
National Health Statistics Reports

Number 162 ■ August 5, 2021

Prescription Opioid Use Among Adults With Chronic Pain: United States, 2019

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Abstract

Objective—This report presents prevalence estimates of prescription opioid use among U.S. adults with chronic pain.

Methods—Data from the redesigned 2019 National Health Interview Survey were used to estimate the prevalence of prescription opioid use in the past 3 months among adults aged 18 and over with chronic pain (pain on most days or every day in the past 3 months). Prevalence estimates are presented by age group, sex, race and ethnicity, educational attainment, veteran status, employment status, poverty status, health insurance coverage, and urbanization level of residence.

Results—In 2019, 22.1% of U.S. adults with chronic pain used a prescription opioid in the past 3 months. Prescription opioid use among adults with chronic pain varied by age group, sex, educational attainment, employment status, poverty status, and health insurance coverage. Prescription opioid use increased with age before declining among adults aged 65 and over, with the highest prevalence observed among adults aged 45–64 (25.9%). Women (24.3%), adults who were not employed (27.8%), and adults with a family income below 100% of the federal poverty level (27.0%) were more likely to have used a prescription opioid for chronic pain than men (19.4%), employed adults (15.2%), and adults with a family income of 200% or more of the federal poverty level (19.4%), respectively. Prescription opioid use declined with increasing educational attainment: Adults with less than a high school diploma or GED (26.2%) had the highest prevalence of prescription opioid use for chronic pain, while adults with a bachelor's degree or higher (18.4%) had the lowest prevalence of prescription opioid use. Uninsured adults had a lower prevalence of prescription opioid use (12.1%) than adults with private coverage (19.9%), Medicare (28.2%), or Medicaid or other forms of public coverage (28.4%).

Keywords: race and ethnicity • veteran status • health insurance coverage • poverty status • National Health Interview Survey

Introduction

In 2019, an estimated 20.4% of U.S. adults had chronic pain (1). Opioids are widely prescribed for the treatment of chronic pain in the United States (2,3), and while they have proven effective in reducing acute pain (4,5), the benefits of opioid use for chronic pain have been questioned (6). Studies have noted adverse outcomes such as increased anxiety, depression, pain sensitivity, comorbidity with other substance use disorders, and increased risk of opioid misuse and mortality (2,4,5,7). As noted in a recent National Academies of Sciences report, “The ongoing opioid crisis lies at the intersection of two substantial public health challenges—reducing the burden of suffering from pain and containing the rising toll of the harms that can result from the use of opioid medications” (8).

In this context, there is a lack of nationally representative studies of prescription opioid use among U.S. adults with chronic pain and how estimates of use vary by sociodemographic and socioeconomic characteristics (9,10). A study using nationally representative 2009–2010 National Health and Nutrition Examination Survey data on back pain that was collected as part of the arthritis



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questionnaire found that 18.8% of adults aged 20–69 with chronic low back pain had taken at least one prescription opioid in the past 30 days (9). Controlling for age, sex, and medical comorbidities, Hispanic adults were less likely to have used a prescription opioid than non-Hispanic black adults, while adults with lower incomes and adults with less than a bachelor's degree were more likely to have used a prescription opioid than adults with higher incomes and adults with a bachelor's degree or higher, respectively (10). A separate study using National Ambulatory Medical Care Survey data from 2010 found that 36.4% of adults with noncancer chronic pain had been prescribed an opioid. In addition, nonwhite adults (compared with white adults) and rural adults (compared with nonrural adults) had higher odds of prescription opioid use, after adjusting for several sociodemographic, socioeconomic, and medical comorbidity measures (10). While other studies of adults with chronic pain have identified differences in prescription opioid use by age (11,12), sex and gender (11–13), race (14), and economic deprivation (12), the generalizability of these findings are limited due to a focus on non-U.S. populations or those that are specialized (for example, members of health care networks) or subnational (for example, individual states or communities).

This report fills a gap in the literature by using data from the 2019 National Health Interview Survey (NHIS) to provide current, nationally representative estimates of prescription opioid use in the past 3 months among adults with chronic pain (pain on most days or every day in the past 3 months). Prevalence estimates are presented overall and by selected sociodemographic and socioeconomic characteristics. The estimates provide a baseline for continued surveillance of prescription opioid use among adults with chronic pain and may illuminate subgroups potentially at higher risk of negative outcomes associated with opioid use.

Methods

Data source

Data used in this report are from the Sample Adult component of the 2019 NHIS, a nationally representative household survey of the U.S. civilian noninstitutionalized population that is conducted throughout the year by the National Center for Health Statistics (NCHS). The survey collects information on health status, health-related behaviors, and health care access and use. In 2019, NHIS was redesigned to better meet the needs of data users.

The redesigned NHIS interview begins by identifying everyone who usually lives in the household. One sample adult, aged 18 or over, and one sample child, aged 17 or under (if any children live in the household), are randomly selected to be part of the NHIS sample. Information about the sample adult is collected from the sample adults themselves unless they are physically or mentally unable to report, in which case a knowledgeable proxy can answer for them. Analyses presented in this report are based on data collected from 7,184 sample adults reporting chronic pain in the past 3 months. The overall response rate for sample adults was 59.1% in 2019 (15). A detailed description of the 2019 NHIS sample design and survey questionnaire is available elsewhere (15).

Measures

Prescription opioid use and pain measures

Prescription opioid use in the past 3 months is the dichotomous outcome or dependent variable for all analyses presented in this report. Questions on prescription opioid use were included in the 2019 NHIS as emerging content, which is questionnaire content reserved for topics of growing public health interest. Sample adults who previously indicated they had used prescription medications in the past 12 months were first asked, “During the past 12 months, have you taken any opioid pain relievers prescribed by a doctor, dentist, or other health professional?” Sample adults who said “yes” to this question were

then asked, “During the past 3 months, have you taken any opioid pain relievers prescribed by a doctor, dentist, or other health professional?”

The survey questions on pain are part of the Sample Adult rotating core and are asked every 2 years (15). In 2019, sample adults aged 18 and over were asked, “In the past 3 months, how often did you have pain? Would you say never, some days, most days, or every day?” Chronic pain was defined as having pain most days or every day in the past 3 months.

Sociodemographic and socioeconomic status measures

Estimates of prescription opioid use in the past 3 months among adults with chronic pain are presented and compared by selected sociodemographic and socioeconomic status (SES) measures. The following sociodemographic measures were included in the analysis: age group, sex, race and ethnicity, veteran status, and urbanization level of residence. Sex was categorized into two groups, men and women. Age was categorized into four groups: 18–29, 30–44, 45–64, and 65 and over. Race and ethnicity were categorized into four groups, Hispanic, non-Hispanic white, non-Hispanic black, and non-Hispanic other (included in the totals but not shown separately). Adults categorized as Hispanic may be of any race or combination of races. Adults defined as non-Hispanic white or non-Hispanic black indicated only one race. Adults who indicated races other than only white or only black, or multiple races, are combined into the non-Hispanic other category. Veteran status was included in the analysis because the U.S. Department of Veterans Affairs has developed a policy regarding the reduction of opioid use for the treatment of chronic pain (16). In addition, veterans have been shown to have a higher prevalence of chronic pain than nonveterans (17). Veterans were defined as sample adults who had ever served on active duty in the U.S. Armed Forces, military reserves, or National Guard and were not currently on full-time active duty with the Armed Forces. Urbanization level of residence was measured by collapsing the six-category 2013 NCHS urban–rural classification

scheme for counties (18) into four categories: large central metropolitan counties (inner cities), large fringe metropolitan counties (suburbs), medium and small counties, and nonmetropolitan areas.

The SES measures covered in this report include educational attainment, employment status, poverty status, and health insurance coverage. Health insurance coverage is included as a measure of SES (and as a measure of access to and the ability to pay for medications) because it has been used similarly and found to be associated with prescription opioid use in past studies (19,20). For this study, health insurance coverage was based on a hierarchy of five mutually exclusive categories: private, Medicare, Medicaid or other public coverage, other coverage, and uninsured. Adults with more than one type of health insurance were assigned to the first appropriate category in the hierarchy. Educational attainment was categorized into four groups: less than a high school diploma or GED, high school diploma or GED, some college or associate's degree, and bachelor's degree or higher. Employment status was categorized into two groups, employed and not employed. Income data were used to calculate poverty status, which was divided into three categories based on the U.S. Census Bureau's poverty thresholds: adults with a family income below 100% of the federal poverty level (FPL), adults with a family income of 100% to less than 200% of FPL, and adults with a family income of 200% of FPL or above. Missing income data were imputed using multiple imputation methods.

Statistical analyses

Unadjusted prevalence estimates of prescription opioid use in the past 3 months among adults with chronic pain, along with 95% confidence intervals (CIs), are presented overall and by the nine sociodemographic and SES measures (Table and Figures 1–4). The 95% CIs were generated using the Korn–Graubard method for complex surveys. Estimates of prescription opioid use were compared for statistically significant differences using two-tailed significance tests at the 0.05 level. All reported differences

are statistically significant ($p < 0.05$). Linear and quadratic trends for age group, educational attainment, poverty status, and urbanization level of residence were modeled using orthogonal polynomials in logistic regressions. No adjustments were made for multiple comparisons.

All estimates of prescription opioid use among adults with chronic pain were calculated using sample adult weights and are representative of the U.S. civilian noninstitutionalized population of adults aged 18 and over. The development and application of sample weights are described in more detail elsewhere (21). All analyses were conducted using SAS-callable SUDAAN version 11.0 (RTI International, Research Triangle Park, N.C.) to account for the complex sample design of NHIS. Unless otherwise noted, all estimates shown in the report meet NCHS standards of reliability as specified in “National Center for Health Statistics Data Presentation Standards for Proportions” (22).

Results

Nationally, 22.1% of adults with chronic pain used a prescription opioid in the past 3 months (Figure 1). Women with chronic pain were more likely to have used a prescription opioid in the past 3 months (24.3%) than men with chronic pain (19.4%). A significant quadratic trend was observed between age and the prevalence of prescription opioid use for adults with chronic pain (Figure 1). Prescription opioid use increased from 11.8% for adults aged 18–29 to 25.9% for adults aged 45–64 before decreasing among adults aged 65 and over (21.8%). No significant differences in the percentage of adults with chronic pain who used a prescription opioid were identified by race and ethnicity or by veteran status (Figure 2).

Figure 3 presents results for three of the four SES measures. A significant linear trend was observed between educational attainment and prescription opioid use among adults with chronic pain, with adults with less than a high school diploma or GED having the highest prevalence of prescription opioid use at 26.2%, followed by adults with some college or an associate's degree (23.5%), adults with a high school

diploma or GED (21.3%), and adults with a bachelor's degree or higher (18.4%). Employed adults with chronic pain were less likely to have used a prescription opioid in the past 3 months (15.2%) compared with not employed adults with chronic pain (27.8%). Finally, a significant linear trend between poverty status and prescription opioid use among adults with chronic pain was observed where use was highest among adults with a family income below 100% of FPL (27.0%), followed by adults with a family income of 100% to less than 200% of FPL (25.9%), and adults with a family income of 200% of FPL or above (19.4%).

Uninsured adults with chronic pain were less likely to have used a prescription opioid in the past 3 months (12.1%) compared with adults with private coverage (19.9%), adults with Medicare (28.2%), and adults with Medicaid or other forms of public coverage (28.4%) (Figure 4). Additionally, adults with chronic pain and private insurance coverage were less likely to have used prescription opioids compared with adults with Medicare and those with Medicaid or other public coverage. Finally, adults with Medicare and those with Medicaid or other public coverage were more likely to have used a prescription opioid compared with adults with “other coverage” (16.2%). No significant trend in prescription opioid use was observed by urbanization level of residence.

Summary

This report provides nationally representative estimates of prescription opioid use in the past 3 months among adults with chronic pain. Overall, 22.1% of adults with chronic pain had used a prescription opioid in the past 3 months. Men and employed adults were less likely to have used a prescription opioid compared with women and not employed adults, respectively. Prescription opioid use increased with age among adults aged 18–64 and decreased among adults aged 65 and over. Adults from higher socioeconomic backgrounds, as measured by their educational attainment and family income as a percentage of FPL, were less likely to have used prescription

Figure 1. Percentage of adults with chronic pain who used prescription opioids in the past 3 months, overall and by sex and age group: United States, 2019

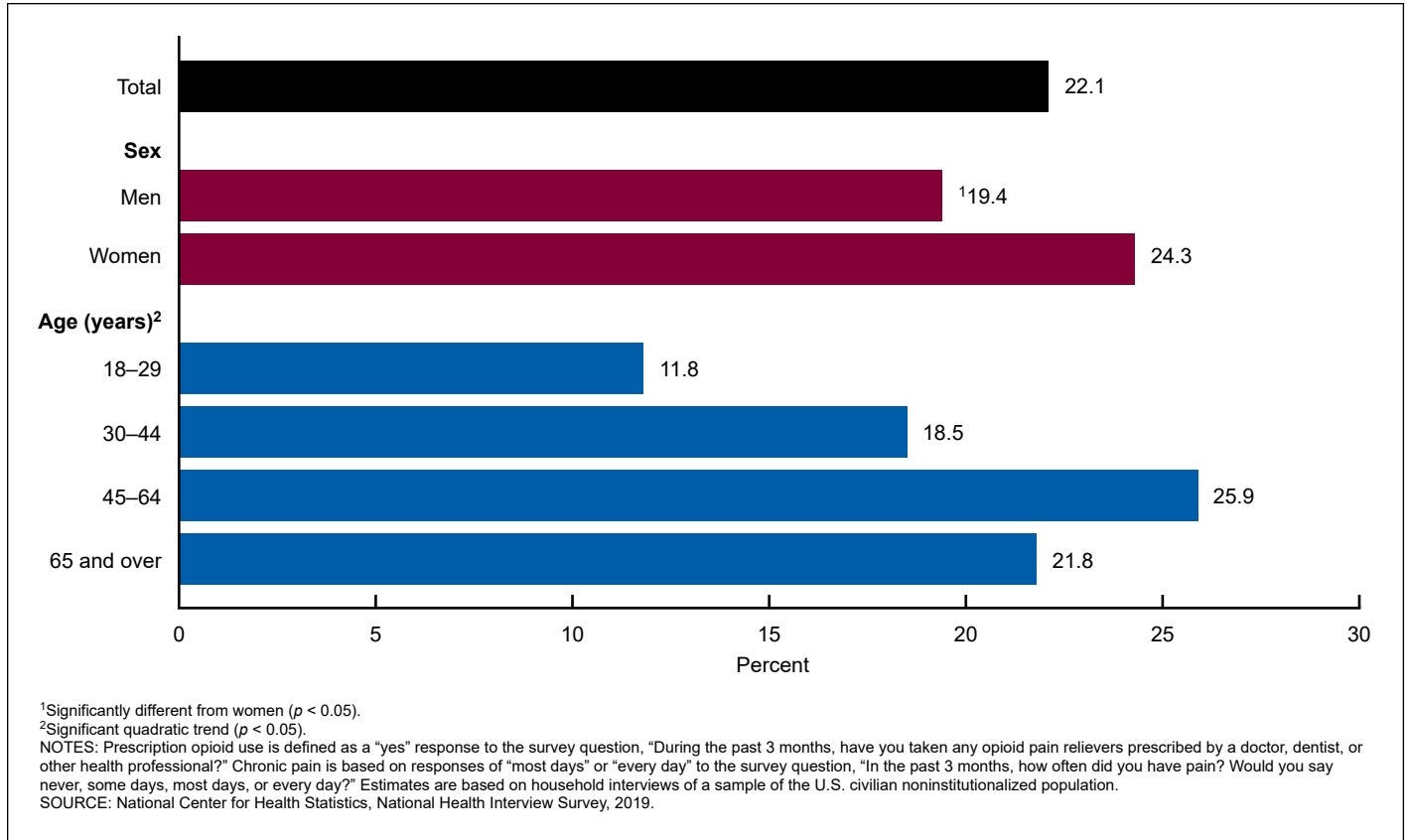


Figure 2. Percentage of adults with chronic pain who used prescription opioids in the past 3 months, by race and ethnicity and veteran status: United States, 2019

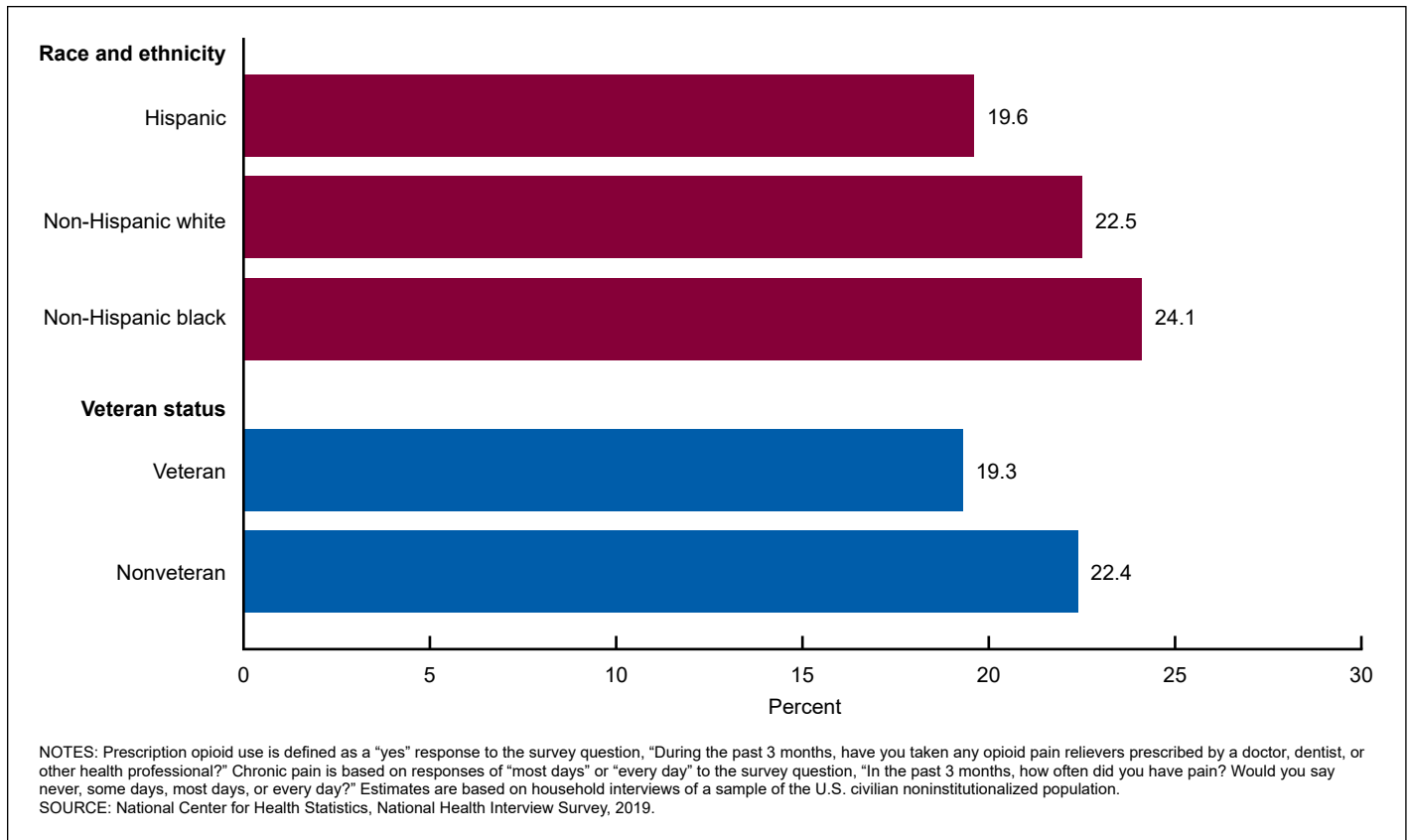
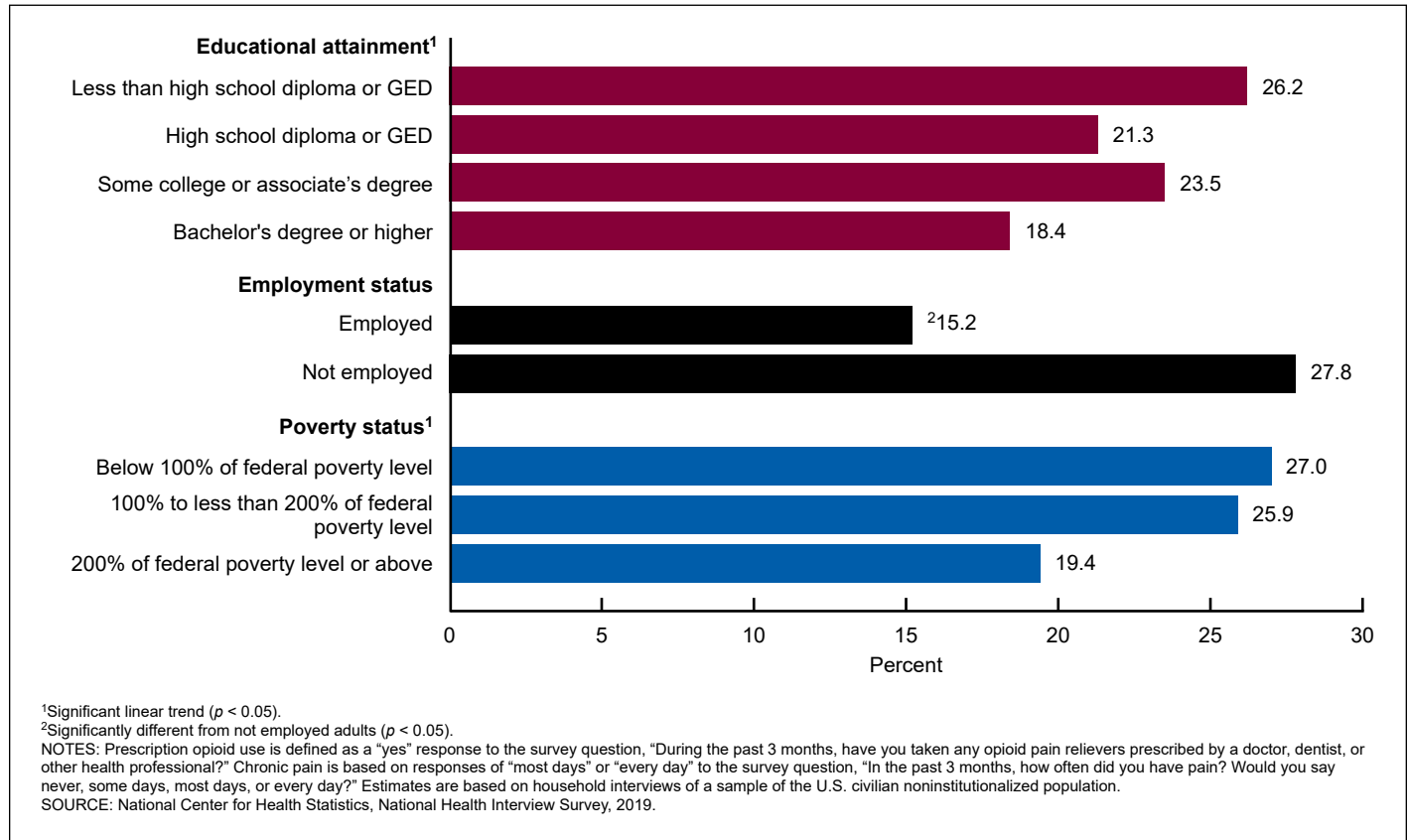
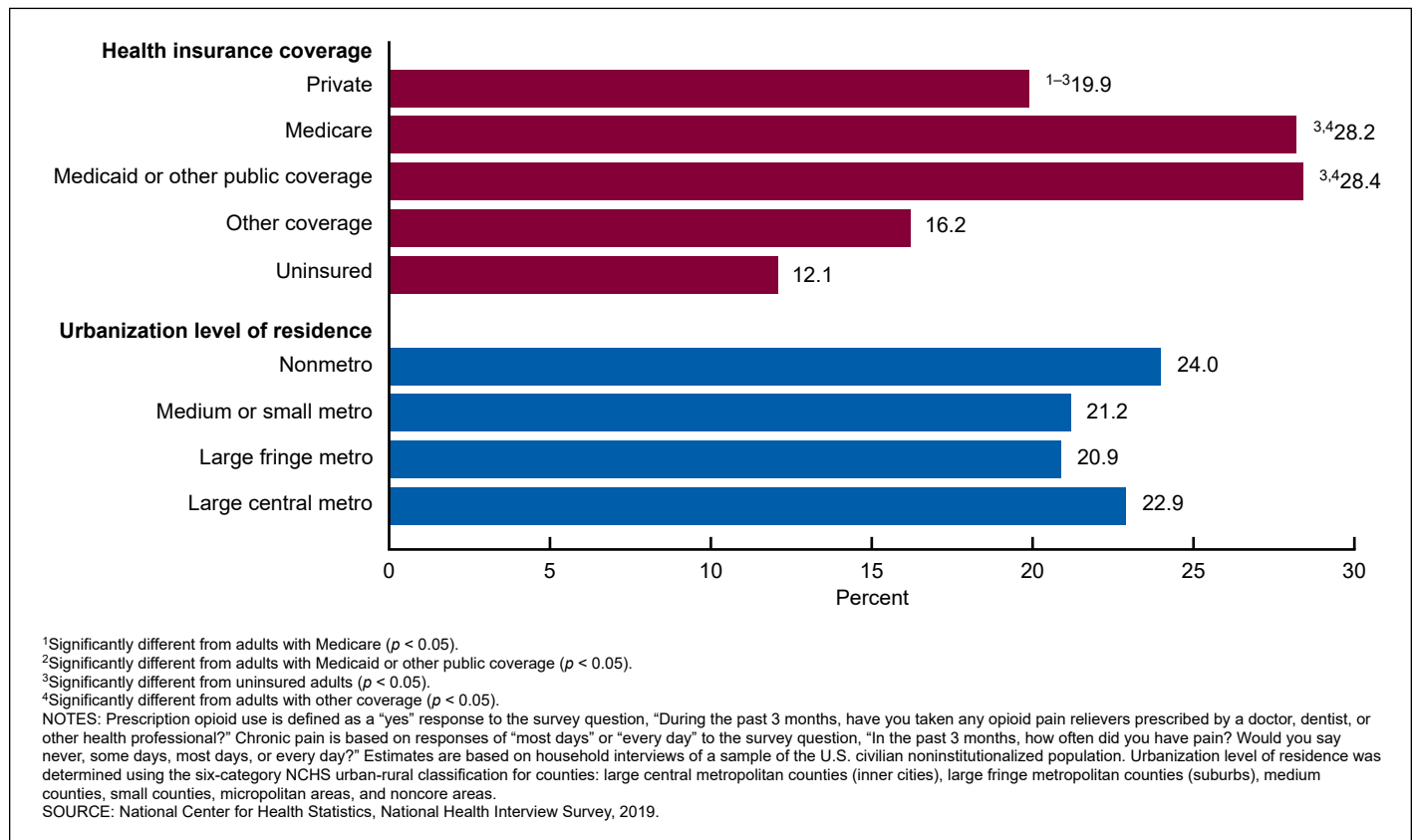


Figure 3. Percentage of adults with chronic pain who used prescription opioids in the past 3 months, by educational attainment, employment status, and poverty status: United States, 2019**Figure 4. Percentage of adults with chronic pain who used prescription opioids in the past 3 months, by health insurance coverage and urbanization level of residence: United States, 2019**

opioids compared with those from lower socioeconomic backgrounds. Finally, adults with private health insurance coverage, Medicare, or Medicaid or other forms of public coverage were more likely to have used a prescription opioid than uninsured adults.

The analyses presented here are not without limitations. First, information on prescription opioid use was self-reported and may be subject to recall bias. Second, some respondents may be unaware of whether medications they take for pain contain opioids. While examples of the most common prescription opioids are provided in the survey question, the large variety of prescription opioids and rapid changes in the availability of opioids over time complicate the measurement of prescription opioid use. Third, prescription opioid use data were not validated against health care records or prescription database information. Fourth, given the sensitivity of the topic and the mode of NHIS administration (interviewer- as opposed to self-administered), prescription opioid use may be underestimated in this study due to social desirability bias (that is, some adults who used a prescription opioid in the past 3 months may have answered “no” given perceptions of opioid use as an undesirable behavior). Finally, adults who control their chronic pain via prescription opioids may not have reported pain on most days or every day in the past 3 months, so they may not be included in this analysis. Despite these limitations, this study has strengths, including the use of a large, nationally representative data set, and the ability to examine prescription opioid use among adults with chronic pain.

Chronic pain is a pervasive health condition affecting as many as one in five adults. Among those with chronic pain, nearly one-quarter of adults had used a prescription opioid in the past 3 months, with usage rates varying across a range of sociodemographic and socioeconomic subgroups. Prescription opioid use in the context of chronic pain management is associated with increased risk of misuse, addiction, morbidity, and mortality (4–6). Data from the 2019 NHIS can be further analyzed to study prescription opioid use among U.S. adults with chronic pain to look at differences between those

experiencing chronic pain that frequently limits their work and life activities (high-impact chronic pain) and those with chronic pain whose daily activities are not as limited (low-impact chronic pain). Examining differences in prescription opioid use among these adults may provide additional insights about how prescription opioids are used for pain in the United States.

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Table. Unadjusted prevalence estimates of prescription opioid use in the past 3 months, by selected characteristics among adults with chronic pain: United States, 2019

Characteristic	Estimate	95% confidence interval	Standard error
Total	22.1	(20.9–23.3)	0.63
Sex			
Men	¹ 19.4	(17.7–21.2)	0.89
Women	24.3	(22.7–26.0)	0.83
Age group (years) ²			
18–29	11.8	(8.1–16.4)	2.01
30–44	18.5	(15.9–21.4)	1.37
45–64	25.9	(24.0–28.0)	1.02
65 and over	21.8	(20.0–23.6)	0.89
Race and ethnicity			
Hispanic	19.6	(16.0–23.6)	1.91
Non-Hispanic white	22.5	(21.0–23.9)	0.73
Non-Hispanic black	24.1	(20.8–27.7)	1.72
Veteran status ³			
Veteran	19.3	(16.5–22.3)	1.45
Nonveteran	22.4	(21.1–23.8)	0.68
Educational attainment ⁴			
Less than high school diploma or GED	26.2	(22.8–29.8)	1.74
High school diploma or GED	21.3	(19.0–23.7)	1.18
Some college or associate's degree	23.5	(21.5–25.5)	1.02
Bachelor's degree or higher	18.4	(16.3–20.6)	1.08
Employment status			
Employed	⁵ 15.2	(13.6–16.9)	0.83
Not employed	27.8	(26.0–29.5)	0.88
Poverty status ⁶			
Below 100% of federal poverty level	27.0	(23.8–30.4)	1.65
100% to less than 200% of federal poverty level	25.9	(22.9–29.0)	1.53
200% of federal poverty level or above	19.4	(18.0–20.9)	0.74
Health insurance coverage ⁷			
Private	^{8–10} 19.9	(18.4–21.5)	0.79
Medicare	^{10,11} 28.2	(25.6–30.8)	1.31
Medicaid or other public coverage	^{10,11} 28.4	(24.4–32.6)	2.04
Other coverage	16.2	(11.3–22.1)	2.63
Uninsured	12.1	(9.0–15.8)	1.68
Urbanization level of residence ¹²			
Nonmetro	24.0	(21.3–26.8)	1.38
Medium or small metro	21.2	(19.3–23.2)	0.99
Large fringe metro	20.9	(18.1–23.8)	1.42
Large central metro	22.9	(20.4–25.6)	1.31

¹Significantly different from women ($p < 0.05$).²Significant quadratic trend ($p < 0.05$).³Defined as sample adults who had ever served on active duty in the U.S. Armed Forces, military reserves, or National Guard and were not currently on full-time active duty with the Armed Forces.⁴Significant linear trend ($p < 0.05$).⁵Significantly different from not employed adults ($p < 0.05$).⁶Significant linear trend ($p < 0.05$). Poverty status for adults was based on the U.S. Census Bureau's categorization for poverty thresholds.⁷Based on a hierarchy of mutually exclusive categories in the following order: private, Medicaid or other public coverage, other coverage, and uninsured. Adults with more than one type of health insurance were assigned to the first appropriate category in the hierarchy. Private is any comprehensive private insurance plan (including health maintenance and preferred provider organizations), including those obtained through an employer, or those purchased directly through local or community programs or through the Health Insurance Marketplace or a state-based exchange. Private coverage excludes plans that pay for only one type of service, such as accidents or dental care. Medicaid or other public coverage includes Medicaid, Children's Health Insurance Program (CHIP), and state-sponsored health plans. Other coverage includes other government-sponsored health plans and military plans. A person is defined as uninsured if they do not have any private health insurance, Medicare, Medicaid, CHIP, state-sponsored or other government-sponsored health plan, or military plan. A person is also defined as uninsured if they have only Indian Health Service coverage or only a private plan that pays for one type of service, such as accidents or dental care.⁸Significantly different from adults with Medicare ($p < 0.05$).⁹Significantly different from adults with Medicaid or other public coverage ($p < 0.05$).¹⁰Significantly different from uninsured adults ($p < 0.05$).¹¹Significantly different from adults with other coverage ($p < 0.05$).¹²Determined using the six-category NCHS urban–rural classification for counties: large central metropolitan counties (inner cities), large fringe metropolitan counties (suburbs), medium counties, small counties, micropolitan areas, and noncore areas.

NOTE: Data are based on household interviews of a sample of the U.S. civilian noninstitutionalized population.

SOURCE: National Center for Health Statistics, National Health Interview Survey, 2019.

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National Health Statistics Reports ■ Number 162 ■ August 5, 2021

Suggested citation

Dahlhamer JM, Connor EM, Bose J, Lucas JW, Zelaya CE. Prescription opioid use among adults with chronic pain: United States, 2019. National Health Statistics Reports; no 162. Hyattsville, MD: National Center for Health Statistics. 2021. DOI: <https://dx.doi.org/10.15620/cdc.107641>.

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