It is illegal to post this copyrighted PDF on any website. Correlates of Prescription Opioid Use, Misuse, Use Disorders, and Motivations for Misuse Among US Adults

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ABSTRACT

Objective: To simultaneously examine characteristics associated with prescription opioid use, misuse, and use disorders among US adults and assess correlates of their motivations for prescription opioid misuse.

Methods: Data were examined from 51,200 adults 18 years or older who participated in the 2015 National Survey on Drug Use and Health. Prescription opioid use disorders were based on *DSM-IV* criteria. Bivariable and multivariable multinomial logistic regressions were applied.

Results: Prescription opioid use disorders were associated with ages 18-29 and 30-49 years, male sex, good/fair/poor health, suicidal ideation, and tobacco use, alcohol or cocaine use disorders, heroin use or use disorders, and other psychotropic medication misuse or use disorders. Among US adult prescription opioid misusers, 63.4% reported that the main motivation for their most recent misuse was to relieve physical pain, followed by seeking to get high (11.6%) or to relax (10.9%). Sociodemographic characteristics, mental illness, and specific substance use and use disorders were associated with specific motivations for misusing prescription opioids. Among adults with prescription opioid use, reporting pain relief as a motivation for prescription opioid misuse was associated with suicidal ideation, cannabis and heroin use or use disorders, cocaine use disorders, and other psychotropic misuse or use disorders.

Conclusions: Our results suggest that clinicians should assess prescription opioid misuse and its motivations and screen for multiple co-occurring behavioral health conditions in patients who misuse prescription opioids.

J Clin Psychiatry 2018;79(5):17m11973

To cite: Han B, Compton WM, Blanco C, et al. Correlates of prescription opioid use, misuse, use disorders, and motivations for misuse among US adults. *J Clin Psychiatry.* 2018;79(5):17m11973.

To share: https://doi.org/10.4088/JCP.17m11973 © *Copyright 2018 Physicians Postgraduate Press, Inc.*

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^bNational Institute on Drug Abuse, Bethesda, Maryland *Corresponding author: Beth Han, MD, PhD, MPH, 5600 Fishers Lane, 15E85C, Rockville, MD (beth.han@samhsa.hhs.gov). In 2015, roughly 1 in 3 adults in the United States used prescription opioids.¹ Of these, about 11.5 million misused the drugs, and 1.9 million had a prescription opioid use disorder.¹ The prevalences of prescription opioid misuse and use disorders vary according to sociodemographic characteristics as well as physical health and behavioral health factors.^{1–5} Previous research has found that adults with other substance use disorders are more likely to have prescription opioid use disorders than adults without substance use disorders.^{5–8} A few studies have examined motivations for misusing prescription medications based on local data^{9–12} or national samples of high school seniors.^{13,14} Importantly, due to lack of available data, none of the existing studies has simultaneously examined correlates of prescription opioid use, misuse, use disorders, and motivations for misuse in the US adult population.

The 2015 National Survey on Drug Use and Health (NSDUH) is the first survey to collect nationally representative data on prescription opioid use, misuse, and related motivations for misuse among the US civilian, noninstitutionalized population aged 12 or older.¹ In addition, the 2015 NSDUH provides nationally representative data on prescription opioid use disorders among this population.¹ We took advantages of this opportunity to use nationally representative data and examined the following questions:

- 1. What are the specific differences among adults with prescription opioid use but without misuse, adults with prescription opioid misuse but without use disorders, and adults with prescription opioid use disorders?
- 2. What sociodemographic and behavioral health characteristics are uniquely associated with specific main motivations for prescription opioid misuse? In particular, do those who report pain relief as the main motivation for the most recent misuse differ from their counterparts who report other misuse motivations?

Understanding these questions can help inform and target efforts to reduce prescription opioid misuse and related morbidity and mortality and develop effective clinician training programs as well as public health policies, programs, and public message campaigns.

METHODS

Study Population

We examined data from adults 18 years or older who participated in the 2015 NSDUH, a face-to-face survey conducted by the Substance Abuse and Mental Health Services Administration. The 2015 NSDUH provides nationally representative data on prescription opioid use, misuse, and use disorders, as well as motivations for misuse.^{1,15}

NSDUH employed a stratified, multistage area probability sample that was designed to be representative of both the nation as a whole and

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a stratified design with states serving as the primary strata and state sampling regions serving as the secondary strata, census tracts, census block groups, segments within census block groups, and dwelling units (DU) within segments were each selected using probability proportional to size sampling. After DU selections were made, an interviewer visited each selected DU to obtain a roster of all people residing in the DU. Using the roster information obtained from an eligible member of the selected DU, 0 to 2 people were selected for the survey.^{1,15}

NSDUH data collection was approved by the US Office of Management and Budget and the Institutional Review Board at the RTI International. Verbal informed consent was received from each study participant. Data were collected by interviewers in personal visits to households and noninstitutional group quarters. The interview averaged about an hour. Audio computer-assisted self-administered interviewing was used, providing respondents with a private, confidential way to record answers. The weighted response rates for the 2015 NSDUH household screening and for interviewing were 79.7 and 69.3%, respectively,¹⁵ based on the corresponding definitions from the American Association for Public Opinion Research.¹⁶ Details regarding NSDUH methods are provided elsewhere.¹⁵

Measures

The 2015 NSDUH collected past-year prescription opioid use, misuse, and use disorders among all respondents. NSDUH defined prescription opioid use as the use of one's own prescription opioids as directed by a doctor as well as prescription opioid misuse in the past year.^{1,17} NSDUH defined prescription opioid misuse as "in any way that a doctor did not direct you to use them, including (1) use without a prescription of your own; (2) use in greater amounts, more often, or longer than you were told to take them; or (3) use in any other way a doctor did not direct you use them."^{1,17} Pastyear prescription opioid use disorder was defined based on the 11 diagnostic criteria for prescription opioid dependence or abuse specified within the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), including symptoms such as withdrawal, tolerance, use in dangerous situations, trouble with the law, and interference with major obligations at work, school, or home during the past 12 months.^{1,17} Thus, based on the NSDUH definitions, adults with prescription opioid use included 3 mutually exclusive groups: adults with prescription use without misuse, adults with prescription misuse without use disorders, and adults with prescription misuse and use disorders.

Among respondents who reported past-year prescription opioid misuse, NSDUH asked about their main motivation for misusing prescription opioids the most recent time: relieve physical pain, relax or relieve tension, experiment or to see what the drug is like, feel good or get high, help with sleep, help with feelings/emotions, increase or decrease effect(s) of other drug(s), is "hooked" or has to have it, or other reason.^{1,17}

- Among US adult prescription opioid misusers, 63.4% reported that the main motivation for their most recent misuse was to relieve physical pain, followed by seeking to get high (11.6%) or to relax (10.9%).
- Sociodemographic characteristics, mental illness, and specific substance use and use disorders were associated with specific motivations for misusing prescription opioids.
- Among adults with prescription opioid use, reporting pain relief as a motivation for prescription opioid misuse was associated with suicidal ideation, cannabis and heroin use or use disorders, cocaine use disorders, and other psychotropic misuse or use disorders.

NSDUH collected lifetime and past-year use of tobacco, alcohol, cannabis, cocaine, heroin, hallucinogens, and inhalants, as well as lifetime and past-year use and misuse of other psychotropic medications (prescription sedatives/ tranquilizers and stimulants). Furthermore, NSDUH provided estimates on past 12-month major depressive episode (MDE) and specific substance use disorders (ie, alcohol, cannabis, cocaine, heroin, hallucinogens, inhalants, and other psychotropic medications [sedatives/tranquilizers and stimulants]) based on assessments of individual diagnostic criteria from the *DSM-IV*.¹⁸ Nicotine dependence among cigarette smokers was assessed using the Nicotine Dependence Syndrome Scale.¹⁹ These measures have good reliability and validity.²⁰⁻²²

The 2015 NSDUH asked all adult respondents about suicidal ideation: "At any time during the past 12 months, did you seriously think about trying to kill yourself?" NSDUH also captured respondents' self-rated health and the number of 12-month emergency room (ER) visits. Additionally, NSDUH collected sociodemographic characteristics, including age, sex, race/ethnicity, educational attainment, employment status, family income, marital status, health insurance, and metropolitan statistical area.

Statistical Analyses

First, bivariable and multivariable multinomial logistic regression models were applied to examine sociodemographic and behavioral health characteristics distinguishing prescription opioid misuse without prescription opioid use disorders, misuse with use disorders, and prescription opioid use without misuse. Second, among adults with pastyear prescription opioid use, bivariable and multivariable multinomial logistic regression models were applied to examine whether and how characteristics were associated with specific motivations of prescription opioid misuse. Third, among adults with past-year prescription opioid misuse, bivariable and multivariable multinomial logistic regression models were applied to assess whether and how those who reported pain relief as the main motivation for their most recent misuse differed from their counterparts with other misuse motivations. Multinomial logistic regressions were used in this study because each of the examined outcomes

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Table 1. Multivariable Multinomial Logistic Regression Model Showing Characteristics That Distinguish Adults With Prescription Opioid Misuse, but Without Use Disorder and Adults With Prescription Opioid Use Disorder From Adults With Prescription Opioid Use, but Without Misuse in the United States, 2015 NSDUH (N = 18,800^a)

	Opioid Misuse Without Use Disorder vs Use Without Misuse n = 18,300 ^a AOR (95% CI)	Opioid Use Disorder vs Use Without Misuse n = 16,300 ^a AOR (95% CI)
Sociodemographic Characteristics		
Age		
18–29 у	2.1 (1.62–2.66)	2.0 (1.21-3.46)
30–49 y	1.6 (1.29–2.02)	1.8 (1.16–2.93)
\geq 50 y (ret)	1.0	1.0
Men	1 2 (1 04-1 39)	1 5 (1 08_2 12)
Women (ref)	1.0	1.0
Race/ethnicity		
NH white (ref)	1.0	1.0
NH black	1.1 (0.87–1.38)	1.3 (0.83–2.17)
Hispanic	1.4 (1.16–1.75)	1.2 (0.74–1.94)
NH other Education	1.2 (0.88–1.71)	1.2 (0.71–2.11)
< High school (ref)	1.0	10
High school	0.7 (0.56-0.89)	0.8 (0.49–1.36)
Some college	0.7 (0.57–0.91)	0.8 (0.47–1.29)
College graduate	0.7 (0.53-0.90)	0.8 (0.42-1.60)
Health insurance		
Private only (ref)	1.0	1.0
Uninsured	1.4 (1.15–1.76)	1.4 (0.90–2.18)
Medicald only Other	0.9(0.71 - 1.07)	0.9(0.57 - 1.36)
Health Indicator	0.9 (0.07-1.09)	0.0 (0.34-1.14)
Sell-rated health	1.0	1.0
Very good	0.9 (0.73–1.09)	1.0
Good	1.0 (0.79–1.19)	1.7 (1.03-2.71)
Fair/poor	0.9 (0.70-1.15)	2.5 (1.40-4.52)
No. of PY ER visits		
0 (ref)	1.0	1.0
1	0.7 (0.61–0.88)	1.1 (0.74–1.55)
2	0.9(0.75-1.14)	0.8 (0.49–1.24)
23 Marstal I I as Ith Dush I and a	1.0 (0.71-1.30)	1.4 (0.83–2.38)
Suicide ideation	1 5 (1 14 1 04)	24/150271
res No (ref)	1.3 (1.14-1.84) 1.0	2.4 (1.38–3.71) 1.0
Substance Lise Problems	1.0	1.0
PM picotine dependence	1 1 (0 80 1 40)	3 6 (1 73_7 40)
PY tobacco use, but no PM nicotine dependence	0.9 (0.66–1.08)	2.2 (1.09–4.42)
Lifetime use, but no PY use	0.9 (0.69–1.16)	1.9 (0.87–3.91)
Never tobacco use (ref)	1.0	1.0
Alcohol use and disorder		
PY alcohol use disorder	1.7 (1.17–2.52)	3.0 (1.11-8.18)
PY alcohol use	1.2 (0.81–1.64)	1.7 (0.65–4.18)
Litetime use, but no Pr Use Never alcohol use (ref)	0.7 (0.45-1.02) 1.0	2.5 (U.92-6.59) 1 0
Cannabis use and disorder	1.0	1.0
PY cannabis use disorder	2.8 (1.91-4.05)	2.0 (0.88-4.37)
PY use, no disorder	2.2 (1.72–2.81)	1.2 (0.63–2.40)
Lifetime use, no PY use	1.3 (1.05–1.63)	1.3 (0.67–2.47)
Never cannabis use (ref)	1.0	1.0
Cocaine use and disorder		a a /a a a a a a a a
PY cocaine use disorder	2.2 (1.11-4.54)	8.3 (3.05–22.64)
PY use, no disorder	1.3 (0.92–1.84)	1.8 (1.02-3.24)
Never cocaine use (ref)	1.1 (U.00-1.53) 1.0	1.0 (1.13-2./9) 1.0
	1.0	1.0
Heroin use and disorder		
PY heroin use or disorder	3.8 (1.99–7.08)	17.6 (8.55–36.18)
Peroin use and disorder PY heroin use or disorder Lifetime use, no PY use	3.8 (1.99–7.08) 1.8 (1.27–2.62)	17.6 (8.55–36.18) 3.1 (1.90–5.00)

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	Opioid Misuse Without	
	Use Disorder vs	Opioid Use Disorder vs
	Use Without Misuse	Use Without Misuse
	n = 18,300 ^a	n=16,300 ^a
	AOR (95% CI)	AOR (95% CI)
Hallucinogen use and disorder		
PY hallucinogen disorder	0.7 (0.25–1.72)	0.7 (0.20-2.69)
PY use, no disorder	1.6 (1.17–2.24)	0.8 (0.41-1.46)
Lifetime use, no PY use	1.4 (1.14–1.71)	1.1 (0.67-1.69)
Never hallucinogen use (ref)	1.0	1.0
Inhalant use and disorder		
PY inhalant use disorder	0.02 (0.00-0.25)	0.5 (0.06-4.62)
PY use, no disorder	1.6 (0.89–2.87)	1.4 (0.48-4.21)
Lifetime use, no PY use	1.6 (1.26–1.89)	1.3 (0.86-1.90)
Never inhalant use (ref)	1.0	1.0
Rx sedative/tranquilizer misuse and use disorder		
PY misuse and use disorder	6.1 (4.83–7.77)	17.0 (11.39–25.34)
PY use, lifetime misuse	2.0 (1.32–3.01)	3.7 (1.74–7.64)
PY use, no lifetime misuse	0.8 (0.66–0.96)	1.1 (0.69–1.75)
Lifetime use, no PY use	1.1 (0.89–1.46)	0.7 (0.37-1.42)
Never use (ref)	1.0	1.0
Rx stimulant misuse and use disorder		
PY misuse and use disorder	3.0 (2.34–3.74)	4.6 (3.00–7.05)
PY use, lifetime misuse	2.0 (1.14–3.58)	3.0 (1.17–7.89)
PY use, no lifetime misuse	1.1 (0.84–1.41)	1.7 (1.03–2.86)
Lifetime use, no PY use	1.2 (0.92–1.60)	1.9 (1.08–3.47)
Never Rx stimulant use (ref)	1.0	1.0

^aThe Substance Abuse and Mental Health Services Administration requires that any description of overall sample sizes based on the restricted-use data files be rounded to the nearest 100, which intends to minimize potential disclosure risk. Marital status, employment status, family income, metropolitan statistical area, and major depressive episode were not associated with the outcomes and were removed from the final multivariable model. Each bolded adjusted odds ratio is significantly different (P < .05) from the corresponding reference group.

Abbreviations: AOR = adjusted odds ratio, CI = confidence interval, NH = non-Hispanic, NSDUH = National Survey on Drug Use and Health, PM = past month, PY = past year, ref = reference group, Rx = prescription.

had more than 2 categories and because we examined how factors were associated with different categories of the outcomes.

Multicollinearity (using variance inflation factors) and potential interaction effects between examined factors were assessed and were not identified in the final multivariable models. This study used SUDAAN software²³ to account for the NSDUH's complex sample design and sample weights.

RESULTS

Characteristics Associated With Prescription Opioid Misuse With and Without Prescription Opioid Use Disorders

Based on the 51,200 sampled persons 18 years or older who participated in the 2015 NSDUH, we found that compared to prescription opioid use without misuse (Table 1), prescription opioid misuse without use disorders was associated with ages 18–29 and 30–49, male sex, Hispanic ethnicity, having less than high school education, being uninsured, having suicidal ideation, and having past-year alcohol or cocaine use disorders, cannabis or heroin use or use disorders, and other psychotropic use, misuse, or use disorders. Compared to prescription opioid misuse, but without prescription opioid use disorders, prescription opioid Figure 1. Main Motivation for Misusing Prescription Opioids the Most Recent Time Among Adults With Prescription Opioid Misuse in the Past 12 Months in the United States, 2015, Weighted Percentage (N = 3,000)



use disorders were associated with ages 18–29 and 30–49, male sex, good/fair/poor health, suicidal ideation, past-month nicotine dependence, and past-year tobacco use (without past-month nicotine dependence), alcohol or cocaine use disorders, heroin use or use disorders, and other psychotropic use, misuse, or use disorders.

Characteristics Associated With Specific Motivations for Misuse

Among US adult prescription opioid misusers in 2015, 63.4% (95% CI, 60.92%-65.86%; Figure 1) reported that the

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Table 2. Multivariable Multinomial Logistic Regression Model Showing Motivations of Prescription Opioid Misuse Associated With Sociodemographic and Behavioral Health Characteristics Among Adults With Past-Year Prescription Opioid Use, 2015 NSDUH (N = 18,800 ^a)

	Pain Relief	Substance Related Use Help Relax, Regulate		ax, Regulate Affect, a	Affect, and Sleep	
	Relieve Physical		Get High, Hooked,		Affect Regulation	Help With Sleep
	Pain vs	Experiment	Adjust Drug Effects	Relax vs	VS No Micuco	VS No Micuso
	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
	$n = 17,600^{a}$	$n = 15,900^{a}$	$n = 16,400^{a}$	$n = 16,100^{a}$	$n = 15,900^{a}$	$n = 15,900^{a}$
Sociodemographic Characteristic	S					
Age						
18–29 y	1.8 (1.40-2.31)	8.7 (1.43–53.40)	5.4 (2.63–10.90)	1.9 (0.96–3.64)	2.8 (0.89–8.84)	1.0 (0.41–2.19)
30–49 y	1.6 (1.26–2.01)	1.9 (0.33–11.15)	3.3 (1.68–6.27)	1.5 (0.79–2.71)	0.9 (0.30–2.71)	0.9 (0.40–2.10)
\geq 50 y (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Men	1 3 (1 07_1 49)	1 1 (0 58–2 00)	1 9 (1 43-2 63)	1 2 (0 87–1 78)	1 1 (0 64–1 95)	0 6 (0 34-0 97)
Women (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Race/ethnicity						
NH white (ref)	1.0	1.0	1.0	1.0	1.0	1.0
NH black	1.1 (0.83–1.39)	1.6 (0.79–3.04)	0.8 (0.48–1.46)	1.3 (0.72–2.35)	0.5 (0.18–1.29)	2.3 (1.15–4.77)
Hispanic	1.5 (1.17–1.81)	0.7 (0.33–1.66)	1.1 (0.70–1.79)	2.1 (1.36–3.22)	1.4 (0.65–2.89)	0.9 (0.47–1.73)
NH other Education	1.2 (0.85–1.72)	1.2 (0.47–2.88)	1.4 (0.78–2.32)	1.5 (0.63–3.48)	2.3 (0.69–7.62)	1.6 (0.67–4.01)
< High school (ref)	10	10	1.0	10	10	10
High school	0.7 (0.58-0.95)	0.4 (0.20-0.98)	0.7 (0.38–1.10)	0.6 (0.30–1.11)	1.5 (0.61–3.58)	0.6 (0.30–1.21)
Some college	0.7 (0.56-0.93)	0.7 (0.30–1.60)	1.0 (0.57–1.58)	0.6 (0.30–1.03)	1.5 (0.53–4.02)	0.5 (0.26–1.03)
College graduate	1.2 (0.30-4.83)	0.4 (0.14–1.22)	0.8 (0.42-1.46)	0.5 (0.25-1.08)	2.3 (0.81-8.27)	0.8 (0.35–1.78)
Employment						
Full-time (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Part-time Disabled for work	1.0 (0.76-1.20)	1.0 (0.52–1.97)	1.7 (1.16-2.51)	1.0(0.60-1.57)	1.7 (0.82–3.58)	1.0 (0.44–2.20)
Unemployment	1.0 (0.07-1.38)	1.8 (0.25-12.00)	0.0(0.25 - 1.30) 1 7 (1 05 - 2 79)	0.2 (0.04–0.55) 1 1 (0.58–2.06)	0.0 (0.14-2.23)	1.1 (0.30–4.14)
Other	1.0 (0.77–1.72)	0.9(0.42 - 1.86)	1 1 (0 70–1 64)	0.7(0.43 - 1.30)	1.0(0.73-4.27) 1.2(0.53-2.80)	1 2 (0 54–2 53)
Health insurance		015 (0112 1100)				
Private only (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Uninsured	1.5 (1.21–1.94)	0.6 (0.29–1.19)	1.0 (0.66–1.48)	1.0 (0.63–1.55)	1.9 (0.94–3.76)	1.6 (0.76–3.27)
Medicaid only	1.0 (0.75–1.20)	0.6 (0.25–1.59)	0.7 (0.48–1.13)	1.0 (0.54–1.67)	1.7 (0.80–3.47)	0.8 (0.36–1.59)
Other	0.9 (0.66–1.14)	1.0 (0.32–3.24)	0.9 (0.56–1.60)	0.7 (0.35–1.42)	1.8 (0.64–4.98)	0.5 (0.17–1.29)
Health Indicator						
No. of PY ER visits						
0 (ref)	1.0	1.0	1.0	1.0	1.0	1.0
1		0.6(0.30-1.23) 0.6(0.25-1.58)	0.5 (0.32-0.71)	0.0 (0.37-0.80)	1.7 (0.83-3.26)	0.9(0.52 - 1.03)
>3	1.2 (0.87–1.51)	0.5(0.18 - 1.61)	0.6 (0.33-0.91)	1.1(0.45 - 2.70)	0.6 (024-1.39)	0.9(0.36-2.24)
Mental Health Problems	(,					
Suicide ideation						
Yes	1.4 (1.02-1.81)	1.0 (0.39–2.41)	1.8 (1.12-2.78)	1.8 (1.02-3.16)	4.5 (2.35-8.65)	2.1 (1.11-4.05)
No (ref)	1.0	1.0	1.0	1.0	1.0	1.0
MDE						
Yes	1.2 (0.91–1.54)	0.9 (0.36–2.10)	0.7 (0.43–1.03)	1.0 (0.63–1.62)	2.6 (1.34–4.99)	0.8 (0.41–1.71)
No (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Substance Use Problems						
Tobacco use and disorder	/	/>	/	/	/	/
PM nicotine dependence	1.0 (0.74–1.38)	0.7 (0.19–2.65)	4.2 (2.04-8.50)	2.5 (1.05-6.05)	1.4 (0.50–3.65)	1.0 (0.40–2.71)
Lifetime use, no PV use	0.8 (0.64–1.09)	0.9 (0.24-3.23)	2.0 (1.00-4.01)	1.9 (0.82-4.46)	0.0 (0.23-1.34)	1.0 (0.41-2.01)
Never tobacco use (ref)	1.0	1.0	1.0 (0.74-5.45)	1.0	1.0	1.0 (0.40-2.51)
Alcohol use and disorder						
PY alcohol use disorder	1.4 (0.93–2.14)	3.9 (0.61–25.07)	3.3 (0.96–11.16)	1.5 (0.45–5.19)	3.8 (0.66–22.23)	6.5 (1.65-25.22)
PY alcohol use	1.1 (0.78–1.66)	1.5 (0.24–9.09)	1.8 (0.52–5.87)	0.9 (0.26–2.81)	3.0 (0.58–15.27)	1.6 (0.47–5.72)
Lifetime use, no PY use	0.8 (0.54–1.25)	2.6 (0.44–14.93)	1.9 (0.53–6.45)	0.4 (0.12–1.37)	1.7 (0.20–13.74)	0.7 (0.18–2.63)
Never alcohol use (ref)	1.0	1.0	1.0	1.0	1.0	1.0
PY cannabis use disorder	1.8 (1 15-2 80)	19.1 (2 99_121 8)	38.1 (17 77 91 73)	3.3 (1.41_7 04)	2 1 (0 67-6 60)	2.7 (1 01-7 40)
PY use, no disorder	1.8 (1.36-2.36)	5.7 (1.02-31.40)	20.8 (11.01-39.15)	2.4 (1.20-4.71)	1.7 (0.63–4.75)	2.8 (1.24–6.41)
Lifetime use, no PY use	1.3 (0.98–1.59)	2.6 (0.42–15.77)	10.2 (5.57–18.56)	1.2 (0.58–2.47)	0.7 (0.26–1.74)	1.9 (0.91–3.84)
Never cannabis use (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Cocaine use and disorder						
PY cocaine use disorder	2.9 (1.32–6.44)	2.0 (0.49–7.77)	4.5 (1.47–13.58)	6.1 (2.24–16.41)	0.9 (0.15–5.73)	0.2 (0.05–0.52)
PY use, no disorder	1.0 (0.69–1.55)	1.5 (0.61-3.70)	1.9 (1.16-2.99)	2.7 (1.37-5.39)	1.2 (0.46-3.02)	0.8(0.32-2.21)
Never cocaine use (ref)	1.1 (0.90–1.44) 1.0	0.0 (0.24-1.40) 1.0	1.1 (0.75-1.71) 1.0	2.U(1.19-3.22) 1.0	2.1 (0./0−3./9) 1 0	0.0 (0.20-1.23) 1 0

It is illegal to post this copyrighted PDF on any website Table 2 (continued).

	Pain Relief	Substance Related Use		Help Relax, Regulate Affect, and Sleep		
	Relieve Physical Pain vs No Misuse AOR (95% Cl) n = 17,600 ^a	Experiment vs No Misuse AOR (95% CI) n = 15,900 ^a	Get High, Hooked, Adjust Drug Effects vs No Misuse AOR (95% Cl) n=16,400 ^a	Relax vs No Misuse AOR (95% Cl) n = 16,100 ^a	Affect Regulation vs No Misuse AOR (95% CI) n = 15,900 ^a	Help With Sleep vs No Misuse AOR (95% Cl) n=15,900 ^a
Heroin use and disorder						
PY heroin use or disorder Lifetime use, no PY use	4.7 (2.28–9.66) 1.8 (1.22–2.61)	6.7 (1.52–29.38) 2.0 (0.63–6.16)	25.5 (11.84–54.71) 4.6 (2.84–7.45)	4.5 (1.76–11.25) 2.3 (1.11–4.56)	14.7 (5.00–43.47) 2.1 (0.76–5.64)	7.2 (2.15–24.00) 0.2 (0.04–0.89)
Never heroin use (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Hallucinogen use and disorder						
PY hallucinogen disorder	1.1 (0.41-3.01)	0.4 (0.03-4.09)	0.6 (0.17-1.89)	0.1 (0.01–0.36)	0.7 (0.11–4.76)	0.3 (0.05-1.85)
PY use, no disorder	1.3 (0.84–1.85)	2.5 (1.08-5.94)	1.7 (1.02–2.88)	1.4 (0.73–2.77)	1.3 (0.53–3.26)	1.9 (0.83-4.47)
Lifetime use, no PY use	1.4 (1.13–1.76)	1.4 (0.66–2.77)	1.5 (0.99–2.21)	1.2 (0.74–1.96)	0.9 (0.37-2.42)	1.2 (0.62-2.44)
Never hallucinogen use (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Inhalant use and disorder						
PY inhalant use disorder	0.2 (0.02–1.54)	0.01 (0.00–0.04)	0.3 (0.05–1.82)	0.1 (0.00–1.10)	0.7 (0.11–4.76)	0.3 (0.05–1.85)
PY use, no disorder	1.3 (0.63–2.82)	2.1 (0.42–10.45)	2.6 (1.13–6.05)	1.5 (0.59–3.59)	1.3 (0.53–3.26)	1.9 (0.83–4.47)
Lifetime use, no PY use	1.4 (1.11–1.72)	1.9 (0.85–4.22)	1.7 (1.16–2.35)	1.5 (0.96–2.20)	0.9 (0.37–2.42)	1.2 (0.62–2.44)
Never inhalant use (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Rx sedative/tranquilizer misuse ar	nd use disorder					
PY misuse and use disorder	6.1 (4.71–7.99)	5.0 (2.40–10.49)	10.1 (6.90–14.66)	10.4 (6.74–16.09)	11.6 (5.62–24.08)	8.5 (4.71–15.34)
PY use, lifetime misuse	2.1 (1.33–3.42)	1.8 (0.91–3.71)	1.8 (0.91–3.71)	3.3 (1.58–6.92)	1.93 (0.73–5.07)	4.2 (1.52–11.61)
PY use, no lifetime misuse	0.8 (0.63–0.95)	1.0 (0.65–1.48)	1.0 (0.65–1.48)	1.2 (0.69–1.95)	0.7 (0.30–1.77)	1.0 (0.49–2.03)
Lifetime use, no PY use	1.2 (0.88–1.50)	0.2 (0.06–0.63)	1.2 (0.72–2.13)	1.1 (0.53–2.40)	0.5 (0.17–1.73)	0.5 (0.19–1.26)
Never use (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Rx stimulant misuse and use disorder						
PY misuse and use disorder	2.8 (2.14–3.61)	4.1 (2.04–8.26)	3.5 (2.44–5.11)	3.8 (2.33–6.06)	5.6 (2.87–10.71)	1.4 (0.69–2.80)
PY use, lifetime misuse	2.1 (1.16–3.77)	2.5 (0.62–10.03)	2.0 (0.77–5.45)	2.1 (0.73–6.24)	4.1 (1.02–16.36)	0.6 (0.15–2.15)
PY use, no lifetime misuse	1.2 (0.94–1.63)	2.0 (0.65–5.98)	0.7 (0.39–1.10)	0.8 (0.41–1.41)	3.1 (1.08–8.68)	1.5 (0.72–3.04)
Lifetime use, no PY use	1.3 (0.98–1.78)	1.6 (0.36–7.15)	1.4 (0.77–2.39)	1.0 (0.50–1.95)	1.3 (0.72–3.04)	0.9 (0.33–2.31)
Never Rx stimulant use (ref)	1.0	1.0	1.0	1.0	1.0	1.0
The Substance Abuse and Mental Health Services Administration requires that any description of overall sample sizes based on the restricted use data						

^aThe Substance Abuse and Mental Health Services Administration requires that any description of overall sample sizes based on the restricted-use data files has to be rounded to the nearest 100, which intends to minimize potential disclosure risk. Marital status, family income, metropolitan statistical area, and self-rated health were not associated with the outcomes and were removed from the final multivariable model. Each bolded adjusted odds ratio is significantly different (*P* < .05) from the corresponding reference group.

Abbreviations: AOR = adjusted odds ratio, CI = confidence interval, NH = non-Hispanic, NSDUH = National Survey on Drug Use and Health, PM = past month, PY = past year, ref = reference group, Rx = prescription.

main motivation for their most recent misuse was to relieve physical pain, followed by seeking to get high (11.6%; 95% CI, 10.22%-13.16%) or to relax (10.9%; 95% CI, 9.24%-12.46%). Motivation for misusing prescription opioids for physical pain relief was associated with ages 18-29 and 30-49, male sex, Hispanic ethnicity, having less than high school education, being uninsured, and past-year suicidal ideation, cannabis or heroin use or use disorders, cocaine use disorders, or other psychotropic misuse or use disorders (Table 2). Motivation for misusing prescription opioids to get high or to adjust for drug effects was associated with ages 18-29 and 30-49, male sex, part-time employment or unemployment, no past-year ER visits, past-month nicotine dependence, and past-year suicidal ideation, cannabis, heroin, or cocaine use or use disorders, hallucinogen use, or other psychotropic misuse or use disorders.

Motivation for misusing prescription opioids for regulating affect was associated with past-year suicidal ideation, MDE, heroin use or use disorders, and other psychotropic misuse or use disorders. Motivation for misusing prescription opioids for helping with sleep was associated with women, non-Hispanic blacks, and past-year suicidal ideation, alcohol use disorders, cannabis or heroin use or use disorders, or other psychotropic misuse or use disorders.

Differences Between Correlates of Pain Relief Motivation and Other Motivations

Among adults with prescription opioid misuse, compared to adults with private health insurance, those uninsured were more likely to report misusing opioids for pain relief and were less likely to report misusing prescription opioids for experiment, relaxation, getting high, or adjusting for other drug effect(s) (Table 3). Compared to adults who obtained opioids from friends/families for free, those who bought opioids from friends or relatives were less likely to report misusing opioids for pain relief and were more likely to report misusing prescription opioids for relaxation, getting high, or adjusting for other drug effect(s).

Motivation for misusing prescription opioids to get high or adjust for other drug effect(s) was associated with ages 18–29, male sex, part-time employment, past-year cannabis or heroin use or use disorders, cocaine use, opioid use disorders, or other psychotropic misuse or use disorders, and buying prescription opioids from friends/relatives or drug dealers/strangers. Motivation for misusing opioids for affect regulation was associated with college graduates, past-year suicidal ideation, MDE, prescription sedative or tranquilizer misuse or use disorders, prescription opioid use disorders, and buying prescription opioids from drug dealers/strangers. The motivation for misusing opioids to help with sleep was illegal to post this copyrighted PDF on any website

Table 3. Multivariable Multinomial Logistic Regression Model Showing How Pain Relief Differing From Other Motivations of Prescription Opioid Misuse in Sociodemographic and Behavioral Health Characteristics Among Adults With Prescription Opioid Misuse, 2015 NSDUH (N = 3,000^a)

	Substance	e Related Use	Help Regulate Affect, Sleep, and Relax			
		Get High	· · ·			
		Hooked Adjust				
	Experiment vs Relieve Pain AOR (95% CI)	Drug Effects vs Relieve Pain	Affect Regulation vs Relieve Pain AOR (95% CI)	Help With Sleep vs Relieve Pain AOR (95% CI)	Relax vs Relieve Pain AOR (95% CI)	
	$n = 1.900^{a}$	$n = 2.300^{a}$	$n = 1.900^{a}$	$n = 1.900^{a}$	$n = 2.100^{a}$	
Sociodemographic Characteristics						
Age	5 0 (0 00 07 0 A)		4 5 (0 44 4 07)	0.5 (0.00, 1.07)	1 1 (0 50 0 10)	
18–29 y	5.0 (0.92–27.24)	2.9 (1.33-6.36)	1.5 (0.44–4.97)	0.5 (0.22–1.27)	1.1 (0.58–2.10)	
30–49 y	1.2 (0.20–6.45)	1.9 (0.86–3.98)	0.5 (0.16–1.72)	0.6 (0.25–1.35)	0.9 (0.49–1.66)	
≥50 y (ref)	1.0	1.0	1.0	1.0	1.0	
Sex						
Men	0.9 (0.45–1.78)	1.7 (1.18–2.29)	0.9 (0.51–1.68)	0.4 (0.25–0.72)	1.1 (0.74–1.57)	
Women (ref)	1.0	1.0	1.0	1.0	1.0	
Race/ethnicity						
NH white (ref)	1.0	1.0	1.0	1.0	1.0	
NH black	1.3 (0.60-2.68)	0.8 (0.39-1.43)	0.3 (0.10-0.94)	2.3 (1.15–4.59)	1.1 (0.64-2.05)	
Hispanic	0.6 (0.24-1.48)	1.0 (0.63–1.74)	1.0 (0.44-2.19)	0.7 (0.32–1.35)	1.6 (0.99–2.58)	
NH other	1.3 (0.53-3.37)	1.3 (0.65-2.38)	1.7 (0.49–5.73)	1.6 (0.62-4.12)	1.3 (0.55–3.20)	
Education	, , , , ,					
< High school (ref)	1.0	1.0	1.0	1.0	1.0	
High school	0.5 (0.19–1.22)	0.8(0.44 - 1.41)	1 7 (0 73-3 75)	0.9(0.42 - 1.92)	0.9 (0.46–1.66)	
Some college	0.8 (0.34-2.06)	1 4 (0 80_2 35)	2 2 (0 81_6 21)	0.8 (0.35_1.70)	0.9(0.48 - 1.60)	
College graduate	0.0(0.34-2.00) 0.6(0.20-2.07)	1.4 (0.30-2.33)	2.2 (0.01-0.21)	11(0.48-2.64)	0.0(0.40-1.02)	
Employment	0.0 (0.20-2.07)	1.4 (0.75-2.70)	3.9 (1.10-12.01)	1.1 (0.40-2.04)	0.9 (0.4-1.03)	
Full time (ref)	1.0	1.0	1.0	1.0	1.0	
Part time		1.0		1.0	1.0 1.1(0.64, 1.77)	
Part-ume Dischlad for work	1.1(0.54-2.15)	2.1 (1.30-3.20)	2.0 (0.95-4.52)	0.9(0.43 - 1.91)	1.1(0.04-1.77)	
	2.5 (0.40-15.76)	1.0 (0.40-2.30)	0.5 (0.12-1.09)	0.8 (0.22-3.21)	0.1(0.03-0.53)	
Unemployment	0.9 (0.36-2.35)	1.4 (0.79–2.60)	1.4 (0.60-3.37)	0.5 (0.15-1.53)	0.9 (0.47-1.68)	
Other	0.9 (0.41–1.85)	1.2 (0.75-1.90)	1.3 (0.55–3.04)	1.2 (0.58–2.44)	0.7 (0.40–1.16)	
Health insurance						
Private only (ref)	1.0	1.0	1.0	1.0	1.0	
Uninsured	0.3 (0.12–0.54)	0.5 (0.32–0.79)	1.0 (0.49–2.16)	1.2 (0.57–2.45)	0.6 (0.36–0.90)	
Medicaid only	0.5 (0.20–1.46)	0.8 (0.49–1.21)	2.0 (0.92–4.14)	0.7 (0.36–1.53)	1.0 (0.24–1.69)	
Other	0.8 (0.28–2.38)	0.9 (0.51–1.67)	1.7 (0.62–5.05)	0.5 (0.20–1.23)	0.9 (0.44–1.86)	
Health Indicator						
No. of PY FR visits						
0 (ref)	10	10	10	10	10	
1	0.0 (0.42-1.82)	0.6 (0.38_0.02)	1.0	1.0	0.7(0.45-1.12)	
2	0.7(0.42 - 1.02) 0.7(0.28 - 1.53)	0.0(0.30-0.32) 0.8(0.48-1.16)	1.0(0.00-4.20) 1 1 (0 40-2 78)	0.1(0.37 - 2.10)	0.7 (0.45 - 1.12) 0.8 (0.52 - 1.35)	
2 2 (rof)	0.7 (0.20-1.33)	0.0(0.40-1.10)	0.1(0.42-2.70)	0.7(0.15-0.04)	10(0.32 - 1.33)	
	0.0 (0.15-2.55)	0.5 (0.25-0.62)	0.4 (0.10-1.12)	0.7 (0.20-1.65)	1.0 (0.45-2.29)	
Mental Health Problems						
Suicide ideation						
Yes	0.8 (0.35–1.92)	1.2 (0.77–2.01)	3.5 (1.87–6.68)	1.6 (0.82–3.05)	1.3 (0.75–2.24)	
No (ref)	1.0	1.0	1.0	1.0	1.0	
MDE						
Yes	0.8 (0.34-1.91)	0.7 (0.42-1.03)	2.7 (1.49–4.70)	0.7 (0.34-1.44)	1.0 (0.64–1.62)	
No (ref)	1.0	1.0	1.0	1.0	1.0	
Substance Use Problems						
Tobacco uso and disordor						
PM picotino dependence	0 0 (0 22 2 60)	2 9 (1 50 0 12)	12(0/15 207)	10(020 270)	2 4 (1 01 5 60)	
PW mcoune dependence	0.0 (0.22-2.00)	3.0(1.39-5.13)	1.3(0.43-3.97)	1.0(0.39-2.70) 1.5(0.60, 2.64)	2.4(1.01-3.00)	
Pruse, no PM dep	1.1 (0.32-3.07)	2.4 (1.02-5.40)	0.7(0.23 - 1.87)	1.5 (0.60-3.64)	2.2 (0.97-5.97)	
Lifetime use, no PY use	0.7 (0.18-2.37)	1.8 (0.74–4.35)	0.9 (0.28-2.84)	1.1 (0.44–2.76)	2.3 (0.97-5.23)	
Never tobacco use (ref)	1.0	1.0	1.0	1.0	1.0	
Cannabis use/disorder						
PY cannabis use disorder	7.0 (1.34–36.48)	31.7 (11.28-88.92)	1.5 (0.46–4.96)	2.5 (0.87-7.41)	2.0 (0.88–4.55)	
PY use, no disorder	2.1 (0.47–9.02)	18.3 (7.06–47.25)	1.4 (0.40–4.55)	2.3 (0.95–5.69)	1.4 (0./1–2.6/)	
Lifetime use, no PY use	1.5 (0.30–7.50)	12.5 (4.87–31.99)	0.7 (0.22–1.95)	2.0 (0.85–4.64)	1.0 (0.46–1.95)	
Never cannabis use (ref)	1.0	1.0	1.0	1.0	1.0	
Cocaine use and disorder						
PY cocaine use disorder	1.3 (0.30–5.48)	1.9 (0.63–5.53)	0.3 (0.04–1.63)	0.04 (0.01–0.24)	2.7 (0.96–7.38)	
PY use, no disorder	1.8 (0.73–4.32)	1.9 (1.17–2.97)	1.1 (0.44–2.84)	1.0 (0.36–2.62)	2.7 (1.44–5.11)	
Lifetime use, no PY use	0.5 (0.23–1.25)	0.9 (0.60-1.45)	1.7 (0.72–3.94)	0.5 (0.26–0.98)	1.8 (1.10–3.01)	
Never cocaine use (ref)	1.0	1.0	1.0	1.0	1.0	
Heroin use and disorder						
PY heroin use and disorder	1.8 (0.43–7.59)	4.1 (2.07–7.98)	1.6 (0.53–4.54)	0.5 (0.04-5.51)	1.0 (0.39–2.33)	
Lifetime use, no PY use	1.0 (0.30-3.22)	2.1 (1.21-3.50)	1.0 (0.37-2.82)	0.1 (0.03–0.59)	1.2 (0.62-2.13)	
Never heroin use (ref)	1.0	1.0	1.0	1.0	1.0	

(continued)

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	Substance Related Use		Help Regulate Affect, Sleep, and Relax		
		Get High, Hooked, Adjust			
	Experiment vs	Drug Effects vs	Affect Regulation	Help With Sleep vs	Relax vs Relieve
	Relieve Pain	Relieve Pain	vs Relieve Pain	Relieve Pain	Pain
	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
	n=1,900 ^a	n = 2,300 ^a	n = 1,900 ^a	n=1,900 ^a	n=2,100 ^a
Hallucinogen use and disorder					
PY hallucinogen disorder	0.3 (0.02–4.45)	0.5 (0.13–1.71)	0.5 (0.06–3.76)	0.2 (0.02–2.03)	0.1 (0.01–0.35)
PY use, no disorder	2.5 (1.08–5.72)	1.5 (0.95–2.49)	1.4 (0.59–3.17)	1.4 (0.59–3.30)	1.3 (0.71–2.45)
Lifetime use, no PY use	1.1 (0.55–2.18)	0.9 (0.59–1.40)	0.8 (0.36–1.90)	0.9 (0.50–1.70)	0.9 (0.54–1.35)
Never hallucinogen use (ref)	1.0	1.0	1.0	1.0	1.0
Inhalant use and disorder					
Lifetime inhalant use	1.7 (0.87–3.15)	1.6 (1.15–2.32)	1.0 (0.53–1.98)	1.8 (0.88–3.55)	1.2 (0.82–1.76)
Never inhalant use (ref)	1.0	1.0	1.0	1.0	1.0
Rx sedative/tranquilizer misuse and use disor	der				
PY misuse and use disorder	1.0 (0.51–2.01)	1.9 (1.25–2.79)	2.0 (1.01–4.04)	1.6 (0.86–3.06)	2.1 (1.32–3.21)
PY use, lifetime misuse	0.7 (0.08–7.25)	0.9 (0.46-1.86)	1.4 (0.52–3.79)	2.1 (0.69–6.57)	1.9 (0.94–3.99)
PY use, no lifetime misuse	0.9 (0.30-2.41)	1.3 (0.81-2.18)	1.2 (0.51–2.79)	1.1 (0.49–2.41)	1.5 (0.90-2.52)
Lifetime use, no PY use	0.2 (0.04–0.57)	1.3 (0.69-2.28)	0.6 (0.17-2.18)	0.4 (0.11-1.14)	1.0 (0.49–2.17)
Never use (ref)	1.0	1.0	1.0	1.0	1.0
Rx opioid misuse and disorder					
PY Rx opioid use disorder	1.4 (0.58-3.20)	2.2 (1.38–3.51)	3.2 (1.63-6.20)	0.9 (0.35-2.33)	0.8 (0.45-1.42)
PY misuse (ref)	1.0	1.0	1.0	1.0	1.0
Source of Rx opioids for last misuse					
Free from friend/relative (ref)	1.0	1.0	1.0	1.0	1.0
Prescribed	0.2 (0.07-0.38)	0.5 (0.33-0.79)	1.0 (0.45-2.01)	3.0 (1.71–5.40)	1.0 (0.66-1.52)
Bought from friend/relative	0.8 (0.33-1.68)	2.8 (1.65-4.67)	2.1 (0.84-5.10)	2.3 (0.92-5.92)	2.0 (1.07-3.71)
Stolen from friend/relative, clinic/doctor	1.5 (0.65-3.42)	3.6 (2.32-5.63)	2.7 (1.11-6.54)	2.3 (0.94-5.56)	1.5 (0.81–2.77)
office, or bought from drug dealer					
No. of days of Rx opioids misuse in the PM					
1–2 days (ref)	1.0	1.0	1.0	1.0	1.0
3–5 days	0.4 (0.12-1.27)	1.0 (0.54–1.94)	2.4 (0.93-6.23)	0.9 (0.35-2.49)	0.5 (0.25-1.15)
≥6 days	0.1 (0.01-0.63)	1.1 (0.59–2.10)	0.5 (0.18-1.44)	1.0 (0.28-3.46)	0.7 (0.33-1.41)
No PM misuse	0.7 (0.32-1.39)	1.0 (0.60–1.51)	0.6 (0.27–1.16)	0.8 (0.35–1.75)	0.6 (0.36–1.04)

^aThe Substance Abuse and Mental Health Services Administration requires that any description of overall sample sizes based on the restricted-use data files be rounded to the nearest 100, which intends to minimize potential disclosure risk. Marital status, family income, metropolitan statistical area, and self-rated health, alcohol use and use disorder, Rx stimulant use, misuse, and use disorder were not associated with the outcomes and were removed from the final multivariable model. Each bolded adjusted odds ratio is significantly different (*P* < .05) from the corresponding reference group.

Abbreviations: AOR = adjusted odds ratio, CI = confidence interval, NH = non-Hispanic, NSDUH = National Survey on Drug Use and Health, PM = past month, PY = past year, ref = reference group, Rx = prescription.

associated with female sex and with obtaining prescription opioids from physicians.

DISCUSSION

Among adults with prescription opioid misuse in the United States, we found that almost two-thirds reported that their main motivation for their most recent misuse was to relieve physical pain. While pain treatment is needed, the current evidence indicates that using prescription opioids is not the most appropriate way to manage many types of pain.²⁴

Our results provide further evidence that reporting pain as the motivation for misuse of opioids should not preclude an evaluation for opioid use disorders and other substancerelated conditions. We found that compared to adults with prescription opioid use without misuse, adults reporting pain relief as their motivation for prescription opioid misuse had greater likelihood for past-year suicidal ideation, cannabis and heroin use or use disorders, cocaine use disorders, and other psychotropic misuse or use disorders. Our results on the associations between misuse, motivation to relieve pain, and addition are consistent with earlier research indicating that pain may be a key part of the pathway to misuse or addiction.²⁵⁻²⁷ One earlier study reported that pain is a significant comorbidity even among patients with prescription opioid dependence.²⁷ Another earlier study reported that opioid-induced hyperalgesia, an increased sensitivity to already painful stimuli, may occur among some individuals using opioids.²⁸ Furthermore, opioid withdrawalinduced pain could be another potential explanation for why adult prescription opioid misusers may seek opioids to relieve pain.²⁹ Thus, it is not surprising that a recent study showed that pain per se is a predictor of prescription opioid use disorders.²⁵ Another recent study found that pain contributes to the risk of prescription opioid use disorders.²⁶ Previous studies reported that among high school seniors¹⁴ or college students,¹⁰ those with motivation for misusing prescription opioids for pain relief were less likely to fit into a broad drug abuse phenotype than those with other motivations. Our results contrast with these findings for young people^{10,14} and provide further evidence for an overall drug misuse phenotype among US adults and even often among those reporting pain as a motivation for their use.

use disorder once it is diagnosed because it contributes to morbidity and mortality of many patients.³⁰ A recent study highlighted that treatment for opioid use disorders should include medication-assisted treatment of an adequate duration.³⁰ Moreover, our results suggest that treatment of co-occurring mental disorders and other substance use disorders can be an integral part of treating prescription opioid misuse and use disorders. Consistent with prior findings,²⁵ our study shows that prescription opioid misuse and, even more strongly, prescription opioid use disorders were associated with a broad range of psychopathology, including other substance use disorders, depression, and suicidal ideation. We found that heroin or cannabis use or use disorders and misuse or use disorders of other prescription sedatives or tranquilizers (eg, benzodiazepines) were associated with almost all of the examined motivations for prescription opioid misuse. Thus, our results are consistent with the increasing trends in morbidity and mortality due to co-use of opioids and benzodiazepines.³¹ Also, consistent with findings from previous studies about the relationships between prescription opioid misuse and heroin use,^{32,33} we found that heroin use or use disorders were associated with all examined motivations for misusing prescription opioids among adults with prescription opioid use. Furthermore, we found that among adults with prescription opioid misuse, heroin use or use disorders were positively associated with misusing prescription opioids to get high. Thus, patients with these characteristics may be targeted for prevention of prescription opioid misuse and use disorders and for greater intensity of monitoring if opioids are prescribed. Patients with prescription opioid misuse should be queried about co-occurring behavioral health conditions and, if any are present, should be offered or referred for treatment. Conversely, those identified in clinical settings with behaviors commonly associated with prescription opioid misuse should be queried about potential misuse and engaged in a discussion of whether continuation of prescription opioids is appropriate.

Another novel finding of our study was that suicidal ideation was associated with all of these examined motivations for prescription opioid misuse: pain relief; getting high, being hooked, or adjusting for drug effects; relaxation; affect regulation; and help with sleep. Our findings may help explain the relationship between the upward national trend in overdose deaths from prescription opioids^{1,34} and the upward national trend in deaths by suicide.^{1,35} Some studies have reported that pain and depression increase suicide risk.³⁶⁻⁴⁰ A recent study reported that the risk of suicide mortality was greater among people using higher doses of prescription opioids.³³ We found that among adults with prescription opioid misuse, those with suicidal ideation, major depression, and prescription opioid use disorders were at increased risk for reporting affect regulation as their main misuse motivation. Thus, in addition to mental disorders and other substance use disorders, clinicians should screen for suicidality among

patients misusing prescription opioids, especially those reporting pain relief; affect regulation; getting high, being hooked, or adjusting for drug effects; relaxation; or help with sleep as their main motivation for misuse.

In addition, our results suggest that financial motivations may be a driver of prescription opioid misuse and that better provision of pain treatment is needed particularly for those without health insurance. We found that among US adults with prescription opioid use, uninsured adults were more likely to misuse prescription opioids for relieving pain than those with private health insurance. Moreover, among adults with prescription opioid misuse, compared to those with private health insurance, uninsured adults were less likely to misuse prescription opioids for experiment, getting high, or relaxation and were more likely to misuse opioids for pain relief. Importantly, adults with prescription opioid misuse often do not receive clinical assessments, monitoring, and timely interventions to reduce their risk for prescription opioid use disorders, morbidity, and mortality.⁵⁻⁷ Currently, policymakers have focused significant efforts on curbing prescribing rates.⁴¹ Uninsured adults may misuse prescription opioids to relieve pain because that is what they can access outside of the medical system or because it is easier for them just to pay for prescription opioids than other pain treatments. Having health insurance may allow these individuals to have better access to more appropriate pain management. Thus, our results suggest the need for expanding access to evidence-based pain treatment for all adults, especially for uninsured adults, which is a significant policy and public health challenge for the United States.

This study has several limitations. First, NSDUH does not cover homeless persons not living in shelters, active-duty military, or those residing in institutions (eg, incarcerated adults). Our study may underestimate the prescription opioid misuse and use disorders because homeless adults not living in shelters and adults in the criminal justice system usually have higher prevalence of substance use and use disorders than general civilian, noninstitutionalized adults.42-44 Second, NSDUH did not specify relief of withdrawal pain as a motivation for prescription opioid misuse. Third, because of the crosssectional nature of NSDUH, this study could not establish temporal or causal relationships. Fourth, although the 2015 NSDUH estimated the prevalence of prescription opioid use disorders based on the DSM-IV criteria rather than DSM-5 criteria, the prevalence of prescription use disorders would have been similar if it were based on DSM-5 criteria.45,46 Finally, NSDUH data are subject to recall and socialdesirability biases.

CONCLUSIONS

Sociodemographic characteristics, mental illness, and specific substance use and use disorders were associated with specific motivations for misusing prescription opioids. Seeking pain relief was a common motivation for misuse that was associated with a range of behavioral health **It is illegal to post this copy** problems, including past-year suicidal ideation, cannabis and heroin use or use disorders, cocaine use disorders, and other psychotropic misuse or use disorders. Prescription opioid misuse and, even more strongly, prescription opioid use disorders were associated with a broad range of psychopathology, including other substance use disorders, depression, and suicidal ideation. Treating co-occurring conditions could be a crucial aspect of addressing prescription opioid misuse and use disorders. Financial motivations may be a driver of potentially risky prescription opioid misuse, and better provision of pain treatment is needed for all adults, particularly for those without health insurance. Our results suggest that clinicians should assess prescription opioid misuse and its motivations and should screen for multiple co-occurring behavioral health conditions in patients who misuse prescription opioids.

Submitted: October 17, 2017; accepted January 24, 2018.

Published online: August 14, 2018.

Author contributions: Study concept and design, critical revision of the manuscript for important intellectual content, and analysis and interpretation of data: all authors. Acquisition of data, drafting of the manuscript, statistical analysis, and administrative, technical, or material support: Dr Han. Dr Han had full access to all of the data in this study and takes responsibility for integrity of the data and the accuracy of the data analysis.

Potential conflicts of interest: Unrelated to the submitted work, **Dr Compton** reports ownership of stock in General Electric, 3M, and Pfizer. **Dr Blanco** reports ownership of stock in General Electric, Sanofi, and Eli Lilly. **Drs Han** and **Jones** have no conflicts to disclose.

Funding/support: None.

Disclaimer: The findings and conclusions of this study are those of the authors and do not necessarily reflect the views of the Substance Abuse and Mental Health Services Administration, the National Institute on Drug Abuse of the National Institutes of Health, and the US Department of Health and Human Services.

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