the importance of prevention of both nicotine use and NUD, or of intervening appropriately when these occur. Future research should characterize biological and sociocultural risk factors among whites and protective factors among blacks, Asians/Pacific Islanders, and Hispanics. This information will further understanding of NUD etiology and inform appropriate prevention and intervention programs.

After adjustment for sociodemographics and additional comorbidity, we observed significant, positive associations of 12-month and lifetime *DSM-5* NUD with other *DSM-5* substance use, major depressive, bipolar I, panic, generalized anxiety, posttraumatic stress, and borderline and antisocial personality disorders. Generalized anxiety disorder was associated with severe 12-month NUD whereas agoraphobia and specific phobia were associated only with severe lifetime NUD. Twelve-month mild NUD was also negatively associated with bipolar II disorder, and 12-month mild and moderate NUD and lifetime moderate NUD were negatively

associated with schizotypal personality disorder. Stronger associations with adjustment only for sociodemographic characteristics suggest that factors common to NUD and comorbid disorders partly explain the associations. However, the persistence of these relationships after adjustment for additional comorbidity suggests important, unique underlying neurobiological or psychosocial factors. The present findings, along with genetic studies,[44] call for further study of correlates, predictors, and mechanisms of NUD comorbidity, including differing directions of association by NUD severity with bipolar II and schizotypal personality disorder.

The burden of US cigarette consumption among psychiatrically comorbid individuals with NUD appears even greater than that among individuals with nicotine dependence in our previous study.[18] Individuals with NUD smoked a greater percentage of cigarettes in the present study compared to those without NUD (89.6% vs 57.5%), especially those with comorbid psychopathology (53.6% vs 34.6%), relative to their respective representations in the US general population (20.0% and 11.1% vs 12.8% and 7.1%).[18] Increasing evidence demonstrates that tobacco industry marketing segments smokers by sociodemographic and psychological vulnerability factors. Reflecting both sociodemographic disadvantage and psychiatric comorbidity, smokers with NUD bear disproportionate economic and public health burdens and have limited access to treatment, longer duration of smoking, and higher rates of failed cessation attempts.[44–47] The present results echo the call by Apollonio and Malone[45] for countermeasures to curb smoking among these vulnerable individuals, and by others[48] to further identify this segment of the population as an important disparity group for tobacco control programs.

Rates of help seeking were low for both 12-month (20.3%) and lifetime (18.8%) *DSM-5* NUD. The most frequently utilized treatments (prescribed medications and nicotine replacement), however, included modalities with strongest empirical support.[49–51] With some modifications, standard pharmacologic and psychosocial treatments can be used effectively and safely in smokers with comorbid psychopathology, including substance use disorders.[51] Nevertheless, better integration of NUD services into health care settings including mental health and other substance use disorder treatment is clearly needed.[51,52] Research examining

perceived needs for and barriers to NUD treatment among smokers with and without psychiatric comorbidity is also warranted.

Study limitations include its cross-sectional design, which precludes causal interpretation of results. Since the NESARC-III sample excluded active military personnel and most homeless and institutionalized individuals, estimates presented here may underestimate the true prevalence of NUD. Respondents' self-reports of socially disvalued behaviors, including nicotine use and NUD symptoms, may have also led to underestimation of the true prevalence of these conditions.[53] The lack of biochemical verification of smoking status is also a study limitation.

Despite these limitations, the present study is the first to report nationally representative US data on the epidemiology of *DSM-5* NUD among US adults. It extends previous examinations of psychiatric comorbidity of NUD, including a lifetime perspective as well as investigation of unique associations independent of other disorders. Our findings of substantial comorbidity of NUD and low rates of treatment underscore the importance of identification and intervention with every tobacco-using patient at every primary care or specialty mental health visit.[54,55] Of note, tobacco users' satisfaction with medical care is positively associated with physician attention to smoking cessation.[56] Beyond these considerations, recognition of psychiatrically vulnerable population subgroups may inform future research on genetic and environmental determinants of NUD and its psychiatric comorbidities, as well as improved prevention and treatment for these burdensome conditions.

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